Information Resources on the Care and Welfare of Beef Cattle

AWIC Resource Series No. 24 June 2004

Updates Housing, Husbandry, and Welfare of Beef Cattle, 1995

Watering cattle and providing shelter are two important ways to help keep them cooler and less stressed during heat waves. Photo by Keith Weller, USDA, ARS, Photo Library.

Compiled and edited by:

Cynthia P. Smith, M.S.
Animal Welfare Information Center
National Agricultural Library
U.S. Department of Agriculture

Published by:

U. S. Department of Agriculture
Contents

Acknowledgments

How to Use This Document

An Overview of Current Beef Welfare Concerns by James W. Oltjen, Ph.D. and Frank M. Mitloehner, Ph.D.

Bibliography

Behavior / Breeding / Feeding / General / Health / Housing
Husbandry / Legislation / Production Systems and Management
Reproduction / Slaughter / Transport

Website Resources

Acknowledgments

The editor gratefully acknowledges James Oltjen, Ph.D, and Frank Mitloehner, Ph.D., Extension Specialists with Department of Animal Science, University of California, for their expert review and written introduction to this publication.

Special thanks to D’Anna Jensen for the cover design, final editing, formatting, and printing of this publication. Her role in guiding this publication to completion is greatly appreciated.

The Animal Welfare Information Center acknowledges CAB International and CABI Publishing, a leading international, not-for-profit publisher in applied life sciences, including animal science, nutrition, integrated crop management, plant sciences and forestry, for the use of more than sixty abstracts from the CAB Abstracts database. More information on CABI Publishing and CAB International is available at http://www.cabi.org

How to Use This Document

This publication is divided into three major sections: Introduction, Bibliography, and Website Resources. A section containing National Agricultural Library Document Delivery Information for U.S. and foreign patrons and a
Introduction

The introduction to this document was written jointly by James Oltjen, Ph.D, and Frank Mitloehner, Ph.D., Extension Specialists with Department of Animal Science, University of California. They have reviewed and summarized the latest research regarding the care and welfare of today’s beef cattle and provided comments on critical areas of concern.

Bibliography

An extensive bibliography categorized into eleven subject subsections covering all aspects of beef cattle care, husbandry, health, and welfare comprise this section of the publication. Citations were selected from searches conducted using a variety of agricultural, medical, and life science databases. Within a subject category citations are arranged alphabetically according to the last name of the primary author. Each citation is listed with a set of keywords that describe useful information about the entry. If a citation is listed from a publication available through the National Agricultural Library (NAL) a NAL call number has been included. Entries were included with publications dates ranging from 1996-2003. Please note that citations with a copyright notice are protected by U.S. and/or international copyright laws and are used by special permission.

Web Site Resources

More than forty annotated web site resources relating to the care, welfare, and housing of beef cattle have been selected and listed alphabetically for convenience. Resources selected cover: codes of practice, animal welfare requirements, housing, disease, nutrition, and general husbandry information. World Wide Web addresses are listed to access specialized databases, extension materials, and publications produced by a variety of non-profit organizations. All resources are accessible through the internet and are current as of September 2004. Readers are cautioned as to the dynamic nature of the internet and the fact that addresses and content are subject to change.

National Agricultural Library Document Delivery

Information on how to request materials that are included in the collection of the National Agricultural Library (NAL) may be found on the Document Delivery Services Branch website at http://www.nal.usda.gov/borrow-materials. Please read carefully as there are certain restrictions on media and document types.

All patrons are encouraged to explore local library resources first before contacting the National Agricultural Library.

Return to Contents

The Animal Welfare Information Center, Contact Us
September 7, 2004
Behavior

NAL Call Number: SF202.5 A43 1997
Keywords: animal production, animal welfare, dairy cattle, beef cattle, maternal and calf behavior, behavioral responses to management systems, human-cattle interactions, training cattle, social behavior, reproductive behavior, feeding behavior.

NAL Call Number: SF1 R45
Keywords: beef cattle cows, grazing systems, animal feeding, behavior, feeding habits, feeding systems, Portuguese language, Brazil.

NAL Call Number: SF601.C66
Keywords: steers, standing reflex, sexual behavior, abnormal behavior, implantation, growth promoters, zeranol, estrogens, trenbolone, diethylstilbestrol, stress, removal, cattle feeding, social dominance.

NAL Call Number: 60.18 J82
Abstract: Twelve yearling steers were observed in an 8-arm radial maze to determine the strength of the association between food quality and spatial locations following a 0- or 30-day delay. The study was conducted using 3 qualities of feed, low (straw), medium (alfalfa pellets), and high (grain). During phase 1, all 8 arms contained dehydrated alfalfa pellets. In phase 2, steers were fed either grain or wheat straw, in 2 arms (key arms). The remaining 6 arms contained alfalfa pellets. Six steers received straw in key arms, and 6 received grain. Key arms varied among steers and were selected so a change in arm selection patterns between phases would clearly be associated with corresponding changes in food quality. Straw was placed in arms that steers selected first during phase 1, and grain was placed in arms that were selected last in phase 1. Phase 3 began after a 0- or 30-day delay following phase 2. In this phase, all arms contained alfalfa. Steers rarely reentered a previously entered arm indicating an accurate spatial memory for food location. The sequence of arm selections in phase 2 changed (P < 0.05) from the pattern established in phase 1, which demonstrated that cattle can associate food quality with spatial locations. The delay between phase 2 and 3 did not affect (P > 0.05) the selection patterns of steers that had grain in key arms, but did appear to affect the number and sequence of arm entries for steers receiving low quality food in key arms during phase 2. With no delay, steers that received straw in phase 2 did not enter key arms on the first day of phase 3, but after 30 days animals entered and consumed food in key arms. Steers with no delay entered key arms fewer (P = 0.03) times during phase 3 than steers that began 30 days later. This suggests that strength of the association between food quality and spatial locations can decline over time.
Keywords: steers, beef cattle, learning ability, spatial distribution, wheat straw, alfalfa pellets, feed grains, palatability, feeding behavior, nutritive value, memory, food preferences.

NAL Call Number: QL750 A6
**Keywords:** calves, crossbreds, handling, animal behavior, behavior patterns, beef production, relationships, handling, human animal relationships.


**NAL Call Number:** QL750.A6

**Keywords:** cattle, steers, sexual behavior, social behavior, stress, animal welfare, economic impact, feedlots, intensive livestock farming.


**NAL Call Number:** 18 L2353 Suppl.

**Keywords:** beef cattle, cows, mothers, human animal relationships, behavior, grazing systems, extensive husbandry, Germany, European Union, German language.


**NAL Call Number:** 18 L2353 Suppl.

**Keywords:** cows, mothers, calves, maternal behavior, weight gain, growth, Germany, European Union, German language.


**NAL Call Number:** QL750 A6

**Keywords:** calves, handling, identification, human behavior, animal behavior, relationships, interactions, stockmen, feeding, France.


**NAL Call Number:** QL750.A6

**Abstract:** The perception to petting and brushing (gentling) by man was investigated in 41 beef calves reared with twice daily sucklings under human control. At 1.5 months, they were allocated to one of three treatments. For 5 minutes a day, 5 days a week for 2 weeks they were socially isolated (treatment IS, 13 calves), or with a stationary stockman who brushed the calf when it approached (treatment PR, 14) or with a stockman approaching and brushing the calf (treatment BR, 14). All of the BR calves accepted brushing easily within 5 days of treatment. All of the PR calves briefly interacted with the stockman within 3 days, but by the end of the treatment, none were interacting with the stockman. Two tests were performed on 2 consecutive days after the end of the treatments and 1 month later, in the familiar environment of the treatment procedures. The test procedure included social isolation (1 minute), isolation with the stationary stockman (1.5 minutes) and isolation with the stockman trying to stroke the calf (1.5 minutes). Few animals approached within 2 m of the
stockman during the tests and BR calves tended to stay more than 4 m away from him (P = 0.1). Just after the treatment period, BR animals allowed more stroking by the stockman (P < 0.01) on the 2 days of tests and were more motionless (P < 0.01) on the first day of testing than animals from the 2 other treatments. On the second day of testing, both BR and PR calves were more motionless (P < 0.01) than IS animals. However, all the animals appeared more tolerant 1 month later and no significant difference was found at this age. Acceptance of contact such as brushing or stroking appears to be more the result of a habituation process than one of positive reinforcement.

**Keywords:** beef cattle calves, behavior, human interaction, perception.


**Keywords:** beef cattle, goats, behavior, management, young animals, animal welfare, weaning, feeding, French language.


**NAL Call Number:** 23 Au783

**Keywords:** Zebu, breed, steers, heifers, bull calves, genetics, environmental effects, temperament, behavior, flight speed, genetic factors, selection, tropical pasture grazing, Australia.


**Keywords:** weanling beef calves, yearlings, animal behavior, temperament, flight speed score, weighing crush, meat quality, carcass quality,


**NAL Call Number:** SF1 L5

**Keywords:** Zebu, breed, inbreeding, growth, fertility, disease resistance, growth, fertility, feed conversion efficiency, adaptive traits, resistance to cattle ticks, gastrointestinal helminths, buffalo flies and heat stress, meat quality, temperament, flight speed, carcass composition, body weight, performance, tropics, parasites, adaptation, Australia.


**NAL Call Number:** 241 IM72RA

**Keywords:** beef breeds, breed differences, temperament, standardized scoring system, relationships, performance, traits, evaluation, meat quality, behavior, heritability, breeding, growth, milk yield, carcasses, disease resistance, reviews.


**NAL Call Number:** 49 J82

**Keywords:** feeding, feeding behavior, aggressiveness, agonistic behavior, efficiency, performance evaluation,

NAL Call Number: 49 382

Abstract: Several clostridial vaccines are currently being used in the beef cattle industry. Of greatest concern is altering the location and route of administration of these vaccines to reduce injection-site lesions while maintaining seroconversion. Two experiments were conducted to determine the effect of clostridial vaccines and injection sites on the performance, feeding behavior, and lesion size scores of beef steers. In Exp.1, 80 crossbred beef steers (BW 237 +/- 3.2 kg) were allotted randomly into five groups and given 14d to adapt to the feed and individual feed intake-monitoring devices (Pinpointer devices) before starting the study. Each group was assigned randomly to one of the following vaccination treatments: 1) control (sterile saline water), 2) Alpha-7 Ear (A7E), 3) Alpha-7 Prescapula (A7P), 4) Vision-7 Prescapula (V7P), and 5) Ultrabac-7 Prescapula U7P). All vaccines were injected s.c. in the ear or prescapular region, and injection sites were palpated on d 0 and 28 (Exp. 1) and on d 63 and 91 (Exp. 2). The protocol for Exp. 2 was exactly the same as for Exp. 1 except treatments included control, A7P, Alpha-CD Ear(ACDE), Alpha-CD Prescapula (ACDP), Fortress-7 Prescapula (F7P), and V7P. Also, control and steers receiving F7P and V7P were revaccinated on d 63 and palpated on d 91. Results of Exp. 1 indicated that the A7E and U7P steers had a feed intake lower (P < 0.01) than all other treatment groups. The ADG of the A7P and A7E steers were not different (P > 0.05) from those of the control steers. The gain:feed ratio of the A7E steers was 41% higher (P < 0.01) than that of the V7P steers (Exp. 1). The results of Exp. 2 indicated that the control, ACDP, and V7P steers had greater (P < 0.01) ADG than all other treatment groups, sizes differed by vaccine and injection site in both experiments. These data suggest that vaccinating beef steers s.c. in the ear produced gain: feed ratios and lesion size scores that were similar to prescapular vaccinations. However, more research is required to determine the immune response but the gain:feed ratios were not different (P > 0.05) among all treatment groups. Lesion of vaccinating cattle in the ear.

Keywords: steers, clostridium, spatial variation, vaccines, performance, feeding behavior, lesions, size, feed intake, subcutaneous injection, ears, application date, live weight gain, feed conversion efficiency, immune response.


Keywords: beef cattle, handling, behavior, grazing management tool, moving cattle, low stress, reduced disease incidence, increased productivity.


NAL Call Number: RC965 A5 S24 1997

Keywords: trauma, beef cattle, handling, animal behavior, human injuries, occupational hazards, health and safety at work.


NAL Call Number: 41.8 C163

Keywords: Hereford steers, breed, quantitative analysis, eating, patterns, concentrates, roughage, timothy hay, feeding behavior, rumination, pelleted feeds, mastication, lucerne pellets, time spent eating.

**Keywords:** mixed breeds, suckler cows, behavior, rank, distance, dominance, submissiveness, herd dynamics, grazing, pasture systems, highlands, computer software, Polish language.

**NAL Call Number:** 286.81 F322
**Keywords:** heifers, steers, temperament, lambs, unrestricted feeding, feed intake, performance.

**NAL Call Number:** QL750.A6
**Keywords:** beef cattle, steers, grazing, sown grasslands, bromus inermis, agropyron desertorum, elymus smithii, botanical composition, rangelands, feeding preferences, seasonal variation, grazing intensity, continuous grazing, rotational grazing, spatial variation, native range, North Dakota.

**NAL Call Number:** 23 Au792
**Keywords:** feedlots, animal behavior, performance, immune response, weaning, identification, prediction, finishing, steers, handling, blood chemistry, hydrocortisone, live weight gain, morbidity, leukocytes, lymphocyte transformation, interferon, neutrophils, natural killer cells, IGa, igm, peroxidases, lymphocytes.

**NAL Call Number:** 49.9 N483
**Keywords:** temperament, animal behavior, measurement, tests.

**NAL Call Number:** 41.8 N81
**Keywords:** calves, Norwegian Red, breed, crossbred, dehorning, electrical hot-iron tool, Leister-Ghibli, hot-air gun, comparison, sedative, local anaesthetic, plasma cortisol, behavioral testing, human contact test, discomfort, pain, Norwegian language.

**NAL Call Number:** QP251.A5
**Keywords:** behavior, breeding, animal husbandry, Brahman, breed, crossbreds, bulls, calf production, calves, conception rate, extensive husbandry, male fertility, mating systems, paternity, DNA typing, performance testing, reproduction, reproductive performance, selection, sire evaluation, social behavior, Australia.

**NAL Call Number:** 442.8 Z35
**Keywords:** beef cattle, beef breeds, German Simmental, German Angus, blood chemistry, behavior, breed differences, calves, genetic effects, heritability, hydrocortisone, sex differences, stress, stress response, temporary calf removal, tethering.


NAL Call Number: 41.8 D482

Keywords: calves, cows, bulls, Aberdeen-Angus, German Simmental, breed differences, sex differences, behavior, temperament, handling, German language.


NAL Call Number: SF1.A56.

Keywords: beef cattle, breed differences, behavior, castration, age at castration, estradiol, growth promoting implants, growth rate, insulin-like growth factor, liveweight gain, carcass fat, Australia.


NAL Call Number: 49 J82

Keywords: cows, trainer, beef calves, weaned, behavior, performance, health, feeding patterns, haptoglobin, leukotoxin antibody, body weight gain, rectal temperature.


Abstract: This article summarizes the main objectives and stages of a project which aims to assess the utilization of pastures and permanent meadows by cattle in less favourable production areas in the Czech Republic. The project includes especially: 1) evaluation of different grass and clover mixtures, 2) assessment of optimal grass varieties in order to extend the grazing period, 3) evaluation of the effect of grazed grasslands on the landscape formation, 4) assessment of botanical diversity of permanent grasslands, 5) evaluation of different grazing methods, 6) monitoring cattle behaviour, 7) economical analyses.

Keywords: beef cattle, suckler cows, heifers, feed grasses, meadows, pasture improvement, grazing, soil amendments, yield factors, behavior, feeding habits, feeds, grasses, natural resources, nonrenewable resources, Czech language, Czech Republic.


NAL Call Number: QL750 A6

Keywords: calves, polled condition, horns, dairy cattle, beef cattle, restraint of animals, cattle husbandry, animal behavior.


NAL Call Number: 281.8 IN32

Keywords: animal welfare, beef cattle, standards, EC Scientific Committee on Animal Health and Animal Welfare, stress, housing, feed access, aggressive behavior, diet, health, loading, unloading, Italian language, Italy.


NAL Call Number: QL750.A6
Abstract: Vocalization of cattle in commercial slaughter plants is associated with observable aversive events such as prodding with electric prods, slipping in the stunning box, missed stuns, sharp edges on equipment or excessive pressure from a restraint device. A total of 5806 cattle were observed during handling and stunning in 48 commercial slaughter plants in the United States, Canada and Australia during the calendar year of 1999. Each animal was scored as either a vocalizer or a nonvocalizer. In 20 plants (42%), 0-1% of the cattle vocalized, in 12 plants (25%) 2-3% vocalized, in 12 plants (25%) 4-10% vocalized and in four plants (8%) more than 10% vocalized. In three plants repeated use of an electric prod on 95% or more of the cattle that balked and refused to move was associated with vocalization percentages of 17, 16 and 12%. In five plants, the percentage of cattle that vocalized was reduced by making modifications to plant equipment. Reducing the voltage on a rheostat controlled electric prod reduced the vocalization percentage from 7 to 2% in the first plant. In three other plants, the incidence of cattle backing up and balking was reduced by illuminating a dark entrance or adding a false floor to a conveyor restrainer. A false floor eliminates the visual cliff effect. The percentage of cattle that vocalized was reduced from 8 to 0%, 9 to 0% and 17 to 2%. Since balking was reduced, electric prod use was also reduced. In the fifth plant, reduction of the pressure exerted by a neck restraint reduced the percentage of cattle that vocalized from 23 to 0%. In the five plants where modifications were made, a total of 379 cattle were observed prior to equipment modifications and 342 after modification. The mean percentage of cattle that vocalized was 12.8% before the modifications and 0.8% after the modifications (P < 0.001). Vocalization scoring can be used to identify handling and equipment problems that may compromise animal welfare.

Keywords: abattoirs, commercial slaughter plants, behavior, animal welfare, stress, vocalization, aversive events, prodding with electric prods, slipping in the stunning box, missed stuns, sharp edges on equipment, excessive pressure from a restraint device, facility and equipment modifications, proper lighting, false floors, reduced voltage of electric prod, Australia, Canada, USA. Copyright© 2003, CAB International


NAL Call Number: SF601 B6

Keywords: beef cattle, dairy cattle, handling, transport, stress, trauma, milk, milking, reproduction, techniques, immune response.


NAL Call Number: QL750.A6

Keywords: animal behaviour, heifers, Limousin (cattle breed), genetic variation, handling, isolation, restraint of animals, human presence, reaction to humans.


NAL Call Number: QL750 A6

Keywords: calves, cattle breeds, Limousine temperament, handling, stress, social environment, social behavior, animal behavior, docility test, fearfulness, visual stimuli, handling.


NAL Call Number: 18 L2353 Suppl.

Keywords: beef cattle, cows, mothers, human animal relationships, free range husbandry, extensive husbandry, Germany, European Union, German language.

Abstract: In order to study the effects of herbage allowance on cattle behaviour activities on the farm, some methodological aspects had to be defined. Two sets of observations have been conducted on farm using a beef suckler herd containing 24 cows and managed in a rotational grazing system including a total of 6 paddocks. Behaviour activities were recorded on two successive paddocks. In set 1, the herd activities were recorded every 5 min in daylight and 15 min at night for the first two days on the two paddocks. In set 2, ten cows were individually identified among the same herd. On the first and the last day on the two paddocks, daylight activities were recorded with 5-min frequencies. From these individual observations, total grazing and ruminating duration were calculated, simulating records every 5, 10, 15 and 20 min. In set 1,76% of the total grazing and 28% of the total ruminating activities occurred in daylight. Grazing started at dawn and finished at dusk. In set 2, grazing activity followed the same pattern as in set 1 in daylight. Whatever the frequency of the records, grazing and ruminating time were not significantly (P > 0.05) different. However the 10 min frequency gave fewer and lower individual differences than the 15 and 20 min frequencies, compared to the original record (5 min). It is concluded that visual observations of cattle managed in a rotational grazing system can be readily undertaken at the farm level with 5 to 20 min frequencies.

Keywords: feeding behavior, dark, daylight, pasture, rotational grazing, rumination. Copyright© 2003, CAB International


Keywords: pigs, beef cattle, handling, responses, stimuli, novel objects, previous exposure, animal behavior, human approach tests.


Keywords: beef cattle, beef cows, calves, grazing systems, animal behavior, data collection, errors, techniques, estimation, paspalum notatum, rumination, grazing.


Keywords: foraging, memory, learning ability, spatial variation, visual stimuli, feeding preferences, feeding behavior, feed intake, individual characteristics.


Keywords: Charolais cows, breed, food intake, feeding behavior, hay ad libitum, feeding from mangers, nutritional requirements.


**Keywords:** cows, beef cattle, housing, feeding habits, behavior.


**Keywords:** beef cattle, beef cows, group effect, feeding behavior, hay, dry matter, feed intake, nutrition programs, housing, loose housing, milk, milk yield, management, nutrient requirements, winter, cow housing, French language.


**Keywords:** cows, housing, tethered stalls, hay, feed intake, feeding habits, feeds, husbandry methods, behavior, French language, France.


**Keywords:** bulls, steers, pubertal, effects of surgical and immunocastration, sexual behavior, aggressive behavior, plasma testosterone growth, slaughter, meat quality, hot carcass weight, pH, body weight, carcass weight, carcass composition.


**Keywords:** beef production, animal welfare, behavioral restriction, bovine spongiform encephalopathy, public health concerns, profitability, environmental impact, animal husbandry, meat production, UK. Copyright© 2003, CAB International

Abstract: It is widely believed that beef production fulfilling the majority of the criteria for ethological and ecological husbandry is less productive and less economic than conventional beef production. It is commonly believed that organic ethologically and ecologically sound beef production must rely on premium prices. The management, production and economic performance from 1990 to 1996 of a herd of double suckling South Devon cattle on an ecological farm within the Dartmoor National Park, U.K., indicates that animal welfare, ecological, public health and aesthetic concerns can be dramatically reduced, and that this can be accompanied by better economic performance than on conventional suckler systems. The management system is outlined and its strengths and weaknesses assessed.

Keywords: South Devon, breed, economic analysis, profitability, ethics, nature conservation, sustainability, organic farming, animal welfare, suckling, animal husbandry, farm management, public health, animal behavior, beef production, England.


**Keywords:** cows, breed differences, Senepol, Brahman, behavior, social dominance, estrus prostaglandins, reproductive behavior, mounting, estrus synchronization, environmental factors, temperature, humidity, subtropical environments, Florida; USA.

---


**Keywords:** auction ring behavior, behavioral scoring, calm, agitated, relationship to facial hair patterns, temperament, breed differences, Bos taurus beef breeds, Bos indicus beef breeds, Holsteins, Colorado, Texas.

---

**The relationship between reaction to sudden, intermittent movements and sounds and temperament.** Journal of Animal Science 78 (6): 1467-1474, ISSN: 0021-8812.

**Keywords:** steers, heifers, bulls, cows, sex differences, British and European breeds (Bos taurus, Angus, Hereford, Charolais, Simmental and their crosses), Holsteins, Bos indicus (Brahman, Watusi and crosses), breed differences, animal behaviour, aution ring, defaecation, gait, handling, head, heifers, movement, orientation, responses, sounds, stimulation, stimuli, temperament score, urination, animal welfare, reaction time, Colorado, Texas. Copyright© 2003, CAB International

---

**Reactions of Limousine cattle to handling.** [Reactions des bovins limousins lors des manipulations.] Comptes Rendus de l’Academie d’Agriculture de France 82 (2): 71-80, ISSN: 0989-6988.

**Keywords:** Limousine, breeds, domestication, husbandry methods, behavior, genetic variation, French language, France.

---

**Etho-physiological reactions in mother cows and their calves during the peripartal period.**


**Keywords:** Limousine, breeds, domestication, husbandry methods, behavior, genetic variation, French language, France.

NAL Call Number: 18 L2353 Suppl.

Keywords: beef cattle cows, mothers, calves, behavior, heart rate, movement, parturition, Germany, European Union, German language.


NAL Call Number: 41.8 R3224

Keywords: beef cows, monitoring, automation, sexual behavior, estrus, detection, detectors, artificial insemination, conception rate, pregnancy rate.


NAL Call Number: 18 L2353 Suppl.

Keywords: environmental temperature, thermoregulation, cold, heat, stress, behavior, body temperature, heart rate, rumination, movement, feed intake, rumen digestion, Germany, European Union, German language.


NAL Call Number: SF779.5 A1B6

Abstract: Live weight; rectal temperature (on days one and 3); implant condition; feed bunk condition; and serum hormone concentrations of trenbolone, trenbolone acetate, testosterone, progesterone, and estradiol 17 beta (on days one and 3) were measured in rider steers (n=17), buller steers (n=6) and control steers (n=18) at the time of bulling activity. Day one was considered the day of initial bulling activity. Liveweight at the time of bulling did not differ between groups (p=0.99), nor did rectal temperature at the time of bulling or the rectal temperature on day 3 post-bulling (p=0.93, p=0.80). There was a significant relationship between liveweight at the time of bulling activity and day one rectal temperature (p=0.002); however, the relationship between liveweight at the time of bulling and day 3 rectal temperature was not significant (p=0.31). The condition of growth hormone implants at the time of bulling did not differ between groups (p=0.27). Day one serum estradiol 17 beta concentration was significantly different between groups (p=0.05). The four steers that had detected (and quantified) levels of estradiol 17 beta on day one were riders; on the other hand, one buller and one control steer had detected (not quantified) levels of estradiol 17 beta on day one. The available data suggest that rider steers may have elevated levels of estradiol 17 beta as compared to bullers and non-involved pen mates at the time of bulling activity. Furthermore, the results of this study suggest that the rider steer should be scrutinized as closely as the buller steer in future studies.

Keywords: aggressive behavior, body temperature, bulls, estradiol, liveweight, mating behaviour, progesterone, steers, temporal variation, testosterone, trenbolone, buller steer syndrome. Copyright 2003, CAB International.

**NAL Call Number:** 107.6 K114

**Keywords:** calves, Japanese Black, breed, oral administration, tryptophan, weaning, behavior, lying, locomotion, agonistic interactions, social behavior, vocalizations, play, growth, feed conversion efficiency, amino acids, application methods, Japan.


**Keywords:** cattle, sheep, goats, pastures, feeding systems, mixed grazing, review, animal groupings, social bonds, behavior, stocking density, Polish language, Poland.


**NAL Call Number:** 23 Au792

**Keywords:** steers, beef cattle, carcass quality, meat quality, performance, temperature, feedlots, liveweight, body condition, feed intake, handling, fearfulness, prediction, liveweight gain, feed conversion efficiency, dressing percentage, pH, stress.


**NAL Call Number:** SF202.5 P45 2002

**Keywords:** play behavior, social behavior, nutritional behavior, reproductive behavior, resting behavior, locomotion, adaptation, perception, cognition, selective breeding, welfare, human animal relationship, welfare, measuring welfare, welfare of dairy cows, disease, hunger, malnutrition, milking, housing, tail docking, welfare of beef cattle and draft oxen, housing, pasture, dystocia, welfare of calves, calf behavior, housing, handling, veal calves, welfare of cattle during transport, marketing, slaughter, stunning, ritual slaughter.


**NAL Call Number:** SF1 A56

**Keywords:** steers, heifers, photoperiod, body weight, live weight gain, carcass weight, dressing percentage, feed intake, dry matter, feed conversion, body condition, conformation, blood serum, prolactin, animal behavior, sexual behavior, lean, body fat.


**NAL Call Number:** 49 J82

**Abstract:** The purpose of this research was to compare the frequency of aggressive behavior’s in beef bulls actively immunized against gonadotropin-releasing hormone relative to contemporary nonimmunized control bulls and surgically castrated steers. Eight males were assigned to each of these treatments in each of 4 yr. Immunized males were treated with a GnRH-keyhole-limpet hemocyanin (KLH) conjugate at approximately 4 mo of age. A secondary (booster) immunization was administered at 12 mo. Steers were castrated at 4 mo of age. Animals in each treatment in each year were housed as a single group prior to testing. At approximately
Information Resources for Beef Cattle

16 mo of age, each group of eight animals was placed in a 10- x 16-m enclosure for 20 min on five occasions at 2 to 3 d intervals. An observer recorded butts initiated by each animal as well as participation in bouts of sparring. Relative to control bulls, immunocastration reduced the frequency of butts initiated (P < 0.05) and participation in sparring bouts (P < 0.05) to levels typically observed in steers (P > 0.05). These observations indicate that active immunization against GnRH reduces the incidence of aggressive behavior in male beef cattle and are consistent with our postulate that immunoneutralization of GnRH is an effective alternative to surgical castration in the management of beef cattle.

Keywords: bulls, castrations, immunocastration, alternative to surgical castration, aggressive behavior, butts.

NAL Call Number: 49 382

Abstract: The purpose of this study was to examine the hypothesis that fence line contact between beef calves and cows at weaning reduces indices of behavioral distress and associated temporary reductions in weight gain. One hundred Angus/Hereford-cross calves were randomly assigned to five treatments for 7 d in each of 3 yr to determine the effect of different weaning techniques on their behavior and subsequent growth. Treatments were 1) fenceline separation from dams on pasture (F-P), 2) total separation from dams on pasture (S-P), 3) total separation from dams in a drylot (corral) preconditioned to hay (S-D-P), 4) total separation from dams in a drylot not preconditioned to hay (S-D-NP), and 5) nonweaned controls on pasture (C-P). At the end of the 7-d postweaning period, all calves were placed on pasture in large groups. Calves were weighed weekly for 10 wk. In the days following weaning, F-P and C-P calves spent more time eating (grazing or eating hay) than S-P and S-D-NP calves (P < 0.05). The S-P calves spent more time walking (pacing) than calves in the other four treatments (P < 0.05), which did not differ. The S-P calves also spent less time lying down than C-P, F-P, and S-D-P calves (P < 0.05). S-P and S-D-NP calves did not differ in lying time. The F-P calves vocalized less than S-P and S-D-NP calves (P < 0.05). In general, treatment differences were greatest during the first 3 d following weaning and d 2 (20 to 30 h after weaning) showing the greatest disparity. The F-P calves spent approximately 60% of their time within 3 m of the fence separating them from their dams during the first 2 d following weaning, whereas F-P cows spent about 40% of their time within 3 m of the fence during this period. Postweaning cumulative body weight gains of the F-P calves were greater than the gains recorded for the calves in the three totally separated treatments (which did not differ). The F-P calves gained 95% more weight than the average calf in the three totally separated treatments in the first 2 wk and were still heavier at 10 wk (21.4 vs 11.0 kg, respectively, at 2 wk and 50.0 vs 38.2 kg, respectively, at 10 wk, P < 0.05). It was concluded that providing fenceline contact between beef calves and cows for 7 d following weaning reduces behavioral indices of distress seen in the totally separated calves. In addition, fenceline contact with dams at weaning minimizes losses in weight gain in the days following separation. Totally separated calves did not compensate for these early losses in weight gain even after 10 wk.

Keywords: beef cattle, calf, cow rearing, weaning, separation, mother young relation, behavior, weight gain, performance evaluation, experimental study. Copyright© 2003, CAB International


Keywords: handling, beef cattle, dairy cattle, USA, New Zealand, Australia, Irish Republic.


NAL Call Number: QL55 H8

Keywords: husbandry, welfare, beef cattle, calves, cost benefit analysis, weaning.


NAL Call Number: 49 AR23

Abstract: A beef suckler herd (25 cows, 23 calves) was observed on pasture for cow-calf behaviour. There were 20 suckling positions (with 1, 2 or 3 calves suckling per cow) during 299 sucklings. The incidence of cross-suckling and the diversity of sucking positions were higher than those in the literature, indicating that there was disruption to the bonding between the cow and its calf during calving. The cows preferred parallel lying positions along the periphery of the pasture. It is suggested that farmers should design pastures to meet animal welfare needs and that regular observation of the herd should be incorporated into the farm management scheme.

Keywords: cows, calves, animal behavior, suckler herds, maternal behaviour, bonding, suckling, beef cows, pastures, animal welfare, beef cattle, German language, Germany. Copyright© 2003, CAB International


NAL Call Number: 442.8 Am3

Abstract: Two behavioral traits, temperament and habituation, were measured in 130 calves from 17 full-sib families which comprise the Canadian Beef Cattle Reference Herd. Using variance components, heritability was calculated as 0.36 for temperament and 0.46 for habituation. Genotyping of 162 microsatellites at approximately 20 cM intervals allowed the detection of six quantitative trait loci (QTL) for behavior traits on cattle chromosomes 1, 5, 9, 11, 14, 15.

Keywords: quantitative traits, loci, heritability, genetics, husbandry, animal behavior, temperament, habituation.


NAL Call Number: 49 J82

Abstract: Thirty-three steers (328 +/- 2 kg) from a total of 300 animals were randomly selected for a comparison of techniques designed to quantify the behavioral response to painful procedures. The steers were randomly assigned to freeze-branding, (F), hot-iron branding (H), and sham branding (S) treatments. The responses of all steers were videotaped to quantify the amount and intensity of head movements during branding. In addition, the force that steers exerted on the headgate and squeeze chute during branding was recorded using strain gauges and load cells. Behaviors believed to be indicative of pain (tail-flicking, kicking, falling, and vocalizing) were also recorded during branding. These techniques were compared for their effectiveness in measuring behavioral responses of steers during branding. Hot-iron-branded steers had greater maximum and average head movement distances and velocities than F or S steers (P < .05), and F steers only had greater maximum values than S animals (P < .05). The maximum exertion forces obtained from headgate load cells were also greater in H than in For S steers (P < .05); however, no differences were observed between H and F treatments for squeeze load cell or headgate strain gauge data. Hot-iron-branded steers had the greatest incidence of tail-flicks, kicks, falls in the chute, and vocalizations, and S steers had the least. Results indicate that H steers experienced more discomfort at the time of branding than F and S steers, whereas F steers experienced more discomfort than shams. Image analysis was a superior technique for detecting treatment differences compared with exertion force measurements and frequency counts of tail-flicks, kicks, falls, and vocalization during branding.

Keywords: steers, branding, pain, responses, image processing, video recordings, forces, strain gauges, transducers, animal behavior, animal welfare.


NAL Call Number: 41.8 C163

Keywords: yearling heifers, mixed breeds, Hereford, Charolais, Angus, Shorthorn, branding, pain, hydrocortisone, stress, discomfort, animal welfare, identification, hot-iron branding, freeze branding, burns.


**NAL Call Number:** S3 A27  
**Keywords:** Hereford, breed, blood serum fatty acids, essential fatty acids, saturated fatty acids, unsaturated fatty acids, afterstimulation, calf suckling behavior, honest begging, milk fat composition, milk yield.


**NAL Call Number:** 107.6 T643  
**Keywords:** blood levels, vitamin A, retinol, glucocorticoids, adrenal cortex hormones, animal feeding, daily weight gain, behavior, stress, social behavior.


**NAL Call Number:** 49 N62  
**Keywords:** feed intake, hay, rice straw, crop residues, digestion, eating disorders, rumination, behavior, agricultural wastes, Japan.


**NAL Call Number:** 49 J82  
**Abstract:** Spectral analysis was used to relate dietary quality and herbage species to the behavior of grazing steers. Four .3-ha paddocks were established with either ‘AU-Triumph’ tall fescue (F; Festuca arundinacea Schreb.), “Apollo” alfalfa (A; Medicago sativa L.), 1/3 fescue and 2/3 alfalfa (2/3A), or 2/3 fescue and 1/3 alfalfa (1/3A). Each paddock was stocked with 10 to 16 steers and defoliated in 5 d. Three steers on each paddock carried vibracorders to monitor grazing time. Daily forage samples were taken in 10-cm layers and weighed. Esophageal extrusa were collected from fistulated steers to measure diet quality. Daily grazing time did not differ (P = .37) among treatments; however, steers grazing mixtures grazed numerically longer (1.4 h/d) than steers on monocultures. Spectral analysis revealed that steers grazing A and 2/3A had many daily meals of short duration, but steers grazing 1/3A and F consumed three meals daily at 8-h intervals. Throughout the 4.67-d grazing period, quality of the diet linearly declined in crude protein and herbage digestibility, linearly increased in neutral detergent fiber and cellulose, and exhibited quadratic changes in lignin and ash. For most quality values, the tall fescue monoculture differed from the others (P < .05). Steers selected diets with similar quality for the A, 2/3A, and 1/3A treatments. This study illustrates how differences in forage diets alter grazing behavior of steers.  
**Keywords:** steers, pastures, botanical composition, selective grazing, *Festuca arundinacea*, *Medicago sativa*, forage, feeding frequency, duration, sward destruction, grazing intensity, stand density, rotational grazing.


**NAL Call Number:** QL750.A6  
**Keywords:** Japanese Black calves, breed, stress, plasma ACTH, hydrocortisone, corticotropin, effects, feeding, hay, housing, group versus individual, animal behaviour, weaning, exploratory behavior, abnormal behavior, grooming, displacement behavior, sucking, tongue playing, teats, dummy teat.


**Keywords:** beef cattle, age differences, behavior, calves, dehorning, live weight gain.


**NAL Call Number:** SF202.7 S65 1998

**Keywords:** handling, herding, driving, stockmanship, stress, history, culture, senses, perception, social behavior.


**NAL Call Number:** SF51 P76

**Keywords:** chutes, cattle weighers, animal behavior, electrical stimulation, stress response, stress factors, restraint of animals, blood protein, leukocyte count, erythrocyte count, hemoglobin value, hematocrit, neutrophils, lymphocytes, ratios, conditioned reflexes, animal welfare.


**NAL Call Number:** 49 J82

**Keywords:** selective culling, social behavior, management implications, social hierarchies.


**NAL Call Number:** 49 J82

**Keywords:** contact weaning, remote weaning, social contact, stress, weight gain.


**NAL Call Number:** 41.8 Au72

**Abstract:** To describe the buller steer syndrome in a Western Canadian feedlot. DESIGN: a retrospective study. ANIMALS: 78,445 male cattle that entered a 24,00-head feedlot in western Canada from 1991 to 1993. PROCEDURE: All cattle were given a hormonal growth promotant containing 20 mg oestradiol benzoate and 20 mg progesterone within 24 h of arrival at the feedlot. A “buller” was a steer that was observed at daily pen checking to be ridden persistently by pen mates or had evidence of having been persistently ridden by pen mates. At the completion of the feeding period, animal health records for bullers were collected and analysed. RESULTS: The prevalence of bullers in the total population was 2,139/78,445 (2.7%, range per pen 0 to 11.2%). The prevalence of bullers increased with increasing weight and age. The relapse risk after first treatment (three days in the feedlot hospital plus treatment for concurrent disease) was 30% on average (27 to 35%). Individual records from 9,734 yearling steers that entered the feedlot in 1991 and 1992 showed that bullers were significantly (P < 0.05) heavier at processing than non-bullers. Bulls occurred as a point source epidemic with a cause occurring soon after cattle arrived at the feedlot and were mingled into pen groups. This gave a “days on feed” distribution. The peak incidence of bullers occurred much sooner after arrival and dropped off much quicker in older cattle. The daily incidence of bullers was temporal, but was not related to season of the year, weather condition or any other feedlot management practice. It was related to the seasonal arrival of cattle at the feedlot, their age at entry to the feedlot and the post arrival occurrence of bullers. Reimplantation with hormonal growth promotants and castration of intact bulls did not produce an epidemic of bullers. CONCLUSIONS: The findings of this study support the theory that bullers are the result of agonistic interactions, which occur concurrent with the establishment and maintenance of a social hierarchy with pens of feedlot cattle.

**Keywords:** bulls, bullers, epidemiology, progesterone, growth promoters, animal behavior, feedlots, weight, age, body weight, Alberta, Canada.

syndrome in a western Canadian feedlot. *Australian Veterinary Journal* 75 (10) 732-736, ISSN: 0005-0423,

**NAL Call Number**: 41.8 Au72

**Abstract**: Medical records of 78 445 male cattle that entered a 24 000-head feedlot in Alberta, Canada, between August 1991 and November 1993 were reviewed. The prevalence of dominance behaviour increased with increasing age of cattle on arrival at the feedlot. Sickness and mortality decreased with increasing age on arrival but increased in cattle exposed to aggressive bulls. Sickness and dominance behaviour mostly occurred within the first 30 days of the feeding period. Pens of cattle with a high prevalence of bullers did not have a correspondingly high prevalence of sickness or mortality. It is suggested that dominance behaviour is correlated with sickness in feedlot steers.

**Keywords**: age, buller-steer-syndrome, dominance, behavior, feedlot, mortality, sickness, Western Canada. Copyright© 2003, CAB International


**NAL Call Number**: 41.8 C163

**Keywords**: grazing, monitoring, global positioning systems, geographical information systems, tracking, grassland management, pastures and range.


**Keywords**: animal behavior, monitoring, geographical information systems, intensively managed beef cattle, time spent in pasture segments, time spent watering.


**NAL Call Number**: 24 F225

**Keywords**: cows, social behavior, social structure, South Africa.


**NAL Call Number**: 24 F225

**Keywords**: psychological factors, mental ability, South Africa.


**NAL Call Number**: 49 J82

**Keywords**: steers, heifers, Braford, Simmental x Red Angus, Red Brangus, Simbrah, American Angus (AA), Tarentaise x AA, breeds, breed differences, sex differences, temperament, weight gain, handling, tameness, behavior, growth rate.


**NAL Call Number**: QL750.A6

**Keywords**: calves, bulls, heifers, age differences, sex differences, vocalization, environmental factors, genetic effects, isolation, live weight, animal behaviour, individual variability, Canada.


**NAL Call Number**: QL750.A6

Abstract: 189 calves were randomly assigned to 4 treatments in a 2 x 2 factorial design, the factors were branded and not branded, and restrained and not restrained. On 4 consecutive days calves were brought through a headgate and squeeze apparatus. Restrained calves were caught in the headgate for 3 to 5 s. The remainder were stopped at the headgate but not restrained. On day 5, all calves were captured and restrained. Half the animals were hot-iron branded and half were sham branded using an unheated iron. During branding, vocalizations were recorded. Digitized files were used to generate an audio-spectrogram and a power spectrum for each call. 167 calls were analysed. During treatment, 65 calves vocalized. Significantly more branded than non-branded animals vocalized (58/95 compared with 7/94). Branded animals showed a greater frequency range in the fundamental, or lowest harmonic, of the audio-spectrogram, (68.04 plus or minus 5.33 Hz compared with 28 plus or minus 8.74 Hz), a higher maximum frequency (186.66 plus or minus 5.19 Hz compared with 141.6 plus or minus 6.6 Hz) and a higher peak sound level. The previous 4 days of restraint did not alter the probability of vocalizing, or any characteristics of the calls. It is suggested that measuring vocal response may be particularly useful when the effects of relatively severe stressors are being investigated.

Keywords: calves, stress, branding, beef cattle, measurement, vocalization, animal welfare, behavior.

Copyright© 2003, CAB International


NAL Call Number: QL750 A6

Keywords: heifers, electronic scale, remote telemetry, heart rate, fearfulness, stress, handling, noise, animal behavior, movement, sounds, humans shouting, metal clanging, habituation.


NAL Call Number: 100 OK4M

Keywords: behavior, reproduction, implants.


Keywords: beef cattle, castration, behavior, puberty, growth rate.


NAL Call Number: QL750.A6

Keywords: beef cattle, Charolais, feedlots, enrichment, animal behavior, animal welfare, aroma, stimulation, animal preferences, habituation, environmental enrichment, scratching devices.


NAL Call Number: 18 L2353 Suppl.
Keywords: cows, mothers, parturition, movement, behavior, sensors, measuring instruments, reproduction, Germany, European Union, German language.

Return to Contents
Breeding


Keywords: beef calves, introduced breeds, crossbreeding, extensive husbandry, pastoralism, pasture raised, no farm buildings, gestation, parturition, calving ease, body weight gain, Polish language, Poland.

NAL Call Number: SF1 L5

Keywords: breeding, economics, calf growth, calf quality, calving ease, economic values, gestation length, selection sub, indexes, slaughtered progeny, Ireland.

NAL Call Number: 49 J82

Keywords: Angus, Brahman, Hereford, Pinzgauer, Sahiwal, Tarentaise, growth, height, body condition scores, breeding, environmental effects, mixed models.

NAL Call Number: 49 J82

Keywords: breed, Angus, Hereford, dams, heights, weights, adjustments, genetic parameters, body condition scores, genetics, environmental effects, genetic correlations, analysis, heritability, lactation, pregnancies.

NAL Call Number: SF1 L5

Keywords: young beef bulls, breed, Afrikaner, Angus, Bonsmara, Hereford, Sanga, Simmental, feed intake, growth rate, feed efficiency.

NAL Call Number: 23 Au783

Keywords: growing cattle, mature cattle, genetic variation, feed efficiency, selection programs, requirements for maintenance, body composition, proportions of visceral organs, level of physical activity, digestion efficiency, literature review.

NAL Call Number: 23 Au783

Keywords: Angus, heifers, selection, yearling growth rate, dystocia, calf birth weight, calf survival.


**NAL Call Number:** 41.8 R3224

**Keywords:** beef cattle, bulls, reproductive efficiency, reproductive performance, seasonal variation, semen quality, spermatozoa, scrotal circumference, lameness, scrotal frostbite, body condition, Saskatchewan, Canada.


**Keywords:** Simmenthal, Angus, breeds, genetic factors, meat production, meat yield, animal performance, animal production, national program goals, thesis, Ukraine, forest steppe, Ukrainian language.


**NAL Call Number:** 49 J82

**Keywords:** beef cattle industry, sheep industry, breeding, economic selection indexes, multiple trait selection, genetic evaluation systems, genetic predictions.


**NAL Call Number:** 49 J82

**Abstract:** Milk yield and quality were observed on 93 Angus, Brahman, and reciprocal cross cows over 3 yr to evaluate the interactions of direct and maternal breed effects and heterosis with forage environment. Forage environments were common bermudagrass (BG), endophyte infected tall fescue (E+), and a rotational system (ROT) of both forages, in which each forage (BG or E+) was grazed during its appropriate season, usually June through October for BG and November through May for E+. Milk yield was estimated each of 6 mo (April through September) via milking machine and converted to a 24 h basis. Milk fat, milk protein, and somatic cell count were analyzed by a commercial laboratory. Heterosis for milk yield was similar among forages, averaging 2.4 kg (P < 0.01). Expressed as percentages of purebred means, heterosis for milk yield was largest on E+ (52.8%), intermediate on ROT (39.3%), and smallest on BG (23.7%). Direct breed effects for milk yield favored Brahman, and they were similar among forages but tended to be larger for E+ (2.5 kg) and ROT (2.8 kg) than for BG (1.3 kg). Direct breed effects for milk fat favored Brahman and were similar among forages but tended to be larger for E+ (1.0%) and ROT (1.0%) than for BG (0.6%). Purebred cows exceeded crossbreds in milk protein by 0.1% on ROT (P < 0.10). Crossbred cows had lower somatic cell counts than purebreds on BG (P < 0.05), E+ (P < 0.01), or ROT (P > 0.30). Heterosis for somatic cell counts as percentages of purebred means was similar for BG (68.3%) and E+ (68.9%) and less favorable for ROT (31.6%). Maternal breed effects for somatic cell count favored Angus on ROT (P < 0.10) with a similar nonsignificant trend on BG and E+. Direct breed effects for somatic cell count favored Brahman on ROT (P < 0.10) with similar nonsignificant trends on BG and E+. These results suggested that a rotation of cows from E+ to BG in the summer can partially alleviate negative effects of E+ on milk yield. Conclusions also indicated an advantage to crossbred cows in somatic cell count and provided evidence of both direct and maternal breed effects for this trait. The results also suggested that direct breed effects for milk yield, milk fat, and somatic cell count and heterosis for milk yield and somatic cell count (as percentages of purebred means) tended to vary with forage environment, indicating a potential for genotype X environment interaction for these traits.


**Keywords**: Zebu, breed, steers, heifers, bull calves, genetics, environmental effects, temperament, behavior, flight speed, genetic factors, selection, tropical pasture grazing, Australia.


**Keywords**: beef breeds, breed differences, temperament, standardized scoring system, relationships, performance, traits, evaluation, meat quality, behavior, heritability, breeding, growth, milk yield, carcasses, disease resistance, reviews.


**Keywords**: breed, Angus, effects of age of dam, sex, age of calf, month of birth, environmental factor effects, visual evaluation scores, weaning conformation scores, precocity, muscling, size, Beef Cattle Improvement data, Brazil, Portuguese language.


**Keywords**: breed, Brown Swiss, Pirenaica, cows, spring-calving, calves, indoor housing, lactation, natural pastures, energy requirements, grazing behavior, calf performance, milk intake, growth rate, cow milk yield.


**Keywords**: congenital disease, disproportionate dwarfism, excessive extension of metacarpophalangeal and metatarsophalangeal joints, calf survival, radiographic evaluation, carpal and tarsal bones, chondrodystrophy, cause, feeding of dry, spoiled silage.


**Keywords**: Angus, Simmental, Charolais, Limousin, Blonde d’Aquitaine, Piedmontese steers, breed differences, forage-based diet, 3.5% intramuscular fat (IMF), ultrasound assessments, housing, tie stall barn, loose housing, straw bedding, M. biceps femoris, M. longissimus dorsi, M. regio glutea, muscular system, collagen solubility, heme iron, intramuscular fat, meat quality, pH, shear force, tie-barn stall.

**NAL Call Number:** SF1 K7

**Keywords:** Simmental, dual, purpose breed, breeding programs, diary and meat traits, high quality beef, milk production, Poland, Polish language.


**NAL Call Number:** 49 J82

**Keywords:** replacement beef animal, genetic evaluation, analytical method, ultrasound analytical method, breeding values, carcass traits, carcass yield.


**NAL Call Number:** SF1.A56

**Keywords:** Aberdeen Angus, Charolais, Limousin, Simmental, South Devon, breed, best linear unbiased predictions, breeding value, genetic evaluation, effects of, group, sex, month of birth, birth type (single or multiple), embryo transfer births, fostered calves, breed of dam, proportion purebred, age of dam, live weight, United Kingdom.


**NAL Call Number:** SF1.S6

**Keywords:** beef, breed, Charolais x Angus, calf, birth weight, direct breeding values, heritability, maternal breeding values, pre-weaning average daily gain, pre-weaning, growth performance traits, weaning weight.

Dal-Farra, R.A.; Roso, V.M.; Schenkel, F.S. (2002). Environmental effects and heterosis on weight gain from birth to weaning and on visual scores at weaning of beef cattle. [Efeitos de Ambiente e de Heterose sobre o Ganho de Peso do Nascimento ao Desmame e sobre os Escores Visuais ao Desmame de Bovinos de Corte.] Revista Brasileira de Zootecnia 31 (3 Supplement):1350-1361, ISSN: 1516-3598.

**NAL Call Number:** SF1 R45

**Keywords:** breed, Nellore x Angus, Nellore x Hereford, calf age, calf birth date, conformation, dam age, environmental effects, heterosis, individual, maternal, muscling, precocity, visual score at weaning, weight gain, birth to weaning.


**NAL Call Number:** SF1 R45

**Keywords:** breeding, genetic dissemination, genetic improvement, genetic lag, theoretical models, Portuguese language.


**NAL Call Number:** 49 J82

**Keywords:** environmental interaction, genetics, grandsire, male, sire, weaning weight, Brazil.


**NAL Call Number:** 49 J82
**Keywords:** weaning weight, geographical variation, genotype environment interaction, dams (mothers), age at weaning, maternal effects, beef herds, animal husbandry, sex differences, phenotypes, maternal behavior, simulation models, growth models, heritability, estimation, genetic correlation.


**NAL Call Number:** 49 J82

**Keywords:** breed, Braunvieh x Charolais x Limousin x Angus x Hereford, Gelbvieh x Simmental x Angus x Hereford, breed, Pinzgauer x Red Poll x Angus x Hereford, direct genetic effects, direct heritability estimates, grandmaternal genetic effects, maternal genetic effects, weaning weight.


**NAL Call Number:** SF1 R45

**Keywords:** breed, Charolais, mathematical model, sire model, statistical weight gain model, maternal effect, permanent environmental effects, Portuguese language.


**NAL Call Number:** 23 Au792

**Keywords:** beef cattle breeds, bulls, crossbreeding, Brahman, Sahiwal, Shorthorn, performance, tropics, temperament, behavior, flight distance, tick and buffalo fly resistance, genetics, growth, traits, disease resistance, ectoparasites, scrotum, dimensions, genetic parameters, heritability, genetic correlation, Australia.


**NAL Call Number:** QH431 A1A52

**Keywords:** bulls, sire performance testing, artificial insemination, carcass composition, carcass fatness score, diet, genetic correlation, progeny beef traits, progeny dressing percentage, progeny growth, progeny skeletal frames, sire muscling scores, France.


**NAL Call Number:** 49 J82

**Keywords:** beef calves, birth traits, genetic effects, mixed model estimates, body weight, growth, performance, weaning traits, genetic effects, mixed model estimates.


**NAL Call Number:** SF1.A56

**Keywords:** Belmont Adaptaur, Belmont BX, Belmont Red, Boran, Brahman, Charolais, Tuli, breed differences, crossbreeding, growth rate, heterosis, live weight, Australia.

**NAL Call Number:** SF1.A56  
**Keywords:** Belmont Adaptaur, Belmont BX, Belmont Red, Boran, Brahman, Charolais, Tuli, breed differences, host, cattle tick, Acarina, pest, nematode, parasite, gastrointestinal nematode infestation, parasitic disease, breed difference, crossbreeding, heterosis, live weight gain, Australia.

**NAL Call Number:** 49 J82  
**Abstract:** Experiments were conducted to evaluate the heat tolerance of the following breeds: Hereford (H), Brahman (B), H x B, H x Boran (H x Bo) and H x Tuli (H x T). Heat tolerance was evaluated in a climatically controlled room (Exp. 1) and under summer environmental conditions (Exp. 2) by comparing rectal temperatures (RT), respiration rates (RR), and sweating rates (SW). In Exp. 1, under extremely hot conditions (mean temperature-humidity index [THI] > 90), purebred B had significantly (P < .05) lower RT and RR than other genotypes, which may be indicative of greater surface area per mass to dissipate heat and a lower metabolic rate than other genotypes. Boran and Tuli crosses had RT (39.5 degrees C) that were intermediate to those of B (39.0 degrees C) and H x B (40.0 degrees C). The H genotype had the greatest RT at 40.3 degrees C. Among the breeds, trends in RR were similar to RR observed at THI < 77; B had the lowest RR, and H x B steers had lower RR than the other H crossbred steers. Sweating rates were significantly greater for the Bos indicus x Bos taurus crosses (H x B and H x Bo) than for the purebred genotypes (H x B) and the Bos taurus cross (H x T). In Exp. 2, mean RT for B, H x B, H x B, H x Bo, and H x T were very similar to those recorded under the moderate heat stress conditions found in Exp. 1. There were no differences in RT among B, H x Bo, and H x T genotypes. The RR increased over time for H only, and RR for other genotypes tended to be elevated only slightly over time. Among genotypes, SW was significantly greater for the H x Bo steers. The ability of the Bos indicus crosses to dissipate heat through enhanced SW and associated evaporative cooling was evident. However, the heat-tolerant nature of the Bos taurus cross (H x T) was not evident through enhanced RR or SW in either experiment. Compared with other genotypes, the lower RR of B steers was clearly evident and is assumed to be due to greater surface area and other skin characteristics that allow them to dissipate heat to maintain lower RT. These data suggest that the H x Bo and H x T are similar to H x B and intermediate to H and B genotypes in maintaining homeostasis when exposed to a high heat load.  
**Keywords:** heat tolerance, crossbreeding, Brahman, Boran, Tuli, Hereford, environmental temperature, insolation, relative humidity, wind, body temperature, respiration rate, sweating.

**NAL Call Number:** 41.8 D482  
**Keywords:** calves, cows, bulls, Aberdeen-Angus, German Simmental, breed differences, sex differences, behavior, temperament, handling, German language.

**NAL Call Number:** 41.8 C163  
**Abstract:** The data for the study were obtained over an 11-yr period and the number of observations varied from 2663 to 4263 depending on the trait that was studied. The objective was to compare the reproduction and growth traits of genetically horned and polled cattle in three synthetic lines of beef cattle. No differences (P > 0.05) were observed between horned and polled cattle in all lines for pregnancy, calving and weaning rates, calf birth and weaning weights, calf preweaning average daily gains, dystocia score, cow weightsand cow condition scores at calf birth and calf weaning. We advocate the use of polled cattle for breeding, which is a welfare friendly alternative and circumvents the need for dehorning.  
**Keywords:** horns, polled condition, reproductive traits, growth, traits, lines, reproductive performance, body
weight, live weight, body condition.


NAL Call Number: 41.8 C163
Keywords: beef, Angus x Hereford, Hereford, Red Angus, Shorthorn, foot health, sand cracks, heritability, prevalence, severity.


NAL Call Number: SF1.A56
Keywords: linear morphological system, algorithms, mathematical method, morphological assessment system, assessment method, anatomical traits, artificial intelligence, complex genetic traits, type traits.


NAL Call Number: SF55 A78A7
Keywords: breed, Angus, Hereford, Limousin, breed, Simmental, calf, cow, crossbred, dam, female, male, sire, semen, artificial insemination, breeding method, ultrasound, calving, eye, muscle area, fatness, genotype, growth, estimated breeding values.


NAL Call Number: 44.8 J822
Keywords: heat stress, genetic predisposition, cortisol, level, prolactin, level.


NAL Call Number: SF1 K7
Abstract: Modern cattle population has originated from relatively small gene pools. Therefore, in comparison with the human population, it is likely that fewer genetic defects will occur in cattle, but those that do will be at a relatively high prevalence. Because breeds of cattle developed in isolation (similar to human ethnic groups), many recessive defects are breed-specific. Therefore, it would be imprudent to suspect that the majority of defects existing in cattle have been recognised. Caution is required when reducing the risk of dissemination of recessive defects resulting from increased selection pressure within the dairy industry presently dominated by Holstein-Friesians. Where commercial production is dominated by purebreds, the risk of dissemination of recessive defects is real. A variety of autosomal recessive defects, many lethal to the newborn calf, have been recognised in the HF breed. The most significant is BLAD (bovine leukocyte adhesion deficiency) and DUMPS (deficiency of uridine monophosphate syntase). In 2000, complex vertebral malformation (CVM) - a new recessively inherited genetic defect was discovered in HF cattle. Animals determined to be carriers will be identified with code CV and those determined not to be carriers as TV. It is obvious that CVM will be a worldwide problem in Holsteins just as BLAD was a few years ago. The CVM disorder causes a multitude of possible abnormalities, some with visible deformities. Embryonic deaths and abortions due to CVM may happen at any time during gestation. Many CVM calves or fetuses will be lost earlier in the gestation period, and such occurrence will rarely be detected (besides, abortion and stillbirths can occur for reason other than CVM). At present, the molecular test for identifying carriers of the CVM
defect is based on genetic markers that are inherited together with the disease gene. In beef cattle, the nt821 (del11) mutation in the myostatin gene, responsible for the occurrence of muscle hypertrophy in Belgian Blue cattle, seems the most significant. The syndrome is associated with some production problems such as reduced fertility, dystocia and reduced calf survival. For commercial production it is recommended that the breeding female herd be kept free from double muscling.

**Keywords:** breed, Friesian, Holstein, Belgian Blue, bovine leukocyte adhesion deficiency, immune system disease, complex vertebral malformation, bone disease, deficiency of uridine monophosphate syntase, endocrine disease, muscle hypertrophy, economic significance, embryonic deaths, genetic defects, gestation periods, Polish language. Copyright © 2003, CAB International


**NAL Call Number:** SF1 L5

**Keywords:** calving date, calving interval, genetic correlation, heritability, reproductive performance, type traits.


**NAL Call Number:** 49 J82

**Abstract:** Two trials were conducted with heifers to determine heat tolerance among temperate Bos taurus (Angus, Hereford), Bos indicus (Brahman), tropical Bos taurus (Senepol, Romosinuano), and the reciprocal crosses of Hereford and Senepol. Differences among breeds in temperament score, circulating concentrations of cortisol, and blood packed cell volume were also investigated. Trial 1 used 43 Angus, 28 Brahman, 12 Hereford, 23 Romosinuano, 16 Senepol, 6 Hereford X Senepol (H X S), and 5 Senepol X Hereford (S X H) heifers. Trial 2 used 36 Angus, 31 Brahman, 9 Hereford, 14 Senepol, 19 H X S, and 10 S X H heifers. On the hottest summer date in Trial 1, rectal temperature of Angus was greater (P < .001) than that of Brahman, Senepol, or Romosinuano. Rectal temperature and plasma cortisol were significantly less in Senepol than in Brahman, suggesting that the differences in rectal temperature between these breeds may be due to differences in stress response possibly related to differences in temperament. Reciprocal crosses of Hereford and Senepol had rectal temperatures nearly as low as that of Senepol and displayed substantial heterosis (-9.4%, P < .05) in log10 rectal temperature on the hottest summer date. On both the hottest and coolest dates in Trial 1, Angus heifers had significantly faster respiration rates than Brahman, Romosinuano, or Senepol heifers, and Brahman had significantly slower respiration rates than Romosinuano or Senepol. On the hottest summer date in Trial 2, rectal temperature in Angus heifers was greater (P < .001) than in Brahman or Senepol heifers. Reciprocal crosses of Hereford and Senepol had rectal temperatures similar to that of Senepol, and heterosis for log10 rectal temperature was similar to that in Trial 1 (-9.8%, P < .05). Considering rank order among breeds, Brahman always had the slowest respiration rate and greatest packed cell volume. Brahman had significantly greater temperament scores and plasma cortisol concentrations than Angus or Senepol, except that plasma cortisol was not different between Brahman and Senepol on the hottest summer date. On this date, rectal temperature did not differ between Brahman and Senepol, which supports the hypothesis that there is a relationship between response to stress and rectal temperature that helps explain differences in rectal temperature between Brahman and Senepol. The results of these trials demonstrate heat tolerance of the Senepol and Romosinuano, two Bos taurus breeds. Furthermore, the results suggest a substantial level of dominance of the Senepol's ability to maintain constant body temperature in a hot environment as measured by rectal temperature in crosses with a nonadapted breed.

**Keywords:** beef cattle, beef breeds, romosinuano, brahman, aberdeen-angus, hereford, crossbreds, heifers, body temperature, blood plasma, hydrocortisone, temperament, heterosis, respiration rate, hematocrit, environmental temperature, heat tolerance, Florida.

Information Resources for Beef Cattle

**Bien-être animal: le cas du Blanc-Bleu Belge.** *Elevages Belges* 50 (12): 11-15, ISSN: 0770-2116.

**Keywords:** beef cattle, selection, animal physiology, induced parturition, caesarean section, beef, quality, meat yield, animal performance, reproduction, Belgium, French language.


**NAL Call Number:** SF201 C37 1990.

**Keywords:** origin, history, genetic resource management, conservation, research institutions, disease resistance, crossbreeding, double-muscling, domestication, genetic types, improvement in traditional cattle breeding, introduction of foreign breeds, Criollo cattle of Latin America, milk production in the semi-tropical and tropical zones, cattle for work, buffaloes, draught cattle, population genetics, molecular markers, phylogenetic patterns, world resources, West Africa, Latin American, Caribbean, North America.


**NAL Call Number:** SF1 A542

**Keywords:** beef bulls, clone testing scheme, breeding method, progeny testing, scheme, breeding method, carcass traits, genetic gains, heritability, selection index, Japanese language, Japan.


**NAL Call Number:** 49 J82

**Abstract:** Economic values of growth and carcass traits in Japanese beef cattle for production systems with various types of integration of levels/stages (cow-calf and feedlot segments and the integrated system) and production circumstances (including 20% higher genetic levels of the traits, management, and economic alternatives) were used to examine responses to selection. Discounted economic values with interest rates of 0, 4.2 (Japanese average), and 8.4% were obtained to investigate the effect of discounting on selection efficiency. Traits considered were daily gain in the feedlot, marbling score, birth weight, weaning weight, and mature weight. The effects of discounting were small. Correlated responses to selection were not always economically favorable for all situations. Selecting bulls for the base situation (i.e., the typical biological and economic conditions for the production of Japanese Black cattle) resulted in negative genetic changes in weaning weight and mature weight in the feedlot segment. Higher genetic levels of daily gain and weaning weight affected efficiency of selection. Although effects of management and economic alternatives on responses to selection were generally small, lighter market weight influenced responses to selection. The results indicate that predicted correlated responses to selection are sensitive to production systems and some production circumstances.

**Keywords:** beef bulls, artificial selection, selection program, breeding, breeding programs, progeny testing, economic analysis, selection responses, efficiency, live weight gain, feedlots, body fat, muscles, birth weight, weaning weight, live weight, genetic gain, husbandry, Japan.


**NAL Call Number:** SF1 A542

**Keywords:** carcass composition, simulation models, breeding methods, meat production, growth, energy, feed conversion efficiency, economics.


**NAL Call Number:** 49 J82

**Keywords:** Brahman, Senepol, Tuli, Angus, breed, sex differences, preweaning performance, calves, adaptation, growth, weight gain, genotype environment interaction, performance evaluation, meat production, reproductive performance, comparative study, Texas, semi arid zone, tropical zone.


**NAL Call Number:** QD415 A1B5

**Keywords:** Bruna Dels Pirinieus, Pyrenean brown cattle, rare breed, genetic resources, conservation, Food and Agriculture Organization of the United Nations, gene flow, genetic structure, genetic variability, global data bank on domestic animal diversity, inbreeding, migratory path, population genetics, subpopulation interrelationship, Spain.


**NAL Call Number:** SF1.L5

**Keywords:** beef cattle, steers, beef breeds, breed differences, carcass composition, carcass quality, Romagnola, Holstein-Friesian, Piemontese, evaluation, genetic variation, animal husbandry, feed rations, feed intake, finishing, duration, concentrates, feed supplements, grass silage, body fat, bones, muscles, fat.


**Keywords:** genetic parameters, breeding value, heritability, selection criteria, slaughter weight, meat yield, animal performance, body weight, German language.


**NAL Call Number:** S5 C65

**Keywords:** Limousine, breeds, domestication, husbandry methods, behavior, genetic variation, French language, France.


**NAL Call Number:** SF55.A78A7

**Keywords:** direct genetic effects, genetic correlations, inbreeding, maternal genetic effects, selection bias, weaning weight.


**NAL Call Number:** 49 J82

**Keywords:** algorithms, weights, birth, weaning, growth traits, analysis, genotype environment interactions, biological effects, geography, heritabilities, phenotypes, Argentina, Uruguay, Canada, USA.


**NAL Call Number:** 49 J82

**Keywords:** milk production, Bayesian theory applications, body weight, genetic antagonism, genetic correlation estimates, genetic variance component, heritability estimates, Korea.


**NAL Call Number:** 41.8 Au72  
**Keywords:** beef cattle, calf, dairy cattle, goat, sheep, lamb, genetic cloning, genetic method, transgenesis, genetic method, farm animal cloning, genetic diversity.


**NAL Call Number:** SF1 A56  
**Keywords:** grazing, winter, cattle suckling, males, females, body condition, pastures height, weight gain, sex, biological differences, feeding level.


**NAL Call Number:** 49 J82  
**Keywords:** Angus, breed, calves, birth weight, gestation length, breeding seasons, calf birth weights, genetic variation, maternal birth weights.


**NAL Call Number:** SF1.S26  
**Keywords:** calves, heifers, bulls, breeds, Simmental, Limousine, Hereford, Salers, Red Angus, evaluation, parturition, reproduction, winter, spring, birth weight, weight gain, weaning, weaning weight, animal performance, body weight, age, milk yield, animal feeding, husbandry methods, Poland.


**NAL Call Number:** 49 J82  
**Keywords:** breeds, Abondance, Charolais, Limousin, Montbeliarde, Tarentaise, Villard de Lans, microsatellite DNA analysis, genetic method, principal components analysis, microsatellite DNA analysis, breeding, genetic assignment tests, genetic diversity, genetic variation, microsatellite genotype data.


**NAL Call Number:** SF1 L5  
**Keywords:** Hereford, Angus, Hereford, Limousin, maternal effects, regression analysis, weaning weight, environmental covariances, genetic parameters, sire x herd, year interaction.


**NAL Call Number:** 41.8 C163
Information Resources for Beef Cattle

**Keywords:** heifers, steers, Wagyu, breed, crossbred, growth performance, carcass characteristics, meat quality, marbling grade, barley, based diets. carcass characteristics.


**NAL Call Number:** 442.8 Z35

**Keywords:** bovine muscular hypertrophy, muscle disease, myostatin gene, mutation, polymorphism, oligonucleotide ligation assay, genetic techniques, simultaneous genotyping.


**NAL Call Number:** SF1 A542

**Keywords:** Japanese Black, breed, calf, cows, beef production efficiency, birth weight, body weight, genetic correlation, growth, heritability


**NAL Call Number:** 442.8 Z35

**Keywords:** Hereford, breed, maternal productivity index, birth weight, heritability estimates, multiple trait selection, survival, weaning weight.


**NAL Call Number:** 49 N62

**Keywords:** breed, Wagyu (Japanese Black cattle), feeds, rumen digestion, volatile fatty acid (vfa), feed intake, carcass composition fat deposition, longissimus muscle, marbling score, rib-eye area.


**NAL Call Number:** S471 C6N87

**Keywords:** bulls, breed, Santa Gertrude, crossbreeding, selection, high yielding breeds, breeding methods, selection, autosexing, pasture grazing, utilization of coarse fibered plants, russian language, Kazakhstan.


**Keywords:** beef production, crossbreeding, decision analysis, computer software, predicting differences between genotypes, traits, temperature, nutrition, parasitism.


**NAL Call Number:** SF600 B94

**Keywords:** breed differences, Sumba Ongole (SO), Brahman Cross (Bx) and Australian Commercial Cross
Information Resources for Beef Cattle

(ACC), intensive husbandry, growth rate, feed intake, carcass composition, fattening, feed conversion efficiency, body weight, slaughter weight, Indonesian language, Indonesia.


**NAL Call Number:** S19 J3

**Keywords:** best linear unbiased prediction animal model, breeding technique, cattle productivity, mathematical model, miscellaneous method, multiple ovulation, embryo transfer, Japan.


**NAL Call Number:** 49 J82

**Keywords:** breed, Japanese Black Wagyu, steers, fatty acid, carcass fat composition, monounsaturated fatty acids, carcass, carcass fat, carcass fat fatty acid composition, genetic effects.


**NAL Call Number:** 49.9 N483

**Keywords:** beef cattle, case studies, technology, breeding, artificial insemination, sex control, semen, programs, sires, embryo transfer, management, beef production, farmers’ attitudes, New Zealand.


**NAL Call Number:** SF196 T7P385 1997

**Keywords:** husbandry, tropics, subtropics, breeds, history, origin, genetics, breeds of Africa, the Americas, Asia, Oceania, breeding strategies, socio-economic conditions, biotechnology, genetic improvement.

Pereira, L.P.; Restle, J.; Brondani, I.L.; Alves Filho, D.C.; Silva, J.H.S. da; Muehlmann, L.D. (2000). **Growth of beef cattle from different genetic groups of Charolais x Nellore intact or castrated at eight months.** *(Desenvolvimento ponderal de bovinos de corte de diferentes grupos genéticos de Charoles x Nelore inteiros ou castrados aos oitos meses.)* *Ciencia Rural* 30 (6): 1033-1039, ISSN: 0103-8478.

**NAL Call Number:** S192 R4

**Keywords:** natural pastures, sexual behavior, crossbreeding, feedlot, weaning, Portuguese language, Brazil.


**NAL Call Number:** 49 J82

**Keywords:** Charolais x Hereford, breed, calving difficulty, characterization, extensive rangeland system, genetic parameters.


**NAL Call Number:** SF1 R45

**Keywords:** crossbreeding, breed, Zebu, carcasses, feedlots, age, weight, slaughtering, Portuguese language, Brazil.


Information Resources for Beef Cattle

**NAL Call Number:** S192 R4  
**Keywords:** beef cattle, feedlots, weight gain, feed conversion efficiency, crossbreeding, animal performance, diet, para, digestibility, Portuguese language, Brazil.

**NAL Call Number:** S15 I8  
**Keywords:** beef cattle, cows, dairy cattle, sheep, genetic improvement, selection, adaptation, behavior, production, extensive production, animal welfare, stress, Spanish language.

**NAL Call Number:** SF55 A78A7  
**Keywords:** adaptability, animal production, heat loss balance, heat tolerance index, hot environments, thermal factors, thermo-regulatory processes.

**NAL Call Number:** 49 J82  
**Keywords:** breeding value, linear model, mathematical model, reproductive performance, calving difficulty, threshold model, mathematical model.

**NAL Call Number:** SF1 Z6  
**Keywords:** Maremmana breed, breed conservation, breed improvement, genotypes, animal breeding, Italian language.

Reinike, H. (1998). Influence of environmental and genetical factors on the productive and reproductive behaviour of Hereford cattle in a farm of the tenth region, Chile. *[Influencia de factores ambientales y geneticos en el comportamiento productivo y reproductivo del ganado Hereford en un predio de la Decima region, Chile.]* Thesis Degree Tesis (Ing Agr), Universidad Austral de Chile, Fac. de Ciencias Agrarias: Valdivia, Chile, 120 p.  
**Keywords:** breeds, environmental factors, parturition, seasons, sex, birth weight, heritability, phenotypes, genotypes, genetic correlation, productivity, reproductive performance, body weight, thesis, Spanish language, Chile.

**NAL Call Number:** SF1 R45  
**Keywords:** beef cattle, carcasses, weight, hybrids, crossbreeding, feedlots, fattening, feeding, husbandry methods, bovidae, bovinae, breeding methods, Portuguese language, Brazil.


Information Resources for Beef Cattle


NAL Call Number: SF1.S6

Keywords: multibreed composite beef cattle, Simmentaler, breed, intensive irrigated grazing conditions, additive heritabilities, maternal heritabilities, calves, birth weight, weaning weight.


NAL Call Number: SF1.S6

Keywords: multibreed beef cattle, Kleiber ratio, postweaning, preweaning, cow efficiency, growth, efficiency trait, covariance, direct, maternal, multitrait estimation, multibreed herd, relative growth rate, postweaning, preweaning, weaning index, weaning weight.


NAL Call Number: SF1 S6

Keywords: bulls, growth, body weight data, National Beef Cattle Performance, progeny testing.


NAL Call Number: QP251 R48

Keywords: beef breeds, Holstein x Zebu, breed-Red Angus x Zebu, breed-Red Angus x Zebu x Santa Gertrudis, Zebu, crossbreds, cow, calf, weaning weight, forages, Brachiaria brizantha, Brachiaria decumbens, Brachiaria humidicula, Portuguese language.


NAL Call Number: QL750.A6

Keywords: beef cattle, sheep, selection, adaptation, extensive husbandry, animal welfare, behavior, disease resistance, animal husbandry methods, extensive farming systems.


Keywords: beef cattle, beef production, breeding programs, crossbreds, Holstein Friesian, Brown Swiss, Jersey, native livestock, exotic breeds, genetic conservation, performance traits, India.


NAL Call Number: SF1 S6

Keywords: purebred and crossbred cattle, Afrikaner, Simmentaler, Hereford, breeds, intensive mangement, high stocking rate, breed direct effects, individual heterotic effects, birth weight, weaning weight.


NAL Call Number: SF1 S6

**Keywords:** multibreed composite beef cattle, cows, calves, Hereford genes, intensive irrigated grazing conditions, direct additive heritability, maternal heritability, maternal permanent environmental effects, birth weight, weaning weight, growth traits, breeding value.

**NAL Call Number:** 49 J82
**Keywords:** crossbred beef cattle, consumer preferences, meat product, quality parameters, carcass traits, genetic effects, genetic correlations, estimates, maternal, weaning weights.

**NAL Call Number:** 49 J82
**Keywords:** heifers, steers, paternal half sibs, genetics, female, growth, reproductive traits, calving difficulty, male, carcass traits, gender difference.

**NAL Call Number:** 49 J82
**Keywords:** breeds, Angus, Hereford, Boran, Brahman, Tuli, cross steers, fat distribution, lipoprotein lipase (LPL) activity, subtropics, differences in adaptability, adipose tissue, samples from perirenal, omental, subcutaneous depots, carcass measurements, omental, external, seam fat trim.

**NAL Call Number:** 49 J82
**Keywords:** lipoprotein lipase, adipocytes, breeding, breeds, lactational state, lipoprotein lipase, meeting abstract, season, weight.

**NAL Call Number:** 49 J82
**Keywords:** subtropics, Brahman, American Angus, Tuli, cows, cattle breeds, crossbreeding, crosses, breed differences, body condition, body temperature, cattle feeding, digesta, digestive tract, energy intake, environmental factors, environmental temperature, grazing, feeding behaviour, feed intake, heat adaptation, lactation.

**NAL Call Number:** 18 L2353 Suppl.
**Keywords:** breeds, Deutsche Schwarzbunte, Deutsche Rotbunte, Galloway x Holstein-Friesian, mother cows, calves, grazing systems, extensive husbandry, blood composition, lactation, pregnancy, growth, age, weight, nutritional status, urea, creatinine, calcium, blood proteins, German language, Germany.


**Keywords:** multipurpose breeds, double-purpose Hungarian spotted cattle, Hungarian grey cattle, Mountain spotted cattle, animal breeding, population genetics, breed conservation, beef, keeping quality, technology, farm management, Hungarian language, Hungary.


**NAL Call Number:** 49 J82

**Keywords:** breeding, decision support system, genotype, environment interactions, performance traits.


**NAL Call Number:** 49 J82

**Keywords:** Angus, Hereford, Limousin, Charolais, Simmental, breeds, genetic evaluation, genetic method, meat, breed overlap, genetic trends, genetic variation, growth traits, reproductive capacity.


**NAL Call Number:** 41.8 C163

**Keywords:** multibreed beef cattle, genetic trends, weaning weight, environmental factors, genetic trends, natural selection, weaning weight.


**NAL Call Number:** SF1 S6

**Keywords:** beef, breed, Afrikaner, calf, National Beef Cattle Improvement Scheme, test phase, estimated breeding value, selection process, yearling weight, heritability, heterogeneity, South Africa.


**NAL Call Number:** 49 J82

**Keywords:** Pirenaica calves, Brown Swiss calves, breed differences, season of birth effects, preweaning growth curves, Spanish Pyrenees.


**Keywords:** beef calves, bulls, heifers, breeds, Limousine, Salers, Red Angus, Simmental, pastoralism, grazing, weight gain, extensive farming, Polish language, Poland.


NAL Call Number: S471 J3C84
Keywords: milk and beef production, breed, Wagyu, embryo transfer, economic analysis, animal production, pregnancy, artificial insemination, Japanese language, Japan.

Return to Contents
Feeding


**Keywords:** rumen digestion, feed intake, nitrogen, swine excreta, Spanish language, Cuba.


**NAL Call Number:** 49 J82

**Keywords:** beef cows, breed, Gelbvieh X Angus, supplemental degradable protein (DIP), undegradable protein (UIP), forage intake, body weight change, body condition score (BCS), postpartum interval to first estrus, conception rate, milk production, milk composition, serum metabolites, metabolic hormones, blood meal, animal feed supplement, native grass hay, soybean meal, trace, mineralized salt.


**NAL Call Number:** SF1 R45

**Keywords:** beef cattle cows, grazing systems, animal feeding, behavior, feeding habits, feeding systems, Portuguese language, Brazil.


**NAL Call Number:** 49 J82

**Keywords:** yearling steers, high-oil corn, carcass characteristics, slaughter, postmortem, carcass. intramuscular lipid deposition, unsaturation of fatty acids.


**NAL Call Number:** 41.8 IN22

**Keywords:** beef cattle, goat, sheep, rumen contents, potential feed.


**NAL Call Number:** SF1 L5

**Keywords:** breed, Holstein x Friesian, Holstein x native Brown of Atlas, bull, heifer, meat product, carcass merit, diet, dry matter, replaced barley, sugar beet molasses, animal feed, environmental friendly beef production, feed efficiency, genotype, growth, live weight gain, Morocco, Africa.


**NAL Call Number:** SF1 L5

**Keywords:** husbandry, beef cattle, dairy cows, chicken, egg, hen, rabbit, genetically modified organism, feeding, carcass merit, feed efficiency, food chain, food safety, growth rate, maize, milk production, nutrient

digestibility, recombinant DNA technology.

NAL Call Number: S192.R4
Keywords: feedlots, pastures, concentrates, weight gain, fattening, animal performance, Portuguese language, Brazil.

NAL Call Number: 49 J82
Keywords: calf, crossbred beef cow, female, heifer, liver, IgG, dietary supplement, copper, manganese, zinc, humoral immune response, reproductive performance.

Keywords: cattle feeds, soybean flake cassava, leaves, fermented products, proteins, dry matter intake, organic matter intake, chemical composition, feed consumption, Indonesian language, Indonesia.

NAL Call Number: 41.8 Am3A
Keywords: Angus, Hereford, breed effects, oral vitamin E supplementation, late gestation, serum vitamin E and IgG concentrations, stored forages.

NAL Call Number: 49 J82
Keywords: feedlot finishing cattle, Jersey steers, breed, diet, effects of barley rolling, chewing activities, ruminal fermentation, extent of digestion, cannulated in the rumen and duodenum, dry matter intake.

NAL Call Number: SF1 R45
Keywords: heifers, Hereford, Aberdeen Angus, breed, Portuguese language, improved natural pasture, Lolium multiflorum, Trifolium repens, Lotus corniculatus, pasture forage, average daily gain, growth rate, feedlot system, intensive beef cattle production systems, winter feeding system.

NAL Call Number: 49 J82
Keywords: dry lot feeding, diets, feed formulation, computer simulation, simulation models, live weight gain,
finishing, body weight, cattle feeding, breed differences, American Angus, Charolais, Hereford (cattle breed), crossbreds, environmental temperature, wind speed, coat, depth, barley, barley silage, rapeseed oilmeal, straw, chemical composition, cold stress, accuracy, prediction, Saskatchewan.


NAL Call Number: 41.8 C163

Keywords: breed, beef, Charolais x Simmental, dairy, Holstein, methane excretion, sulfur hexafluoride trace gas technique, measurement method, diet, dry matter intake, forage quality, in vitro organic matter digestibility, nutrient density.


NAL Call Number: 41.8 C163

Keywords: steer, methane excretion, sulfur hexafluoride tracer gas technique, measurement method, dry matter intake, forage quality, grazing season, legume grass, pasture grazing, rolled barley, total organic matter intake.


NAL Call Number: 18 G31

Keywords: animal production, beef cattle, farming systems, forage, grasslands, grazing, handling, herbage, labor costs, less favoured areas, nurse cows, behavior, temperment, breed differences, pastures, production costs, production economics, stables, traits, German language, German.


NAL Call Number: 49 J82

Keywords: steers, feeding, grazing, food supplement, energetic value, protein values, feeding behavior, food intake, digestibility, experimental study, corn flour, soybean meal, blood product, feces, fodder, rangeland.


NAL Call Number: SF95 A55

Keywords: hay, supplements, feed intake, behavior, feeding habits; feeds, livestock.

Brito, R.M. de; Sampaio, A.A.M.; Cruz, G.M. da; Alencar, M.M. de; Barbosa, P.F.; Barbosa, R.T. (2002). Comparison of diet evaluation systems for cattle in an intensive beef production model. II - Creep feeding.[Comparacao de sistemas de avaliacao de dietas para bovinos no modelo de producao intensiva de carne. II - Creep feeding.] Revista Brasileira de Zootecnia 31 (2, Suppl.): 1002-1010, ISSN: 1516-3598.

NAL Call Number: SF1 R45

Keywords: analytical methods, beef cattle, calves, creep feeding, diets, evaluation, fattening performance, feed supplements, intensive husbandry, liveweight gain, nutrition, nutritive value, Portuguese language, Brazil.

Keywords: beef cows, calves, body weight, diet, energy balance, energy expenditure, heart rate, lactation, late pregnancy, metabolizable energy, milk production, organic matter digestibility, oxygen consumption.


Keywords: heifers, grazing experiments, experimental design, feeding behavior, controlled grazing, adaptation, plant height, biomass, tillers.


Keywords: nutrition, ammonia, short chain fatty acids, feed fermentability, gas production, hay, grass silage, dry matter, maize, silage, pH, rumen fermentation, whole-crop wheat.


Keywords: trace elements, selenium, deficiency, lesions, cold stress, energy demands, winter, cold adaptation, brown fat, adipose tissue, Alaska.


Keywords: estradiol, zeranol, energy accretion, fat accretion, growth, growth energy density, protein accretion.


Keywords: suckler cows, beef cattle, parturition, grazing, body weight, livestock management, animal feeding, reproduction.


Keywords: metabolism, whole body energy use, maintenance, visceral tissues, liver, gastrointestinal tract, muscle, adipose tissues protein, synthesis, turnover, urea, meat, production, ion transport.


Keywords: gonadotropin releasing hormone, fertility drug, estradiol benzoate, intramuscular administration, progesterone, intravaginal device, drug delivery system, fertility drug, breeding method, estrus synchronization, Ovsynch, body weight, energy nutrition, estrus success, plane of nutrition correlation, parity,
silage, animal feed, winter calving.


**NAL Call Number:** SF95 C463 1999

**Keywords:** feeds, nutrition, analytical methods, nutrition, physiology, protein sources, energy sources, forage, minerals, trace elements, vitamins, feeding behaviour, water, composition, processing, feed intake, beef cattle, cows, fish, animal welfare, exotics, furbearing animals, zoo animals, animal production, poultry.


**NAL Call Number:** 381 AM33Pa

**Keywords:** genetic enhancement technology, crops fed to livestock, insect protection, herbicide tolerance, composition, digestibility, feeding value.


**NAL Call Number:** 24 F225

**Keywords:** beef cattle feedlots, unrestricted feeding, feeding systems, South Africa.


**NAL Call Number:** 49 382

**Keywords:** stocker calves, forage, animal feed, forage quality, grain, grazing season, growth performance, hay, sod-seeded winter annuals.


**NAL Call Number:** S5 C65

**Keywords:** poultry, pigs, veal calves, beef cattle, European regulations, antimicrobial growth promoter, concentrations, animal species, withdrawal periods, avilamycin, carbadox, flavomycm, monensin, olaquindox, salinomycin, average daily gain, growth, review paper, French language.Seroprevalence of Babesia bovis in cattle in the "Norte Fluminense" mesoregion.


**Keywords:** beef cattle cows, grazing, duration, natural pastures, grassland management, grazing intensity, animal performance, animal feeding, behavior, French language, France.


**NAL Call Number:** SF601 I4

**Keywords:** beef bulls, supplementary feeding, mineral deficiencies, nutrient deficiencies, animal welfare, osteochondritis, bone diseases, joint diseases, lameness, weight gain, coat quality, barley, sugarbeet pulp, molasses, protein mix, Ca, Na, P, Mg, Cu.

8524.

**NAL Call Number:** TD930 A32

**Keywords:** Salmonella typhimurium, Escherichia coli O157:H7, carcass contamination, foodborne pathogen, grazing, microbial contamination, bioresource technology, broiler litter feeding.


**NAL Call Number:** SF205 D37 1998

**Keywords:** calf, care, management, anatomy, feeding, digestive system, energy and protein requirements, environmental temperature, metabolism, calving, colostrum, milk replacers, liquid feed, starter feed, housing, nutrition, husbandry.


**NAL Call Number:** SF95 A55

**Keywords:** grasses, silage, sodium bicarbonate, feed intake, ph, inorganic acid salts, chemico-physical properties, behavior.


**NAL Call Number:** 49 J82

**Keywords:** finishing heifers, intake, performance, roughage concentration, roughage source.


**NAL Call Number:** 49 J82

**Keywords:** low, quality forages, nutrition, supplementation strategies.


**NAL Call Number:** 41.8 C163

**Keywords:** Hereford steers, breed, quantitative analysis, eating, patterns, concentrates, roughage, timothy hay, feeding behavior, rumination, pelleted feeds, mastication, lucerne pellets, time spent eating.


**NAL Call Number:** 49 J82

**Keywords:** cow, calves, Angus, Beefmaster, breed, molasses, based supplements, animal feed, nutritional supplements, performance.


**NAL Call Number:** 286.81 F322

**Keywords:** heifers, steers, temperament, lambs, unrestricted feeding, feed intake, performance.

Information Resources for Beef Cattle

Scientists 15 (4): 238-244.

NAL Call Number: SF51 P76

Keywords: steers, dietary minerals, phosphorus, mineral supplements, weaning, stress, maize silage, soybean oilmeal, experimental infections, bovine rhinovirus, rhinotracheitis, live weight gain, feed intake, feed conversion, body temperature, antibody formation, morbidity, blood plasma, copper, zinc, inorganic trace minerals, organic trace minerals.


NAL Call Number: SF1 L5

Keywords: Simmental, Angus, breed, suckler cows, herbage intake, dry matter, slow-release alkane capsules, alpine climate, body weight, calving period, nutrient turnover, pasture grazing, subalpine climate.


NAL Call Number: SF1 L5

Keywords: husbandry, organic farming, feedlots, performance, economic analysis, costs, steers, farming systems, vaccination, creep feeding, feeds, maize, soybeans, hay, feed intake, live weight gain, live weight, feed conversion efficiency, backfat.


NAL Call Number: SF1 L5

Keywords: breed, Belgian Blue, bull, double-muscled, carcass composition, carcass quality, feed intake, feed restriction, growing period, growth rate, liveweight gain, maize silage, pasture grazing, slaughter, slaughter weight.


NAL Call Number: 44.8 J822

Keywords: beef cattle, dairy cattle, sheep, digestive tract capacity, digestive system, rumen, climate, diet selection, digestion rate, discomfort, metabolism, nutritional value, social factors, voluntary feed intake.


NAL Call Number: S539.5 174

Keywords: Continental crossbred steers, cattle grazing systems, evaluation, growth rate improvement strategies, grazing, autumn grass, supplementation, concentrates, performance effects, grass intakes, grazing management strategies, carcass characteristics, final live weight, carcass weight, carcass conformation score, carcass fat score.


NAL Call Number: TX341 Z45

Keywords: beef steers, growth promoting implants, comparative study, Synovex (SYN), Ralgro (RAL), Revalor (REV), fatty acid compositions, conjugated linoleic acid (CLA), subcutaneous fat, intramuscular fat, lipids, analysis, liquid chromatography.

**NAL Call Number:** 49 J82

**Keywords:** finishing beef cattle, nutritionists, survey, diet formulation, crude protein, metabolizable protein, dry matter, feed bunk management, feed intake, performance, implant programs.


**NAL Call Number:** 49 J82

**Abstract:** The usual means of assessing the health of newly received beef cattle susceptible to bovine respiratory disease (BRD) are subjective, typically involving visual evaluation aided by minimal clinical measurements. Recent evidence based on the occurrence of pneumonic lung lesions at slaughter indicates a need for more accurate methods of diagnosing BRD. Inadequate passive immune transfer at birth may be an important risk factor in susceptibility to BRD, suggesting the need for management to improve passive transfer success rates. Preweaning management and vaccination practices offer opportunities for beef cattle producers to improve the immune status of newly weaned calves and decrease postweaning BRD. Feeding diets with higher levels of concentrate typically improves performance by newly weaned or received cattle, as does feeding diets supplemented with protein; however, limited data suggest that increasing concentrate and protein in receiving diets increases the rate and severity of subjectively determined BRD morbidity. Research with receiving diet concentrate/protein level relative to humoral and cell-mediated immune function coupled with indicators of health and performance is needed. Supplemental B vitamins are sometimes useful in receiving diets, but the effects have been variable, presumably reflecting differences in stress and associated feed intake responses. Vitamin E added to receiving diets to supply ≥ 400 IU/animal daily seems beneficial for increasing gain and decreasing BRD morbidity; however, further dose titration experiments are needed. Supplemental Zn, Cu, Se, and Cr can alter immune function of newly received calves, and some field trials have shown decreases in BRD morbidity rate with supplementation; however, several experiments have shown no performance or health/immune benefits from supplementation of these trace minerals. Formulation of receiving diets should take into account decreased feed intake by highly stressed, newly received beef cattle and known nutrient deficiencies, but fortification of such diets with trace minerals beyond the levels needed to compensate for these effects is difficult to justify from present data.

**Keywords:** immune system, health, nutritional state, interactions, energy intake, dietary protein, nutrient intake, mineral nutrition, evaluation, clinical examination, lesions, respiratory diseases, risk factors, passive immunity, vaccination, weaning, calves, concentrates, performance, protein supplements, morbidity, vitamin supplements, stress, feed intake, vitamin E, vitamin B complex, live weight gain, dosage effects, zinc, copper, selenium, chromium, feed formulation, literature reviews.


**NAL Call Number:** 60.18 J82

**Abstract:** We compared the forage preferences of steers grazing among 8 varieties of grasses at 2 stages of phenology on the Northern Great Basin Experimental Range near Burns, Ore. Varieties included: “Nordan” (Agropyron desertorum (Fischer ex Link)Schultes) and “CD-II” (A. desertorum X A. cristatum (L.) Gaertn) crested wheatgrass; “Magnar” and “Trailhead” Basin wildryes (Leymus cinerues (Scribner & Merrill) A. Love); “Goldar” bluebunch wheatgrass (Pseudoroegneria spicata (Pursh)A. Love); “Bozoisky-Select” Russian wildrye (Psathyrostachys junceus (Fischer) Nevski); “Bannock” thickspike wheatgrass (Elymus lanceolatus ssp. lanceolatus (Scribner & J.G. Smith) Gould), and “Secar” Snake River wheatgrass (proposed nomenclature Elymus lanceolatus ssp. lanceolatus (Scribner & J.G. Smith) Gould). Three esophageal-fistulated steers grazed each paddock, with 3 paddocks grazed at the boot stage of development, and 3 paddocks grazed after grasses entered quiescence. In boot-stage trials, steers were very selective and collectively harvested 53% of total bites from the preferred CD-II and Nordan. These crested wheatgrasses also ranked higher (P < 0.05) in bites visit and time/visit. Magnar, Trailhead, and Bozoisky-Select were avoided. When grasses were quiescent, steers were less selective; and CD-II, Nordan, Goldar, Bannock, and

Bozoisky-Select were all equally acceptable. Magnar and Trailhead were again avoided. Steers consistently took more bites (p < 0.05) from preferred forages and regrazed preferred plants before any variety was depleted. Mean distance traveled between successive feeding stations was greater during bootstage trials (2.4 m) than at quiescence (1.4 m), suggesting steers searched among the nearest 48 neighboring plants in bootstage trials and the nearest 24 neighbors during quiescence. Measures of grazing time per variety were strongly correlated (r > 0.95, P < 0.01) with total bites harvested from varieties and are probably adequate for ranking relative preferences of steers. By selectively grazing at both stages of phenology, cattle diets were higher in CP, P, and ADL than the standing crop. During boot-stage trials, diets were also higher in Ca and Mg than forage analyses would suggest. Except for phosphorus, the nutritive content of all varieties was satisfactory for lactating beef cattle at both stages of phenology. Given their proven ease of establishment, competitive ability, nutritional value, grazing tolerance, and high relative palatability, we suggest the crested wheatgrasses (CD-II and Nordan), are excellent candidates for reclaiming or establishment of pastures for beef production programs in the northern Great Basin.

**Keywords:** steers, grazing, feeding preferences, agropyron desertorum, leymus cinereus, interspecific hybridization, elymus spicatus, psathyrostachys juncea, elymus lanceolatus, phenology, maturity stage, selective grazing, chemical composition, biting rates, plant height, leaf area index, moisture content, biomass, density, mineral content, crude protein, fiber content, in vitro digestibility, palatability, Oregon.


**NAL Call Number:** SF55 I4J68

**Keywords:** breed, Bos indicus x Brown Swiss, feed intake, ground corn straws, sorghum straws, straw-excreta mixture, sun-dried swine excreta, animal acceptance, nutritional quality, weight gain.


**Abstract:** This article summarizes the main objectives and stages of a project which aims to assess the utilization of pastures and permanent meadows by cattle in less favourable production areas in the Czech Republic. The project includes especially: 1) evaluation of different grass and clover mixtures, 2) assessment of optimal grass varieties in order to extend the grazing period, 3) evaluation of the effect of grazed grasslands on the landscape formation, 4) assessment of botanical diversity of permanent grasslands, 5) evaluation of different grazing methods, 6) monitoring cattle behaviour, 7) economical analyses.

**Keywords:** beef cattle, suckler cows, heifers, feed grasses, meadows, pasture improvement, grazing, soil amendments, yield factors, behavior, feeding habits, feeds, grasses, natural resources, nonrenewable resources, Czech language, Czech Republic.


**NAL Call Number:** SF1 R45

**Keywords:** nutrition, Brachiaria decumbens, forage crop, beef cattle, average daily gain, feed, supplements, corn gluten meal, cottonseed meal, soybean meal, wheat bran, dry season, Portuguese language.


**NAL Call Number:** 60.9 J27

**Keywords:** beef cattle, fattening, silica, rice cropping methods, rice straw, rumen digestion, rice straw feeding, Japanese language, Japan.


**NAL Call Number:** SF601 C66

**Keywords:** feeder cattle, minerals, iron, cobalt, iodine, sodium, phosphorus, magnesium, calcium, potassium, manganese, selenium, copper, zinc, trace elements, nutrition, forage, composition, growth, nutrient requirements, mineral content, stress.


**NAL Call Number:** 49 J82

**Keywords:** minerals, dietary supplementation, forage, based diet, pasture grazing.


**NAL Call Number:** SF1 A56

**Keywords:** proteins, supplements, bulls, cattle, weight gain, feed conversion efficiency, feed intake, weight, maize, gluten, fish meal, rapeseed meal, silage, animal feeding, byproducts, cereals.


**NAL Call Number:** SD387 M8A3

**Keywords:** case studies, grazing, woodlands, beef cattle, scrub control, cattle feeding, controlled grazing, poultry manure, regrowth, stocking rate, thinning, silvopastoral systems, agroforestry systems, feed supplements, supplementary feeding, live weight, calving season, browsing, Israel.


**NAL Call Number:** SF604 B7

**Keywords:** beef calves, baseline data, glutathione peroxidase, antioxidant, whole blood, selenium, dietary supplement, whole blood.


**NAL Call Number:** 49 AR23

**Keywords:** bulls, housing systems, automation, transponders, equipment, floors, straw, litter, slatted floors, behavior, feed intake, estimation, automatic feed dispensers, German language.


**Abstract:** In order to study the effects of herbage allowance on cattle behaviour activities on the farm, some methodological aspects had to be defined. Two sets of observations have been conducted on farm using a beef suckler herd containing 24 cows and managed in a rotational grazing system including a total of 6 paddocks. Behaviour activities were recorded on two successive paddocks. In set 1, the herd activities were recorded every 5 min in daylight and 15 min at night for the first two days on the two paddocks. In set 2, ten cows were individually identified among the same herd. On the first and the last day on the two paddocks, daylight activities were recorded with 5-min frequencies. From these individual observations, total grazing and ruminating duration were calculated, simulating records every 5, 10, 15 and 20 min. In set 1,76% of the total
grazing and 28% of the total ruminating activities occurred in daylight. Grazing started at dawn and finished at dusk. In set 2, grazing activity followed the same pattern as in set 1 in daylight. Whatever the frequency of the records, grazing and ruminating time were not significantly (P > 0.05) different. However the 10 min frequency gave fewer and lower individual differences than the 15 and 20 min frequencies, compared to the original record (5 min). It is concluded that visual observations of cattle managed in a rotational grazing system can be readily undertaken at the farm level with 5 to 20 min frequencies.

**Keywords:** feeding behavior, dark, daylight, pasture, rotational grazing, rumination. Copyright© 2003, CAB International.


**NAL Call Number:** 49 J82

**Keywords:** winter feeding programs, improving economic efficiency, optimization, nutrition.


**NAL Call Number:** 49 Z8

**Keywords:** daily weight gain, dry matter, energy, feed intake, forage intake, German Simmental cow, grass silage, hay, maize silage, nutrition, German language.


**NAL Call Number:** SF51 P76

**Keywords:** beef cows, lactation, probiotics, saccharomyces cerevisiae, streptococcus faecium, lactobacillus acidophilus, enzyme preparations, alpha-amylase, beta-glucanase, milk yield, lactation stage, milk fat percentage, milk protein percentage, somatic cell count, body weight, live weight gain, calves, weaning weight.


**NAL Call Number:** SF1.A56

**Abstract:** The objective of this experiment was to evaluate the performance and well being of animals accommodated outdoors over the winter period on out-wintering pads (OWPs), relative to animals housed indoors in conventional slatted sheds. One hundred and twenty-six steers were assigned at random to one of seven treatments. The first six treatments were accommodated on OWPs. These six treatments were arranged in a three (6, 12 and 18 m² per head space allowance) by two (wind sheltered or exposed) factorial design. A seventh treatment group (control) was housed indoors in a slatted-floor shed at a space allowance of 3 m² per head. All animals were offered silage ad libitum and 5 kg concentrate per day. All animals were slaughtered at the end of the 151 day experiment. Animal production and indices (climatic energy demand (CED), behaviour, cleanliness, hoof condition and immune function) of animal welfare were evaluated. There was no significant effect of stocking density outdoors or sheltering on liveweight gain, carcass gain, fat score, fat score per 100 kg carcass, kidney plus channel fat (KCF) as a proportion of carcass, carcass conformation score, killing-out proportion, food intake or food efficiency. Relative to animals housed indoors on slats, animals accommodated outdoors on OWPs had higher daily liveweight gain (P<0.001), carcass gain (P<0.05), and food intake (P<0.05). However, animals on the OWPs had less KCF per kg carcass and lower fat scores per 100 kg carcass. There was no effect of shelter on the CED of animals out-wintered, which was higher (P<0.001) than their counterparts wintered indoors on slats. Animals housed on slats were cleaner than animals housed at 6 or 12 m² per head (P<0.05) but not 18 m² per head. There was no effect of treatment on physiological measures. Animals confined on the OWP with or without shelter, had a greater number of lying bouts per 24 h (P<0.076), had a greater synchronized lying frequency (P<0.082) and displayed less hesitation prior to lying when compared with animals housed on slats. Indoor animals had more white line disease
(P<0.01) and under-run (P<0.001) on their front hoof, when compared with outdoor animals. Animals accommodated outdoors at 18 m² per head had more (P<0.05) claw erosion while the indoor animals had a greater (P<0.001) degree of under-run present on their hind hoof. There was no evidence to suggest that outwintering compromised animal welfare. Further studies are required to determine the reason for the increased carcass growth and leanness of the cattle on the OWPs.

**Keywords:** housing, animal welfare, beef cattle, carcass composition, carcass quality, feed intake, hooves, liveweight gain, physical activity, steers, winter.


**NAL Call Number:** SF601 V535

**Keywords:** feeding, feedstuffs, peanut hulls, by-product, adverse effects, tannins, dietary fiber, protein, economics.


**NAL Call Number:** QR171.16 P76 1997

**Keywords:** beef cattle, calves, lactobacillus, streptococcus, aspergillus, deuteromycotina, bacteria, fungi, lactation, supplements, probiotics, milk production, feed intake, milk yield, animal feeding, animal performance, animal production, behavior.


**Keywords:** Charolais cows, breed, food intake, feeding behavior, hay ad libitum, feeding from mangers, nutritional requirements.


**Keywords:** cows, housing, tethered stalls, hay, feed intake, feeding habits, feeds, husbandry methods, behavior, French language, France.


**NAL Call Number:** 41.8 C163

**Keywords:** Hereford, breed, acid detergent fiber, crude protein, neutral detergent fiber, body weight gain, forage quality, growth performance, herbage mass, native pasture grazing, soil compaction, spring turnout date, effect.


**NAL Call Number:** 41.8 C163

**Keywords:** feeder cattle, nutrition, early turnout, forage biomass, forage quality, late turnout, spring pasture, weight gain, weight loss.


**NAL Call Number:** 41.8 C163

**Keywords:** barley, corn, animal feed, carcass quality, animal feed, dressing yield, meat, color.


Keywords: beef cattle, high, performance, genetic selection, rumen bacteria, rumen protozoa, high energy diets, amino acid supply, carcass quality, diet composition, feed additives, feed energy value, high, energy diet, complications, lipid supplementation, meat quality, protein supply, rumen ecosystem, manipulation, rumen microbial protein synthesis, rumen acidosis, starch digestion.


Keywords: antibiotic growth promoter ban, alternatives, feed additives, bacterial resistance, pathogenic bacteria, therapeutics olaquindox, zincoxide, copper, weaning problems, E.coli infection, legislation, review, Sweden, Germany, German language.


Keywords: grazing cattle, phosphorus deficiency, nutritional disease, dietary intake, homeostasis, nutritional requirements, skeletal reserves, status indicators, supplements.

Grazing tolerance of alfalfa (Medicago spp.) under continuous and rotational stocking systems in pure stands and in mixture with meadow bromegrass (Bromus riparius Rehm. syn. B. biebersteinii Roem & Schult). Canadian Journal of Plant Science 82 (2): 337-347, ISSN: 0008-4220.

Keywords: beef cattle, grazing, Bromus riparius, meadow bromegrass, forage crop, alfalfa, grazing tolerance, mixed stands, pure stands, continuous stocking system, field method, rotational stocking system, Western Canada.

The Intensive Growing and Feeding of Beef Bulls. [Cresterea Intensiva Si Ingrasarea Taurinelor Pentru Carne.] Institute of Technical and Economical Information: Kishinev, Republic of Moldova, 30p.

Keywords: bulls, animal feeding, Romanian language, Republic of Moldova.


Keywords: steers, Charolais, breed, nitrogen utilization, energy intake, energy utilization, feed intake, forage/concentrate ratio, grass silage, animal feed, high digestibility diet, low digestibility silage.


Keywords: body condition, supplementary feeding, nutritional requirements, proteins, wintering, South Africa.


Keywords: supplementary feeding, nutritional requirements, proteins, urea, South Africa.

**Keywords:** beef cattle bulls, bullocks, heifers, grazing systems, fattening, feed intake, weight gain, slaughter weight, carcass composition, prices, costs, Germany, France, Ireland, Czech language.


**NAL Call Number:** 41.8 C163

**Abstract:** Crossbred steers (n = 136) were used to evaluate the effect of management strategy on growth performance, carcass characteristics, and fatty acid composition and palatability attributes of beef. Management strategies included: (1) high grain (75% high moisture corn) finishing (HG), or (2) backgrounding with restricted feeding of an alfalfa silage ration for 112 d, followed by HG until slaughter (BKG). Steers were slaughtered at 8-10 mm ultrasound backfat. Backgrounding increased (P < 0.001) days on feed and decreased (P < 0.01) days on grain, average daily gain and longissimus muscle area compared with the HG regime. Slaughter weight, intramuscular fat content, and marbling score were unaffected (P > 0.10) by management strategy. Longissimus muscle palatability attributes and shear force did not differ (P > 0.10) between management strategies, whereas BKG increased (P < 0.03) softness, overall tenderness, chewiness, and rate of breakdown scores, and decreased (P < 0.09) juiciness scores in semitendinosus muscle. Backgrounding increased (P < 0.05) conjugated linoleic acid (CLA), total monounsaturated fatty acids, and omega3 polyunsaturated fatty acid (PUFA), and decreased (P < 0.05) total saturated fatty acids (SFA), and omega6 PUFA content of beef. While the change in quantitative and qualitative fatty acid composition of beef is in line with current dietary recommendations for humans, the magnitude of these changes was minimal.

**Keywords:** beef cattle, steers, animal husbandry, growth, performance, carcass composition, fatty acids, palatability, crossbreds, meat quality, feeds, finishing, silage, backfat, fat thickness, liveweight gain, muscles, slaughter weight, leanness, tenderness, flavor, moisture content.


**NAL Call Number:** 41.8 C163

**Keywords:** breed, Hereford x Angus, yearling, blood, blood and lymphatics, bone, skeletal system, heart,circulatory system, hide, kidney, excretory system, liver, digestive system, muscle, muscular system, cadmium, tissue distribution, copper, tissue distribution, lead, tissue distribution, mercury, tissue distribution, molybdenum, tissue distribution, fat, molybdenum, enriched diet.


**NAL Call Number:** SF1 R45

**Keywords:** feed intake, supplements, pastures, diet, weight, behavior, feeding habits, grazing lands, land resources, natural resources, nonrenewable resources, Portuguese language, Brazil.


**NAL Call Number:** SF1 R45

**Keywords:** beef cattle, supplements, feed intake, pastures, urea, weight gain, grazing, amides, behaviour, feeding habits, grazing lands, land resources, natural resources, nonrenewable resources, ruminants, Portuguese language, Brazil.

Information Resources for Beef Cattle


NAL Call Number: SF94.6 S95 1997

Keywords: dietary aspects, feed evaluation, feedstuff net energy, prediction.


**Keywords:** in-vitro bioassays, comparative study, estrogenic potency of chemicals used as growth promoters, beef cattle production in Non-European Union countries, 17beta-estradiol, alpha-zearalanol, testosterone, trenbolone, trenbolone acetate, melengestrol acetate, food contaminant, mycotoxin zearalenone, 17alpha-estradiol, estrone, 17alpha-epitestosterone, 19-nortestosterone, androstendione, zearalanone, alpha-zearalanol, beta-zearalanol, alpha-zearalenol, beta-zearalenol dd, alkaline phosphatase gene induction, estrogens in the human endometrial Ishikawa cell line.


NAL Call Number: 49 J82

**Keywords:** Simmental crossbred cows, breed, limit feeding, corn based diets, supplementation, monensin, alternatives to hay, reproductive performance, conception rate, calf weaning weight.


NAL Call Number: SF961 C37

**Keywords:** grazing, height, plant height, feeding behavior.


NAL Call Number: SF1 A56

**Keywords:** grazing, winter, cattle suckling, males, females, body condition, pastures height, weight gain, sex, biological differences, feeding level.


NAL Call Number: SF95 R463 1996

**Keywords:** feeding, management, grazing, organic agriculture, silage, beef, meat production, bulls, alternative agriculture, United Kingdom.


**Keywords:** legislation, abattoirs, animal production, housing, feeding, anabolics, residues, slaughter, beef quality, meat quality, meat production, carcasses, Italian language, Italy.


NAL Call Number: 49 J82

**Keywords:** feeding, environmental effect, feedlot, body temperature, food intake, energy metabolism, experimental study, restricted feeding, heat stress.

Manterola, B.H.; Cerda, D.; et al. (1997). **Study of the productive behavior and ruminal parameter variations in steers fed different levels of grape marc.** [Estudio del comportamiento productivo y
Manzano, R.P. (2002). *Intake, digestive parameters and behavior of beef steers on Tanzania grass (Panicum maximum Jacq. cv. Tanzania) pasture, supplemented with energy or protein sources* [Consumo, par metros digestivos e comportamento de bovinos de corte em pastejo de capim Tanz nia (Panicum maximum Jacq. cv Tanz nia) suplementados com fontes de energia ou de prote na] Escola Superior de Agricultura Luiz de Queiroz, Piracicaba, SP (Brazil), 160p.

**Keywords:** beef cattle, panicum maximum, supplements, pastures, digestibility, feed consumption, animal performance, consumption, grazing lands, land resources, natural resources, nonrenewable resources, Portuguese language, Brazil.


**NAL Call Number:** 41.8 V6416

**Keywords:** toxicity, lead concentrations, salt formulations, spectrophotometric technique, atomic plasma induction, Brazil


**NAL Call Number:** SF1 L5

**Keywords:** breed, Sarda, Charolais, body condition score, calving, conception rate, feeding level, genotype, postpartum anestrous interval, postpartum reproductive performance, suckling frequency, Sardinia, Italy.


**NAL Call Number:** SF95 A55

**Keywords:** crossbred Holstein, Friesian heifers, fitted with rumen and duodenal cannulae dietary treatments, barley straw, concentrate, barley, corn, urea, casein, rumen microbial yield, rumen ammonia, arabinose, digestibility, carbohydrate fermentation, cellulose, glucose.


**Keywords:** integration, fattening, farming systems, oryza sativa, rice straw, feeds, composts, java, agricultural wastes, animal wastes, animal feeding, crop residues, gramineae, oryza, ruminants, straw, Indonesian language, Indonesia.


**NAL Call Number:** SF55 A78A7

**Keywords:** beef producers, farmer training, marketing processing, nutritional management, producer

**NAL Call Number:** SF1 L5  
**Keywords:** ad libitum feed, dry matter intake, grass silage model, mathematical model, barley, feed concentrate, dry matter intake, grass silage, intake prediction


**NAL Call Number:** SF779.5 A1B6  
**Keywords:** breeding, dairy production, energy metabolism, feed efficiency, feeding, fertility, infertility, meeting paper, nutrition, reproduction.


**NAL Call Number:** 41.8 C163  
**Keywords:** heifers, steers, Wagyu, breed, crossbred, growth performance, carcass characteristics, meat quality, marbling grade, barley, based diets, carcass characteristics.

Moore, K.M.; Barry, T.N.; Cameron, P.N.; Lopez-Villalobos, N.; Cameron, D.J. (2003). *Willow (Salix sp.) as a supplement for grazing cattle under drought conditions*. Animal Feed Science and Technology 104 (1-4):1-11, ISSN: 0377-8401.

**NAL Call Number:** SF95 A55  
**Keywords:** willow supplementation, dry pasture, dead matter content, drought conditions, dry matter content, liveweight, metabolizable energy content, feed, chemical composition, dietary supplement, nutritive value, New Zealand.


**Keywords:** cows, calves, multiple births, milk replacers, feed intake, growth, behavior, development, feeding habits, feeds, livestock, pregnancy, reproduction, Japanese language.


**NAL Call Number:** SF601 A47  
**Keywords:** heifers, growth promoter, monensin, enzyme immunoassay, fecal, urinary, seral samples.


**NAL Call Number:** 23 N4892  
**Keywords:** beef, fat color, flavor, marbling, juiciness, meat, meat color, tenderness, quality, finishing, forage based feeding system, grain based feeding system, literature review, New Zealand.


**NAL Call Number:** S539.5 174

**Keywords:** grass, forage crop, growth studies, livestock performance studies, copper analysis, blood level studies, molybdenum, sulfur, biological effects, deficiency effects, fertilization effects, nutrients, Irish grassland study, grazing, animal performance study, Ireland.


**NAL Call Number:** SF95 A55

**Keywords:** steers, feeding, byproduct, ensiled spearmint, barley silage, comparison, fistulated steers, ruminal fermentation, nutrient utilization, neutral detergent fiber (NDF), acid detergent lignin (ADL), crude protein (CP), acid detergent insoluble protein, volatile fatty acids (VFA), dry matter, average daily gain, digestible energy content.


**NAL Call Number:** 49 J82

**Keywords:** beef heifer, beef steer, overseeding cultivation, cultivation method, prepared seedbed cultivation, dry matter yield, bahiagrass, cool season grazing, forage blend, oats, rye, ryegrass.


**Keywords:** nutrient requirements, beef cattle, reproduction, computer software, cattle management, environmental conditions, energy, protein, growth and body reserves, reproduction, minerals, vitamins and water, feed intake, implications of stress.


**NAL Call Number:** 49 J82

**Keywords:** crossbred beef steers, diet, barley, corn, potato by-product, feedlot performance, carcass characteristics, beef appearance, meat composition.


**NAL Call Number:** 49 J82

**Abstract:** The effect of stress on tissue alpha-tocopherol was investigated in 16 crossbred heifers fed a corn/corn silage-based diet. For 28 d, eight heifers (379 +/- 10 kg BW) received a dietary supplement of 1,000 IU of dl-alpha-tocopheryl acetate, whereas the controls (375 +/- 10 kg BW) received no supplemental vitamin E. Tissue samples of plasma, red blood cells, liver, trapezius, and longissimus muscles and subcutaneous fat immediately dorsal to each muscle were taken on d 1 for determination of alpha-tocopherol concentration. On d 2 through 4 each heifer was restricted to 2.61 kg of grass hay and allowed water. On d 5, 6, and 7 no feed or water was given, 100 IU of ACTH and .0024 mg of epinephrine/kg BW were given every 8 h, and biopsies for alpha-tocopherol content were again taken on d 7. The stress reduced (P < .01) mean BW, increased (P < .01) serum cortisol, creatine kinase, and urea. After stress, supplemental vitamin E reduced (P < .13) the increase in creatine kinase relative to that in heifers not supplemented with vitamin E. Stress also increased (P < .04) serum Se in heifers fortified with the vitamin E. Alpha-tocopherol content of plasma, red blood cells, liver, and subcutaneous fat dorsal to the trapezius muscle was increased (P < .01) by supplemental vitamin E. The stress treatment reduced (P < .01) alpha-tocopherol content of plasma in those fed the vitamin E and increased it (P < .05) in the nonsupplemented vitamin E-deficient heifers. Stress also decreased red blood cell (P < .01) and liver (P < .05) alpha-tocopherol content in cattle supplemented with vitamin E. Tissue alpha-tocopherol concentrations were reduced by stress only when a diet adequate in vitamin E was fed. In addition, in most sampled tissues, stress did not affect alpha-tocopherol concentrations.
**Keywords:** beef cattle, heifers, alpha-tocopherol, stress response, vitamin e acetate, water deprivation, restricted feeding, blood serum, selenium, urea, erythrocytes, hydrocortisone, liver, muscle tissue, adipose tissue, creatine kinase, maize, maize silage.


**NAL Call Number:** QP251 R48

**Keywords:** calves, weaning weight, gestation rate, creep-feeding, body condition score, Brazil, Portuguese language.


**NAL Call Number:** 49 J82

**Keywords:** calf, neonate, hormones, metabolites, automate starting feeding, bucket pair-feeding, endocrine traits, feeding frequency, growth, growth performance, metabolic traits.


**NAL Call Number:** 44.8 J822

**Keywords:** barley, manure, methane production, nitrogen, potassium, dry matter intake, net feed intake, silage.


**NAL Call Number:** 44.8 J822

**Keywords:** ambient weather, body orientation, foothill winter range, grazing, relative humidity, seasonality, solar radiation, Montana, USA.


**NAL Call Number:** 49 J82

**Keywords:** calf, cow, range beef cattle body condition, calving body condition score, grazing intensity, stocking rate, strategic supplementation, nutritional strategy, split feeding.


**Keywords:** animal feeding, pastures, grazing, grazing systems, grassland soils, wintering, silage, feed processing, quality, silage, making, nutrients, *Lolium perenne, Festuca arundinacea*, cultural soil types, ecological soil types, Germany.


**NAL Call Number:** 49 J82

**Keywords:** effects of grain species, grain processing, dry matter intake, rate and efficiency of gain, high concentrate diets, metabolizable energy (ME), high moisture corn and milo, steam-flaked corn or wheat.

and female beef cattle twins and singles: 1st communication: live weight growth and feed conversion. 
Zuechtungskunde 71 (3): 168-181, ISSN: 0044-5401.

NAL Call Number: 49 Z8

Keywords: bulls, heifers, effects of, birth type, sex of twin partners, age, live weight growth, energy expenditure, live weight gain, German language.


Keywords: probiotics, laser radiation, body weight, fattening, animal feeding, Indonesian language, Indonesia.


NAL Call Number: SF1 R45

Keywords: cattle feeding, young animals, Braford, breed, protein intake, feed intake, feed conversion efficiency, Portuguese language.


NAL Call Number: SF1 R45

Keywords: feed intake, feedlots, diet, weight gain, crossbreeding, behavior, breeding methods, Portuguese language, Brazil.


NAL Call Number: 44.8 J822

Keywords: beef cattle, stocker calf, wheat, forage crop, average daily gain, carcass quality, feedlot, pasture grazing, stocking rate, Texas, USA.


NAL Call Number: SF1.A56

Keywords: Charolais, breed, beef cows, female blood, lymphatics, milk, reproductive system, non, esterified fatty acids, oleic acid, restricted diet, nutritional method, body weight, underfeeding, condition score.


NAL Call Number: 41.8 C163

Abstract: An experiment was conducted to determine the effects of grazing system (continuous and rotational), stocking rate (light, 1.1 steers ha-1; heavy, 2.2 steers ha-1) and season of use on forage intake and grazing behaviour of stocker cattle grazing an approximately 70% alfalfa (Medicago sativa L.), 25% meadow bromegrass (Bromus biebersteinii Roem & Schult.) and 5% Russian wildrye (Psathyrostachys juncea (Fisch.) Nevski) pasture. To determine organic matter intake, grazed herbage was collected with esophageal fistulated
Information Resources for Beef Cattle
c
cattle and analyzed for in vitro digestible organic matter while fecal output was determined using chromic oxide. These variables were used to calculate organic matter intake. Daily herbage consumption (g OM kg BW-0.75 d-1 and kg OM d-1) did not differ (P > 0.05) for either grazing system or stocking rate from 1991 to 1993, with the exception of greater (P < 0.05) intakes at light compared with heavy stocking rates (10.9 vs. 8.4; kg OM d-1) late in the 1991 season. Grazing time was usually lower (8.9 vs. 10.3 h (3-yr mean); P < 0.05) in lightly than in heavily stocked pastures. As available herbage increased, cattle spent less time grazing (y = 12.46, 0.00103 x; r = 0.48, RSD = 2.04, P < 0.001; where y = grazing time and x = herbage mass). Biting rates ranged from 28 to 32 bites min-1, regardless of year, season, grazing system or stocking rate. Rate of intake (g OM kg-1 BW0.75 h-1) did not differ (P > 0.05) for either grazing system, although it tended to be greater (P < 0.10) at light than at heavy stocking rates. As animals in lightly stocked pastures spent less time grazing, herbage was consumed at an increased rate, which was reflected in increased average daily gain (y = 0.067 x; r = 0.86, RSD = 0.14, P < 0.001; where y = daily gain and x = intake rate). Our results suggest that daily herbage consumption was not affected by grazing system or stocking rate; however, at lower stocking rates, grazing time declined and intake rate tended to increase.

Keywords: medicago sativa, bromus biebersteinii, psathyrostachys juncea, steers, stocking rate, seasons, feed intake, rotational grazing, continuous grazing, grazing, organic matter, in vitro digestibility, feces, biting rates, live weight gain, growth rate, grazing time, Manitoba.

Porte, F.E.; Manterola, B.H.; Cerda, A.D.; Mira, J.J. (1997). *Productive behavior and study of ruminal parameters in steers fed different levels of swine feces.* [Comportamiento productivo y estudio de parámetros ruminales, de novillos alimentados con niveles crecientes de inclusion de fecas de cerdo en su racion.] *Avances en Produccion Animal* 22 (1/2): 81-90, ISSN: 0378-4509.

NAL Call Number: SF1 A9

Keywords: manures, feeding pig manure to growing beef cattle, rumen metabolism, pH, digestibility, feeding, feed conversion efficiency, live weight gain, nutritive value, carcass composition, Spanish language, Chile.


NAL Call Number: SF1 R45

Keywords: beef cattle, female, heifer, primiparous, economic analysis, nutritional systems, continuous grazing, cultivated annual ryegrass natural pasture, feedlot diets, sorghum silage plus urea, Portuguese language.


NAL Call Number: SF1.C94

Keywords: feed grasses, dactylis, festuca arundinacea, lolium perenne, freezing, feed intake, proximate composition, feeding behavior, feeding habits, feeds, festuca, gramineae, grasses, lolium, Czech language.


NAL Call Number: 49 J82

Keywords: steers, carcass characteristics, feed efficiency, feed, to gain ratio, feedlot performance, limited access time to feed, effects, feeding, behavior.


NAL Call Number: SF779.5 A1B6

Keywords: wastes, poultry manure, utilization, diseases, health risks to cattle, bacteria, feeds.

Rankins, D.L.; et al (2002). *The importance of by-products to the US beef industry.* *Veterinary Clinics of*
**Abstract:** The use of by-products as nutrient sources for beef cattle will continue to be driven by economics. As landfill prices continue to escalate, more by-products will become economically viable as cattle feed. These considerations will be counter-balanced by safety concerns. American consumers are becoming increasingly concerned with the production aspects of their food. The environmental concerns associated with additional landfills will have to be balanced against which by-products consumers will accept in the production of the beef that they consume. These will most assuredly heighten over the coming years.

**Keywords:** feed, food handling, economics, meat standards, feed standards, nutrition, consumer product safety, cost-benefit analysis, USA.


**Abstract:** Since the 1950s, recycled poultry bedding has been used as an economical feedstuff for beef cattle. It has been extensively studied at several experiment stations around the world with regard to its safety and nutritional aspects. It will continue to be closely scrutinized as the public increases its awareness of agricultural issues. As this study was being prepared, the news media was “spotlighting” bovine spongiform encephalopathy. Currently, in the United States there is a ban on incorporation of mammalian-derived protein feeds into ruminant diets. This has led to a requirement of beef cattle producers signing affidavits indicating that they had met this obligation. Some poultry companies use ruminant meat and bone meal in broiler diets when least-cost formulation indicates that it is economically desirable. This then poses the question of whether feeding RPB to beef cattle should be permitted if the birds had been fed ruminant meat and bone meal. It also raises the question of whether cattle grazing pastures fertilized with RPB are exposed to ruminant meat and bone meal. Because of the importance of pasture fertilization as a waste disposal solution for the poultry industry, it seems that the issue will be quickly resolved by omitting the ruminant meat and bone meal from poultry diets should concerns increase. Use of RPB, like many byproduct feeds, requires a higher level of management expertise than traditional feeds. Despite the potential problems discussed in this study, an informed beef cattle producer can gain a financially competitive edge by using RPB. A simple processing method, deep-stacking under polyethylene sheeting, can produce a safe product that will provide a complete diet when blended with an energy source and supplemented with some long-stem fiber. The diets can be used for both brood cows and stocker calves for extended periods of time, and the practice of feeding RPB is safe for both cattle and consumers. Economic parameters will influence the future use of RPB; however, the general public’s perception and acceptance will ultimately determine its long-term use.

**Keywords:** cattle feed, poultry manure, dietary fiber, analysis, dietary proteins, safety, review.


**Keywords:** anabolic agent, hormone, drug.


**Keywords:** insulin like growth factor I, serum concentration, insulin like growth factor binding protein 2, insulin like growth factor binding protein 3, somatotropin, dietary supplement, body composition, feed efficiency, feeding level, growth, weight gain.


NAL Call Number: SF1 R45

**Keywords:** beef cattle, pastures, grazing, sorghum, millets, weight gain, brachiaria, behavior, feeding habits, grazing lands, land resources, natural resources, nonrenewable resources, plant products, poaceae, Portuguese language, Brazil.


NAL Call Number: 44.8 J822

**Keywords:** crossbred, host, infectious bovine respiratory virus, pathogen, fever, vitamin E, dietary supplement, average daily gain, dry matter intake, feed intake, rectal temperature, New Mexico, USA.


NAL Call Number: SF601 V535

**Keywords:** feeding, cottonseed products, gossypol toxicosis, lower production costs, economics, dietary analysis.


NAL Call Number: SF601 C66

**Keywords:** beef calves, calf feeding, colostrum, passive transfer, colostral immunity parity, age, breed, nutritional state, feeding, lactation, udder conformation, health, vaccination status, parturition, dystocia, twinning, reviews.


NAL Call Number: SF55 I4J68

**Keywords:** breed, Angus, Hereford, female, heifer, nutrition, Lolium multiflorum (ryegrass), forage crop, acid detergent fiber, dry matter, neutral detergent fiber, organic matter, protein digestibility, bermudagrass hay, feed, dietary supplementation, body weight gain, cracked corn, growth performance, nutrient utilization.


NAL Call Number: SF1 R45

**Keywords:** breed, Canchim x Nelore, economic analysis, Cornell Net Carbohydrate and Protein System, Intestine Digestible Protein System, Metabolizable Protein System, beef production, body weight gain, feed, corn grain, feed, corn silage, cottonseed meal, diet, feedlot, soybean meal, whole soybean, Portuguese language.

**Keywords:** rumen digestion, animal nutrition, probiotics, digestibility, animal feeding, animal performance, Spanish language.


**Keywords:** hay, supplements, feed intake, behavior, feeding habits.


**NAL Call Number:** SF1 S6

**Keywords:** bulls, growth, body weight data, weaning records, National Beef Cattle Performance, progeny testing.


**NAL Call Number:** 49 AR23

**Abstract:** A study on 65 beef cow-calf pairs was conducted to investigate the intake of a feed supplementation with grain and its interrelations to performance and behavioural characteristics of suckling calves, as well as the development of body condition and milk yield of the dam. The intake of grain in the group receiving the supplementation (group B) was on average 2.7 kg/calf/day during the grazing period. A substantial individual variation of feed intake from 1.8 kg to 7.7 kg grain/calf/day was determined. In this period, the daily gains and the weaning weights of the calves in group B were higher (15.4% resp. 7.4%). The advantage of the calves of the group B could be proven only in the second half of the grazing period. The supplementation of grain caused significantly lower suckling activities and grazing periods per day. Effects of a grain supplementation in the feeding of suckling calves on pasture could not be determined on both the body condition and the milk yield of the cows.

**Keywords:** body condition, feed intake, grain, animal feed, milk yield, pasture grazing, suckling, weaning weight.


**NAL Call Number:** QL750.A6

**Keywords:** beef cattle, steers, heifers, feeding behavior, duration, restricted feeding, unrestricted feeding, feed intake, dry matter, liveweight gain, feed conversion, eating rates, feeding frequency, individual characteristics, data collection, transponders, radio waves, fattening performance.


**NAL Call Number:** 389.78 Z3

**Keywords:** beef bulls, German Simmental, performance criteria, growth, feed intake, energy intake, nutrient intake, carcass criteria, corn silage, nutrient intake, quadratic model.


Keywords: feed intake, hay, rice straw, crop residues, digestion, eating disorders, rumination, behavior, agricultural wastes, Japan.


Keywords: growth analysis, feed intake, maintenance requirements, feed efficiency, mathematical equations, daily intake, body weight, metabolic body size, metabolizable energy, relative growth rate.


Keywords: Escherichia coli (Enterobacteriaceae), beef cattle crossbred steers, feces, rumen, total coliform count, finishing performance, carcass characteristics, dietary manipulations, finishing diets, pH, steam-flaked corn.


Keywords: beef cattle, dairy cattle, swamp buffalo, beef production, meat product, meat quality, body weight, concentrate, feeding performance, growth, Thailand, Asia.


Keywords: growth promoters, anabolic implants, zeranol, trenbolone acetate, estradiol, progesterone, propionate, testosterone, drug, growth stimulant, implant, pollutant, dietary supplement, implantation, lasalocid, lysocellin, monensin, average daily gain, carcass characteristics, diet, feed conversion, feed efficiency, growth, literature review.

NAL Call Number: SF601 T7
Keywords: Brahman cows, breed, feed supplementation, pre- and post-calving, reproductive performance, digestible energy, dry matter, crude protein, body weight, body condition score, urea, plasma, estrus, pregnancy rates.

NAL Call Number: 49 J82
Keywords: beef cows, feeding, food supplement, liquid product, fodder, voluntary intake, feeding behavior, food intake, experimental study, crude protein, urea, rangeland.

NAL Call Number: 60.18 J82
Abstract: Twenty two-year-old primiparous Angus X Hereford cows and their heifer calves were used to study effects of milk consumption on calf performance, suckling behavior, and forage intake. Ten cow-calf pairs were allotted to each of 2 treatments on blue grama (Bouteloua gracilis [H.B.K.] Lag.) rangeland. Calves from 5 cows were prevented from suckling the rear udder quarters for 4 weeks to reduce milk intake by 32% when calves averaged 71 +/- 4 days of age. The other 5 calves were allowed to suckle normally. Four 12-day sampling periods were conducted from June through September. Calves from the control treatment weighed more (P < 0.05) than restricted calves in each period and at weaning. Calves from the restricted treatment did not (P > 0.10) suckle longer or more frequently than control calves during any sampling period. Forage organic matter intake was not (P > 0.10) different between cows or calves from either group at any date. Milk production was not different (P > 0.10) between groups 1 month after restriction periods were terminated. Calves on 4 week milk restriction did not increase forage organic matter intake and had decreased weaning weights compared to control animals.
Keywords: calves, suckling, beef cattle, Bouteloua gracilis, restricted feeding, feeding behavior, physical activity, voluntary intake, forage, digestibility, biomass, digesta, fiber content, nitrogen content, body weight, feed intake, New Mexico.

NAL Call Number: SF95 A55
Keywords: animal nutrition, supplements, consumer behavior, beef quality, animal products, USA.

NAL Call Number: 49 J82
Keywords: subtropics, Brahman, American Angus, Tuli, cows, cattle breeds, crossbreeding, crosses, breed differences, body condition, body temperature, cattle feeding, digesta, digestive tract, energy intake, environmental factors, environmental temperature, grazing, feeding behaviour, feed intake, heat adaptation, lactation, night grazing, Texas.

NAL Call Number: 60.19 B773
Keywords: beef, male, steer, muscle, fatty acid composition, muscular system, omega-3 polyunsaturated fatty acids, barley meal based concentrate, animal feed, carcass composition, concentrate supplementation, grass silage, high digestibility, medium digestibility, liveweight gain, soya bean meal based concentrate.

**NAL Call Number:** SF1.A56

**Keywords:** Simmental x Friesian, breed, steer, open, circuit respiration calorimetry, dry matter, metabolizable energy, perennial ryegrass silage, rolled barley, rumen fermentation.


**NAL Call Number:** SF203 P46 1995

**Keywords:** feeding, nutrition, breeding to finishing, vitamins, minerals, protein, computer modeling, ration formulation, feed stuffs, pasture and forages, hay, silage, concentrates.


**NAL Call Number:** S15 A377

**Keywords:** intensive husbandry, bulls, heifers, age, fattening, winter, maize, silage making, oats, feed processing, feeding, weight gain, meat yield, copulation, Spanish language, Chile.


**NAL Call Number:** SF1 K7

**Keywords:** beef, breed, Black-and-White x Limousin, crossbred, fattening traits, permanent pastures, production effectiveness, slaughter traits, Polish language.


**NAL Call Number:** QP251.A1T5

**Keywords:** yearling beef heifers, effects of, bovine somatotropin (bST), limit feeding, follicular growth, oocyte competence, in vitro fertilization, in vitro maturation, feeding, nutrition.


**NAL Call Number:** 49 382

**Keywords:** growing beef cattle, steers, heifers, dietary supplements, bovine somatotropin, methionine, average daily gain, feed efficiency, body composition, serum concentrations serum, IGF, 1 (insulin, like growth factor, 1), progesterone.


**Keywords:** heifers, pastures, feed grasses, feeding systems, grazing, paddock grazing, rotational grazing, mountain farming, weight gain, Polish language, Poland.

Vaz, F.N.; Restle, J.; Brondani, I.L.; Da Costa, E.C.; Vaz, R.Z.; Roso, C.; Carrilho, C.O. (2002). Energetic supplementation on carcass and meat quality of cull cows of different ages, finished on cultivated winter pasture under temporary grazing. [Suplementacao energetica sobre a qualidade da carcaca e da...
carne de vacas de diferentes idades, terminadas em pastagem cultivada de estacao fria sob pastejo horario.\} Revista Brasileira de Zootecnia 31 (1): 173-182, ISSN: 1516-3598.

NAL Call Number: SF1 R45

Keywords: ryegrass, forage crop, beef cattle, breed, Charolais, cow, carcass quality, meat quality, meat tenderness, pasture grazing, Portuguese language.


NAL Call Number: 49 J82

Abstract: Angus bull calves (n = 42; 7 mo of age; 254 kg initial BW) were used to investigate the effects of dietary Cu and Mo on immune function of stressed cattle. Randomly selected calves (n = 22) were injected with 90 mg of Cu as Cu glycinate 28 d before weaning and castrated at weaning. These calves received 7.5 and 5 mg of supplemental Cu/kg of DM during a 41-d receiving phase and a 196-d growing phase, respectively. The remainder of the steers received no supplemental Cu during the experiment. Copper-supplemented steers had adequate Cu status at weaning, whereas unsupplemented calves were marginally Cu-deficient. Cell-mediated response to intradermal injection of phytohemagglutinin was not affected by dietary treatment during the receiving phase. During the growing phase, half of the steers in each Cu treatment were given 5 mg of supplemental Mo/kg of DM. Copper supplementation increased (P < .05) humoral response to ovalbumin injected on d 133 of the growing phase. On d 168 of the growing phase, calves receiving only supplemental Mo were severely Cu-deficient based on plasma and liver Cu concentrations. The other treatment groups had adequate Cu status. Before feeding on d 168 of the growing phase, half of the steers were loaded onto trailers and transported 2.5 h, and they remained on the trailers an additional 9.5 h. Humoral response to porcine erythrocytes (PRBC) and delayed-type hypersensitivity (DTH) to dinitrochlorobenzene was tested at the end of the stress period. There was a Cu x stress interaction for humoral response to PRBC, with Cu decreasing antibody titers in unstressed calves and increasing titers in stressed steers. Stressed steers had lower (P = .03) ADG during the 28 d following stress. The results of this study indicate that Cu deficiency and 5 mg of supplemental Mo/kg of DM do not dramatically alter the specific immunity of stressed cattle.

Keywords: steers, stress, copper, molybdenum, dietary minerals, healing, castration, antibody formation, skin tests, blood plasma, ceruloplasmin, enzyme activity, hydrocortisone, mineral deficiencies.


NAL Call Number: 49 J82

Keywords: breed, Angus X Simmental, heifer, effects of postweaning nutritional management, feedlot performance, carcass traits, intramuscular and subcutaneous fat deposition, feed efficiency, grazing, endophyte-infected tall fescue, concentrate diet, average daily gain, feed efficiency, feedlot performance, growth.


NAL Call Number: 49 J82

Keywords: beef, cows, supplement protein concentration, forage intake, forage utilization, stockpiled bermudagrass.


NAL Call Number: SF51 P76

Keywords: breeds, Hereford, Brahman, Aberdeen-Angus, crossbreds, steers, forage, summer, air temperature,
pastures, breed differences, shade, pens, grasses, animal behavior, diurnal variation.


**NAL Call Number:** 44.8 J822

**Keywords:** beef heifer, blood and lymphatics, pH, urine, bicarbonate ion, calcium(II) ion, dietary intake, magnesium(II) ion--dietary intake, potassium ion dietary intake, sodium ion dietary intake, average daily gain (ADG), dietary cation anion balance, feed intake, feedlot performance, partial carbon dioxide pressure.


**NAL Call Number:** SF95 A55

**Keywords:** steers, Friesian, breed, feeding level, dry matter, grass silage, concentrate, in situ ruminal degradability, digestibility, feed consumption, diet.


**NAL Call Number:** 60.19 B773

**Keywords:** cows, stocking density, height, body condition, silage, lolium perenne, meat production.


**NAL Call Number:** SF1 L5

**Abstract:** This study aims to evaluate how rearing techniques that improve veal calf welfare affect growth performance and carcass quality, by comparing both traditional rearing in individual stalls with group rearing in collective pens and exclusive milk feeding with maize grain supplementation. Eighty male calves were raised from 60 days-of-age (live weight 76.4 plus or minus 5.5 kg) until slaughter (at 182 and 189 days-of-age). Both group rearing and maize grain supplementation significantly improved growth performance (final live weight: +7 kg in group-reared calves compared to individually reared calves, and +10 kg in maize-supplemented calves compared to exclusively milk-fed calves) and carcass conformation, with no differences in dressing percentage. Group rearing increased blood packed cell volume value. Neither the type of housing nor the feeding system significantly modified carcass or meat colour or the main physical and sensory traits of the meat. Carcass fatness and meat ether extract concentration were higher in the calves reared in individual stalls or supplemented with maize grain. Our results suggest that rearing veal calves in pens and providing solid feed supplements may improve growth performance without impairing carcass and meat quality.

**Keywords:** husbandry, animal welfare, beef cattle, carcass quality, housing, growth, haematocrit, maize, meat composition, meat quality, veal, veal calves. Copyright© 2003, CAB International


**NAL Call Number:** SF95 A55

**Keywords:** barley, ryegrass, animal performance, carcass characteristics, diet evaluation, feeding studies, dry matter yield, feed conversion efficiency.

Keywords: crossbreed beef cattle evaluation, commercial mineral supplements, salt, protein, urea, mineralized salt, Braquiaria decubens grass, sugar cane supplementation, weight gain, Portuguese language.

**NAL Call Number:** SF1 A56  
**Keywords:** dairy cattle, beef cattle, animal wastes, waste disposal, pollution, husbandry, wildlife, species diversity, nitrogen, silvopastoral systems, grasslands, management, environmental degradation, reviews, farming systems, intensive livestock farming, sustainability, agroforestry, cycling, agroforestry systems, lowland areas, environment, United Kingdom.

**NAL Call Number:** SF203 N38 1997  
**Keywords:** feedlots, feedlot effluent, waste, drainage, animal welfare, guidelines, Australia.

**NAL Call Number:** HV4757 F39 2001  
**Keywords:** animal welfare, laboratory animals, cloning, transgenics, human-animal interactions, farm animal disease models, Australia, New Zealand.

**NAL Call Number:** SF781 R4  
**Abstract:** The author explores the variations in the domestic livestock populations world-wide between 1961 and 1998, and observes a marked increase in the swine population, as compared to other domestic species. Trends in international trade of live animals over the same period are also analysed; international trade involved 1% of livestock world-wide and the international meat market constituted 10% of total meat production. The various stages of the food chain are analysed, from farm to fork, with emphasis on those elements to which the concept of traceability is applicable; from the composition of bovines, to slaughter, and through the various products and sub-products all the way to the final product consumed. Against this background, the characteristics of identification systems for individual animals and animal products is described, as well as applications to traceback and trace forward. To conclude, the author details the factors which influence the various processes of identification and traceability, and thus must be considered when choosing a system. The wide variability amongst systems world-wide is noted and attributed to the differences in sanitary and economic or socio-cultural criteria. The author therefore recommends that work should begin on international harmonisation of such systems.  
**Keywords:** animal identification systems, commerce, standards, international cooperation, trends, meat, standards, meat products, animal welfare, public health, quality control, safety, veterinary medicine.


**Keywords:** beef cattle, farms, intensive husbandry, extensive husbandry, farm structure, farm income, international agreements, international relations, European Union, France, French language.


**Keywords:** beef cattle, handling, behavior, grazing management tool, moving cattle, low stress, reduced disease incidence, increased productivity.


**NAL Call Number:** SF1 K7

**Keywords:** beef cattle, dairy cattle, breeding, industry, politics, global diversification, environmental conservation, corporate farming, family farms, European Union, Poland.


**Keywords:** husbandry, animal production, biotechnology, knowledge transfer, technology, pasture management, genetics, management, reproduction, health, economics, languages, English, Spanish, Portuguese, Brazil.


**NAL Call Number:** SF207 E5 1997

**Keywords:** history and business of cattle raising, nutrient requirements, health, behavior, genetics, slaughter, feeding, breed registries, US and Canadian colleges of agriculture.


**NAL Call Number:** SF61 M35 1999

**Keywords:** cattle, sheep, goats, pigs, poultry, rabbits, red deer, fishes, guineafowls, animal production, animal welfare, economics, nutrition, animal breeding, care.


**Keywords:** beef, meat production, profitability, extensification, feed crops, Belgium, French language.


**NAL Call Number:** QL55.G8 1999

**Keywords:** facilities, environment, range, pasture management, feedlot, housing, feed, water, social environment, husbandry, dystocia, castration, dehorning, handling, transportation, euthanasia.
Abstract: Animal production all over the world has been practised in three different systems: conventional, free range, and agroecological. In Brazil, conventional production systems for beef cattle, dairy cattle, sheep, goats, swine, and poultry are directed towards high productivity, placing the country among the main exporters. However, conventional systems have continuously excluded producers from the activity. Therefore, free range and agroecological systems are becoming more popular among those concerned with the welfare of animals and the environment. All three types of production are concerned with the quality of their products and are becoming certified. It is suggested that the traceability of the products should be ensured. It is also suggested that growing awareness on agroecological production will push agroecological products into the mainstream market in Brazil and in the world.

Keywords: alternative farming, animal production, certification, eggs, farming systems, free range husbandry, livestock, meat, milk, organic farming, organic foods, production, quality controls, sources, Portuguese language, Brazil.


**NAL Call Number:** SB13 S26

**Keywords:** cow, calves, Angus, Bohemia Spotted, Charolais, breed, breed differences, calving interval, calf growth, calving age, early maturing, fertility, production regions, beef, growing, comparison, forage crop, growing, grain, growing, potato, growing, Czech language.


**NAL Call Number:** 281.8 IN32

**Keywords:** animal welfare, beef cattle, standards, EC Scientific Committee on Animal Health and Animal Welfare, stress, housing, feed access, aggressive behavior, diet, health, loading, unloading, Italian language, Italy.


**NAL Call Number:** SF88 L58 2000

**Keywords:** cattle, swine, sheep, handling, fear, human animal relationships, stock person training, manager training, stress, welfare, assessment, transport, thermoregulation, meat quality, loading, unloading, slaughter.


**NAL Call Number:** SF55 A78A7

**Keywords:** Australian beef industry, animal welfare, economics, food safety, live cattle trade.


**NAL Call Number:** QL750.A6

**Keywords:** animal evaluation courses, animal science curricula, education, novel idea, conformation traits, animal welfare, welfare assessment, competitions, judging teams.


as good as conventional production regarding environmental quality and price. Therefore, possible future
organic and conventional meat production are compared regarding production costs, land requirements, soil
conservation, nature conservation, energy needs, and chemical requirements as well as the discharge of
nitrogen and greenhouse gases. The results suggest that organic production can be more sustainable than
conventional production for beef and lamb, but not for pork. Organic beef and lamb production has
advantages compared with conventional pig production regarding soil conservation, nature conservation and
independence of chemicals. However, the production costs and discharge of nitrogen and greenhouse gases
per kilo of meat are larger than in conventional pork production. Organic production also needs more land,
which limits its sustainability if land for food production and energy crops is scarce. When food is scarce,
organic meat production should aim to use land and by-products that cannot be used in any other way for food
production.

**Keywords:** organic farming, sustainability, grasslands, fodder, animal behavior, animal housing,
environmental protection, food prices, costs, soil conservation, nature conservation, energy requirements,
aricultural chemicals, nitrogen, beef cattle, lambs, pigs, Sweden.


NAL Call Number: SF75.3 C2 O74 2000

**Keywords:** dairy cows, beef cattle, sheep, goats, pigs, poultry, rabbits, work horses, honey bees, animal
husbandry, organic farming, livestock, animal health, parasites, herbal remedies, standards, comparisons to
other countries, Canada.

1445-9.

**Abstract:** This guide (3rd edition) provides livestock producers with information that will assist them in
making decisions on how to manage droughts. The guide includes information on planning for droughts,
managing and feeding livestock (sheep and beef and dairy cattle), animal health and welfare, farm
management, caring for the land during drought and key services and assistance available to farmers. The
guide is not intended to be a complete manual on running the farm during drought. However, it provides some
basic information for producers to consider before making decisions on how to manage droughts.

**Keywords:** beef cattle, dairy cattle, sheep, health, husbandry, production, welfare, feeding, disasters, drought,
farm management, livestock farming, sheep feeders. Copyright© 2003, CAB International

sciences: effect of 13 years of a beef cattle management practicum.* Journal of Animal Science 76 (11):
2947-2952. ISSN: 0021-8812.

**NAL Call Number:** 49 J82

**Abstract:** As the source of students shifts from rural to urban and suburban communities, students entering
agricultural programs have less practical livestock experience. The career goals indicated by most of these
students require knowledge of and experience with practical applications of their course work. The objective
of this study was to examine the profile of students enrolled in an experiential beef cattle course 1) to describe
the demographic and occupational characteristics of students enrolled and 2) to assess the perceived value of
course activities to graduates completing the course as related to their skill attainment and career
development. The questionnaire was sent to all 312 students who were enrolled in the course from 1983 to
1996. Over 61% of the respondents indicated they had enrolled in the course to gain experience working with
beef cattle. Over 39% took the course to enhance their application to the College of Veterinary Medicine.
When asked to rate the value of the course, as it related to skill development, they noted it was most helpful in
teaching cattle handling skills, growth performance measurement, live animal evaluation, nutritional
management, carcass and meat product value determination, and breed identification.

**Keywords:** agricultural education, animal husbandry, curriculum, students, career education, career planning,
learning, professional competence, growth, performance, evaluation, identification, surveys.

McAllister, T.A.; Gibb, D.J.; Kemp, R.A.; Huisma, C.; Olson, M.E.; Milligan, D.; Schwartzkopf-Genswein,

NAL Call Number: 41.8 C163

Keywords: beef production, research, health, disease, electronic individual identification, traceback systems, technology, data collection in natural production environments, temperature, pH, body weight, feed intake, electronics, transponders, Canada.


NAL Call Number: 49.9 N483

Keywords: cattle, sheep, beef cattle industry, sheep industry, heritability, livestock farming, low chemical farming.


NAL Call Number: SF203.N88 2000

Keywords: energy, protein, growth, body reserves, reproduction, minerals.


NAL Call Number: SF207 N48 1994

Keywords: breeding, conformation, genetics, feeding, health, showing, show ring protocol, preparation for the show ring.


NAL Call Number: 49 J82

Keywords: body weight, carcass merit, feed efficiency, genetics, marketing, performance, selection.


NAL Call Number: SF1 K7

Keywords: breed, Aberdeen-Angus, Charolais, Limousin, breed comparisons, body weight, daily weight gains, growth, reproductive efficiency, economic efficiency, Polish language.


Keywords: dairy cattle, beef cattle, sheep, goats, research, animal husbandry, milk production, feeding, milking, calving, breeding, milk yield, Denmark.


NAL Call Number: 44.8 J82

Keywords: beef cattle, chicken, broiler, layer, dairy cattle, human, consumer, pig, sheep, turkey, animal care, handling, public education, well-being.


NAL Call Number: 49 J82

Abstract: Fifty-two animal scientists (8 private consultants, 22 feed industry representatives, 22 university
Information Resources for Beef Cattle personnel) were surveyed regarding frequency of use and reliability of information from 27 different publications and information sources. Among the information sources, these scientists (6 dairy specialists, 25 beef cattle specialists, 17 swine specialists, 4 dealing with multiple species) most frequently scanned Feedstuffs, the Journal of Animal Science, National Research Council (NRC) species bulletins, abstracts from regional and national meetings of either ASAS or ADSA, annual reports from experiment stations, and proceedings from state nutrition conferences. Differences among species specialties were detected: dairy specialists read the Journal of Dairy Science, abstracts from ADSA meetings, Dairy Herd Management, Hoard’s Dairyman quite extensively; beef specialists read Beef and National Cattleman frequently; and swine specialists used the Pfizer Conference, National Hog Farmer, and Pork 95. Frequency of use rankings of publications were surprisingly similar for feed industry and university specialists; however, private consultants tended to use certain publications (Professional Animal Scientist, Feed Management, Beef Today) to a greater degree. For reliability, Journal of Animal Science, Journal of Dairy Science, NRC bulletins, the Professional Animal Scientist, Pfizer Report, and reports from ASAS and ADSA meetings received the highest rankings, and university workers ranked reliability of NRC publications and Animal Feed Science and Technology higher than feed industry personnel. Regarding timeliness of information, Feedstuffs, National Hog Farmer, Pork 95, and reports from state nutrition conferences ranked best, and NRC bulletins, Journal of Animal Science, and Journal of Dairy Science ranked lowest. Applicability of information was correlated with frequency of use ($r = .38**$) and presumed reliability ($r = .59**$). Asked whether some formal appraisal of articles appearing in the popular press by a panel of specialists would be desirable, 88% of the scientists, especially private consultants and university personnel, favored or were neutral toward pre- or postpublication appraisal. Mechanisms to institute such an appraisal system are outlined and ethical responsibilities of researchers, reviewers, administrators, and societies related to research information are discussed.


Keywords: environmental factors, adaptation, grazing, feed intake, breeds, Auvergne, French language, France.


NAL Call Number: SF202.5 P45 2002

Keywords: play behavior, social behavior, nutritional behavior, reproductive behavior, resting behavior, locomotion, adaptation, perception, cognition, selective breeding, welfare, human animal relationship, welfare, measuring welfare, welfare of dairy cows, disease, hunger, malnutrition, milking, housing, tail docking, welfare of beef cattle and draft oxen, housing, pasture, dystocia, welfare of calves, calf behavior, housing, handling, veal calves, welfare of cattle during transport, marketing, slaughter, stunning, ritual slaughter.


NAL Call Number: S3 A335

Keywords: agricultural policy, beef cattle, beef production, carcass weight, feeding, husbandry, mathematical models, prices, production costs, returns, subsidies, profit, Finland

Information Resources for Beef Cattle

**NAL Call Number:** 49 J82
**Keywords:** beef cattle, human, student, beef cattle production course, classroom attendance, cooperative learning, student performance.


**NAL Call Number:** aSF51 F88 2002
**Keywords:** livestock, poultry, standards, future plans, farm representatives, commodity organizations, specialty markets.


**Keywords:** dairy cattle, beef cattle, cows, ewes, broilers, egg production, transport of animals, disease prevention, surveys, mastitis, ectoparasites, dermatomycoses, animal diseases, organic farming, animal welfare, animal health, hosts, parasites, helminths, United Kingdom.


**NAL Call Number:** SF55 A78A7
**Keywords:** breed, Japanese Black, Japanese Brown-Kumamoto, Kouchi, Japanese Shorthorn, Japanese Polled, Aberdeen Angus, Hereford, WAGYU., judging, good visual quality, soft and elastic hides, fine and soft hair, good horn, fine bones in legs, clean-cut face, performance testing, progeny testing, meat productivity, breeding scheme, field recording, carcass traits, genome analysis, genetic method, marker-assisted selection, breeding method, genetic method.


**NAL Call Number:** 41.8 C163

**Abstract:** A survey was conducted to document general characteristics of beef cattle management and identify producer concerns in Manitoba. The survey was divided into five sections: (i) characterization of farm operation, (ii) winter management, (iii) forage and pasture management, (iv) reproductive management and (v) factors limiting profitability and the use of non-traditional management tools. The survey provided base information for measuring change in the industry and identified cost of production pasture, and reproduction as the top three factors that producers consider limiting the profitability of beef operations in Manitoba.

**Keywords:** husbandry, farm surveys, geographical variation, beef production, winter, grassland management, forage, reproduction, livestock numbers, profitability, Manitoba, Canada.


**NAL Call Number:** 23 N4892
**Keywords:** beef cows, Hereford X Friesian, breed, live weight profiles, dry matter intake, slow release chromic oxide capsules, fecal grab sampling, in vitro digestibility, daily gain, calf weaning weight, New Zealand.


**NAL Call Number:** SF202.7 S65 1998
**Keywords:** handling, herding, driving, stockmanship, stress, history, culture, senses, perception, social behavior.

**NAL Call Number:** SF51 P76  
**Keywords:** pig farmers, farmers’ attitudes, beef production, change, stress factors, pigs, beef cattle, animal welfare, transport of animals, dark cutting meat, porcine stress syndrome, transport personnel, livestock transporters, Pennsylvania.

**Keywords:** conferences, dairy cattle, cows, beef cattle, feeding, calf feeding, cattle feeding, calves, feeds, animal husbandry, animal welfare, diseases, injuries, milk, reproduction.

**Keywords:** labeling, quality labelling, retail marketing, consumer behavior, subsidies, support measures, animal welfare, food marketing, conference paper, United Kingdom.

**Keywords:** animal welfare, regulations, vocational training, behavior, animal husbandry methods, animal husbandry equipment, physical activity, European Union, Italian language, Italy.

**NAL Call Number:** SF207.T47 1998b  
**Keywords:** breeds, genetics, handling, behavior, buying, selling, pasture, fencing, facilities, feeding, health, growing and breeding heifers, care of the cow, care of the calf, weaning, breeding, Cooperative Extension resources, breed organizations.

**Keywords:** breeds, selection, breeding programs, reproduction, feeding, health, calf management, pasture and range management, facilities.

**Keywords:** animal welfare, meat yield, environmental protection, farmyard manure, liquid manures, pollutants, animal husbandry, animal husbandry methods, stocking density, Italian language, Italy.

**Keywords:** animal welfare, livestock, organic farming.

**NAL Call Number:** SF601.V484
Keywords: review, scientific, ethical and economic factors, animal welfare, ethical matrix, wellbeing, autonomy, fitness, suffering, husbandry, legislation, free market, quality assurance schemes, quality control, independent audit.

Keywords: animal welfare, veal calves, beef cattle, dairy cows, health, behavior, housing, milk production, transport of animals.

Keywords: meat production, meat quality, genetics, nutrition, economics, animal behavior, Australia.

Keywords: beef, dairy, swine, sheep, poultry, organic livestock farming, organic meat, marketing, health, animal welfare, consumer attitudes, grassland management.

Return to Contents

**Abstract:** Antimicrobial agents are used in food animals for therapy and prophylaxis of bacterial infections and in feed to promote growth. The use of antimicrobial agents for food animals may cause problems in the therapy of infections by selecting for resistance among bacteria pathogenic for animals or humans. The emergence of resistant bacteria and resistance genes following the use of antimicrobial agents is relatively well documented and it seems evident that all antimicrobial agents will select for resistance. However, current knowledge regarding the occurrence of antimicrobial resistance in food animals, the quantitative impact of the use of different antimicrobial agents on selection for resistance and the most appropriate treatment regimens to limit the development of resistance is incomplete. Surveillance programmes monitoring the occurrence and development of resistance and consumption of antimicrobial agents are urgently needed, as is research into the most appropriate ways to use antimicrobial agents in veterinary medicine to limit the emergence and spread of antimicrobial resistance.

**Keywords:** anti-infective agents, administration and dosage, drug resistance, multiple, meat, microbiology.


**NAL Call Number:** SF604 J342

**Keywords:** feeder steers, Japanese Black, breed, vitamin A, metabolism, serum, dietary intake, farm introduction, stress, bronchitis, diarrhea.


**NAL Call Number:** SF604 J342

**Keywords:** Japanese Black, breed, metabolic profile tests, high productivity, production diseases, prevention, serum levels, lactic dehydrogenase, glutamic, oxalacetic transaminase, gamma, glutamyl transpeptidase, creatine phosphokinase, triglyceride, total cholesterol, albumin (Alb), total protein, blood urea nitrogen, magnesium, vitamin E, serum calcium, Vitamin A, death, low frequency, disease, low frequency, fattening stage, high productivity, serum components, enzymes, physiological studies.


**NAL Call Number:** SF604 V486

**Keywords:** animal health, hygiene, beef cattle, dairy cattle, cattle diseases, animal husbandry, Spanish language, Venezuela.


**NAL Call Number:** SF810 V4

**Keywords:** cows, heifers, calves, epidemiological study, gastrointestinal nematode infection, pasture nematode contamination, digestive system disease, parasitic disease Cooperia sp., Nematodirus sp., Oesophagostomum sp., Ostertagia sp. Trichostrongylus sp., hay meadows, seasonality, mountainous areas,


**Keywords:** management, calf rearing, suckler herds, beef finishing systems, dairy farming, heifer rearing, tropical cattle management, heat stress, nutrition, alternative forages, disease, diagnosis, congenital conditions, calf diarrhea, Salmonellosis, endoparasites, respiratory diseases, trace element disorders, mastitis and teat conditions, lameness, reproductive physiology, reproductive problems, artificial insemination, embryo transfer, viral diseases, bacterial conditions, ectoparasites, metabolic disorders, alimentary conditions, welfare, housing, hygiene, biosecurity, vaccines, growth promoters in cattle, infection damage, alternative medicine, bovine surgery.


**NAL Call Number:** SF810 V4

**Keywords:** cochliomyia hominivorax, castration, pest control, sterilization, surgical operations.


**NAL Call Number:** 23 Au783

**Keywords:** Angus, heifers, selection, yearling growth rate, dystocia, calf birth weight, calf survival.


**NAL Call Number:** 41.8 C163

**Keywords:** beef cattle, dairy cattle, Escherichia coli O157:H7, contaminant, pathogen, bacterial disease, feces, prevention and control, transmission, manure, soil, water, flies, bacteriophage therapy, clinical techniques, vaccination, diet, geographical differences, ground beef, meat product, seasonality, Canada, Japan, United Kingdom, USA.


**NAL Call Number:** SF810 V4

**Keywords:** beef cow, calf herds, doramectin pour, control, gastrointestinal nematodosis, fecal egg count, calf weight gain, farm location, Idaho, Mississippi.


**NAL Call Number:** 44.8 J824

**Abstract:** Two hundred steers and heifers from a large feedyard (65 000-head capacity) were used to determine the prevalence levels of enterohaemorrhagic Escherichia coli O157 (EHEC O157) and Salmonella spp. prior to and after shipping to a commercial packing facility. Two samples, a ventral midline hide swab and a faecal sample, were aseptically collected from each animal 2 weeks prior to the date of transportation and at the packing plant immediately after exsanguination. Samples were collected from all trailers (n=46) before animals were loaded for transport to the packing facility. The average prevalence levels of EHEC O157 on hides (18%) and in faeces (9.5%) at the feedyard decreased (P>0.05) at the packing plant to 4.5 and
Information Resources for Beef Cattle

5.5%, respectively. The average prevalence levels of Salmonella spp. on hides (6%) and in faeces (18%) at the feedyard increased to 89 and 46%, respectively, upon arrival at the packing plant. Average prevalence levels for EHEC O157 and Salmonella spp. on the trailers were 5.43 and 59%, respectively. The results of this study demonstrate that transportation may be a potential stressor for cattle, as evidenced by the increased shedding of Salmonella spp.

**Keywords:** beef cattle, heifers, steers, disease prevalence, feces, food contamination, food safety, foodborne diseases, Escherichia coli, Salmonella, hides, skins, stress factors, transport of animals. Copyright © 2003, CAB International


**NAL Call Number:** SF601 P7

**Keywords:** beef calves, Neospora caninum infection, parasitic disease, risk factors, questionnaire, management practices, logistic multiple-regression model, serum, seasonal calving patterns, stocking density, round bale feeder, self-contained cattle feeder, wildlife, cattle working dog, Texas, USA.


**NAL Call Number:** QR189 V32

**Keywords:** cattle, pigs, sheep, literature review, emergency foot-and-mouth disease vaccines, viral disease, vaccination, immunization-method, clinical signs, local virus replication, spread of infection.


**NAL Call Number:** 44.8 J824

**Abstract:** As part of a larger study to assess risk factors associated with hide and carcass contamination of beef cattle during transport to slaughter, a total of 281 salmonellae were isolated from 1,050 rectal, hide, carcass, and environmental samples. For feedlot cattle, salmonellae were recovered from 4.0% of rectal samples, 37.5% of hide samples, 19.0% of carcass samples, and 47.4% of environmental samples. For nonfeedlot cattle, salmonellae were recovered from 10.9% of rectal samples, 37.5% of hide samples, 54.2% of carcass samples, and 50.0% of environmental samples. Overall, the five serotypes most commonly associated with feedlot cattle and their environment were Salmonella Anatum (18.3% of the isolates), Salmonella Kentucky (17.5%), Salmonella Montevideo (9.2%), Salmonella Senftenberg (8.3%), and Salmonella Mbandaka (7.5%). The five serotypes most commonly associated with nonfeedlot cattle and their environment were Salmonella Kentucky (35.4%), Salmonella Montevideo (21.7%), Salmonella Cerro (7.5%), Salmonella Anatum (6.8%), and Salmonella Mbandaka (5.0%). Antimicrobial susceptibility testing of all of the isolates associated with feedlot cattle revealed that 21.7% were resistant to tetracycline, compared with 11.2% of the isolates associated with nonfeedlot cattle. None of the other isolates from feedlot cattle were resistant to any of other antimicrobial agents tested, whereas 6.2% of nonfeedlot cattle isolates were resistant to more than four of the antimicrobial agents tested.

**Keywords:** tetracycline, Salmonella, contaminant, pathogen, serovar Anatum, serovar Cerro, serovar Kentucky, serovar Mbandaka, feedlot, host, antibiotic resistance, cattle carcass, meat product.


**NAL Call Number:** QP251.A1T5

**Keywords:** dystocia, effects on, neonatal calves, rectal temperature, glucose concentrations, blood sampling, body weight, cold temperatures, shivering scores, cold tolerance.

NAL Call Number: 41.9 SV23
Keywords: beef cattle, adult, intravenous injection, pentobarbital, cardiovascular system, ethanol, euthanasia, safety, xylazine, heart diseases, culling, animal welfare, dosage, injectable anaesthetics, analgesics, sedation, Swedish language.

NAL Call Number: 41.8 Am3A
Keywords: mixed-breed beef cattle, feedlot cattle, immunity, bovine respiratory syncytial virus (BRSV), vaccination, rate of gain, health, growth performance.

NAL Call Number: 41.8 Am3A
Keywords: 3-methylindole (3MI)-induced respiratory tract disease, reduced rate of gain, orally administered dose of aspirin, respiratory tract disease, lungs evaluated at slaughter, gross pulmonary lesions.

NAL Call Number: 41.8 C163
Keywords: methane (CH4), carbon dioxide (CO2), production, crossbred yearling beef heifers, air pollutant, excretion, open-circuit hood calorimetry, alfalfa, barley.

Keywords: beef calves, respiratory diseases, risk factors, cattle housing, French language.

NAL Call Number: SF601 V38
Keywords: young bulls, heifers, glucocorticoids, growth promoters, illegal use, ELISA, liquid chromatography, mass spectrometry, chemical analysis, animal welfare, lymphocytes, analytical methods, blood chemistry, certification., Italy.

NAL Call Number: SF601 P7
Keywords: beef calves, Angus crossbreds, animal health, extensive beef farms, disease frequency, economic impact, calf diseases, risk factors, weight gain, longitudinal study, farm management data, questionnaire, birth and weaning weights, clinical diagnosis, treatment costs, postmortem examination.


intake, subcutaneous injection, ears, application date, live weight gain, feed conversion efficiency, immune response.


**NAL Call Number:** SF810 V4

**Keywords:** Dictyocaulus, viviparus, parasite, Ostertagia, ostertagi, parasite, gastrointestinal parasitism, anthelmintic programs, immunity, control measures, pasture management, economic effects, weight gain, reproduction, lactation, forage use.


**NAL Call Number:** SF601 V484

**Keywords:** Transmission of Mycobacterium, paratuberculosis (or Johne’s disease), contamination via fecal-oral route, grazing behavior, monitoring, transponder, field rotation.


**NAL Call Number:** 41.8 V641

**Keywords:** abattoirs, dirty beef cattle, age differences, surveys, farm of origin, transport and lairage, feed type, coat length, clipping, journey distance, United Kingdom.


**NAL Call Number:** TD930 A32

**Keywords:** Salmonella typhimurium, Escherichia coli O157:H7, carcass contamination, foodborne pathogen, grazing, microbial contamination, bioresource technology, broiler litter feeding.


**NAL Call Number:** S583 A7

**Keywords:** heifers, anabolic preparations, off-label injection sites, Synovex H, Finaplix H, Implus S, Component, EC Revalor H, administration and dosage, tissue analysis, food contamination.


**NAL Call Number:** QP251.A1T5

**Abstract:** Neospora caninum is a protozoan parasite, which causes fetal and neonatal mortality in livestock and companion animals. In 224 abortions in Belgian cattle, different diagnostic methods were used to demonstrate infection, and the presence of N. caninum. An indirect fluorescent antibody test (IFAT) was used to analyze fetal and maternal sera and immunohistochemistry (IHC) was performed when lesions consistent with neosporosis were observed in the brain, heart or liver. Twenty dairy cattle sera out of 70 (29%) and 13 beef cattle sera out of 93 (14%) were positive by IFAT. A positive titer to N. caninum was found in seven and three fetuses born to beef and dairy cows, respectively. Lesions consistent with N. caninum infection were observed in 17 fetuses. Of nine positive beef fetuses, five were confirmed by IHC while, all but one dairy fetus were confirmed using the same technique. Age had no influence on the serological status of the mother (P = 0.486) whereas husbandry system had a borderline influence (P = 0.082). However, a strong association (P = 0.004) between the level of antibodies in the dam and the occurrence of lesions in the fetus was observed.

and lesions were more prominent in dairy than in beef fetuses. Additionally, the distribution of intra-cerebral lesions was more extensive in dairy than in beef fetuses (P < 0.0001). Age and serological status of the fetus were found to influence the occurrence of lesions in beef fetuses (both P <0.001) but no such significant relationships could be demonstrated in dairy fetuses. The study indicated that N. caninum must be considered as an important cause of bovine abortion in Belgium.

**Keywords:** pregnancy, diseases, parasitology, coccidiosis, Neospora caninum, protozoan parasite, fetal diseases, fluorescent antibody technique, heart, liver, brain, pathology, necrosis.

Driemeier, D.; Gomes, M.J.P.; Moojen, V.; et al. (1997). *Clinic, pathological aspects in the natural infection of bovine respiratory syncytial virus (BRVS) in extensive management of cattle in Rio Grande do Sul, Brazil.* Pesquisa Veterinaria Brasileira 17 (2): 77-81, ISSN: 0100-736X.

**NAL Call Number:** SF756.37 B7P5

**Keywords:** beef cattle, disease, Bovine Respiratory Syncytial (BRSV) infection, viral infection, chronic cough, severe dyspnea, pathology, microbiology, serology, extensive management, Portuguese language, Brazil.


**NAL Call Number:** 49 J82

**Abstract:** For nonruminants, stress and disease greatly increase requirements for vitamin B6, folic acid, pantothenic acid, and ascorbate. The effects of feed restriction, virus infection, and vitamin injections on plasma concentrations of B vitamins critical to the immune response were evaluated. Twelve beef steer calves, 6 to 8 mo of age, were fed below maintenance for 17 d and deprived of food for 3 d during a 20-d period after weaning. They then were inoculated intranasally with live attenuated bovine herpesvirus-1 (BHV-1). Six calves received saline injections and six received injections of a B vitamin mixture and ascorbate every 48 h for 14 d before and 14 d after inoculation. A mild respiratory infection developed in all calves 4 to 5 d after inoculation. In control calves, restricted intake and food deprivation decreased plasma vitamin B6 and pantothenate and increased vitamin B12 but did not affect folic acid and ascorbate concentrations. Vitamin injections increased plasma concentrations of vitamin B6, folic acid, vitamin B12, pantothenic acid, and ascorbate (P < .002). Plasma concentrations of vitamin B6, vitamin B12, pantothenic acid, and ascorbate, but not folic acid, were markedly reduced in all calves during the BHV-1 infection (P = .001). The vitamin B6, pantothenic acid, vitamin B12, and ascorbate status of stressed calves may affect their immune response to vaccination or infection.

**Keywords:** calves, beef cattle, bovine herpesvirus, experimental infections, restricted feeding, stress response, thiamin, riboflavin, nicotinic acid, folic acid, pantothenic acid, vitamin b12, pyridoxine, blood plasma, pyridoxal, 4-pyridoxic acid, pyridoxal phosphate, ascorbic acid, intramuscular injection.


**NAL Call Number:** 49 J82

**Keywords:** beef calves, feedlot, tilmicosin phosphate, feeding chlortetracycline, health, average daily gain, daily dry matter intake, bovine respiratory disease (BRD).


**NAL Call Number:** 41.8 Au72

**Keywords:** serological surveys, monitoring, animal husbandry, antibodies, vaccination, pathogens, geographical distribution, detection, South Australia.

Echternkamp, S.E.; Gregory, K.E. (1999). *Effects of twinning of gestation length, retained placenta, and...*

**Keywords:** feeder cattle, slaughter, survey, frequency, enterohemorrhagic Escherichia coli, strain, O157:H7, carcass contamination, sanitary procedures.


**Keywords:** cattle, diseases, diagnosis, veterinary radiology.


**Keywords:** Synovex-S, effects, steroid hormones, Kruskal-Wallis-H-test, exogenous steroid administration, chromatography mass spectrometry, laboratory techniques, spectrum analysis techniques.


**Keywords:** human health, occupational hazards, occupational health, blood disorders, epidemiology, exposure, farmers, leukemia, myeloma, non-Hodgkin’s lymphoma, disease incidence, Canada.

**NAL Call Number:** SF1.A56

**Keywords:** Belmont Adaptaur, Belmont BX, Belmont Red, Boran, Brahman, Charolais, Tuli, breed differences, host, cattle tick, Acarina, pest, nematode, parasite, gastrointestinal nematode infestation, parasitic disease, breed difference, crossbreeding, heterosis, live weight gain, Australia.


**NAL Call Number:** QP141 A1N87

**Keywords:** beef cattle, human, consumer, cancer, neoplastic disease, DNA, carcinogens, hormonal compounds, biological functions/effects, uses, hormones, xenobiotics, consumer issues, food safety, human health risks, international meat production, hormonal aspects, mathematical models, meat product, quality, safety, sociological issues, review, European Union.


**NAL Call Number:** SF601 V44

**Keywords:** monitoring Salmonella infection, bacteriological culture, immune response (enzyme linked immunosorbent assay (ELISA), haptoglobin.


**NAL Call Number:** 448.3 Ap5

**Keywords:** bacteria prevalence, Escherichia coli infections, antibiotic susceptibility, beef cattle feedlots, fecal pat, environmental samples, USA, Kansas.


**NAL Call Number:** 49 J82

**Abstract:** The usual means of assessing the health of newly received beef cattle susceptible to bovine respiratory disease (BRD) are subjective, typically involving visual evaluation aided by minimal clinical measurements. Recent evidence based on the occurrence of pneumonic lung lesions at slaughter indicates a need for more accurate methods of diagnosing BRD. Inadequate passive immune transfer at birth may be an important risk factor in susceptibility to BRD, suggesting the need for management to improve passive transfer success rates. Preweaning management and vaccination practices offer opportunities for beef cattle producers to improve the immune status of newly weaned calves and decrease postweaning BRD. Feeding diets with higher levels of concentrate typically improves performance by newly weaned or received cattle, as does feeding diets supplemented with protein; however, limited data suggest that increasing concentrate and protein in receiving diets increases the rate and severity of subjectively determined BRD morbidity. Research with receiving diet concentrate/protein level relative to humoral and cell-mediated immune function coupled with indicators of health and performance is needed. Supplemental B vitamins are sometimes useful in receiving diets, but the effects have been variable, presumably reflecting differences in stress and associated feed intake responses. Vitamin E added to receiving diets to supply (>) or (\(\geq\)) 400 IU/animal daily seems beneficial for increasing gain and decreasing BRD morbidity; however, further dose titration experiments are needed. Supplemental Zn, Cu, Se, and Cr can alter immune function of newly received calves, and some field trials have shown decreases in BRD morbidity rate with supplementation; however, several experiments have shown no performance or health/immune benefits from supplementation of these trace minerals. Formulation of receiving diets should take into account decreased feed intake by highly stressed, newly received beef
cattle and known nutrient deficiencies, but fortification of such diets with trace minerals beyond the levels needed to compensate for these effects is difficult to justify from present data.

**Keywords**: immune system, health, nutritional state, interactions, energy intake, dietary protein, nutrient intake, mineral nutrition, evaluation, clinical examination, lesions, respiratory diseases, risk factors, passive immunity, vaccination, weaning, calves, concentrates, performance, protein supplements, morbidity, vitamin supplements, stress, feed intake, vitamin E, vitamin B complex, live weight gain, dosage effects, zinc, copper, selenium, chromium, feed formulation, literature reviews.


**NAL Call Number**: RA651 A1E74

**Abstract**: Escherichia coli O157:H7 infection of cows and calves in a naturally-infected beef cattle herd in Alberta, Canada, was investigated over 2 years, encompassing two calf production cycles. In both years of the study, E. coli O157:H7 was isolated from the faeces of cows shortly after but not before parturition in late winter: 6/38 (16%) in 1996 and 13/50 (26%) in 1997. At <1 week post-partum, 13/52 (25%) calves born in 1997 were shedding the organism. Faecal shedding of E. coli O157:H7 by cows and calves continued over the 7 weeks that they were in the calving pens, with the organism being isolated from the faeces of 2-18% of cows and 23-26% of calves during this period. Five weeks after they were moved onto a native grass pasture, all the calves and all but one cow in 1997 had ceased shedding the organism. When the calves were weaned in the fall, E. coli O157:H7 was isolated from the faeces of 0-1.5% of the calves 1 week prior to weaning and from 6-14% of the calves within 2 weeks after weaning. Parturition, calving pens and weaning appear to be important factors in maintaining E. coli O157: H7 infections in this beef cattle herd. Isolates from cows and calves during the immediate post-partum period were mostly of the same pulsed-field gel electrophoresis (PFGE) type of E. coli O157:H7. Similarly, at weaning a common PFGE type of E. coli O157:H7, which differed slightly from the post-partum PFGE type, was isolated from the calves. These typing data suggest a common source of infection for the animals as well as demonstrate clonal turnover of resident populations of this pathogen.

**Keywords**: Escherichia coli, pathogen, strain-O157:H7, bacterial disease.


**NAL Call Number**: 500 N21P

**Keywords**: slaughter, Escherichia coli, pathogen, strain, O157:H7, contamination, meat.


**NAL Call Number**: QP251 R48

**Keywords**: Nelore, breed, bacterial disease, health, endemic leptospirosis, reproductive performance data, calving rate, age differences, conception rates, calving interval, antibody titers, immunity, Brazil, Portuguese language.


**NAL Call Number**: 44.8 J824

**Keywords**: Arcobacter butzleri, pathogen, cattle, beef, dairy, host, feces, bacterial disease, Collins isolation method, culturing techniques, Johnson-Murano isolation method, polymerase chain reaction, Texas.

**NAL Call Number:** SF967.L3G73 1996

**Keywords:** economics, claw defects, cracks, fissures, horizontal groove, nutrition, laminitis, conformation, frame size.


**NAL Call Number:** SF601 V535

**Keywords:** economic loss, production costs, prevention, diagnosis, treatment, review.


**NAL Call Number:** 41.8 Z5

**Abstract:** Adult female beef cattle found positive for stanozolol in the urine were investigated for liver pathology. In all the animals toxic hepatitis was found, including cholestasis, periportal fibrosis and inflammation, focal necrosis and blood filled lacunae. As no clinical data of the cows were available, apart from the history of illegal stanozolol abuse, it is not possible to attribute all changes to the illegal hormone treatment. Moreover, the cows have probably been treated with a cocktail, and apart from stanozolol more anabolic steroids may have been used. Management factors, viral and bacterial infections, former caesarean sections and especially feeding regime may also be responsible for the lesions described. Striking similarities with data from hepatotoxicity found in human body builders using similar agents, however, suggest a major role of stanozolol as causative agent.

**Keywords:** adult, beef cattle, cows, female, hepatitis, diagnosis, digestive system disease, drug induced, etiology, pathology, stanozolol, adverse effects, androgenic, steroid, hepatitis, hepatotoxin, illegal growth promoter, toxicity, histopathology.


**NAL Call Number:** SF781 R4

**Keywords:** beef, food safety, microbial contamination, public health, beef cattle, intensive husbandry, meat hygiene, zoonoses, disease control, meat production, cattle diseases, Salmonella, Escherichia coli, Listeria monocytogenes, Toxoplasma gondii, New Zealand.


**NAL Call Number:** QR1 A6

**Keywords:** detection of estrogens in edible tissues of beef cattle, muscle, liver, kidney, fat tissues, E2beta (active isomer), radioimmunoassays, anabolic ear implants.


**NAL Call Number:** SF601 B6

**Keywords:** feedlots, pneumonia, etiology, mixed infections, stress, antibiotics, losses.


**NAL Call Number:** 49 J82

**Keywords:** diabetes mellitus, endocrine disease, pancreas, metabolic disease, streptozotocin, induced disease model.

NAL Call Number: SF601 V535

Keywords: disease, bovine leukemia virus (BLV), vertical transmission, in utero, through colostrum and milk, horizontal transmission, contact transmission, review.


NAL Call Number: 448.3 Ap5

Abstract: The virulence properties and serotypes of complex Shiga toxin-producing Escherichia coli (cSTEC) were determined in two studies of healthy cattle in eastern Australia. In the first, a snapshot study, 84 cSTEC isolates were recovered from 37 of 1,692 (2.2%) fecal samples collected from slaughter-age cattle from 72 commercial properties. The second, a longitudinal study of three feedlots and five pasture beef properties, resulted in the recovery of 118 cSTEC isolates from 104 animals. Of the 70 serotypes identified, 38 had not previously been reported.

Keywords: escherichia coli, bacterial toxins, virulence, serotypes, isolation, cattle dung, drinking water, feedlots, beef cattle, dairy cattle, polymerase chain reaction, genes, free range husbandry, New South Wales, Queensland.


NAL Call Number: QR171.16 P76 1997

Keywords: beef cattle, calves, lactobacillus, streptococcus, aspergillus, deuteromycotina, bacteria, fungi, lactation, supplements, probiotics, milk production, feed intake, milk yield, animal feeding, animal performance, animal production, behavior.


NAL Call Number: SF757.2 V38

Keywords: alternative vaccination routes, laboratory animals, domestic farm animals, humans, viral, bacterial, parasitic, fungal antigens, clinical protection, body weight change, antibody titers, cytokines, cellular responses, beef cattle, morbidity, mortality, average daily gain, feed efficiency, needs, quality assurance, review.


NAL Call Number: 41.8 SCH9

Keywords: calves, bacterial disease, respiratory system disease, bronchopneumonia, naturally occurring, treatment, medicated milk, tilmicosin, antibacterial, drug, efficacy, dosages.


NAL Call Number: SF604 J342

Keywords: steers, breed, Japanese black, artificial stress, adrenocorticotropin (ACTH) challenge, leukocyte counts, plasma cortisol levels, peripheral blood polymorphonuclear leukocyte (PMN) function, blood composition, corticotropin, cold, environmental temperature, environmental factors.


NAL Call Number: SF757.2 J74 2002

Keywords: Escherichia coli, verocytotoxigenic, cattle, population, eight-month, study, infection, prevalence, horizontal transmission, control, review.


NAL Call Number: SF757.2 J74 2002

Keywords: Escherichia coli, verocytotoxigenic, cattle, population, eight-month, study, infection, prevalence, horizontal transmission, control, review.
**coli (VTEC) in a Scottish cattle herd.** *Journal of Applied Microbiology* 93 (6): 944-953, ISSN: 1364-5072.

**NAL Call Number:** QR1 1687

**Abstract:** Strains of Verocytotoxin-producing Escherichia coli (VTEC) from Scottish beef cattle on the same farm were isolated during four visits over a period of eight months. Characteristics of these strains were examined to allow comparisons with strains of VTEC associated with human infection. Methods and Results: Strains were characterized to investigate the relationship between these bovine isolates with respect to serotype, Verocytotoxin (VT) type, intimin-type, and presence or absence of the enterohaemolysin genes. VT genes were detected in 176 of 710 (25%) faecal samples tested using PCR, although only 94 (13%) VTEC strains were isolated using DNA probes on cultures. Forty-five different serotypes were detected. Commonly isolated serotypes included O128ab:H8, O26:H11 and O113:H21. VTEC O26:H11 and O113:H21 have been associated with human disease. Strains harbouring the VT2 genes were most frequently isolated during the first three visits to the farm and those with both VT1 and VT2 genes were the major type during the final visit. Of the 94 strains of non-O157 VTEC isolated, 16 (17%) had the intimin gene, nine had the gene encoding beta-intimin and seven strains had an eta/zeta-intimin gene. Forty-one (44%) of 94 strains carried enterohaemolysin genes. Conclusions: Different serotypes and certain transmissible characteristics, such as VT-type and the enterohaemolysin phenotype, appeared to be common throughout the VTEC population at different times. Significance and Impact of the Study: Detailed typing and subtyping strains of VTEC as described in this study may improve our understanding of the relationship between bovine VTEC and those found in the human population.

**Keywords:** Scottish beef cattle herd, Escherichia coli (Enterobacteriaceae), pathogen, toxigenic isolates, bacterial toxins, intimin, proteins, toxin genes, toxins, verocytotoxins, biological activities/effects, production, microbiology, bacterial populations, epidemiology, gene functions, human populations, analysis, phenotypes, Scotland.

---


**NAL Call Number:** SF601 14

**Keywords:** calves, cull cows, animal welfare, metals, plastics, wounds, identification, ear tags, complications, ear diseases.


**NAL Call Number:** SF779.5 A1B6

**Keywords:** computer simulation, economic loss model, Standardized Performance Analysis (SPA) records, disease, Neospora caninum infection, parasite, pregnancy percentage, calving percentage (live calves born), calf death loss between birth and weaning, weaned calf crop, pounds of calf weaned.


**NAL Call Number:** 41.8 Am3

**Abstract:** To determine whether viable shiga-toxigenic Escherichia coli (STEC) O157 could be isolated from hide surface locations and the oral cavity of finished beef feedlot cattle. Design: Within-animal prevalence distribution survey. Animals: 139 finished cattle in 4 pens in a feedlot in Nebraska, prevalence of fecal STEC O157 shedding ranged from 20 to >90%. Procedure: Samples were collected from 7 sites from each animal: feces, oral cavity, and 5 hide surface locations (lumbar region, ventral aspect of the neck, ventral abdominal midline (ventrum), dorsal thoracic midline (back), and distal aspect of the left hind limb (hock)). Results: Viable STEC O157 were isolated from the oral cavity or 1 or more hide surfaces of 130 cattle, including 50 fecal isolation-negative cattle. Site-specific prevalence of STEC O157 was 74.8% for oral cavity samples, 73.4% for back samples, 62.6% for neck samples, 60.4% for fecal samples, 54.0% for flank samples, 51.1% for ventrum samples, and 41.0% for hock samples. Only 5 cattle tested negative for STEC O157 at all 7 sites. Multiple correspondence and cluster analyses demonstrated that bacterial culture of feces, oral cavity samples, and back samples detected most cattle with STEC O157. Conclusions and Clinical Relevance: Results suggest
that viable STEC O157 may be isolated from the oral cavity, multiple hide surfaces, and feces of a high percentage of fed beef cattle and that bacterial culture of feces alone generally underestimates the percentage of fed beef cattle from which STEC O157 can be isolated.

**Keywords:** Escherichia coli, pathogen, strain-shiga-toxigenic O157, oral cavity, food safety, public veterinary medicine. Copyright © 2003, CAB International


**NAL Call Number:** SF779.5 A1B6

**Keywords:** castrated male, female, herd health program, injection site reaction, injury, meeting abstract, meeting poster, therapeutic method, vaccination.


**NAL Call Number:** 49 AR23

**Keywords:** bulls, dairy cows, pollution, risk elements, toxicology, lead, copper, cadmium, zinc, nickel, organs, liver, kidneys, muscle, heart, Europe, Slovakia.

Larson, B.L. (1996). *Calculating supplementation requirements to address trace mineral deficiency.* Agri-Practice 17 (2): 6-10, ISSN: 0745-452X.

**NAL Call Number:** SF601.B6

**Keywords:** trace mineral deficiency, diagnosis, methods, nutrition, treatment, liver, serum, feedstuff samples.


**NAL Call Number:** SF781.R4

**Keywords:** meat production, economy, natural resources, traditional extensive grazing, breed and age, diet of the animals, disease incidence, bovine spongiform encephalopathy (BSE), brucellosis, tuberculosis, salmonellosis, campylobacteriosis, colibacillosis, taeniosis, chemical contaminants in meat, Spanish language, Argentina.


**NAL Call Number:** SF601 V535 v.14 no.2

**Keywords:** feedlots, nutrition, health, feedlot diseases, feedlot therapeutics, handling, stress.


**NAL Call Number:** QR1 I57

**Abstract:** Development of vaccines against bovine pneumonia steurellosis, or shipping fever, has focused mainly on Mannheimia haemolytica A1 leukotoxin (Lkt). In this study, the feasibility of expressing Lkt in a forage plant for use as an edible vaccine was investigated. Derivatives of the M. haemolytica Lkt in which the hydrophobic transmembrane domains were removed were made. Lkt66 retained its immunogenicity and was capable of eliciting an antibody response in rabbits that recognized and neutralized authentic Lkt. Genes encoding a shorter Lkt derivative, Lkt50, fused to a modified green fluorescent protein (mGFP5), were constructed for plant transformation. Constructs were screened by Western immunoblot analysis for their ability to express the fusion protein after agroinfiltration in tobacco. The fusion construct pBlkt50-mgfp5, which employs the cauliflower mosaic virus 35S promoter for transcription, was selected and introduced into white clover by Agrobacterium tumefaciens-mediated transformation. Transgenic lines of white clover were
recovered, and expression of Lkt50-GFP was monitored and confirmed by laser confocal microscopy and Western immunoblot analysis. Lkt50-GFP was found to be stable in clover tissue after drying of the plant material at room temperature for 4 days. An extract containing Lkt50-GFP from white clover was able to induce an immune response in rabbits (via injection), and rabbit antisera recognized and neutralized authentic Lkt. This is the first demonstration of the expression of an M. haemolytica antigen in plants and paves the way for the development of transgenic plants expressing M. haemolytica antigens as an edible vaccine.

**Keywords:** bacterial toxins, gene transfer, gene expression, trifolium repens, recombinant vaccines.


**NAL Call Number:** 49 J82

**Keywords:** bacteria, mastitis causing species, oxytetracycline, antibacterial drug, intramuscular treatment, calf growth, somatic cell count, weaning weight.


**NAL Call Number:** 49 J82

**Keywords:** Hereford, Hereford x Angus, breed, host, Staphylococcus aureus (Micrococcaceae), pathogen, disease, mastitis, antibacterial drugs, novobiocin sodium, penicillin G procaine.


**NAL Call Number:** SF779.5 A1B6

**Keywords:** bloat, grazing, legume pastures, prevention, monensin sodium, controlled release capsule formulation, oral administration, live weight gain, milk yield, mortality, pasture housing, protein yield.


**NAL Call Number:** SF810 V4

**Keywords:** Fasciola hepatica (bovine liver fluke), parasites, Ostertagia ostertagi, beef cattle, calf, crossbred, heifer, host, feces, clorsulon, antiinfective drug, dosage, drench administration, doramectin, subcutaneous administration, ivermectin, subcutaneous administration, palpation, prenatal diagnostic method, body weight, pregnancy, reproductive performance, weight gain.


**NAL Call Number:** SF601 B6

**Keywords:** steers, crossbred, fluke infected steers, antihelminthic-drug, antiparasitic-drug, herd health program, ivermectin-clorsulon, performance, pharmaceuticals.


**NAL Call Number:** 41.8 Am3

**Keywords:** steers, oligoencephalomalacia, nervous system disease, nutritional disease, epidemiologic analysis, sulfide, ruminal fluid, thiamine, blood, feedlot, season.


NAL Call Number: SF604.A76
Keywords: bovine herpesvirus, frequency rates, neutralizing antibodies, age differences, husbandry, beef cattle, beef herds, dairy cattle, dairy herds, Portuguese language, Brazil.

NAL Call Number: SF810.V4
Keywords: epidemiological study, gastrointestinal nematode infections, irrigated pastures, fecal egg counts, seasonal variation, worm burdens sat time of necropsy, Cooperia pectinata, C. punctata, Haemonchus placei, Trichostrongylus axei, Oesophagostomum radiatum.

NAL Call Number: 49 J82
Keywords: health, slaughter, grain feeding,, diet, management factors, economic loss, reduced feed intake, reduced weight gain, decreased feed efficiency, decreased carcass yield, Fusobacterium necrophorum, ruminal anaerobic bacterial flora, Actinomyces pyogenes, etiologic agent, treatment, antimicrobial compounds, bacitracin methylene disalicylate, chlorotetracycline, oxytetracycline, tylosin, virginiamycin.

NAL Call Number: TD420 A1P7
Abstract: Faecal bacterial dynamics during flood events were studied in the Topehaehae Stream near Morrinsville, New Zealand, in a catchment used for grazing dairy and beef cattle. During the rising limb of a natural flood event, E. coli bacterial concentration rose by more than 2 orders of magnitude and peaked at 41,000 cfu/100 mL. E. coli correlated closely with turbidity over the flood event, and both variables peaked close to the time of maximum flow acceleration rather than peak flow. An artificial flood on the same stream, created by releasing water from a supply reservoir during fine weather with no wash-in from the catchment, produced a broadly similar pattern of faecal contamination (peak E. coli=12,500 cfu/100 mL). This and other evidence suggests that direct deposition of faecal matter by cattle in the stream channel may be of similar or greater importance than wash-in from land. The flood experiments have been useful for constructing a model of faecal bacterial yields, and they imply that exclusion of livestock from stream channels may appreciably improve water quality.
Keywords: pollution control, Escherichia coli, bioindicator, stream concentration, environmental management, artificial flood, direct faecal matter deposition, flood events, maximum flow acceleration, peak flow, stream channels, livestock exclusion, supply reservoir water release, turbidity, water quality.

NAL Call Number: aSF207 C43 1998
Abstract: Bovine lactic acidosis syndrome is associated with large increases of lactic acid in the rumen, which result from diets that are high in ruminally available carbohydrates, or forage that is low in effective fiber, or both. The syndrome involves two separate anatomical areas, the gastrointestinal tract and body fluids, and is related to the rate and extent of lactic acid production, utilization, and absorption. Clinical manifestations range from loss of appetite to death. Lactic acid accumulates in the rumen when the bacteria that synthesize lactic acid outnumber those that utilize lactic acid. The systemic impact of acidosis may have several physiological implications, including laminitis, a diffuse aseptic inflammation of the laminae (corium).

Although a nutritional basis for the disease exists, etiology includes a multitude of interactive factors, such as metabolic and digestive disorders, postpartum stress, and localized trauma, which lead to the release of vasoactive substances that trigger mechanisms that cause degenerative changes in the foot. The severity of laminitis is related to the frequency, intensity, and duration of systemic acidotic insults on the mechanisms responsible for the release of vasoactive substance. The critical link between acidosis and laminitis appears to be associated with a persistent hypoperfusion, which results in ischemia in the digit. Management of acidosis is critical in preventing laminitis. High producing dairy herds attempting to maximize energy intake are continually confronted with subclinical acidosis and laminitis. Management of feeding and husbandry practices can be implemented to reduce incidence of disease.

Keywords: dairy cows, laminitis, lactic acidosis, etiology, ischemia, rumen motility, pH, rumen microorganisms, rumen mucosa, feed intake, beef cattle, diagnosis, risk factors, lesions, hemodynamics, soles, digits, incidence, feed formulation, age differences, dietary carbohydrate, literature reviews.


Keywords: hygiene, animal welfare, behavior, health, animal performance.

NAL Call Number: SF601 A47
Keywords: yearling steers, plant poisoning, death from eating seed pod stage Lupinus argenteus (silvery lupine), high levels of piperidine alkaloids, ammodendrine-methylammodendrine, reduced availability of quality feed.


NAL Call Number: SF55 A78A7
Keywords: beef cows, weight, age, body condition at calving, udder scores, calf production, parturition, preweaning growth rate, weaning weights.


NAL Call Number: SB599 J69
Keywords: pests, house fly (Musca domestica), biological control, Muscidifurax raptorellus, cattle housing, release techniques, biological control agents, evaluation.


NAL Call Number: SF191 W62
Keywords: breed, Criollo, Elite Brahman, Elite Guzerat, Elite Nellore, Guzerat, Registered Nellore, Bos taurus x Bos indicus, mortality, postweaning loss, preweaning loss, Venezuela, South America.


NAL Call Number: SF601 V44
Keywords: serologic detection, bovine immunodeficiency virus (BIV), seroprevalence, virulence, France.


NAL Call Number: 41.8 Am3A
Keywords: beef breed, calves, stress, feedlots, respiratory tract disease, conglutinin titers, housing, pens.


NAL Call Number: QH547 I55
Keywords: neosporosis, abortion in cattle, beef and dairy cattle production, random herd samples, antibody detection, herd size, Spain.


NAL Call Number: 49 J82
Keywords: breeding value, linear model, mathematical model, reproductive performance, calving difficulty, threshold model, mathematical model.

**NAL Call Number:** TP372.7 F66

**Abstract:** Ten beef cattle feeding on silage were orally administered a marker organism (nalidixic acid resistant Escherichia coli K12) daily over six days. Subsequently, the administration of the marker organism was stopped, and the animals were divided into two groups (five animals each). The feed was removed from one group (i.e. fasted group) for 48 h, while the feeding of the control group was continued during that period, until both groups were subsequently slaughtered. During this pre-slaughter period, faecal shedding of total E. coli and E. coli K12, as well as of background flora (total aerobes, total anaerobes, and lactobacilli), was monitored in faecal material obtained by rectal swabs from each animal. After both 24 and 48 h of fasting, the levels of total E. coli shed significantly increased (P < 0.01) in the fasted group compared with the control group, total anaerobes shed also increased (after 48 h fasting, P < 0.05), while shedding of total aerobes and total lactobacilli did not change significantly. After slaughter of animals, the pH values and the levels of bacterial groups mentioned above were examined in contents of different sections of the gastrointestinal (GI) tract (rumen, abomasum, caecum, small intestine, colon). The pH values were significantly increased in rumen and decreased in abomasum (P < 0.05) of the fasted animals compared with controls, but did not differ significantly in other GI sections. Significant decreases of total E. coli population (P < 0.05) in abomasums and lactobacilli (P < 0.01) in small intestines were observed in fasted animals, while other bacterial groups in other GI sections did not change significantly compared with controls. The marker organism E. coli K12 was not sufficiently competitive within the bovine GI tracts as it was pre-slaughter shed by, and post-slaughter isolated from, only a minority of animals regardless of the group. Overall, the results indicate that key fasting-induced changes of enteric E. coli populations, and influencing its faecal shedding, could have occurred within the relatively short caudal colon-rectumanus region of the bovine GI tract.

**Keywords:** Escherichia coli, shedding, strain-K12, aerobe, anaerobe, lactobacilli, feed withdrawal.

Copyright© 2003, CAB International


**NAL Call Number:** 44.8 J822

**Keywords:** crossbred, host, infectious bovine respiratory virus, pathogen, fever, vitamin E, dietary supplement, average daily gain, dry matter intake, feed intake, rectal temperature, New Mexico, USA.


**NAL Call Number:** 49 J82

**Keywords:** immunoglobulin G, serum titers, health, humoral immune response, performance, vitamin E, food supplement, supplemental effects.


**NAL Call Number:** 44.8 J822

**Keywords:** injection site lesions, muscle lesions, beef rounds, dairy rounds, educational programs, veterinary procedures, quality control.


**NAL Call Number:** SF601 B6

**Keywords:** disease prevention methods, efficacy, subcutaneous injection, injection site reactions, usage, injection procedure, body weight, vaccine injection.
**Keywords:** stress, body weight, breeds, transport of animals, cattle diseases, Italian language.

**NAL Call Number:** 49 J82  
**Keywords:** glucose, blood levels, blood sugar monitoring, field method, monitoring method, Accu, Chek Easy (ACE), human self, monitoring system, use for cattle.

**NAL Call Number:** 41.8 F49  
**Keywords:** beef cattle housing, cattle diseases, bacterial diseases, disease control, disease transmission, disinfection, zoonoses, Salmonella, Finnish language, Finland

**NAL Call Number:** QR74 J68  
**Abstract:** Beef cattle have been fed ionophores and other antibiotics for more than 20 years to decrease ruminal fermentation losses (e.g methane and ammonia) and increase feed efficiency, and these improvements have been explained by an inhibition of Gram-positive ruminal bacteria. Ionophores are not used to treat human disease, but there has been an increased perception that antibiotics should not be used as feed additives. Some bacteria produce small peptides (bacteriocins) that inhibit Gram-positive bacteria. In vitro experiments indicated that the bacteriocin, nisin, and the ionophore, monensin, had similar effects on ruminal fermentation. However, preliminary results indicated that mixed ruminal bacteria degraded nisin, and the ruminal bacterium, Streptococcus bovis, became highly nisin-resistant. A variety of ruminal bacteria produce bacteriocins, and bacteriocin production has, in some cases, been correlated with changes in ruminal ecology. Some ruminal bacteriocins are as potent as nisin in vitro, and resistance can be circumvented. Based on these results, ruminal bacteriocins may provide an alternative to antibiotics in cattle rations.  
**Keywords:** Streptococcus bovis, pathogen, bacteria, bacteriocins, antibacterial, nisin, review. Copyright© 2003, CAB International

**NAL Call Number:** SF601 P7  
**Keywords:** beef herds, calves, beef cattle, morbidity, risk factors, risk assessment, dystocia, animal housing, geographical variation, calving season, weaning, calving.

**NAL Call Number:** 41.8 Am3  
**Keywords:** cross sectional survey of producers, personal interviews, management practices, data collected, vaccine use, brucellosis testing of imported cattle, Mycobacterium paratuberculosis, bovine viral diarrhea, tuberculosis, feed contamination, quarantine procedures, veterinarians role in biosecurity education.

Information Resources for Beef Cattle

NAL Call Number: SF810 V4
Keywords: Neospora caninum, protozoa, epidemiology, serological surveys, seroprevalence, risk factors, cows, calves, questionnaires, pregnancy, animal husbandry, grazing, feeding, age, ELISA, stocking density, winter, Idaho, Montana, Oregon, Washington, Wyoming.

NAL Call Number: 41.8 N483
Keywords: calves, efficacy, treatment, injection, drug therapy, lesions, cornea, eye diseases, keratoconjunctivitis, penicillins, bacterial diseases, New Zealand.

NAL Call Number: 44.9 R13
Keywords: cows, Fenpropathrin, acaricide, tick control, treatment, pour on medication.

NAL Call Number: SF643 A92
Keywords: rhinotracheitis, bovine herpesvirus, epidemiology, organic diseases, respiratory diseases, Argentina, Spanish language.

NAL Call Number: 49 J82
Abstract: Thirty-three steers (328 +/- 2 kg) from a total of 300 animals were randomly selected for a comparison of techniques designed to quantify the behavioral response to painful procedures. The steers were randomly assigned to freeze-branding, (F), hot-iron branding (H), and sham branding (S) treatments. The responses of all steers were videotaped to quantify the amount and intensity of head movements during branding. In addition, the force that steers exerted on the headgate and squeeze chute during branding was recorded using strain gauges and load cells. Behaviors believed to be indicative of pain (tail-flicking, kicking, falling, and vocalizing) were also recorded during branding. These techniques were compared for their effectiveness in measuring behavioral responses of steers during branding. Hot-iron-branded steers had greater maximum and average head movement distances and velocities than F or S steers (P < .05), and F steers only had greater maximum values than S animals (P < .05). The maximum exertion forces obtained from headgate load cells were also greater in H than in For S steers (P < .05); however, no differences were observed between H and F treatments for squeeze load cell or headgate strain gauge data. Hot-iron-branded steers had the greatest incidence of tail-flicks, kicks, falls in the chute, and vocalizations, and S steers had the least. Results indicate that H steers experienced more discomfort at the time of branding than F and S steers, whereas F steers experienced more discomfort than shams. Image analysis was a superior technique for detecting treatment differences compared with exertion force measurements and frequency counts of tail-flicks, kicks, falls, and vocalization during branding.
Keywords: steers, branding, pain, responses,image processing, video recordings, forces, strain gauges, transducers, animal behavior, animal welfare.


Information Resources for Beef Cattle

Science 77 (3): 369-374. ISSN: 0008-3984.
NAL Call Number: 41.8 C163

Abstract: Thirty yearling (450-500 kg) heifers of mixed breeds (Hereford, Charolais, Angus and Shorthorn) were habituated to handling over a 14 +/- 2 d period before branding and were fitted non-surgically with jugular catheters 1 d before branding. On the day of branding, heifers were assigned to hot-iron brand (H), freeze brand (F), or control (C) treatments according to a predetermined randomized branding order (n = 10 per treatment). Blood samples were obtained at 20 and 0 min before and 20, 40, 60, 80, 100, 120, 140, 160 and 180 min after application of branding treatments. To detect stress-induced analgesia, each animal’s sensitivity to pain was assessed by measuring the time it took them to respond to a thermal energy source (laser) applied to their hind legs. Foot-lift latencies were obtained 0, 10, 20, 60 and 120 min after the treatments were imposed. Sensitivity to touch also was assessed 1 and 7 d after branding by placing pressure on the brand site and measuring the amount of movement by the animals. Both H and F heifers had higher mean plasma cortisol concentrations than C animals 20 and 40 min after branding (P < 0.05). However, hot branding was found to cause a more pronounced cortisol response than freeze branding at 40 min (P < 0.05). No treatment differences in foot-lift latencies or sensitivity to touch were observed. Both branding methods cause discomfort in cattle; however, hot branding appears to cause a greater acute response than freeze branding.

Keywords: beef cattle, heifers, branding, hydrocortisone, pain, legs, pressure, movement, susceptibility, chemical composition, heat tolerance.

NAL Call Number: 41.8 C163

Abstract: Infrared thermography was used to compare differences in extent and duration of inflammation observed on hot-iron and freeze brand sites as an indicator of tissue damage and the associated discomfort to the animals. Thirty beef heifers of mixed breed were assigned to either hot-iron (H) or freeze (F) branding treatments according to a predetermined randomized branding order. Ten animals were branded each day over a 3-d period. On the day prior to branding, animals were clipped to expose two patches of skin; one to be used for the branding treatment and the other for a control. Thermographic images of control and treatment sites were made at 0.08 h (5 min) prior to branding, immediately after the brand was completed (0 h), as well as 0.08, 2, 4, 8, 12, 24, 48, 72, 96, 120, 144 and 168 h after branding. Control site temperatures were subtracted from treatment site temperatures for each individual animal. Both F and H brand sites were consistently warmer (1.9 +/- 0.3 and 1.6 +/- 0.3 degrees C, respectively) than corresponding control sites between 2 and 168 h after branding. Treatment differences were obtained at 0, 0.08, 2, 8, and 144 h after branding (P < 0.001, 0.05, 0.005, 0.001, and 0.01, respectively). Freeze brand sites were warmer at 2 and 8 h after branding while H sites were warmer at 144 h after branding. The thermographic evaluation of hot-iron and freeze brand sites indicated that both methods caused tissue damage. However, H brand sites remained significantly warmer than F sites at 168 h after branding. In addition, H sites were significantly warmer than control sites while F sites were not warmer than control sites at 168 h. The prolonged inflammatory response observed in H animals indicates that more tissue damage and perhaps more discomfort are associated with H branding.

Keywords: heifers, beef cattle, branding, pain, thermography, skin temperature, heat, inflammation, evaluation, animal welfare, animal tissues, damage, Saskatchewan.

NAL Call Number: SF961 C37

Keywords: field study of beef farms, respiratory diseases, antibiotics, drug therapy, marbofloxacin, parainfluenza 3 virus, bovine respiratory syncytial virus, Scotland.

Keywords: sex, breeds, weight, adaptation, intensive husbandry, morbidity, movement disorders, functional disorders, disease surveys, statistical methods, epidemiology, farming systems, intensive farming, Italian language, Italy.


NAL Call Number: 49 382
Abstract: Morbidity and mortality of feedlot cattle have a variety of causes. Compared to respiratory disease, metabolic and digestive disorders generally are less prevalent and occur later in the feeding period. In addition to the obvious costs related to animal death and medication, subsequent performance of sick cattle often is depressed substantially. Closer coordination between veterinarians, nutritionists, and feedlot managers should help reduce the incidence of morbidity and mortality of feedlot cattle.
Keywords: feedlots, dry lot feeding, acidosis, bloat, polioencephalomalacia, feed intake, rumen metabolism, diagnosis, restricted feeding, social behavior, morbidity, mortality, performance, metabolic disorders, digestive disorders, respiratory diseases.


NAL Call Number: SF781.R4
Keywords: beef cattle, feedlots, public health, residues, disease control, contamination, beef, food hygiene, food safety, food poisoning, foodborne diseases, animal husbandry, meat hygiene, Escherichia coli, Salmonella, USA.


NAL Call Number: SF756.37.B7P5
Keywords: sex, female, male, breed, dairy cattle, beef cattle, location, differences in seroprevalence, Babesia bovis, Enzyme, Linked Immunosorbent Assay (ELISA), Portuguese language, Brazil.


NAL Call Number: SF779.5 A1B6
Keywords: value integration, vertical cooperation, preconditioning programs, decrease morbidity, increase BRD resistance, reduce stress, prior to and after shipment, cost of disease prevention programs, maximize net returns, review.


NAL Call Number: 41.8 Am3
Keywords: beef cattle, ears, trenbolone, estradiol, implantation, contamination, thermography, skin temperature, abscesses.


NAL Call Number: 41.8 Au72
Keywords: body weight, buffalo fly control (Haematobia irritans exigua) butterfat, lactation, organophosphorus insecticide, Diazinon, treatment.

**NAL Call Number:** QR115 I57  
**Keywords:** Escherichia coli O157, pathogen, cattle, human, host, Monte Carlo simulations, mathematical method, animal pastures, recreational use health hazards, bacterial shedding, quantitative microbial risk assessments, methodologies, survey results.


**NAL Call Number:** 49 J82  
**Keywords:** ACTH, beef performance, biobusiness, cholesterol, drip loss, foods, free fatty acid, glucose, meat quality, meeting abstract, stress susceptibility.


**NAL Call Number:** 41.8 Au72  
**Keywords:** beef calves, Hereford, Herford crosses, breed, respiratory diseases, fibrinous pneumonia, diagnosis, outbreaks, morbidity, treatment, drug therapy, mortality, oxytetracycline, bacterial diseases,, Pasteurella haemolytica, Queensland, Australia, New South Wales.


**NAL Call Number:** 41.8 Au72  
**Abstract:** Medical records of 78 445 male cattle that entered a 24 000-head feedlot in Alberta, Canada, between August 1991 and November 1993 were reviewed. The prevalence of dominance behaviour increased with increasing age of cattle on arrival at the feedlot. Sickness and mortality decreased with increasing age on arrival but increased in cattle exposed to aggressive bulls. Sickness and dominance behaviour mostly occurred within the first 30 days of the feeding period. Pens of cattle with a high prevalence of bullers did not have a correspondingly high prevalence of sickness or mortality. It is suggested that dominance behaviour is correlated with sickness in feedlot steers.  
**Keywords:** age, buller-steer-syndrome, dominance, behavior, feedlot, mortality, sickness, Western Canada. Copyright© 2003, CAB International


**NAL Call Number:** 421 J822  
**Keywords:** beef cattle feedlot, biobusiness, economic entomology, stable flies, miscellaneous method, pest, pest assessment control, management, pest control, sanitation.


**NAL Call Number:** 49 J82  
**Keywords:** heifers, Angus, Polled Hereford, dystocia, pelvimetry, calf birth weight, disease predictor, pelvic area, disease predictors, weaning hip height, weaning weight, yearling hip height, yearling weight.

**Keywords:** beef herds, management practices, morbidity, mortality, postnatal calf loss, neonatal disease preventative health measures.


**Keywords:** Escherichia coli, pathogen, human, shiga-toxin, toxin, liquid spreader, field equipment, livestock density indicators, analytical method, solid spreader, field equipment, livestock farming intensity.


**Keywords:** adaptability, metastigmata, hides and skins, thermal stress, pest resistance, resistance to injurious factors, Afrikaans language, South Africa.


**Keywords:** dystocia, reproductive system linear analysis, mathematical method, threshold, linear analysis, mathematical method, breeding, birth weight, calving difficulty, reproductive capacity, variance component estimation, Bayesian analysis.


**Keywords:** Escherichia coli (Enterobacteriaceae), pathogen, beef cattle, feces, bacterial disease, amikacin, antibacterial, drug resistance, antiinfective drug, amoxicillin-clavulanic acid, ampicillin, apramycin, cefoxitin, ceftiofur, ceftriaxone, cephalothin, chloramphenicol, ciprofloxacin, gentamicin, kanamycin, nalidixic acid, streptomycin, sulfadimethoxazole, tetracycline, trimethoprim-sulfadimethoxazole, fecal sampling, clinical techniques, diagnostic techniques, antimicrobial susceptibility, feedlot, housing.

**NAL Call Number**: RA565 A1E5  
**Keywords**: sentinels, environmental health, productivity, health data, natural gas developments, sour natural gas processing plant, biological accounting methods, nonpregnancy, abortion, calving late, stillbirth, calf mortality rates, comparison with published data.


**NAL Call Number**: SF601 P7  
**Keywords**: beef cows, cow-calf herds, pastured near active and inactive oil and natural-gas sites, batteries, compressor stations and processing plants, sour-gas flaring, health risks, environmental epidemiology, pregnancy status, calving interval, occurrence of twins, abortions, stillbirths, neonatal mortality, air-monitoring devices, hydrogen sulfide deposition, Canada.


**NAL Call Number**: SF601 P7  
**Keywords**: beef cows, cow-calf herds, pastured near oil- and gas-production facilities, health risks, pregnancy status, calving interval, occurrence of twins, abortions, stillbirths, neonatal mortality, air-monitoring devices, hydrogen sulfide deposition, Canada.


**NAL Call Number**: SF601 C66  
**Keywords**: veterinary services, economics, epidemiology, husbandry.


**NAL Call Number**: HV4701.A557  
**Keywords**: beef cattle, feedlots, stocking density, surfaces, grazing, adrenal glands, weight, blood serum, IgA, t lymphocytes, leukocyte count, animal welfare, immune competence, cell mediated immunity, liveweight gain, IgG, natural killer cells, blood picture, lymphocyte transformation, hypothalamus, hypothalamic regulation, pituitary, dry surface, muddy surface.


**NAL Call Number**: SF601 P7  
**Keywords**: bovine diarrhea virus, persistence, infections, history, clinical aspects, animal husbandry, vaccination, calving season, breeding season, screening, mortality, growth, performance, vertical transmission, pregnancy.


**NAL Call Number**: 41.8 J82  
**Keywords**: dairy cattle, beef cattle, sheep, freeze-branding, heat-branding, tattooing with liquid nitrogen, carcinogenic epidermal neoplasia, papillomatosis, skin tumors, squamous cell carcinoma.


1232-3071.

**Keywords:** breeds, Red-and-White, Black-and-White, Red Polish, skin producing, parasites, Mallophaga, skin diseases, lesions, scars, cuts, skin, hides, quality, Poland, Polish language.


**NAL Call Number:** 49 J82

**Keywords:** litter, feedlots, feedlot wastes, refuse compost, crop residues, waste utilization, animal health, heavy metals, cadmium, copper, molybdenum, nickel, lead, zinc, liver, kidneys, mineral content, rain, environmental temperature, cattle manure, blood picture, nitrogen content, phosphorus, Minnesota.

### Housing


**Keywords:** beef cattle cows, animal housing, husbandry, equipment, costs, investment requirements, German language, Germany.


**NAL Call Number:** S760.N7P56

**Keywords:** cattle sheds, stalls, litter bedding, ventilation, costs, Norwegian language, Norway.


**Keywords:** beef cattle, breed differences, Marchigiana, Chianina, Romagnola bulls, husbandry, rearing systems, stall fed, pasture grazed, mixed, growth, growth rate, liveweight gain, sire selection, non-genetic sources of variation, Serbian language.


**NAL Call Number:** QP82.2 T4J6

**Abstract:** A study was designed to investigate the thermoregulatory responses of feeder cattle to both acute and chronic exposures to elevated environmental temperatures. Rectal temperatures (RT) and respiration rate (RR) showed significant differences between temperature treatments. Both RT and RR had a diurnal pattern, which followed the diurnal pattern of the ambient conditions with some lag. Heat production at thermoneutral conditions was significantly higher than at the heat stress treatments. Heat production and respiratory quotient were the only two parameters shown to change with acclimation to heat stress.

**Keywords:** body temperature, environmental temperature, heat production, heat stress, heat stress acclimation, rectal temperature, respiration rate, thermoregulatory response.


**Keywords:** bulls, calves, fattening, site factors, housing, costs, ventilation, winds, velocity, straw, animal litter, feeding, cereal byproducts, German language


**NAL Call Number:** S675 L32

**Keywords:** beef cattle, dairy cows, winter, cold zones, cold resistance, cold tolerance, frost, temperature, snow, cattle housing, non-insulated cowsheds, animal behavior, animal welfare, dairy farming, human factors, German language, Germany.


**NAL Call Number:** SF1 L5

**Keywords:** cattle housing, floor type, rubber strips, mats, slatted floors, straw, carcass composition, carcass
weight, hygiene, live weight, meat quality.


Keywords: beef cattle, cattle housing, surveys, barn design, lighting, planning, guidelines, ventilation, feeding, Turkish language, Turkey.


NAL Call Number: SF91 L58 1997

Keywords: beef cattle housing, naturally ventilated, emission, ammonia, air pollution, air flow, pressure difference measurements, straw bedding, slurry, United Kingdom.


NAL Call Number: 18 L2353 Suppl.

Keywords: environmental temperature, thermoregulation, cold, heat, stress, digestion, digestibility, nutritive value, animal needs, energy, Germany, European Union, German language.


Keywords: housing, slatted floors, dimensions, cattle sheds, stalls, lesions, damage, claws, veterinary hygiene, animal welfare, Norwegian language, Norway.


NAL Call Number: SF1 L5

Keywords: Simmental crossbred heifers, cattle housing, slatted floors, space allowance, immune response, stress, adrenocorticotropic hormone challenge, animal behavior, lying, eating, ruminating, social behavior, aggression, growth, comfort, animal welfare.


NAL Call Number: SF1 A56

Keywords: heifers, cattle housing, pens, space allowance, immune response, ACTH challenge, growth, serial blood samples, hematology, stress, animal behavior, finishing, animal welfare, hydrocortisone, weight gain.


**Abstract:** To analyze the sulfur content of water and forage samples from a geographically diverse sample of beef cow-calf operations in the United States and to estimate frequency and distribution of premises where forage and water resources could result in consumption of hazardous amounts of sulfur by cattle. **DESIGN:** Cross-sectional study. **SAMPLE POPULATION:** 709 forage samples from 678 beef cow-calf operations and individual water samples from 498 operations in 23 states. **PROCEDURE:** Sulfur content of forage samples and sulfate concentration of water samples were measured. Total sulfur intake was estimated for pairs of forage and water samples. **RESULTS:** Total sulfur intake was estimated for 454 pairs of forage and water samples. In general, highest forage sulfur contents did not coincide with highest water sulfate concentrations. Overall, 52 of the 454 (11.5%) sample pairs were estimated to yield total sulfur intake (as a percentage of dry matter) ≥ 0.4%, assuming water intake during conditions of high ambient temperature. Most of these premises were in north-central (n = 19) or western (19) states. **CONCLUSIONS AND CLINICAL RELEVANCE:** Results suggest that on numerous beef cow-calf operations throughout the United States, consumption of forage and water could result in excessively high sulfur intake. All water sources and dietary components should be evaluated when assessing total sulfur intake. Knowledge of total sulfur intake may be useful in reducing the risk of sulfur associated health and performance problems in beef cattle.


**Keywords:** bulls, housing systems, automation, transponders, equipment, floors, straw, litter, slatted floors, behavior, feed intake, estimation, automatic feed dispensers, German language.


**Keywords:** cattle housing, alternatives to cubicle systems, interconnected feeding design, exercise, rest areas, labor requirements, evaluation, German language, Switzerland.


**Keywords:** cattle housing, alternatives to cubicle systems, interconnected feeding design, exercise, rest areas, labor requirements, French language, Switzerland.


**Keywords:** heifers, wintering, housing, pollution control, environmental protection, livestock management, France, French language.

**NAL Call Number:** 58.8 J82

**Keywords:** aeration, barns, housing, cattle manure, soiling, deep litter housing, litter, peat, simulation, straw, wood chips.


**Keywords:** cattle housing, temperature, mathematical models, heat loss, heat transfer, closed versus open wall design.


**Abstract:** The following article reviews findings based on a series of investigations on animal welfare aspects of the type of flooring used for beef cattle in Northern Ireland and its effects on animal production and carcass parameters as well as cleanliness, and on factors affecting cleanliness of beef cattle, including the level and type of concentrates as well as the type of grass silage fed. Floor type was not found to affect the performance, carcass composition, meat quality and behaviour of the animals, suggesting that welfare problems are of minor when cattle are accommodated on slatted floors during the winter period following summer at pasture. Similarly, there was no additional return to farmers, in terms of higher performance, from the use of straw-bedded systems. Cattle were not consistently cleaner on straw beds compared with slatted systems. However, considering the behavioural, physiological and pathological measures, and the practicalities of local production systems, the present data suggest that if welfare is of major concern, it may be improved by using rubber strips attached to slats in the slatted systems. On the basis of animal cleanliness studies, the quality of ventilation in the animal house was found to be of major importance. The inlet: outlet ratio and internal air volume must be adequate to maintain a fresh internal environment. The construction of slatted housing systems must minimize the proportion of solid concrete in the pen floor and maximize voidage in the pens. Contrary to current views, increasing stocking density in slatted pens did not result in cleaner cattle. As mixing of genders was found to promote dirtiness, steers and heifers should be housed in separate pens. Considering the effects of diet on cleanliness, good quality, well fermented, first-cut silage should be provided to finishing cattle, whereas, low DM silages, harvested as multiple re-growths should be avoided. Silages must be supplemented with a moderate amount of concentrates formulated to contain low levels of ash, fibre and oil. Low DM feed supplements such as potatoes, fodder beat and brewers grains should be avoided during the finishing period.

**Keywords:** animal housing, animal husbandry, animal welfare, beef cattle, carcass quality, cattle feeding, concentrates, fattening performance, feed supplements, floor type, meat hygiene, silage, slatted floors, stocking density, ventilation, winter, Northern Ireland, United Kingdom. Copyright© 2003, CAB International


**NAL Call Number:** 58.8 J82

**Keywords:** pig, cattle, poultry, housing, ammonia emissions, concentration, air pollution, seasonal variation, animal health, England, Netherlands, Germany, Denmark.


**NAL Call Number:** SF1 A542  
**Keywords:** animal housing, handling, meat animals, Japanese language, Japan.


**NAL Call Number:** 49 J82  
**Abstract:** Little is known concerning body temperature regulation in cattle under conditions of low ambient temperature. To investigate the influence of cold on body temperature regulation, core body temperatures of feedlot steers (crossbred Bos taurus) were monitored for two winters in Nebraska, from late December to mid-March in yr 1 and from late December through June in yr 2. In yr 1, radio transmitters to monitor temperature were implanted in the peritoneum of five steers (360 kg); in yr 2, four steers (320 kg) were used. Body temperatures and ambient temperatures were recorded at 3-min intervals and were mathematically filtered to produce 120 readings/d. For yr 1 and 2, daily maximum (40.09 and 39.66 degrees C), minimum (38.78 and 38.64 degrees C), and average (39.29 and 39.06 degrees C) body temperatures were not affected by ambient temperatures. Body temperatures exhibited circadian rhythms with the minima at approximately 0800 and the maxima at approximately 1900. For both years, sharp peaks in body temperature were often seen in the evening and, for yr 2, to a lesser extent in the morning. The occurrence of peak was normally congruent, within a 1.5-h window across steers. Congruent peaks in the evening with peak heights of 1.05 and .77 degrees C occurred on 65 and 56% of the days in yr 1 and 2, respectively. Occurrence of congruent peaks was correlated with dusk; peak followed dusk by 30 to 60 min. Ambient temperature also influenced the occurrence of peaks; few peak were observed when average daily ambient temperatures were below 7.5 degrees C. The dynamic changes in body temperature throughout the day, including the peaks in body temperature after dusk, strongly suggest that thermoregulatory systems in steers respond not only to current ambient conditions, but also to more integrative measures such as day length and daily heat load.  
**Keywords:** beef steers, feedlots, dry lot feeding, body temperature, winter, cold stress, hypothermia, data collection, circadian rhythm, Nebraska.


**NAL Call Number:** SF1 L5  
**Keywords:** steers, finishing, meat quality, carcass composition, performance, cattle housing, hygiene, floors, solid floors, slatted floors, litter, rubber, carcass weight, live weight gain, duration, beef quality, floor type, mats.


**NAL Call Number:** S539.5 174  
**Keywords:** beef, finishing, fully-slatted floor, lameness, assessment, perforated rubber mat, fully-slatted, secured rubber strips, fully-slatted, straw bedded solid floor, seasonal effects, winter.


**NAL Call Number:** S539.5 174  
**Keywords:** floor type, animal behavior, lying down, rising, winter housing.


**NAL Call Number:** SF1 A56

**Keywords:** grazing, winter, cattle suckling, males, females, body condition, pastures height, weight gain, sex, biological differences, feeding level.


**NAL Call Number:** 49 J82

**Abstract:** Steers were finished in three different sets of outside lots: 1) pens with overhead shelter on the north side; 2) pens south and southeast of a shelter belt; and 3) pens with no shelter or windbreak. In trials conducted over a 3-yr period with predominantly British and British x Continental crossbred yearlings, performance improvements due to providing shelter or wind protection in the winter were not detected; however, in the summer, providing wind protection or shelter resulted in decreased ($P < .10$) cattle gains. Cattle fed in the unprotected area had greater ($P < .05$) fat thickness in the winter and greater marbling scores in the winter ($P < .05$) and autumn ($P < .10$) than cattle fed in protected areas. When averaged across facilities, seasonal effects were detected for DMI (autumn > summer > winter > spring; $P < .05$). Feed: gain ratios followed a similar trend among seasons (summer and autumn > winter > spring $P < .05$). As a percentage of BW, winter (2.21), spring (2.19), and summer (2.18) DMI were less ($P < .05$) than autumn (2.35) DMI. Wind velocity data indicated that greater air flow tends to be found on mounds and less at the feedbunk in pens protected by shelter belts. In unprotected, unsheltered pens, the greatest airflow tends to be at the highest point in the pen (bunks and mounds). In Nebraska, benefits realized from feeding cattle in sheltered or protected areas under average or slightly milder than average winter weather conditions may be offset by lower performance experienced by cattle fed in those same areas in the summer. In addition, fat deposition seems to be enhanced in cattle exposed to moderate cold stress.

**Keywords:** steers, wind protection, shelterbelts, feedlots, wind speed, wind stress, live weight gain, feed intake, dry matter, feed conversion, heat stress, seasonal variation, fat thickness, beef quality, carcass yield, environmental temperature, marbling.


**NAL Call Number:** 49 J82

**Abstract:** In each of three summertime trials conducted over consecutive years, approximately 110 predominantly black and black-white-face steers were blocked by weight and randomly allotted to one of 16 pens in a 2 x 2 factorial arrangement of treatments. Factors consisted of cattle being fed in facilities with or without wind barriers and with or without shade. Steers were fed dry-rolled corn-based diets (1.43 Mcal/kg, NE(g)). Mean starting date and days on feed were June 26 and 79, respectively. In unshaded areas, temperature and humidity averaged 21.6 degrees C and 77.9%, and the blackglobe-humidity index (BGHI) at 1500 averaged between 84.0 and 89.1. Each of four 6.1- x 6.1-m structures (mean height = 3.4 m) with white steel roofs provided shade (2.65 m(2)/steer) for two pens. In facilities with wind barriers provided, airflow was reduced from the north and northwest by a 25-m-wide shelterbelt containing six rows of trees. For cattle fed in pens with wind barriers, shade increased ($P < .05$) gain from 0 to 56 d and decreased ($P < .05$) DMI/ADG from 0 to 28 d. Differences ($P < .05$) in performance were not found between shaded and unshaded cattle in any portion of the feeding period for cattle fed in the pens without wind barriers and over the entire feeding period in either type of facility. The shade response in pens with wind barriers seemed to be greater the 1st yr than in subsequent years. Differences in weather patterns among years, especially air temperature, humidity, and solar radiation, may partially explain this interaction. Also, in yr 1, cattle tended to
have greater fat thickness at finish than in yr 2 and 3. Correlations between BGHI and DM1 tended to be
greater during the early portion of the trial (0 to 28 d) than over the entire trial. Correlations between the
difference in BGHI under shade vs no shade and percentage of shade use had the greatest magnitude and were
significant only in the first 28d vs over the entire feeding period. Although no heat-related cattle deaths
occurred in this study, results suggest that shade improves cattle performance in the summer when they are
fed in facilities with winter wind protection available and have not become acclimated to hot conditions. Once
cattle are acclimated or hot conditions subside, compensation by unshaded cattle offsets much of the initial
benefits of providing shade.

**Keywords:** steers, beef cattle, feedlots, shade, wind protection, air temperature, relative humidity, wind speed,
live weight gain, feed intake, dry matter, feed conversion, dressing percentage, fat thickness, depot fat, beef
quality, liver, abscesses, carcass yield, summer, animal behavior, heat stress, marbling, Nebraska.

Makulska, J.; Weglarz, A. (2000). **Evaluation of progeny rearing results of five beef breeds maintained
without cowsheds.** [Hodnoceni prubehu odchovu telat peti masnych plemen chovanych v masnych
stadech.] *Collection of Scientific Papers, Series for Animal Sciences: Faculty of Agriculture in Ceske
Budejovice* 17 (1): 11-17, ISSN: 1212-558X.

**NAL Call Number:** SF1.S26

**Keywords:** calves, heifers, bulls, breeds, Simmental, Limousine, Hereford, Salers, Red Angus, evaluation,
parturition, reproduction, winter, spring, birth weight, weight gain, weaning, weaning weight, animal
performance, body weight, age, milk yield, animal feeding, husbandry methods, Poland.

different cattle breeds to yearly outdoor rearing.** [Adaptation verschiedener Rinderrassen an die
Bedingungen einer ganzjahrigen Freilandhaltung.] *Zeszyty Naukowe Akademii Rolniczej we Wroclawiu.
Konferencje* 291: 139-149, ISSN: 1232-3071.

**Keywords:** beef cattle breeds, free range husbandry, body temperature, thermoregulation, adaptation, German
language.

Mitlohner, F.M; Galyean, M.L; McGlone, J.J. (2002). **Shade effects on performance, carcass traits,
physiology, and behavior of heat-stressed feedlot heifers.** *Journal of Animal Science* 80 (8): 2043-2050,
ISSN: 0021-8812.

**NAL Call Number:** 49 J82

**Keywords:** beef cattle, physiology, shading of, body weight, body measurements, carcasses.

Mitlohner, F.M.; Morrow, J.L.; Dailey, J.W.; Wilson, S.C.; Galyean, M.L.; Miller, M.F.; McGlone, J.J.
(2001). **Shade and water misting effects on behavior, physiology, performance, and carcass traits of

**NAL Call Number:** 49 J82

**Keywords:** crossbred feedlot heifers, heat stress, behavior, drinking, feeding, walking, standing, lying,
physiology, rectal temperature, respiration rate, performance, carcass traits.

the next calving in winter stabling and winter outdoor husbandry [Koerperkonditionsentwicklung von
Mutterkuhen nach dem Absetzen der Kaelber bis zur nachfolgenden Kalbung in der Winterstall- und
Winteraussenhaltung.]** In: 3. Trenthorster Kolloquium, Workshop on Rearing of Cattle with Suckler Calves
(Mutterkuhhaltung) as Extensive Rearing System. *Studies on Appropriate and Environmentally Friendly
Animal Husbandry, Dec. 5–6, 1996 Trenthorst, Germany. [Workshop Uber Die Haltung von Rindern Mit
Saugkaelbern (Mutterkuhhaltung) Als Extensive Tierhaltungsform. Studien Zur Artgerechten Und
Umweltfreundlichen Tierhaltung.]* FAL: Braunschweig-Voelkenrode, Germany, pp. 8-16, Series title,
Landbauforschung Voelkenrode. Sonderheft (Germany), no. 177, ISSN: 0376-0723.

**NAL Call Number:** 18 L2353 Suppl.

**Keywords:** beef cattle cows, mothers, heifers, weight, body condition, nutritional status, winter, stabling,
extensive husbandry, adipose tissues, backfat, methods, free range husbandry, seasons, Germany, European

**NAL Call Number:** S539.5 I74  
**Keywords:** beef, housing, cleanliness, influencing factors, concentrates feeding, dry, wet, floor type, stocking density, ventilation.


**NAL Call Number:** 41.8 C163  
**Keywords:** diurnal activity patterns, energy expenditure, energy gain, grazing behavior, standing behavior, windbreak shelter, winter weather, Montana, USA.


**NAL Call Number:** 44.8 J822  
**Keywords:** breed, Angus, Romosinuano, calf, adaptation, average daily gain, body weight, climate, feedlot, pasture grazing, seasonality, temperature, Oklahoma, USA.


**NAL Call Number:** SF1 A56  
**Keywords:** beef cattle, steers, heifers, carcass composition, growth, photoperiod, supplementary light, body composition, winter, feeding behavior, reproductive behavior, social behavior, sexual behavior, rumination, digestive tract motility, rumen digestion, eating, feeding, body weight, feed conversion efficiency.


**NAL Call Number:** 281.8 IN32  
**Abstract:** EC regulation 1804/99 stipulates the maximum numbers of cattle/ha in pasture and maximum numbers/m² in covered and uncovered housing for organic production. Various possibilities for meeting housing regulations (boxes with litter and outside exercise areas) for bullocks and cows are proposed and contrasted with conventional installations. The ideal solution is new buildings but, if this is not easily achieved, the farmer must analyse in detail the cost of adapting existing housing compared with building new. It is estimated that the cost of new multiple box with inclined litter facilities for housing organic beef production would be more than twice that of new conventional stalls. The costs of adapting conventional slotted floors and supplying a paved exercise area would depend on the buildings to be adapted but an average cost might well be 90 - 120 Euros. Provision for the cows and calves would cost less than for bullocks for fattening. Beef cattle are probably the most costly to provide statutory organic housing for, but against these costs must be set possible increased returns.

**Keywords:** beef cattle, housing, costs, boxes, litter, outside exercise areas, conventional stalls, European Union, organic farming, regulations, Italian language. Copyright© 2003, CAB International.


**NAL Call Number:** 41.8 F49
**Keywords:** beef cattle housing, cattle diseases, bacterial diseases, disease control, disease transmission, disinfection, zoonoses, Salmonella, Finnish language, Finland


**NAL Call Number:** 41.8 T345

**Keywords:** beef cattle housing, climate, simulation models, carbon dioxide, temperature, humidity, energy balance, German language.


**Keywords:** cattle housing, unheated livestock houses, netting, polyester fibers, wind protection, reduction in wind speed, German language, Germany.


**Keywords:** cattle, livestock, abnormal behavior, animal behavior, animal housing, organic farming.


**NAL Call Number:** HV4701.A557

**Keywords:** fattening bulls, seasons, autumn, body weight, flooring, slatted floors, deep bedding, straw, pen size, tail docking, skin lesions.


**NAL Call Number:** 58.8 J82

**Keywords:** animal housing, dry bulb air temperatures, moisture, relative humidity, ventilation, cattle housing, cow housing, pig housing, poultry housing, surveys, Northern Europe


**NAL Call Number:** S675 L32

**Keywords:** beef cattle housing, loose litter flooring, long straw, cut straw, chopped straw, processing straw, dust, slurry removal, animal husbandry, German language, Germany.


**Keywords:** housing, winds, drying, climatic factors, meteorological elements.


Keywords: beef cattle, lambs, housing, floor husbandry, sawdust, rice straw, behavior, crop residues, animals, wastes, wood products, wood residues, meat performance, young animals, Japanese language, Japan.


Keywords: beef cattle, climatic factors, air temperature, animal housing, animal welfare, Belgium, French language.


NAL Call Number: S605.A1Z4

Keywords: female, outdoor stock, suckler cow, extensive farming, ensilage characteristics, environmental conditions, forage economics, German language.


NAL Call Number: 49 Z8

Keywords: livestock, cattle, swine, housing systems, welfare issues, legislation, EU directives, minimal requirements, certification, consumer attitudes, welfare assessment, behavioral needs, stockperson, human animal interaction, German language.


NAL Call Number: SF1 L5

Keywords: beef cows, Friesian, Galloway, breed differences, body condition, feeding, genetics, outdoor wintering, housing, roofed shelter, straw bedding, body temperature, environment, upland areas, energy metabolism, Germany.


Keywords: beef cattle, introduced breeds, Hereford, Red Angus, Salers, winter, adaptation, weight gain, housing, outdoors, Polish, Polish language.


NAL Call Number: SF1 L5

Abstract: This study aims to evaluate how rearing techniques that improve veal calf welfare affect growth performance and carcass and meat quality, by comparing both traditional rearing in individual stalls with group rearing in collective pens and exclusive milk feeding with maize grain supplementation. Eighty male calves were raised from 60 days-of-age (live weight 76.4 plus or minus 5.5 kg) until slaughter (at 182 and 189 days-of-age). Both group rearing and maize grain supplementation significantly improved growth performance (final live weight: +7 kg in group-reared calves compared to individually reared calves, and +10 kg in maize-
supplemented calves compared to exclusively milk-fed calves) and carcass conformation, with no differences in dressing percentage. Group rearing increased blood packed cell volume value. Neither the type of housing nor the feeding system significantly modified carcass or meat colour or the main physical and sensory traits of the meat. Carcass fatness and meat ether extract concentration were higher in the calves reared in individual stalls or supplemented with maize grain. Our results suggest that rearing veal calves in pens and providing solid feed supplements may improve growth performance without impairing carcass and meat quality.

**Keywords:** husbandry, animal welfare, beef cattle, carcass quality, housing, growth, haematocrit, maize, meat composition, meat quality, veal, veal calves. Copyright© 2003, CAB International


**NAL Call Number:** 41.8 IN22

**Keywords:** cattle housing, beef cattle, meat production, fattening performance, Swiss Brown, growth, humidity, feed intake, environmental temperature, bulls, Turkey.

[Return to Contents](http://awic.nal.usda.gov/awic/pubs/Beef/housing.htm[10/29/2014 10:02:22 AM])
Husbandry


Keywords: beef calves, introduced breeds, crossbreeding, extensive husbandry, pastoralism, pasture raised, no farm buildings, gestation, parturition, calving ease, body weight gain, Polish language, Poland.


NAL Call Number: SF779.5 A1B6

Abstract: Many management practices can be utilized to maximize weight and increase value of calves at weaning. Combining the two management practices of castration and implanting male calves allows producers to maximize weaning weights and avoid discounts for intact males. Crossbred bull calves were randomly assigned at birth to 1 of 3 treatment groups: castrated (n = 22), banded (n = 18) or left intact (n = 20). Calves that were castrated or banded within 24 h after birth received a zeranol implant at that time. Calves in the intact group were castrated at 150 days of age and then implanted, and the calves in the other 2 treatment groups were re-implanted at that time. There were no differences in weaning weight, average daily gain (ADG) or weight per day of age between the 3 treatment groups. Castrating calves shortly after birth reduced stress on the animal compared to castration at a older age (day 150 to weaning). Also, early castration may be more acceptable as an animal welfare issue. It is concluded that combining castration and implanting allows producers to maximize weaning weight of calves as well as reduce the stress of castration at an older age.

Keywords: castration, animal welfare, live weight gain, stress, calves, weaning weight, zeranol, beef cattle, bulls, growth promoters. Copyright© 2003, CAB International


NAL Call Number: 18 L2353 Suppl.

Keywords: extensive husbandry, grazing lands; pastures, animal welfare, animal health, legislation, regulations, international agreements Germany, European Union, German language.


NAL Call Number: 281.8 IN32

Keywords: beef cattle, dairy cattle, regulations, production policies, support measures, cost benefit analysis, production economics,, international agreements, international organizations, Italian language, European Union, Italy.


NAL Call Number: SF601.C66

Keywords: beef cattle, castration, calves, surgery, testes, vaccination, lhrh, gnrh, antibody formation, animal

**NAL Call Number:** 49 J82

**Abstract:** To determine the effects of the anti-inflammatory ketoprofen, alone or with local anesthesia (LA) during castration on cortisol, immune, and acute phase responses, 40 Friesian calves (215 ± 3.5 kg) were assigned as follows: 1) control, 2) surgical castration (SURG), 3) SURG following ketoprofen (3 mg/kg BW i.v., SURG + K), 4) SURG following LA (9 mL of 2% lidocaine hydrochloride to each testis, SURG + LA), or 5) SURG following LA and K (SURG + LA + K). Total cortisol response was greater (P < 0.05) in SURG, SURG + LA, and SURG + K + LA calves than in control calves and was not different between control and SURG + K calves. The interval to peak cortisol was longer (P < 0.05) for SURG + K + LA calves than for either SURG or SURG + K calves. On d 3, KLH-induced interferon-gamma production was lower (P < 0.05) in SURG calves than in control calves, whereas concanavalin A-induced interferon-gamma production was lower (P < 0.05) in SURG + LA calves than in control calves, whereas SURG + LA + K calves had lower (P < 0.05) fibrinogen than did SURG calves. Haptoglobin was higher (P < 0.05) in SURG calves on d 1, 3, and 7 than in control calves. On d 1 after surgery, SURG + K and SURG + LA + K calves had lower (P < 0.05) haptoglobin concentrations than SURG calves, whereas SURG + K calves had lower (P < 0.05) levels than SURG calves on d 3. In conclusion, surgical castration induced a significant elevation in cortisol secretion, the rise in cortisol was reduced to control levels by the administration of ketoprofen but not local anaesthetic. Thus, systemic analgesia using ketoprofen is more effective than local anesthesia during castration to alleviate the associated stress response.

**Keywords:** acute phase proteins, cortisol plasma concentration, fibrinogen, haptoglobins, hydrocortisone, interferon, ketoprofen, antiinflammatory drug, immunologic drug, immunological effects, inflammatory response effects, pharmacodynamics, pharmacokinetics, plasma cortisol effects, local anesthesia, immunological effects, inflammatory response effects, plasma cortisol effects, surgical castration, behavioral effects, surgical method, immune response, immunological responses, inflammatory responses.


**NAL Call Number:** 44.8 J822

**Keywords:** calf, steer, yearling, Ralgro, growth stimulant, hormone drug, implant, Synovex C, Synovex Plus, Synovex S, Japanese export market, USDA quality grade, average daily gain, carcass characteristics, dry matter consumption, feed conversion, meat quality, Japan, Canada.


**NAL Call Number:** 41.8 N81

**Keywords:** calves, Norwegian Red, breed, crossbred, dehorning, electrical hot-iron tool, Leister-Ghibli, hot-air gun, comparison, sedative, local anaesthetic, plasma cortisol, behavioral testing, human contact test, discomfort, pain, Norwegian language.


**NAL Call Number:** SF55 A78A7

**Keywords:** Bos frontalis (gayal), birth weight, calving interval, conception rate, estrous cycle, gestation period, lactation, milk yield, repeat breeding, reproductive potential, seasonality, semi-intensive management, reproductive diseases, abortion, anestrous, cervicitis, metritis, Bandarban, Bangladesh.

Information Resources for Beef Cattle

frequency, electric prod use and head gate restraint on the behaviour and growth of beef cattle. 


**NAL Call Number:** 41.8 C163

**Keywords:** bull, heifer, electric prodding, animal movement method, movement frequency, behavior, growth rate, head gate restraint.


**Keywords:** beef cattle, production data, production factors, costs, profitability, economics, slovak republic, Slovak language.


**NAL Call Number:** 18 L2353 Suppl.

**Keywords:** beef cattle cows, mothers, human animal relationships, free range husbandry, extensive husbandry, Germany, European Union, German language.


**NAL Call Number:** 49 J82

**Keywords:** estradiol, progesterone, testosterone, trenbolone acetate, zeranol, component implant, drug delivery device, Ralgro implant, Revalor implant, Synovex implant, body composition, diet, metabolizable energy, finished body weight.


**NAL Call Number:** S471.J3K98

**Keywords:** beef cattle calves, new nursing system, suckling, weight gain, cow milk yield, grazing, weaning, Japanese language, Japan.


**Keywords:** analytical methods, simulation models, beef cattle, suckler herds, husbandry, animal production, French language, France.


NAL Call Number: 18 L2353 Suppl.

Keywords: beef cattle cows, mothers, young animals, animal feeding, energy metabolism, thermoregulation, extensive husbandry, free range husbandry, movement, feed intake, rumination, behavior, Germany, European Union, German language.


NAL Call Number: 41.8 Au72

Keywords: beef cattle, Brahman, Brahman-Shorthorn, crossbred, female, heifer, Willis dropped ovary technique, ovariectomy, traditional paralumber spaying, traditional vaginal spaying method, animal welfare, body condition, body weight, mortality, pregnancy, Australia.


NAL Call Number: 49.9 H19

Keywords: beef cattle, castration, carcasses, chemicophysical properties, organoleptic analysis, statistical methods, Korean language, Korea.


NAL Call Number: S539.5 I74

Keywords: calves, spring born, Friesian,Charolais X Friesian, performance, complete castration, timing effect, split castration, agricultural method, timing effect.


NAL Call Number: S605.5 B5

Abstract: It is widely believed that beef production fulfilling the majority of the criteria for ethological and ecological husbandry is less productive and less economic than conventional beef production. It is commonly believed that organic ethologically and ecologically sound beef production must rely on premium prices. The management, production and economic performance from 1990 to 1996 of a herd of double suckling South Devon cattle on an ecological farm within the Dartmoor National Park, U.K., indicates that animal welfare, ecological, public health and aesthetic concerns can be dramatically reduced, and that this can be accompanied by better economic performance than on conventional suckler systems. The management system is outlined and its strengths and weaknesses assessed.

Keywords: economic analysis, ethics, nature conservation, sustainability, organic farming, animal welfare, suckling, animal husbandry, farm management, public health, animal behavior, beef production, England.


Keywords: dairy cows, beef cattle, cows, organic agriculture, quality, health foods, meat yield, meat performance, meat production, gross margins, operating costs, efficiency, profit, marketing, alternative agriculture, German, German language.


NAL Call Number: 60.8 F82
Keywords: grasslands, zea mays, harvesting, hay, silage, beef cattle, suckler cows, animal husbandry methods, grazing systems, farming systems, burgundy, Limousin, French language, France.

NAL Call Number: 1.98 Ag84
Keywords: castration, age at castration, management practices, surgical castration, banding, liver protein, haptoglobin, stress.

NAL Call Number: 44.8 J822
Keywords: indwelling ruminal transponder development, electronic cow identifier.

NAL Call Number: SF601.P7
Keywords: beef cattle, liveweight, seasonal variation, survival, newborn animals, colostrum, animal husbandry, purchasing, mortality, risk factors, California, USA.

NAL Call Number: 18 L2353 Suppl.
Keywords: beef cattle cows, mothers, calves, extensive husbandry, milk performance, weaning, animal feeding, animal performance, Germany, European Union, German language.

NAL Call Number: SF1 K7
Abstract: In the European Union countries, beef cattle breeders make use of both beef and dairy breeds. In the latter case, commercial crossbreeding with beef breeds has been used to improve fattening efficiency and meat quality. After the unification of Germany, the Eastern Lands of Germany were affected by a high decrease in dairy cows and a growth in their yield. The number of unmilked cows, used as mothers to rear their offspring, has increased many times with the use of low-cost farm-produced fodders, mainly pastures. The beef demand crisis resulting from the BSE scandal was followed by a renewed interest in beef meat among consumers. Per capita beef consumption is increasing, although it is three times lower in Germany than in the USA. This makes prospects for this type of production, especially the production of high-quality beef graded as U and R under the EUROP system. The Land of Mecklenburg-Vorpommern has favourable conditions for the
production of beef cattle. Long-term experience makes it possible to choose the most effective fattening methods and select and tested breeds. The most important among the dozen or so beef breeds are Charolais and their crosses with Simmentals (the synthetic line Ucermaerker) as well as Limousin in smaller herds. In pure breeding and crossbreeding (SimmentalXCharolais), these breeds give a desired product while bright colour of fattening cattle is preferred by the buyers. Efficient methods for fattening calves with mothers at pastures were developed and put in practice, often in all-year cycles. Calvings in the early spring season in large herds (March-April) and calvings in the autumn-winter season (November-December) and pasture fattening of older calves with mothers in smaller herds are used. In the latter case, calf mortality is higher but they use pasture more efficiency. The suckling period is the minimum of 5 to 6 months. By that time, calves should achieve 250 kg (bulls) or 210 kg (calves) of body weight. At 5 months of age, calves should be separated from the bulls. Special attention is paid to the selection of bulls. They are tested for calf size and ease of calving such that calvings take place without breeder’s interference and without deaths of calves. Beef cattle production based on rearing calves at pasture is ecological in the full sense of this word. Regardless of the fact that it provides a product of the highest quality, it should be given special subsidies due to its ecological character.

**Keywords:** beef, breed, Charolais, Limousin x Charolais, Simmental x Charolais, animal breeding, meat product, production, quality, bull selection, calf fattening, cow-based methods, Germany.


**NAL Call Number:** SF1.L5

**Keywords:** beef cattle, organic farming, beef production, dairy bulls, surveys, finishing, ethics, animal husbandry, farmers, farmers’ attitudes, interviews, dairy farming, feeds, steers, grazing, Denmark.


**Keywords:** extensive husbandry, pastoralism, intensification, economics, extensive farming, Spanish language, Southern Europe, Spain.


**NAL Call Number:** SF1.S78

**Keywords:** milk production, dairy cows, milk yield, beef cattle, weight gain, weight, feed consumption, feeds, housing, litter for bedding, veterinary services, costs, profit, prices, Czech language, Czech Republic.


**NAL Call Number:** QL55 H8

**Keywords:** husbandry, welfare, beef cattle, calves, cost benefit analysis, weaning.


**Keywords:** suckler cows, beef cattle, extensive husbandry, livestock management, feeding level, body condition, feeding systems, animal performance, husbandry methods, Spanish language.


**Keywords:** extensive husbandry, performance, husbandry methods, farming systems, Spanish language, Spain.


NAL Call Number: 49 J82

Abstract: 33 steers were randomly assigned to 3 groups: freeze-branding, (F), hot-iron branding (H) and sham branding (S) treatments. The responses of all steers were videotaped to quantify the amount and intensity of head movements during branding. In addition, the force that steers exerted on the headgate and squeeze chute during branding was recorded using strain gauges and load cells. Behavioural indicators of pain (tail-flicking, kicking, falling and vocalizing) were also recorded. H steers had greater maximum and average head movement distances and velocities than F or S steers, and F steers only had greater maximum values than S animals. The maximum exertion forces obtained from headgate load cells were also greater in H than in F or S steers, however, no differences were observed between H and F treatments for squeeze load cell or headgate strain gauge data. H steers had the greatest incidence of tail-flicks, kicks, falls in the chute and vocalizations, and S steers had the least. It is concluded that H steers experienced more discomfort at the time of branding than F and S steers, and F steers also experienced more discomfort than S steers. Image analysis was a better technique for detecting treatment differences compared with exertion force measurements and frequency counts of during branding.

Keywords: steers, branding, pain, stress, animal behavior, head movement, tail-flicks, kicks, falls, vocalization, animal welfare, freeze branding, hot iron branding, sham branding, headgate squeeze chute.


NAL Call Number: 49 J82

Keywords: cortisol, escape behavior, stress-induced analgesia.


NAL Call Number: 41.8 M69

Keywords: beef cattle, replacement, heifers, weaning, breeding, animal breeding methods, nutrition, anthelmintics, growth promoters, culling, genetics, animal production, fertility, frame scores, herd size, growth promoting implants.


NAL Call Number: S3.A27

Keywords: extensive husbandry, weaning, genetic parameters, heritability, genetic gain, Sweden.


NAL Call Number: 18 L2353 Suppl.

Keywords: calves, cows, mothers, dairy cows, colostrum, immunity, immunoglobulins, extensive husbandry, intensive husbandry, Germany, European Union, German language.

**Keywords:** beef bulls, Charolais, Hereford, breed, polled condition, horns, live weight gain, body weight, scrotum, backfat, fat, thickness, dehorning, animal welfare.


**Keywords:** aversion, habituation process, hot-iron branding.


**Keywords:** beef cattle fattening, family labor, farmer income, crop management, java, Indonesian language, Indonesia.


**Keywords:** herd structure, breeding systems, husbandry, feeding, housing, fattening, cooperative activities, livestock management, Polish language, Poland.


**Keywords:** breed, Holstein x Friesian, bull, plasma, blood and lymphatics, acute phase proteins, cortisol, fibrinogen, interferon-gamma, ketoprofen, analgesic drug, local anesthesia, burdizzo castration, caudal epidural anesthesia, growth rate, immune function.


**NAL Call Number:** 44.8 J822

**Keywords:** breed, Holstein x Friesian, bull, plasma, blood and lymphatics, acute phase proteins, cortisol, fibrinogen, interferon-gamma, ketoprofen, analgesic drug, local anesthesia, burdizzo castration, caudal epidural anesthesia, growth rate, immune function.


**NAL Call Number:** 44.8 J822

**Keywords:** breed, Holstein x Friesian, bull, calf, male, interferon gamma, plasma, acute phase proteins, cortisol, fibrinogen, haptoglobin, ketoprofen, analgesic drug, dosage, surgical castration, surgical method, average daily feed intake, immune function.


**NAL Call Number:** SB1 A37

**Keywords:** beef herds, BokerTov, analysis program, computer software, record-keeping program, individual animal data, pasture characteristics.


**Keywords:** cows, winter, feeding, rations, growth, stocking density, livestock management, South Africa.


**Keywords:** calves, weaning, cows, weight gain, weight losses, weaning weight, South Africa.


**NAL Call Number:** 18 G31

**Abstract:** Decreasing numbers of dairy cows and increasing individual milk performance as a consequence of enhanced quality of basic forage and the increasing importance of concentrates caused a redundancy of grassland. It is deducible from the recent development of livestock, that in particular in peripheral regions, keeping of suckler cows and beef cattle may be interesting, irrespective of the farm size. Dominant factors for the economic success of suckler cow and beef cattle keeping are the marketing performance and costs for stables, forage, and work. This paper focuses on the analysis of the cost items. The results can be summarized as follows: Outdoor stock keeping during winter in form of winter grazing, straw folds or folds on arable land are options to save costs for stables. This system is possible to practice ecologically friendly and according to demands of animal comfort. The extension of the grazing period by a careful defoliation during the vegetation period helps to save costs for conserves, provided that the soil type of the pastures is usable and the available soils have a sufficient bearing capacity. Concerning the plant communities Lolio- and Festuco-Cynosuretum, the forage value was acceptable, depending on year. Following forage traits were analysed: energy concentration, crude protein concentration, ergosterol concentrations, and concentrations of common mycotoxines, like zearalenon and ochratoxin A. Instead of hay or straw, silage can be an excellent alternative. But measured nitrate concentrations in herbage were insufficient, irrespective of the site, which makes it necessary to use appropriate silage additives. Alternative breeding traits like behavioural traits related to temperament and traits of disease resistance are more and more of importance in beef battle breeding. Because ease of handling is influenced by the intensity of human-animal contacts, difficulties in handling can occur under extensive management systems. Then the safety of the stockperson and the welfare of the animal are at risk, handling is more labour intensive and time consuming and therefore causes increased production costs.
Genetic differences in temperament in German Angus and Simmental cattle are shown. Temperament was defined as the behavioural response of the animal to handling under different situations. German Angus and male calves in both breeds were less difficult to handle regarding the different parameters. The results were proofed at different ages. Simmental cattle have been raised under more intensive production systems than German Angus cattle in the past. Therefore they are more used to human contact. Bad temperament is more common in cattle reared in intensive systems, because under these conditions, genetically based poor temperament is masked by the intensive handling. The estimated heritabilities of the behavioural traits open a way of selection for temperament in German Angus and Simmental cattle. The process costs on the farm are very high, if they are compared with the costs of farms in the east of Germany or with intensive grassland management e.g. in “Schleswig Holstein”. They are even higher if the yield in energy value is comprised to the evaluation. So the results are causal in context with high machine-costs and unfavourable field-structure on the one side and low yield because of an extensive cultivation on the other side. To reduce this high costs a cost oriented use of technique and the use of modem agricultural systems, - e.g. the use of Conditioners or automotive mowers - could be a possibility. Also a structural change effects an economy of process costs. If an enlargement of fieldsise or a reduction of the farm-field distance is to prefer, it shouldn’t be evaluated separately from the aspects of transport-linked and non-transport-linked field operations as well as the investment and the degree of utilisation.

**Keywords:** Angus, Simmental, Schleswig Holstein, breed, extensive cultivation, extensive management system, grassland utilization, hay, feed, pasture grazing, silage, straw, temperament traits. Copyright© 2003, CAB International


**NAL Call Number:** 41.8 J82

**Keywords:** dairy cattle, beef cattle, sheep, freeze-branding, heat-branding, tattooing with liquid nitrogen, carcinogenic epidermal neoplasia, papillomatosis, skin tumors, squamous cell carcinoma.

[Return to Contents](http://awic.nal.usda.gov/awic/pubs/Beef/husbandry.htm)
Information Resources for Beef Cattle

Legislation


Rossi, P.; Gastaldo, A. (2002). Structural costs of raising beef cattle organically. [Costo delle strutture per l'allevamento biologico dei bovini da carne.] Informatore Agrario 58 (2): 39-44, ISSN: 0020-0689. NAL Call Number: 281.8 IN32

Abstract: EC regulation 1804/99 stipulates the maximum numbers of cattle/ha in pasture and maximum numbers/m2 in covered and uncovered housing for organic production. Various possibilities for meeting housing regulations (boxes with litter and outside exercise areas) for bullocks and cows are proposed and contrasted with conventional installations. The ideal solution is new buildings but, if this is not easily achieved, the farmer must analyse in detail the cost of adapting existing housing compared with building new. It is estimated that the cost of new multiple box with inclined litter facilities for housing organic beef production would be more than twice that of new conventional stalls. The costs of adapting conventional slotted floors and supplying a paved exercise area would depend on the buildings to be adapted but an average cost might well be 90 - 120 Euros. Provision for the cows and calves would cost less than for bullocks for fattening. Beef cattle are probably the most costly to provide statutory organic housing for, but against these costs must be set possible increased returns.

Keywords: beef cattle, housing, costs, boxes, litter, outside exercise areas, conventional stalls, European Union, organic farming, regulations, Italian language. Copyright© 2003, CAB International


Return to Contents
An Overview of Current Beef Welfare Concerns

James W. Oltjen, Ph.D, and Frank M. Mitloehner, Ph.D.
Animal Management Systems and Air Quality Extension Specialists, Department of Animal Science, University of California, Davis, CA 95616

Although beef cattle welfare issues have not attracted as much concern as for those for other farm animals, it does not mean that they are not important, both to those who have a direct association with the beef industry as well as to those looking in from the outside. Progress has been made in understanding beef welfare since the last Housing, Husbandry, and Welfare of Beef Cattle publication (AWIC, 1995), and the new bibliography presents an expanding database. This introduction is to share our views on current beef welfare issues as they affect beef cattle raised in the United States, and we direct readers to the bibliography following for more in-depth information on the welfare issues.

Knowledgeable beef producers are concerned about the welfare of their animals. They know that cattle treated correctly will perform well. If even a small proportion of beef producers provide less than optimum care, it is a concern to other beef producers and all others associated with beef production. Therefore it is in everyone’s best interest that animals receive proper care throughout the production cycle.

One of the main animal welfare concerns in beef cattle production is that of pain and distress, especially pain inflicted by normal husbandry procedures other than common day to day stress in typical production. There is little concern, for example, about cows on rangelands, as long as nutrition is not severely restricted. Rather, dehorning, castration, and branding are husbandry procedures which can cause pain and discomfort and if done incorrectly may result in subsequent health problems. Often these procedures are justified with the argument that a little pain now will prevent more pain later. Other procedures, such as confinement, medication, and research protocols (e.g., blood sampling, cannulation) also merit attention. Economics and research needs drive these, and careful attention and justification is warranted.

Less acute but still distressful are those issues related to the animals’ environment. These issues are often related to climate, because beef cattle are normally raised completely outdoors in the United States. Although housing to ameliorate adverse climates exists, it is generally not economical for most producers to provide. Therefore, extreme natural conditions can result in cattle that are heat and/or cold stressed. Excessive dust and/or mud particularly in feedlot settings are environmental factors that can adversely affect welfare as well.

Another aspect of the environment is the relative abundance or scarcity of feed resources. Because beef cattle are often raised extensively with a seasonal restriction of nutrition, they undergo a subsequent loss of body fatness. Drought and the resulting overstocking for the available feed resources can also reduce body fatness. Thus, these natural temperature (acute) and nutritional stresses (chronic) are welfare issues potentially important in beef production.

The following is a short preview of the different sections that follow in this bibliography. While not complete, it introduces the reader to the recent work in the area relating to beef cattle production.

Behavior

Many references in the Behavior section deal with cattle temperament. Temperament is discussed with respect to the effects of breed (especially Bos indicus breeds), genetics, environment, and handling as well as the effects of temperament on carcass characteristics and performance. Numerous papers cover the area of human animal interrelationships, and low stress cattle handling. Several handling methods that potentially affect cattle behavior, pain, and stress are discussed such as dehorning, and castration, and branding. Some cover animal stress and how it relates to...
environment stimuli (e.g., noise, light) or handling practices. Another main focal area is on feeding/grazing behavior and effects of feeding management on behavior and performance of cattle.

**Breeding**

Most of the citations in the *Breeding* section are related to either genetic evaluation or to selection methods and criteria. Traditional breed evaluation continues; tropical breeds and crosses were emphasized, although high marbling breeds like Wagyu were also included. Heterosis expected between breeds was often part of the research. Some papers covered effects for environments in specific countries (e.g. tropical adaptation), or bull tests. Newer tools for evaluation such as ultrasound for carcass evaluation and markers, microsatellites, QTL's, and genetic identification and other DNA methods are proliferating. A limited literature on new techniques in mixed model analysis was presented. Selection for traits and awareness of the interactions between traits was reported for growth, carcass composition, energetic efficiency, temperament, dystocia, endophyte fescue adaptation, and bull breeding soundness. Breeding objective definition and indexes are continually being developed, tested, and refined.

**Feeding**

A large section on *Feeding* is included in the bibliography. An update of the Seventh Edition of the NRC Nutrient Requirements of Beef Cattle, was published in 2000. Surveying this section, management strategy (e.g. limit feeding of high concentrate diets), energy expenditure, hormonal profile (IGF-1, somatotropin, and exogenous steroids or ractopamine) and their inter-relationships with metabolism, efficiency, and carcass characteristics is of great interest but will continue to provide challenges to researchers. Also, the appropriateness of various forms of energy or protein supplements for given production situations are on ongoing area of research, along with continuing interest in trace mineral (Cu, Mb, Se) needs and renewed interest in vitamins D and E for finishing cattle and their interaction with beef and carcass quality. There are a number of studies testing byproducts as beef cattle feeds including excreta from swine or poultry or their bedding, and further feed evaluation with new interest in novel grains such as high-oil corn, or genetically modified plants. Grain processing is also covered.

Grazing system affects nutritional intake, and research on continuous versus rotational grazing, timing of pasture use, the distribution of cattle and other grazing behavior continue. Matching seasonal forage supply with needs of the cow herd is critical, and supplemental feeding strategy, stocking rate, and even changing calving season effects on reproduction and calf productivity are under investigation. Antibiotic use is under scrutiny, and several papers deal with this issue. Also, the effect of different feeds on pathogenic bacteria is not resolved. Diet influence on methane and ammonia production, of interest for environmental effects, is being addressed. Heat stress may partially be alleviated by feeding strategy (timing, amount, and type of diet). Nutrition is inter-related with immunity.

**General**

The *General* section covers a wide range of welfare related topics from beef handling guidelines in the United States, European countries, and Australia, to sustain ability of beef production systems, agro-ecology, and organic farming. Most papers address these beef welfare issues on a national scale (e.g., Australia, New Zealand, Germany, Poland, Sweden, Canada).

**Health**

In 1998 The National Animal Health Monitoring System released a study of the health practices in the cow-calf segment of the beef production industry, and began a new study of the feedlot industry which has not yet been released. However, much has been published since the last NAL beef bibliography on disease and other conditions that affect beef cattle health. These include papers on acidosis, bloat, bovine herpes virus, bovine immune deficiency virus, bovine viral diarrhea, bovine respiratory disease, bovine respiratory syncytial virus, drug-induced hepatitis, dystocia, ectoparasites, leptospirosis, liver abscesses and flukes, mastitis, nematodes, neospora, poison plants, salmonella, and skin tumors. Feedlot health items covered are mass medication of (usually) incoming cattle and appropriate treatment
protocols, the impact of feedlot diseases, and using techniques, such as infrared thermography, to detect inflammations such as fever or improper implant technique. Nutritional factors interact with immunity, in certain situations; trace minerals, probiotics, and vitamin E were shown to stimulate immune response or help prevent disease. Injection site lesions in meat were investigated for causes, including clostridial vaccinations. There were a few papers investigating the effect of potential environmental hazards (oil and gas wells, composting) on health.

**Housing**

A main focus of the Housing section is on prevention of heat and cold stress in cattle. Numerous papers address the use of shades, water sprinklers/misters, and windbreaks to mitigate adverse climatic effects. Climatic conditions have to be severe to show advantageous effects of e.g., shade on behavior, physiology, performance, and carcass characteristics. The main reason for this finding is that cattle are well adapted to a wide range of climates and have the ability to compensate for performance losses once stressful conditions are over. The area of thermoregulation with respect to the animal's metabolism and physiology is discussed. Numerous papers address floor types and how they affect cattle lameness, cleanliness, performance, and carcass characteristics. Cattle preferences regarding floor type (floors covered with mats, sawdust, straw, or slatted floors) are presented.

**Husbandry**

The Husbandry section deals with issues related to potentially painful practices like castration, branding, implanting, and dehorning. Castration is discussed with respect to effects on performance, immunology, and inflammatory responses. Methods to control pain during castration like the use of novel anesthesia are discussed as well as recommendations given regarding age at castration to reduce welfare problems. Effects of branding methods from hot iron, over freeze- to sham-branding on cortisol levels and pain sensitivity are compared and hot iron branding identified as the most stressful method. Furthermore, branding method was identified as affecting the ease of movement through chutes. Several papers compare implant strategies and effects on beef cattle performance. Dehorning is identified as an important welfare issue related to production traits and welfare and several methods compared to minimize adverse effects on cattle welfare.

**Production Systems and Management**

A number of studies in the Production Systems and Management section focus on the sustainability of beef production systems. Several go further and explore ethological and/or ecological aspects, including organic beef production and marketing. Also in this section are systems analysis studies of beef forage systems, costs and benefits of marketing alternatives, and relationships between costs of production and profit. Body composition models are included here due to the need for them in management systems to predict growth and market value. There are also a few papers on production in other countries. In particular finishing cattle in feedlots is increasing in a number of foreign locations. Rotation and other generally more intensive grazing practices, along with analysis of relative overstocking has been a growing area of interest. Finally, in the Production Systems and Management section are some references to other beef husbandry practices such as early weaning and changing the calving season.

**Reproduction**

Breeding or crossbreeding, particularly in the tropics between Bos taurus and Bos indicus, effects on reproduction have been investigated. Other factors looked at that affect reproduction were trace minerals, endophyte fescue, body condition score, calving season, antibiotic use, meleagrosterol acetate, age, and suckling. Estimators of fertility traits such as markers on sperm, scrotal or testicular size, whole milk progesterone, and monitoring devices were evaluated. Reproductive behaviors were related to exposure to the opposite sex before breeding, other mating stimuli, and group management factors. Systems analysis of reproduction and prediction of pregnancy rate were attempted. Estrus synchronization was a major area of study, with methods and protocols nutritional interactions, calf removal, number of inseminations and induced ovulation all targeted. Spaying, embryo transfers, caesarian sections are topics of further studies.
Slaughter

The factors affecting carcass quality, management (e.g., castration age and method) and growth path, nutrition, and genetics (breed, temperament traits) are of great concern. Models to account for some of these effects have been proposed, and composition prediction for growing or adult cattle are offered, as well as studies on breed and body condition effects on yield and value of cull cows. Ultrasound is used as a tool to estimate composition of live cattle, especially intramuscular and back fat. Myostatin, as well as the effect of intravenous glucose or electrolytes on meat quality was studied. Season and stocking pressure was related to stress susceptibility and incidence of dark cutters. Also, an evaluation of the USDA grading standards was reported. Conjugated linoleic acid, important for its health benefits, was higher in forage fed or organically produced beef.

Beef safety is another concern, with trace-back and electronic identification systems, or microbial contamination and its relation to diet and location of contamination in the forefront. Other studies investigated frequency of injection site lesions; estrogen residues in the animal; disease monitoring, especially tuberculosis at slaughter; and liver abscesses. Transport stress, and welfare and hygiene pre-slaughter, as well as vocalization and neuroendocrine response was correlated to handling or equipment problems at slaughter plants.

Transport

Transport issues are mainly discussed with respect to food safety and cattle welfare. Effects of cattle transport on food safety with respect to shedding of Escherichia coli O157, Salmonella, and Campylobacter are of concern and prevalence levels of these microbes discussed. Welfare issues related to transport are pre-transport cattle handling, transport distance, and space allowance. One paper offers tips for low stress handling.

The following bibliography will be of interest to scientists, veterinarians, extension specialists, students, and others, wishing to explore the broad range of current issues relating to the care and welfare of beef cattle. It is by no means complete but represents a sampling of the world wide literature available for review.
Production Systems and Management


NAL Call Number: S15 A365

Keywords: cattle farming, forests, agroforestry systems, silvopastoral systems, atmosphere, biodiversity, deforestation, greenhouse effect, natural regeneration, organic matter, pastures, soil organic matter, sustainability, methane, carbon dioxide, Spanish language, Costa Rica.


NAL Call Number: SF55 A78A7

Keywords: beef cattle production, calf rearing, early weaning, efficient production systems, live weight, locally available feeds, Indonesia.


NAL Call Number: 104 SW3

Keywords: beef cows and sheep operation, landscape preservation, husbandry, animal production, economics, extensive farming, growth, calves, organic farming, environmental protection, Swedish language, Sweden.


NAL Call Number: SF1 Z6

Keywords: extensive husbandry, national parks, nature reserves, zootechny, highlands, breeds, development projects, germplasm conservation, ecosystems, history, pastoralism, development plans, development policies, extensive farming systems, Italian language, Italy.


NAL Call Number: SF191 W62

Keywords: beef production, intensification, mathematical model, overstocking, stocking rate, profit, rangeland degradation, environmental costs, soil loss rate, Africa


NAL Call Number: SF191 W62

Keywords: arid zones, sustainability, grazing, stocking density, evaluation, husbandry practices, Africa.


NAL Call Number: 19 F75

Keywords: beef cattle, producer prices, production, bovine spongiform encephalopathy, production costs,
animal husbandry, farm surveys, farm comparisons, profitability, calf prices, fattened animal prices, breed data, feed ration, daily weight gain, length of feeding period, German language, Austria.

NAL Call Number: 450 C16
Keywords: rotation grazing, forage crops, weight gain, Canada.

NAL Call Number: S539.5 J68
Abstract: Management and marketing are key components of success and profitability of any beef cow/calf operation. There are many factors involved in management of a cow/calf operation and in marketing its products. These factors interact in a complex manner making any attempt to separate their effects, when predicting profitability as a function of management and marketing decisions, difficult and impractical. Therefore, we developed a simple computer program (CowCost, runs under Windows95 or Windows98) to enable producers to evaluate various management practices and their potential impacts on profitability. The program links the management and marketing variables commonly found in a cow/calf operation in an interactive way. This results in an immediate response to any changes in the input data and, therefore, provides the users with the ability to test many "what if" scenarios and their subsequent effects on profitability. In turn, producers can check many different scenarios, prices, costs, and how they will affect the value of a cow. It is both a program to evaluate management ideas and profit potential of chosen scenarios. The program considers money borrowed to buy a cow, duration of the loan, cost of the cow, salvage value of the cow, yearly cow cost, calf weaning weight, calf price per pound and other variables to evaluate profit potential. Varying any one of these gives insight to management practices that could be emphasized to increase profit. The program allows investigation of the effects of costs relative to other inputs in decisions about purchasing cows.
Keywords: beef cows, beef cattle, calves, profits, prediction, computer software, computer techniques, profitability, marketing, decision making, prices, costs, economic analysis, evaluation, cattle husbandry.

NAL Call Number: S539.5 J68
Abstract: Determining which management practices to focus on to improve profitability is a major challenge in any cow/calf operation. We used CowCost management simulation to evaluate the relative importance the major factors. The software generated 50 000 different management scenarios using values that were generated randomly, but within reasonable ranges of typical western cow/calf operations. Management factors studied by the model included the original cost of the cow, interest rate paid on money borrowed to buy the cow, salvage value of the cow at the end of her production life, percentage of calves the cow might wean, yearly cost per cow of the ranching operation, average weaning weight of the calf, and the average price brought by the calf. The model assumes calves will be sold at weaning and not held as yearlings. The model used these management factors to predict profit or loss, and to gauge the relative importance of the management practice. All scenarios were for one cow with an assumed production of 8 yr. Correlation analysis of the data showed that yearly cost was the most influential in determining profit or loss. The money received per pound of calf was next most influential. Weaning weight was the third most influential and weaning percent is fourth. The original cost of the cow, interest rates, and salvage value of the cow were far less influential on profit loss. While these final items, especially the cost of the cow and interest rate, receive a great deal of attention from most producers, they may not deserve that much attention, especially compared with other management inputs.
Keywords: beef cows, beef cattle, calves, profits, prediction, computer software, computer techniques, profitability, marketing, decision making, prices, costs, economic analysis, evaluation, cattle husbandry.

Keywords: beef, production, marketing, exports, quality, beef cattle, animal husbandry, animal breeding, meat and livestock industry, Irish Republic.


**NAL Call Number:** SF196.B7D63

**Keywords:** nutrition, construction of feedlots, fattening performance, meat production, health, husbandry, economics, management, feedlots, growth, tropics, reviews, Portuguese language, Brazil.


**NAL Call Number:** 49 J82

**Keywords:** breed, Brown Swiss, Pirenaica, animal performance, calving season, grazing season, production system, mountain pastures, Spain.


**NAL Call Number:** SF196.B7D63

**Keywords:** steers, nutrition, feed supplements, feedlots, weaning weight, selection, profitability, meat production, management, age at first calving, tropics, growth, beef production, intensive husbandry, economics, Portuguese language, Brazil.


**Keywords:** agroforestry systems, beef production, husbandry, cost benefit analysis, finishing, grasslands, grazing systems, live weight, natural grasslands, paddocks, production costs, profits, rotational grazing, silvopastoral systems, Leucaena leucocephala, Cuba.


**NAL Call Number:** SB197 A1T7

**Keywords:** native pasture, Stylosanthes, forage crop forage, grazing intensity, pasture productivity, pasture stability, live weight gain, Australia.


**NAL Call Number:** S5 C65

**Keywords:** ruminants, animal production, dairy cattle, beef cattle, productivity, beef, veal, consumer behavior, world markets, economic competition, France, animal products, French language, Western Europe.


**Keywords:** beef cattle, dairy cattle, farm size, stocking density, economic analysis, farm results, profitability,
intensive husbandry, extensive husbandry, international agreements, European Union, French language.


NAL Call Number: 60.8 F82
Keywords: methodology, beef production, labour, beef cattle, grazing, management, constraints, farms, French language, France.

NAL Call Number: SF601 B6
Keywords: artificial insemination, cattle breeding, economics, food animal veterinarians, herd sizes.

Keywords: animal husbandry, beef cattle, reviews, Polish language, Poland.

Keywords: cows, heifers, beef cattle breeds, crossbreeding, small, Angus, Hereford, medium, Limousin, Blonde d’Aquitaine, large, Charolaise, meat production, models, body weight, calving season, Poland, Polish language.

NAL Call Number: 41.8 R3224
Keywords: husbandry, production, health, programs, Canada.

NAL Call Number: SF604.63 N45S87
Keywords: health, animal welfare, beef cattle, production, grazing systems, intensive livestock farming, New Zealand.

NAL Call Number: HD1 A3
Keywords: beef cattle, modernization, farmers’ attitudes, profitability, lifestyle, environmental impact, farm management, economic behavior, social values, cattle farming, innovation adoption, extension, Queensland, Australia.

NAL Call Number: 41.8 P882
Keywords: public opinion, agricultural economics, animal welfare standards, beef cattle, dairy cattle, pigs, climate, grazing, intensive husbandry systems versus extensive systems, housing, straw, labor costs, research, German language.

**Keywords:** veal calves, organic agriculture, meat production, livestock management, slaughter weight, dressing percentage, carcass composition, quality, animal feeding, alternatives, farming systems, Italy, Italian language.


**NAL Call Number:** SD387 M8A3

**Keywords:** beef cattle, Mediterranean climate, grazing, case studies, garrigue, feed supplements, shrubs, thinning, cows, stocking rate, poultry manure, weaning weight, calves, calving season, seasonal variation, husbandry, performance, landscape, regrowth, sustainability, Israel.


**Keywords:** cows, extensification, grazing, livestock management, grassland management, animal performance, animal feeding, behavior, extensive farming, France, French language.


**NAL Call Number:** 49 J82

**Keywords:** beef cattle management systems, spring calving, fall calving, overview of structure and function of ecosystems, energy input/output, whole body mass, grain production budgets, raw materials, manufacturing, distribution costs.


**NAL Call Number:** SF1.P77

**Keywords:** breed, Charolais, female, farmers, farm management priorities, beef production, certified quality meat sector, management practices French language.


**Keywords:** animal production, carcasses, beef, quality, land races, animal husbandry methods, Spanish language, Spain.


**NAL Call Number:** 49 J82

**Keywords:** breeding, breeding date, cow-calf production system profitability, cow-calf production systems, grazing season length, profits, weaning, weaning date.

The problems of beef production, including concerns about animal welfare, undesirable environmental effects, inability to be economically viable without subsidies from the public purse, and, recently, in the light of the B.S.E. crisis, possible concern for public health, are discussed. The criteria for improved animal welfare, including reduced behavioural restriction, are examined in order to work towards developing “ethologically sound” environments. The criteria for assessing the ecological effect of the beef producing enterprise are also outlined. One suggested way of reducing environmental and animal welfare problems is the production of suckled beef on ecological farms if this can be economic.

Keywords: beef production, animal welfare, behavioral restriction, bovine spongiform encephalopathy, public health concerns, profitability, environmental impact, animal husbandry, meat production, UK. Copyright © 2003, CAB International

The practicalities and economics of ethologically and ecologically raised double suckled beef. Biological Agriculture and Horticulture 16 (4): 381-393, ISSN: 0144-8765.

This paper describes an ethological and ecological management system for rearing beef cattle. Data on the management, production and economic performance of a herd of double-suckled South Devon cattle on a farm within the Dartmoor National Park, UK, were collected from 1990 to 1996 and were compared to figures given in the University of Exeter’s Farm Management Handbook for Premium Farms. Data from the experimental farm included records on 62 cows which gave birth to 60 calves and reared an additional 53 calves. The ecological criteria were mainly fulfilled by the management system and the gross margin per head (pounds sterling158.90-818.18) was generally higher than that of the conventional farms (pounds sterling366.10-555.34).

Keywords: South Devon, breed, animal welfare, animal behavior, husbandry, prices, suckling, farm management, beef production, profitability, economics, suckler herds, farming systems, organic farming, UK. Copyright © 2003, CAB International


Keywords: grassland management, farming systems, farms, nitrogen, application rates, nitrogen balance, herbage, biomass production, grazing, animal husbandry, cutting, nutrient sources, broadcasting, cattle slurry, animal housing, trifolium repens, grass sward, botanical composition, soil injection, sandy loam soils, silage, sustainability, fodder, ammonium nitrate, South West England.


Keywords: cattle farming, beef, breeds, animal breeding, livestock numbers, animal production, production, milk, imports, beef cattle, specialization, production possibilities, development programs, natural grasslands, agricultural policy, Russian language, Russia.

Proposal of new equivalent values for different animal categories to quantify cattle herds and adjust stocking rates. [Proposta de novos valores de equivalencia entre as categorias animais para dimensionar rebanhos bovinos e ajustar a lotacao das pastagens.] Arquivo Brasileiro de Medicina Veterinaria e Zootecnia 50 (6): 759-763, ISSN: 0102-0935.

Keywords: dairy cattle, beef cattle, stocking rate, animal husbandry, breed size, body weight, age at first parturition, estimation, age at slaughter, Portuguese language.

NAL Call Number: S15 A377
Keywords: Holstein Friesian, breed, parturition, intensive husbandry, fattening, grazing, restraint of animals, carcasses, feeding, farming systems, reproduction, Chile, Spanish language.


NAL Call Number: SF1 L5
Keywords: dairy cattle, beef cattle, genetic gain, animal husbandry methods, meat production, milk production, pollution by agriculture, nitrogen, phosphorus, methane.


NAL Call Number: 23 Au783
Keywords: Brahman, breed, methane emissions, pollution, predictive equations, tropical forage diets, high grain diet.


NAL Call Number: 49 IN3
Keywords: beef cattle, calves, veal, production data, husbandry, feeding, Italy, Italian language.


NAL Call Number: 18 L2353 Suppl.
Keywords: beef cattle cows, mothers, animal husbandry, animal feeding, winter pastures, site factors, nutritional requirements, costs, soil types, management, Germany, European Union, German language.


NAL Call Number: 49 J82
Keywords: beef cattle, management, workshops, information, teaching, textbooks, audio, visual aids.

Keywords: beef cattle, sheep, goats, breeding, livestock farming, production, history, efficiency, new feed resources, supply, pastures, lucern, maize Uzbekistan, West Asia.

Keywords: beef cattle cows, farm management, mechanization, production costs, farm equipment, feeding equipment, livestock numbers, business management, labor costs, Poland, Polish language.


NAL Call Number: SF55 IA468

Keywords: simulation model, Alberta Beef Production Simulation System (ABPSS), effects of, cow size, milk production, calf market price, economics, calf market price, weaning age, dry matter intake.


NAL Call Number: 41.8 C163

Abstract: A dynamic deterministic model for simulating beef cattle production systems is developed to evaluate the effects of production traits and management strategies on the bioeconomic efficiency of beef production systems. The model, named Alberta Beef Production Simulation System (ABPSS), is composed of four major submodels: herd inventory, nutrient requirement, forage production, and economic submodels. The herd inventory submodel is used to simulate population dynamics and feed requirements in the herd. The nutrient requirements submodel is mainly based on the 1996 version of the National Research Council (NRC). It is used to evaluate nutrients and feed requirements for calves and cows depending on their physiological status (maintenance, growth, lactation and gestation) and the climatic condition. The forage production sub-model is used to predict forage growth rate, cattle grazing rate, available forage biomass and total hectares required for grazing. The economic submodel measures bioeconomic efficiency, as net return per cow, by subtracting total cost from total return. The nutrient requirements predicted by ABPSS were compared with those recommended by the NRC for testing. The results that were predicted by the NRC model and ABPSS model were similar, as expected. Sensitivity analyses showed that cow mature weight, milk production, calf weaning weight and feed prices were the most critical input parameters in the model. It must be noted that the model was developed based on available experimental results and data from the literature and, due to the unavailability of a suitable data set, the model could not be validated. We suggest that the ABPSS has the potential for providing a use method for simultaneous consideration of many factors in an integrated system, which could be helpful to beef cattle extension specialists and cow-calf production managers for assessing the potential effects of different management and selection strategies on bioeconomic efficiency.

Keywords: beef cows, calves, calf production, dynamic models, simulation models, mathematics and statistics, nutrient requirements, returns, cattle husbandry.


NAL Call Number: 41.8 C163

Keywords: animal production, spring-calving cows, calves, crude protein, economics, efficiency, grassland management, grasslands, intensive husbandry, live weight gain, rotational grazing, stocking rate.


NAL Call Number: 49 N62

Keywords: steers, Japanese Black, breed, body measurements, chest girth, body length, hip height, thurl width,
regression analysis.


**NAL Call Number:** S15 I8

**Keywords:** beef cattle, grazing, extensive husbandry, profitability, extensive livestock farming, management, meat production, extensive production versus intensive production, economics, Spanish language, Spain.


**NAL Call Number:** SF1 Z6

**Keywords:** national parks, nature reserves, animal husbandry, zootechny, regulations, farms, Italian language, Tuscany, Italy.


**NAL Call Number:** SF95 A9

**Keywords:** livestock, beef cattle, sheep, pigs, goats, indigenous breeds, husbandry, age, stocking density, growth, body weight, slaughter weight, milk production, meat production, wool production, reproductive performance, Spanish language, Spain.


**NAL Call Number:** 49.9 N483

**Keywords:** beef cattle, sheep, farm monitoring, farm management, performance, income, technology, product information, supply, demand. New Zealand.


**Keywords:** Czech language, Czech Republic, bulletin, management practices, agricultural economics, winter housing, beef production, carcass grading, cattle breed characteristics, mineral nutrition, mineral supplements.


**NAL Call Number:** 49 J82

**Keywords:** computer simulation of beef cattle production systems, body composition, cows, genotypes, lactation, metabolism, prices, protein metabolism, reproduction, beef production, calf production, animal production, simulation models, Montana.


**NAL Call Number:** 49 J82

**Keywords:** current systems, non-sustainable, resource extraction, constructive change, quantitative measure, research and extension personnel, adaptive management strategies, interdisciplinary efforts, legislation, American Society of Animal Science (ASAS), strategic planning, current issues, environmental concerns.

Information Resources for Beef Cattle

Konferencje 291: 31-38, ISSN: 1232-3071.
**Keywords:** grassland management, grazing systems, water management, environmental impact, benefits of raising cattle, organic wastes, waste management, environmental protection, ecology, pollution control, USA.


**NAL Call Number:** QH541.5 D4J6
**Keywords:** arid environment, geographic information system, based models, land management, potential spatial distribution models, variables, vegetation type, degree of slope, distance from water.


**Keywords:** fattening, farm income, economic analysis, dry farming, java, animal feeding, cultural methods, farm surveys, farmer interviews, income, Indonesian language, Indonesia.


**Keywords:** pigs, beef cattle, poultry, ammonia, emission, pollution, livestock farming, environmental impact, welfare, German language, Germany.


**NAL Call Number:** 49 J82
**Keywords:** body composition, prediction models, computer growth model, empty body weight, fat composition.


**Keywords:** beef cattle, sheep, mixed grazing systems, stocking density, weight gain, growth rate, farm inputs, livestock management, Czech Republic.

[Return to Contents]
Reproduction


NAL Call Number: SF604.V485

Keywords: heifers, crossbreeding, bos taurus x bos indicus, artificial insemination, estrus detection, reproductive performance, Spanish language, Costa Rica.


NAL Call Number: 44.8 J822

Keywords: estradiol cypionate, diestrus, estrus, intromission, mounting, novel female exposure, sexual behavior.


NAL Call Number: 49 J82

Keywords: calf, crossbred beef cow, female, heifer, liver, IgG, dietary supplement, copper, manganese, zinc, humoral immune response, reproductive performance.


NAL Call Number: 49 J82

Keywords: bulls, Santa Gertrudis, breed, male fertility, 30-kDa heparin-binding protein, fertility-associated antigen, spermatozoa, membranes, sexual behavior.


NAL Call Number: QP251 R48

Keywords: Nelore or Nelore crossed animals, extensive system, Brachiaria brizantha and humidicola, Andropogan gayanus and Lageado (Hyparrhneia rufa), artificial pastures, conception rate, parturition, pasture, reproductive behavior, weaning age, Brazil, Portuguese language.


NAL Call Number: QL876 B5

Keywords: heifers, graafian follicles, corpus luteum, estrous cycle, synchronized females, festuca arundinacea, seed contamination, endophytes, mycotoxicoses, heat stress, interactions, blood serum, prolactin, cholesterol, progesterone, estradiol, fescue toxicosis.

Zealand Journal of Agricultural Research 40 (2): 231-238, ISSN: 0028-8233.

**NAL Call Number:** 23 N4892

**Keywords:** compudose, rumensin, monensin sodium, estradiol, 17 beta, feed additives, hormonal growth promotant, live weight gain, effects on, carcass quality, meat quality, m. longissimus, meat brightness, warner, bratzler peak shear value, New Zealand.


**NAL Call Number:** 49 J82

**Keywords:** Computer Vision System, commercial video image, analysis system, evaluation method, online evaluation, USDA yield grades, carcass red meat yield.


**NAL Call Number:** SF15 S7A52

**Keywords:** suckler cows, beef cattle, parturition, grazing, body weight, livestock management, animal feeding, reproduction.


**NAL Call Number:** 44.8 J822

**Keywords:** gonadotropin releasing hormone, fertility drug, estradiol benzoate, intramuscular administration, progesterone, intravaginal device, drug delivery system, fertility drug, breeding method, estrus synchronization, Ovsynch, body weight, energy nutrition, estrus success, plane of nutrition correlation, parity, silage, animal feed, winter calving.


**NAL Call Number:** 49 J82

**Keywords:** Simmental x Brahman, Angus x Brahman, Hereford x Brahman, crossbred cows, chlortetracycline, antibiotic, fertility traits, oral antibiotic effects.


**NAL Call Number:** SF1 R45

**Keywords:** heifers, cows, grazing, reproductive performance data, first calving, pregnancy rate, calf loss rate, reconception rate, sex effects, total herd loss rate, Portuguese language.


**NAL Call Number:** QP251 R48

**Keywords:** beef cattle, castration, cows, epididymis, surgery, vasectomy, bulls, costs, teasing, animal husbandry, estrus, Portuguese language, Brazil.

NAL Call Number: SF961 C37

Keywords: beef cattle, dairy cattle, cows, prostaglandins, progestogens, fertility, female fertility, estrus cycle, pregnancy rate, reviews, reproduction, biotechnology.


NAL Call Number: SF602 A5

Keywords: lactating beef cows, estrus, artificial insemination, tie stalls, calving, progesterone, animal housing, lactation, postpartum interval, France.


NAL Call Number: 49 J82

Keywords: beef cows, breed, postpartum interval, age, sire, synchronization of ovulation, Ovsynch protocol, calf removal, GnRH injection, blood samples, serum progesterone, conception rates.


NAL Call Number: SF201 G67 1996

Keywords: literature review, reproduction, estrous cycle, artificial control of estrus and ovulation, pregnancy testing, control of calving, reducing the calving interval, embryo transfer, in vitro fertilization, controlled breeding in buffaloes, embryo transfer and in vitro fertilization in buffaloes.


NAL Call Number: 43.8 EL22

Keywords: cows, oestrus synchronization, artificial insemination, fertility, reproductive performance, French language.


NAL Call Number: 43.8 EL22

Keywords: cows, animal husbandry methods, estrus synchronization, reproduction control, reproductive performance, French language.


NAL Call Number: 49 J82

Keywords: Brahman, Senepol, Tuli, Angus, breed, preweaning performance, calves, adaptation, growth, weight gain, genotype environment interaction, performance evaluation, meat production, reproductive performance, comparative study, Texas, semi arid zone, tropical zone.


NAL Call Number: 49 J82
**Keywords:** beef cattle, bulls, crossbred, blood plasma, luteinizing hormone, male fertility, melengestrol, progestogens, reproductive behavior, sexual behavior, flehmen, mounting, testosterone.


**NAL Call Number:** 49 J82

**Keywords:** beef cattle, Angus, breed, heifers, luteinizing hormone, melengestrol, estrus behavior, ovulation, pharmacology, progesterone, reproduction, synchronization, synthetic progestogens.


**Keywords:** cows, Limousin, breed, female fertility, management, suckler herds, calving interval, France.


**NAL Call Number:** QP251 R48

**Keywords:** beef cattle cows, body condition score, calving, climate, synchronization of estrus, fertility, pasture availability, pregnancy rate, Brazil, Portuguese language.


**NAL Call Number:** 41.8 Au72

**Keywords:** beef cattle, Brahman, Brahman-Shorthorn, crossbred, female, heifer, Willis dropped ovary technique, ovariectomy, traditional paralumber spaying, traditional vaginal spaying method, animal welfare, body condition, body weight, mortality, pregnancy, Australia.


**Keywords:** beef cattle, calves, calving, dystocia, oxytocin, pharmacology, reproduction, stress factors, thesis, German language, Berlin, Germany.


**NAL Call Number:** SF601 C24

**Keywords:** crossbred beef bulls, 16 months old. breeding soundness examinations, measurement of scrotal surface temperature (SST), internal/scrotal testicular temperatures, testicular ultrasonographic echotexture, daily sperm production, epididymal sperm reserves,linear correlations, regression analysis.


**NAL Call Number:** SF601 B6

**Keywords:** beef, cow, productivity, management, body condition, pregnancy rate.


**Keywords:** beef cattle, bulls, crossbred, blood plasma, luteinizing hormone, male fertility, melengestrol, progestogens, reproductive behavior, sexual behavior, flehmen, mounting, testosterone.

NAL Call Number: 49 J82
Keywords: corpus luteum, endocrine system, reproductive system, follicle atresia, GnRH, IGF-binding proteins, androstenedione, estrogen, inhibin, progesterone, ultrasonography, imaging method, visualization method, CoSynch estrous synchronization system, early embryonic detection, fetal sexing, large animal reproduction, pregnancy rates, reproductive management strategies.


NAL Call Number: QP251.A1T5
Keywords: heifers, estradiol benzoate, progesterone-releasing intravaginal device (PRID), follicular development, ultrasonography, onset of estrus, estrus synchrony, fertility, pregnancy rates.


NAL Call Number: 41.8 M69
Keywords: beef herds, pregnancy rate, data analysis, cattle husbandry, breeding season, reproductive disorders.


NAL Call Number: 18 L2352 Suppl.
Keywords: beef cattle cows, mothers, calves, behavior, heart rate, movement, parturition, Germany, European Union, German language.


NAL Call Number: 41.8 So8
Keywords: cow, female, suckling, progesterone concentration, estrus indicator, artificial insemination, conception rate, optimal nutrition, intensive management.


Keywords: cows, reproduction, beef cattle, calving interval, heifers, mating, parturition, puerperium, reproductive organs, service period, postpartum interval, animal husbandry, reproductive performance, Slovakian language.


Keywords: calves, cows, bulls, Angus, Simmental, breed, mating, natural, artificial insemination, calf live weight, average daily gain, growth, heredity testing, Czech language.

Martinez, M.F.; Kastelic, J.P.; Adams, G.P.; Cook, B.; Olson, W.O.; Mapletoft, R.J. (2002). The use of

Information Resources for Beef Cattle


**Keywords:** crossbred beef cattle, pregnancy rates, GnRH or estradiol administration, melengestrol acetate (MGA) based estrus synchronization program, fixed-time insemination.


**Keywords:** beef cattle husbandry, calf production, reproduction, artificial insemination, Indonesian language, Indonesia.


**Keywords:** breeding, dairy production, energy metabolism, feed efficiency, feeding, fertility, infertility, meeting paper, nutrition, reproduction.


**Keywords:** beef cattle cows, mothers, calves, animal husbandry, animal feeding, nutritional requirements, energy, proteins, parturition, parturition complications, obstetrics, maternal behavior, Germany, European Union, German language.


**Keywords:** breed, beef synthetic 1, beef synthetic 2, dairy synthetic, Hereford, beef efficiency model, production, cow culling, cow, calf systems, life, cycle herd efficiency, reproductive performance.

**Characterization of productive aspects in Brangus Ibage cows with distinct levels of fertility (Caracterização de aspectos produtivos de vacas Brangus Ibag com distintos graus de fertilidade).** *Ciencia Rural* 32 (4): 663-667, ISSN: 0103-8478.

**Keywords:** beef cattle, reproductive performance, weight gain, maternal behavior, Rio Grande do sul, Brazil, Portuguese language.


**Keywords:** artificial insemination, follicle removal, embryo transfer, embryo quality, freezable, superovulation.

**Evaluation of a fixed-time artificial insemination protocol for postpartum suckled beef cows.** *Journal of Animal Science* 80 (12): 3060-3064, ISSN: 0021-8812.

**Keywords:** melengestrol acetate (MGA), oral progestin, gonadotropin-releasing hormone (GnRH), prostaglandin F2alpha (PG), estrus synchronization. fertility levels, herd studies, pregnancy rates.
Information Resources for Beef Cattle

**NAL Call Number:** 49 F84

**Keywords:** beef cattle, cows, Bruna dels Pirineus, breed, breeding season, pregnancy, gestation period, domestication, mating, natural service, Spain.


**NAL Call Number:** SF1.A56

**Keywords:** cows, parturition, copulation, mathematical models, mating systems, parturition interval, reproductive performance, statistical methods, estrus cycle, gestation period, time, developmental stages, animal performance, biological rhythms, developmental stages.


**NAL Call Number:** 49 J82

**Abstract:** The study objective was to determine the effect of chlortetracycline in an ad libitum trace-mineralized salt mix given to heifers before and(or) during bull exposure on the proportion pregnant and the time to conception in a fixed breeding period. Heifers (n = 768), 13 to 15 mo of age, were individually identified, immunized (Leptospira, Campylobacter fetus), examined (body condition score, vaginal lesion score, BW), and randomly allocated within 2 x 2 factorial blocks of treatments where trace mineral salt with and without chlortetracycline medication was provided in similar but nonadjacent pastures either before and(or) during bull exposure. The chlortetracycline feeding period was about 30 d for each. In the 2 d immediately before bull exposure, heifers were examined (body condition score, vaginal lesion score, reproductive tract evaluation) and reallocated to treatment pastures. Pregnancy was determined by per rectal palpation at 45 d following bull removal. Mineral intake was below that expected for heifer groups and, as a result, chlortetracycline intake was estimated at less than one-third of that targeted. Many heifers were not cycling reproducitively at the onset of bull exposure (n = 456, 60.3%, based on a reproductive tract score < 3). Despite these limitations, heifers receiving chlortetracycline treatment before breeding had a pregnancy percentage of 65% (chlortetracycline before and during breeding 67% and chlortetracycline before breeding 61.8%) compared to those receiving no treatment before breeding (53%, P < 0.03; no chlortetracycline before or during breeding 60.4% and chlortetracycline during breeding 47.4%). Heifers receiving chlortetracycline treatment before breeding were 57% more likely to become pregnant than those not treated before breeding. Change in vaginal lesion score was associated with the proportion pregnant, but neither body condition score nor average daily gain were.

**Keywords:** antibiotics, tetracycline, pharmacology, chlortetracycline, fertility, breeding, reproduction.


**Keywords:** bulls, breed, Madura, age, parameters measured, semen volume, sperm concentration, motile sperm, consistency and semen pH, Indonesian language, Indonesia.


**NAL Call Number:** SF1.A56

**Keywords:** age, beef cattle, blood plasma, corticotropin, heifers, hydrocortisone, progesterone, reproduction, handling, naive versus handled heifers.


**NAL Call Number:** 49 J82

**Keywords:** adult, angus, beef breed, calf crop percentage, calving date records, dam, female, Igf-I, insulin-like growth factor-1, levels, male, mating records, meeting abstract, reproductive performance, reproductive system, scrotal circumference, semen traits.


**NAL Call Number:** 49 J82

**Keywords:** animal behavior, artificial insemination, beef cattle, conception rate, dairy cattle, female fertility, GnRH, heifers, estrus, pregnancy rate, progesterone, prostaglandins, sexual behavior, synchronization, synchronized females.


**NAL Call Number:** 49.9 C33

**Keywords:** cows, imported beef breed embryos, Hereford, Aberdeen-Angus, Galloway, Highland, embryo transfer, embryo preservation, estrus synchronization, superovulation, conception rates, biological preservation, Czech Republic.


**NAL Call Number:** QP251.A5

**Keywords:** cows, sexual behavior, stimuli, fertility, artificial insemination, pregnancy, copulation, husbandry methods.

Ruas, J.R.M.; Marcatti Neto, A.; Amaral, R. (2000). Considerations about the handling at the pre and post-parturition beef cows and their reflexes about the reproductive performance. [Consideracoes sobre o manejo no pre e pos-parto de vacas de corte e seus reflexos sobre a eficiencia reprodutiva.] *Informe Agropecuario: Empresa de Pesquisa Agropecuaria de Minas Gerais* 21 (205): 70-75, ISSN: 0100-3364.

**Keywords:** reproduction, copulation, parturition, fertilization, Portuguese language, Brazil.


**NAL Call Number:** 49 J82

**Keywords:** South Florida Beef-Forage Program, breeding, herd management, nutrition, pregnancy, reproduction, reproductive management school, education.


**NAL Call Number:** SF601 14

**Keywords:** beef calf production, embryo transfer, efficiency, technology, animal breeding, genetic progress, economics, pregnancy rates, management of twin-bearing cows.


**NAL Call Number:** 49.9 N483
**Keywords:** embryo transfer, fertilization method, new reproductive technology, beef industry, beef production systems, new reproductive technology, profitability, sex ratio.


**NAL Call Number:** SF601 T7

**Keywords:** Brahman cows, breed, feed supplementation, pre- and post-calving, reproductive performance, digestible energy, dry matter, crude protein, body weight, body condition score, urea, plasma, estrus, pregnancy rates.


**NAL Call Number:** 41.8 M69

**Keywords:** heifers, replacement, beef cattle, reproductive performance, optimization, husbandry.


**NAL Call Number:** 49 J82

**Keywords:** suckled beef cows, gonadotropin releasing hormone (GnRH), fertility drug, norgestomet, prostaglandin F-2 alpha (PGF-2-alpha), implant, artificial insemination, body condition score, analytical method, estrus synchronization, assisted reproduction method, ovulation synchronization, assisted reproduction method, breeding season, conception rate, ovulation, pregnancy rate.


**NAL Call Number:** QP251.A1T5

**Keywords:** beef cows, reproductive problems, ovarian cysts, Controlled Internal Drug Release, progesterone-releasing intravaginal silastic device, estrus behavior, follicular development, plasma estradiol.


**Keywords:** tropics, beef cattle, cows, female fertility, breeding season, male fertility, body condition, mating systems, pregnancy diagnosis, culling, weaning, animal nutrition, animal health, animal husbandry, reproduction, calf production, reviews, Portuguese language, Brazil.


**Keywords:** reproduction, estrus synchronization, artificial insemination, Bulgarian language.


**NAL Call Number:** QP251.A5

**Keywords:** beef cattle, crossbred, in vitro culture, in vitro fertilization, culturing techniques, non-invasive method, ultrasound, imaging and microscopy techniques, follicular status.

**NAL Call Number:** 49 J82

**Keywords:** beef cattle, cows, reproductive behavior, diurnal variation, mating behavior, estrous cycle, HeatWatch system, duration of estrus, ovulation, seasonal variation.


**NAL Call Number:** S471 J3C84

**Keywords:** milk and beef production, breed, Wagyu, embryo transfer, economic analysis, animal production, pregnancy, artificial insemination, Japanese language, Japan.


**NAL Call Number:** QP251.A1T5

**Keywords:** suckled beef cows, calf crop, economic loss, anterior pituitary LH, comparison of methods to initiate cyclicity, weaning of calves (either complete, temporary or partial), exposure to bulls, hormonal methods such as administration of GnRH (either single injection, intermittent injections, or continuous infusion), gonadotropins (eCG, FSH, hCG), steroids (estrogens, anti-estrogens, and progestogens), exogenous progestogens, intravaginal devices, controlled-internal drug release (CIDR), progesterone-releasing intravaginal device (PRID), norgestomet implants, feed-additive melengestrol acetate (MGA).


**NAL Call Number:** QP251.A1T5

**Keywords:** suckled beef cows, economic loss, suckling status, nutritional status, calving season, age, dominant follicles, LH pulses, hypothalamic GnRH, negative feedback effect of ovarian estradiol-17beta, premature luteolysis, PGF2alpha.
Slaughter


**NAL Call Number:** 49 J82

**Keywords:** yearling steers, high-oil corn, carcass characteristics, slaughter, postmortem, carcass, intramuscular lipid deposition, unsaturated fatty acids.


**NAL Call Number:** 49 J82

**Keywords:** mature beef cows, British and Continental phenotypes, slaughter, body condition score (BCS), by-product yield, by-product weights, blood, feet (with hooves attached), oxtails, tongue, gullet, trachea, cheek meat, head meat, skull, tripe, honeycomb tripe, large and small intestines, spleen, mesenteric fat, weasand meat, kidneys, heart, lungs, oxtail.


**NAL Call Number:** 41.8 C163

**Keywords:** yearling cattle, electronic identification eartag, equipment, reliability, slaughter information system, traceback success rate, Canada.


**NAL Call Number:** 41.8 C163

**Keywords:** European breeds, Angus, Simmental, Charolais, Limousin, Blonde d’Aquitaine, Piedmontese, longissimus muscle, collagen, real-time ultrasound, imaging method, hide thickness, intramuscular fat, slaughter.


**NAL Call Number:** 49 AR23

**Keywords:** Angus, Simmental, Charolais, Limousin, Blonde d’Aquitaine, Piedmontese steers, breed differences, forage-based diet, 3.5% intramuscular fat (IMF), ultrasound assessments, housing, tie stall barn, loose housing, straw bedding. M. biceps femoris, M. longissimus dorsi, M. regio glutea, muscular system, collagen solubility, heme iron, intramuscular fat, meat quality, pH, shear force, tie-barn stall.


**NAL Call Number:** 41.8 Z52

**Keywords:** slaughter, abattoirs, carcass contamination, Escherichia coli O157, infection, pathogen, serogroup O157, transmission risk, urease, verocytotoxin, producing, transmission to humans, Italy.


**NAL Call Number:** SF55 A78A7  
**Keywords:** beef quality defects, dark, cutting beef, meat, glycogen, grazing production systems, post, mortem rigor development, seasonal influences, stocking pressure.

**Keywords:** bulls, breed, Black-and-White, Ketomix supplement, intravenous glucose infusion, electrolyte drink, ante-mortem stress, carcass composition, slaughtering, pH, low glycogen content, beef quality, Polish language, Poland.

**NAL Call Number:** 281.8 IN32  
**Keywords:** Limousin, Charolais, breeds, vitamin E, supplements, meat quality, stress, transport, slaughter, beef cattle, heavy metals, toxicity, meat keeping quality, Italian language.

**NAL Call Number:** 500 N21P  
**Keywords:** feeder cattle, slaughter, survey, frequency, enterohemorrhagic Escherichia coli, strain, O157:H7, carcass contamination, sanitary procedures.

**NAL Call Number:** QH431 A1A52  
**Keywords:** bulls, sire performance testing, artificial insemination, carcass composition, carcass fatness score, diet, genetic correlation, progeny beef traits, progeny dressing percentage, progeny growth, progeny skeletal frames, sire muscling scores, France.

**NAL Call Number:** SF1.A56  
**Keywords:** steers, age at castration, post-pubertal surgical castration, growth patterns, estradiol treatment, fat color, yellow fat, genotypes, grazing.

**NAL Call Number:** QL750.A6  
**Keywords:** abattoirs, commercial slaughter plants, behavior, animal welfare, stress, vocalization, aversive events, prodding with electric prods, slipping in the stunning box, missed stuns, sharp edges on equipment, excessive pressure from a restraint device, facility and equipment modifications, proper lighting, false floors, reduced voltage of electric prod, Australia, Canada, USA.

**NAL Call Number:** TX373 M4
**Keywords:** meat quality, slaughter, animal welfare, stress, abattoirs, carcass quality, damage, food hygiene, literature reviews, glycogen, muscles, metabolism, handling, fish, pigs, beef cattle.


**NAL Call Number:** 49 J82

**Keywords:** feeder cattle, frame size, longissimus muscle, USDA meat grade standards, meat product, carcass, muscle thickness, meat grade, muscle weight.


**Keywords:** detection of estrogens in edible tissues of beef cattle, muscle, liver, kidney, fat tissues, E2beta (active isomer), radioimmunoassays, anabolic ear implants.


**NAL Call Number:** 41.8 Am3

**Keywords:** beef, dairy, abattoir monitoring system, disease monitoring system, bacterial disease diagnosis, epidemiology, infection, prevalence, tuberculosis, lymph node, tissue specimens, lesions, Mexico.


**NAL Call Number:** SF1 A542

**Keywords:** beef bulls, clone testing scheme, breeding method, progeny testing, scheme, breeding method, carcass traits, genetic gains, heritability, selection index, Japanese language, Japan.


**NAL Call Number:** 49.9 N483

**Keywords:** bulls, pubertal, effects of surgical and immunocastration, sexual behavior, aggressive behavior, plasma testosterone growth, slaughter, meat quality, hot carcass weight, pH.


**NAL Call Number:** 49.9 H19

**Keywords:** beef cattle, castration, carcasses, chemicophysical properties, organoleptic analysis, statistical methods, Korean language, Korea.


**NAL Call Number:** SF1.L5

**Keywords:** beef cattle, steers, beef breeds, breed differences, carcass composition, carcass quality, Romagnola, Holstein-Friesian, Piemontese, evaluation, genetic variation, animal husbandry, feed rations, feed intake, finishing, duration, concentrates, feed supplements, grass silage, body fat, bones, muscles, fat.


Performance, carcass characteristics, and fatty acid composition and palatability attributes of beef. Management strategies included: (1) high grain (75% high moisture corn) finishing (HG), or (2) backgrounding with restricted feeding of an alfalfa silage ration for 112 d, followed by HG until slaughter (BKG). Steers were slaughtered at 8-10 mm ultrasound backfat. Backgrounding increased (P < 0.001) days on feed and decreased (P < 0.01) days on grain, average daily gain and longissimus muscle area compared with the HG regime. Slaughter weight, intramuscular fat content, and marbling score were unaffected (P > 0.10) by management strategy. Longissimus muscle palatability attributes and shear force did not differ (P > 0.10) between management strategies, whereas BKG increased (P < 0.03) softness, overall tenderness, chewiness, and rate of breakdown scores, and decreased (P < 0.09) juiciness scores in semitendinosus muscle. Backgrounding increased (P < 0.05) conjugated linoleic acid (CLA), total monounsaturated fatty acids, and omega3 polyunsaturated fatty acid (PUFA), and decreased (P < 0.05) total saturated fatty acids (SFA), and omega6 PUFA content of beef. While the change in quantitative and qualitative fatty acid composition of beef is in line with current dietary recommendations for humans, the magnitude of these changes was minimal. Keywords: beef cattle, steers, animal husbandry, growth, performance, carcass composition, fatty acids, palatability, crossbreds, meat quality, feeds, finishing, silage, backfat, fat thickness, liveweight gain, muscles, slaughter weight, leanness, tenderness, flavor, moisture content.

NAL Call Number: TX373 M4
 Keywords: breed, Charolais, Friesian, Hereford, heifer, alpha-tocopherol, monounsaturated fatty acids, polyunsaturated fatty acid, breed differences, carcass quality, meat color, overwintering, pasture, rib steak, meat product, slaughter.

NAL Call Number: 49 J82
 Keywords: health, slaughter, grain feeding, diet, management factors, economic loss, reduced feed intake, reduced weight gain, decreased feed efficiency, decreased carcass yield, Fusobacterium necrophorum, ruminal anaerobic bacterial flora, Actinomyces pyogenes, etiologic agent, treatment, antimicrobial compounds, bacitracin methylene disalicylate, chlortetracycline, oxytetracycline, tylosin, virginiamycin.

NAL Call Number: 49 N62
 Keywords: breed, Wagyu (Japanese Black cattle), feeds, rumen digestion, volatile fatty acid (vfa), feed intake, carcass composition fat deposition, longissimus muscle, marbling score, rib-eye area.

NAL Call Number: 49 J82
 Keywords: breed, Japanese Black Wagyu, steers, fatty acid, carcass fat composition, monounsaturated fatty acids, carcass, carcass fat, carcass fat fatty acid composition, genetic effects.

NAL Call Number: 49 Z8
**Keywords:** bulls, heifers, carcass composition, growth of tissues and organs, meat, color, protein content, quality, carcass composition, muscle structure, intensive feeding, German language.


**Keywords:** animal husbandry methods, carcass composition, beef, quality, chemical composition, fatty acids, alternative agriculture, acids, animal products, farming systems, Germany.


**NAL Call Number:** SF601 I4

**Keywords:** breeding, pregnancy diagnosis, prostaglandins, fertility, artificial insemination, beef cattle, estrus synchronization, mating systems.


**NAL Call Number:** SF1 R45

**Keywords:** crossbreeding, breed, Zebu, carcasses, feedlots, age, weight, slaughtering, Portuguese language, Brazil.


**NAL Call Number:** 23 Au792

**Keywords:** steers, beef cattle, carcass quality, meat quality, performance, temperature, feedlots, liveweight, body condition, feed intake, handling, fearfulness, prediction, liveweight gain, feed conversion efficiency, dressing percentage, pH, stress.


**NAL Call Number:** 44.8 J822

**Keywords:** beef cattle, stocker calf, wheat, forage crop, average daily gain, carcass quality, feedlot, pasture grazing, stocking rate, Texas, USA.


**NAL Call Number:** 49 J82

**Keywords:** steers, carcass characteristics, feed efficiency, feed, to gain ratio, feedlot performance, limited access time to feed, effects, feeding, behavior.


**NAL Call Number:** 49 J82

**Keywords:** breed, Angus, bull, steer, longissimus muscle, tenderness, carcass quality traits, growth potential, growth rates, meat quality.

**NAL Call Number:** SF1.P77

**Keywords:** bulls, beef cattle, animal husbandry methods, breeds, meat performance, meat texture, quality, performance, Europe, France, Western Europe, French language.


**NAL Call Number:** SF1 L5

**Keywords:** methodology, performance testing, genetics, Charolais, bulls, carcass composition, fat, analytical methods.


**NAL Call Number:** SF1 R45

**Keywords:** beef cattle, carcasses, weight, hybrids, crossbreeding, feedlots, fattening, feeding, husbandry methods, bovidae, bovinae, breeding methods, Portuguese language, Brazil.


**NAL Call Number:** SF1 R45

**Keywords:** beef cattle, castration, carcasses, carcass composition, pastures, husbandry methods, Portuguese language, Brazil.


**NAL Call Number:** 49 J82

**Keywords:** breed, Brahman, carcass traits, estimated genetic parameters, carcass yield, feedlots, genetic parameters, yield performance.


**NAL Call Number:** 44.8 J82

**Keywords:** injection site lesions, muscle lesions, beef rounds, dairy rounds, educational programs, veterinary procedures, quality control.


**Keywords:** stress, body weight, breeds, transport of animals, cattle diseases, Italian language.

Information Resources for Beef Cattle

NAL Call Number: 41.8 C163
Keywords: British breeds, backfat, carcass merit, live weight, rib, eye area.

NAL Call Number: SF15 S7 A52
Keywords: beef cattle calves, livestock management, slaughtering, stress, functional disorders, evaluation, Spanish language.

NAL Call Number: 49 J82
Keywords: reviews, blood sugar, stress, dehydration, hypoglycemia, handling, metabolic disorders, etiology, treatment, transport of animals, animal welfare, electrolytes, fluid therapy, meat quality.

NAL Call Number: 49 J82
Keywords: Escherichia coli (Enterobacteriaceae), beef cattle crossbred steers, feces, rumen, total coliform count, finishing performance, carcass characteristics, dietary manipulations, finishing diets, pH, steam-flaked corn.

NAL Call Number: 44.8 J822
Keywords: breed, Black Angus, crossbred, steer, 17-beta-estradiol, dosage, estrogen, growth stimulant, Compudose, Revalor-S, Synovex-S, growth stimulant, implant, conjugated linoleic acid, estrogen, growth stimulant drug, estradiol benzoate, Warner-Bratzler shear force value, average daily gain, carcass quality, intramuscular lipid content, meat tenderness.

NAL Call Number: 49 J82
Keywords: crossbred beef cattle, consumer preferences, meat product, quality parameters, carcass traits, genetic effects, genetic correlations, estimates, maternal, weaning weights.

NAL Call Number: 60.19 B773
Keywords: beef, male, steer, muscle, fatty acid composition, muscular system, omega-3 polyunsaturated fatty acids, barley meal based concentrate, animal feed, carcass composition, concentrate supplementation, grass silage, high digestibility, medium digestibility, liveweight gain, soyabean meal based concentrate.


**Keywords:** ACTH, beef performance, biobusiness, cholesterol, drip loss, foods, free fatty acid, glucose, meat quality, meeting abstract, stress susceptibility.


**Keywords:** ryegrass, forage crop, beef cattle, breed, Charolais, cow, carcass quality, meat quality, meat tenderness, pasture grazing, Portuguese language.


**Keywords:** beef cattle, slaughter bulls, transport time effects, sensory panelist, longissimus dorsi thoracis analysis, consumer preferences, muscilar system, tenderness, meat product, quality parameters, transport times.


**Keywords:** organic farming, animal husbandry, evaluation, carcass composition, carcass quality, low input agriculture, feedlots, finishing, backfat, fat thickness, carcass weight, dressing percentage.

**NAL Call Number:** SF95 A55

**Keywords:** barley, ryegrass, animal performance, carcass characteristics, diet evaluation, feeding studies, dry matter yield, feed conversion efficiency.

[Return to Contents]

**NAL Call Number:** 49 J82

**Abstract:** The objective of this study was to investigate the effect of transportation and commingling on measures of the acute-phase protein response in newly weaned beef calves. Thirty-two (Exp. 1; average BW=266 plus or minus 20.8 kg) and thirty-six (Exp. 2; average BW=222 plus or minus 34.6 kg) Brahman-crossbred calves were randomly allotted to one of four treatments (2x2 factorial arrangement (transportation x commingling) in a completely randomized design). Body weight and jugular blood were collected at weaning, after shipment, and 1, 3, and 7 d after transport for Exp. 1, and at weaning and 1, 5, 9, 13, 17, and 21 d after transport for Exp. 2. Feed intake within pen was recorded daily for Exp. 2. Plasma fibrinogen, ceruloplasmin, haptoglobin, and cortisol concentrations were determined for all collection times. Additionally, serum amyloid-A and alpha -acid glycoprotein concentrations were determined in Exp. 1 and 2, respectively. In Exp. 2, commingled calves lost more BW than nontransported calves from the time of weaning to d 1 (2.0 and 3.1% more BW loss for Exp. 1 and 2, respectively). With the exception of haptoglobin in Exp. 1, each of the acute-phase proteins measured in these studies increased over each sampling day. In Exp. 1, transported calves had higher (P<0.05) mean serum amyloid-A concentrations than nontransported calves (48.9 vs. 33.4 micro g/mL). There was a significant sampling day x transportation interaction (P<0.01) for fibrinogen, ceruloplasmin, and haptoglobin in Exp. 1; transported calves had higher concentrations of fibrinogen following transport and on d 2 and 3, and ceruloplasmin on d 3. Haptoglobin concentrations were higher (P=0.04) in nontransported calves on d 1 and 2 of Exp. 1. In Exp. 2, overall mean haptoglobin concentrations were higher in nontransported vs. transported calves. The results of these studies indicate that stressors associated with transportation affect the acute-phase protein response in newly weaned beef calves. More research is needed to determine whether these proteins might be valuable indicators of stress following the weaning process.

**Keywords:** beef cattle, acute phase proteins, blood chemistry, body weight, calves, ceruloplasmin, feed intake, fibrinogen, growth rate, haptoglobins, interactions, stress response, transport of animals.


**NAL Call Number:** 44.8 J824

**Abstract:** Two hundred steers and heifers from a large feedyard (65 000-head capacity) were used to determine the prevalence levels of enterohaemorrhagic Escherichia coli O157 (EHEC O157) and Salmonella spp. prior to and after shipping to a commercial packing facility. Two samples, a ventral midline hide swab and a faecal sample, were aseptically collected from each animal 2 weeks prior to the date of transportation and at the packing plant immediately after exsanguination. Samples were collected from all trailers (n=46) before animals were loaded for transport to the packing facility. The average prevalence levels of EHEC O157 on hides (18%) and in faeces (9.5%) at the feedyard decreased (P<0.05) at the packing plant to 4.5 and 5.5%, respectively. The average prevalence levels of Salmonella spp. on hides (6%) and in faeces (18%) at the feedyard increased to 89 and 46%, respectively, upon arrival at the packing plant. Average prevalence levels for EHEC O157 and Salmonella spp. on the trailers were 5.43 and 59%, respectively. The results of this study demonstrate that transportation may be a potential stressor for cattle, as evidenced by the increased shedding of Salmonella spp.

**Keywords:** beef cattle, heifers, steers, disease prevalence, feces, food contamination, food safety, foodborne diseases, Escherichia coli, Salmonella, hides, skins, stress factors, transport of animals. Copyright© 2003, CAB International

NAL Call Number: 44.8 J824

Abstract: The objective of this study was to evaluate the effect of typical production practices during the transport of cattle on the resulting incidence of Salmonella and Campylobacter in the feces, on the hides, and on the carcasses of these cattle and in the environment (trucks, holding pens, and knock boxes). Various factors were evaluated, including the type of animal (feedlot cattle vs. adult pasture cattle), the breed of cattle, the body condition of the animal, the age of the animal, the time of feed and water withdrawal, the contamination level of the transport vehicle at the feedlot or farm, the transport time, the time cattle were held in the holding pen at the plant, and the contamination level of the holding pen. Four groups of each type of animal were sampled on different days. Samples were collected from cattle prior to transport and after transport (rectal and hide swabs) as well as from the carcasses of these cattle. Pre- and posttransit samples were also taken from the transport vehicle and from the holding pen and knock box at the slaughter facility. For feedlot cattle, fecal shedding stayed fairly constant for both organisms before and after transport (3 to 5% for Salmonella and 64 to 68% for Campylobacter). However, the shedding rate for adult cattle increased from 1 to 21% for Salmonella but stayed constant for Campylobacter (6 to 7%). Contamination of hides with Salmonella increased for both animal types from a level of 18 to 20% to a level 50 to 56%. For Campylobacter, the contamination level decreased from 25 to 13% for feedlot cattle but remained unchanged for adult animals (1 to 2%). Nineteen percent of feedlot cattle carcasses and 54% of adult cattle carcasses tested positive for Salmonella, while only 2% of feedlot cattle carcasses and none of the adult cattle carcasses tested positive for Campylobacter. Thus, for feedlot cattle, the factors considered in this study did not affect the shedding of either organism but did affect the contamination of hides with both. For adult animals, the factors increased both shedding of and hide contamination with Salmonella only, not Campylobacter.

Keywords: campylobacter, salmonella, isolation and purification, food contamination, abattoirs, feces, transport of cattle.


NAL Call Number: 44.8 J822

Keywords: calf, steer, animal welfare, average daily gain, dry matter intake, feedlot, growth performance, heart rate, morbidity, preconditioning, stress, transport distance.


NAL Call Number: 281.8 IN32

Keywords: livestock transporters, transport, nutritional state, new environment, stress, minerals, energy balance, immune response, feeding, systems, transport of animals, Italian language, Italy.


NAL Call Number: 49 J82

Keywords: beef calves, feedlot, tilmicosin phosphate, feeding chlortetracycline, health, average daily gain, daily dry matter intake, bovine respiratory disease (BRD).


NAL Call Number: SF601 I4

Abstract: Steers representative of the most common type, weight, and conformation slaughtered in Chile (between December 1999 and January 2000) were transported for either 3 or 16 h and held in lairage for 3, 6, 12, or 24 h. Measurements of liveweight, carcass weight, and postmortem pH and colour of muscle were made to assess the economic and welfare effects of the different transport and lairage times. Compared with the short
journey, the longer journey was associated with a mean (se) reduction in liveweight of 8.5 (2.8) kg, which was further decreased by 0.42 (0.18) kg for every hour that the animals were kept in lairage after 16 h of transport, an increase in final muscle pH, a decrease in muscle luminosity, and an increase in the proportion of carcasses downgraded because they were classified as dark cutting. The carcass weights also tended to be lower after the longer journey and after longer periods in lairage.

**Keywords:** steers, animal welfare, beef quality, carcass quality, carcass weight, carcasses, color, liveweight, pH, stress, transport of animals, Chile. Copyright© 2003, CAB International


**NAL Call Number:** SF601 B6

**Keywords:** beef cattle, dairy cattle, handling, transport, stress, trauma, milk, milking, reproduction, techniques, immune response.


**NAL Call Number:** 49.9 N483

**Keywords:** glycogen, muscles, pH, beef, meat quality, stress, animal husbandry, transport of animals, handling.


**NAL Call Number:** TX373 M4

**Keywords:** beef cattle, slaughter bulls, transport time effects, sensory panelist, longissimus dorsi thoracis analysis, consumer preferences, muscular system, tenderness, meat product, quality parameters, transport times.


**NAL Call Number:** SF601 I4

**Abstract:** The welfare of cattle depends greatly on the attitudes and training of stockpersons and on the availability of appropriate facilities. Much has been learned about stress during transport, but less attention has been paid to identifying and correcting critical points, partly because these vary widely both nationally and internationally. A survey of cattle transport in Spain was made in an effort to determine which parts of the process most compromised the welfare of the animals. Data were collected on the methods and facilities for loading and unloading, transport times, types of vehicle and slaughter house practices. Loading facilities were adequate and loading times generally short, but some farms continued to use an electric goad and weatherproofing was generally poor. The average journey time within Spain was three-and-a-half hours, but many trips were made abroad (especially to Italy), few drivers received specific training courses and the types and quality of vehicles varied widely. The average unloading time was very short but the animals were not always inspected for injuries or dirtiness. Lairage times were normally more than 8 h but few slaughter houses had air conditioning equipment to prevent excessive heat or dehydration. Almost all stockpersons avoided either regrouping animals, or housing or transporting animals at high densities.

**Keywords:** animal husbandry, animal welfare, attitudes and training of stock persons, survey data, methods and facilities for loading and unloading, transport times, types of vehicle, slaughterhouse practices, electric goad, stocking density, stress factors, transport of animals, injuries, cleanliness, Spain. Copyright© 2003, CAB International


**NAL Call Number:** 41.8 R3224
Abstract: Space allowance for animals in transit is a consistent concern in many countries developing codes of practice and regulations to assure humane treatment of food producing animals. Describing minimum space allowance requirements for cattle in transit has proven to be difficult, as the space required increases as the animal grows. Loading pressure, defined as weight of live animal per unit area, has proven to be a clear method of communicating with transporters and inspection staff what the maximum safe stocking limit is based on individual animal weight. The loading density recommendations in the Canadian code of practice for beef cattle are compared with other standards by using loading pressure charts as a visual aid. Loading pressure charts are recommended in preference to a tabular format to describe the minimal space allowed per animal for cattle transported by road.

Keywords: transport of animals, road transport, animal welfare, legislation, codes of practice, minimal space allowance, loading density, Canada. Copyright© 2003, CAB International
Website Resources

Website addresses change periodically. The sites listed are current as of August 2004. Emphasis was placed on selecting resources relevant to the care and welfare of beef cattle.

**Agriculture and Agri-food Canada**
http://www.agr.gc.ca/index_e.phtml

Agriculture and Agri-Food Canada provides information, research and technology, and policies and programs to achieve security of the food system, health of the environment and innovation for growth. Abstracts available from “The Lennoxville Symposium on Farm Animal Welfare in Canada: New technologies, research and world trade.”

**Alberta Farm Animal Care (AFAC) Association**
http://afac.ab.ca

AFAC is an association started by farmers. AFAC’s goal is to promote responsible animal care and enhance public understanding of Alberta’s animal agriculture. AFAC participates in issues and legislation that encourage research into relevant to animal care. Website contains Farm Animal Welfare News, a publication that contains current information on farm animal welfare initiatives, relevant issues, and research conducted in Canada. Links to reports, codes of practice, legislative information, and information on training courses on handling and transport of swine, cattle, and horses.

**Alternative Farming: An Annotated Database**
http://www.awionline.org/farm/altfrm.htm

Searchable database containing farmers’ profiles and case studies, useful hints and guides, research articles, book chapters, books and web sites. Coverage includes articles on cattle, pig, poultry, sheep and goat grass-based farming; rotational grazing; deep-litter and outdoor systems; pasture; grassland management; sustainable agriculture; principles of low-stress livestock handling; animal behavior; predator-friendly farming, etc. Emphasis on methods that encourage species specific behavior and conservation of the environment.

**American Association of Bovine Practitioners**
http://www.aabp.org

The American Association of Bovine Practitioners is an international association of veterinarians organized to enhance the professional lives of its members through relevant continuing education that will improve the well-being of cattle and the economic success of their owners, increase awareness and promote leadership for issues critical to cattle industries, and improve opportunities for careers in bovine medicine. The association site provides extensive links to online resources including the Dairy Quality Assurance (DQA) Center which has many resources available to producers, milk handlers, veterinarians, and other members of the dairy industry who want to foster the well-being of dairy animals. The Caring for Dairy Animals Technical Reference Guide and the companion On-Farm Self-Evaluation Guide have been compiled for a wide audience, including researchers, students, the press, veterinarians, and, of course, milk and dairy producers.

**Animal Well-Being and Stress Control Systems**
http://www.ars.usda.gov/research/programs.htm
The Agricultural Research Service (ARS) is the principal research agency of the U.S. Department of Agriculture. ARS is charged with extending the Nation’s scientific knowledge across a broad range of program areas. This Website describes ARS research initiatives in the area of farm animal well-being and stress.

**Animal Welfare Information Center (AWIC)**
http://awic.nal.usda.gov

National Agricultural Library
10301 Baltimore Ave.
Beltsville, MD 20705
Tel: (301) 504-6212, Fax: (301) 504-7125, Contact AWIC:

The Animal Welfare Information Center (AWIC) located at the U.S. Department of Agriculture's National Agricultural Library provides reference services primarily for patrons using animals covered by the Animal Welfare Act. Farm animals used in teaching, testing, and non production oriented research, are covered by the Act. AWIC produces bibliographies on the welfare and husbandry of swine, cattle, horses, sheep, poultry, dogs, cats, rabbits, and rodents. The Animal Welfare Information Center Bulletin contains several articles on agricultural animal care and use including anesthesia, analgesia, animal transport, and animal welfare issues. The AWIC Website includes these documents. The site also contains links to US farm animal policies, guidelines, and congressional activity.

**Animal Welfare and Behavior Group at Michigan State**
http://www.msu.edu/~zanella/current.html

Description of current research projects of the Animal Welfare and Behavior Group at Michigan State. Projects include studies on memory and learning in pigs, and a novel animal welfare training program patterned after traditional animal judging teams. The program offers students the opportunity to assess the welfare of animals maintained under different housing, husbandry and environmental conditions.

**Animal Welfare and Beef Cattle Feedlots**

This fact sheet reviews important management considerations for beef cattle raised in feedlots including: humane handling, human animal interactions, facility design, mixing cattle, adverse environmental conditions (i.e. hot weather, dusty yards, boggy conditions), nutrition, and health.

**Dehorning Beef Cattle Via Genetics is Welfare Friendly**
http://www.usask.ca/wcvm/herdmed/applied-ethology/articles/dehorn.html

Recommendations from the Expert Committee on Farm Animal Welfare and Behaviour, on Promoting the use of Polled Sires within the Beef Industry in Canada. Background information on the advantages of using genetics over mechanical and chemical dehorning in beef cattle are presented.

**Animal Welfare: Ministry of Agriculture and Forestry (MAF) New Zealand**

Full text Codes of Recommendations and Minimum Standards for livestock and other species are available at this site. Humane treatment of livestock during transport, slaughter, and sale yards covered.

**Animal Health and Welfare**
http://www.defra.gov.uk/animalh/animindx.htm

The health and welfare of animals are central to Department for Environment, Food and Rural Affair’s (DEFRA) work of protecting and improving livestock and controlling and eradicating disease. The Animal
Information Resources for Beef Cattle

Health and Welfare pages are divided into various subject areas including: BSE, Tuberculosis, Identification, Animal Welfare, International Trade, Disease surveillance and control. Links available to a number of documents focusing on cattle welfare.

Annotated Database on Refinement of Housing and Handling Conditions and Environmental Enrichment for Laboratory Animals. Part II: Cattle, Calves, Chickens, Goats, Horses, Quails, Pigs, Sheep
http://www.awionline.org/Lab_animals/biblio/refine.htm

An annotated database of articles, abstracts, book chapters, and books, on all aspects of refinement and environmental enrichment are available at this site. Housing and handling of farm animals is included. The database is regularly updated.

Arizona Ranchers Management Guide
http://ag.arizona.edu/arec/pubs/rmg/ranchers.html

Revised and expanded in 2002 this guide is designed to be an information resource for Arizona ranchers. The guide contains extension-developed information on a wide range of issues related to Arizona ranch management. Subject coverage includes: identifying poisonous plants, diseases of beef cattle, feeding in drought conditions, rangeland management systems, marketing, and more.

Beef Cattle @ TAMU
http://animals.ience.tamu.edu/ansc/index.htm

Provided by the Department of Animal Science at Texas A&M University the Online Beef Information Center contains publications and information about a beef cattle and beef cattle management. Topics include information on reproduction, quality assurance, facilities, genetics, health, nutrition, and more.

Beef Cattle Handbook on CD-ROM
http://muextension.missouri.edu/explore/mwps/mwpscd1.htm

Information on ordering the 1999 version of the The Beef Cattle Handbook, developed under the auspices of the Beef Cattle Resource Committee of the North Central Land Grant Universities. The CD contains 145 articles and extension bulletins in PDF format. The materials cover reproduction; agribusiness and business management; nutrition; production management; quality assurance and carcass and end products; health and entomology; facilities and equipment; environmental stewardship; pasture, range, and forage management; and breeding and genetics.

Beef Cattle Resources
http://westnilevirus.okstate.edu/library/cattbeef.html

Maintained by the staff of the Animal Science Department at Oklahoma State, this site features an extensive listing of web links for various breed associations, bull test stations, herd health, reproduction, husbandry, and beef cattle nutrition information.

Animal Welfare Guidelines For Beef Farms

Basic welfare guidelines geared toward producers raising beef cattle in Ireland are presented. Good stockmanship, husbandry, veterinary procedures, facilities, feeding, transport, and animal welfare legislation are reviewed.
Budd Williams Stockmanship School: Teaching Low Stress Livestock Handling Methods
http://www.stockmanship.com

Stress is an important component of livestock health problems and effectively limits performance. Sources of stress include shipping, weaning, acclimation to new surroundings, processing, pen riding, treating and sorting. People can be trained in stockmanship and management techniques that eliminate stress during these procedures and, in fact, make handling episodes positive to performance, quality and animal welfare. Budd Williams has spent a life time perfecting these techniques and now offers training classes in his unique handling methods.

Clemson Beef Cattle Information Database
http://www.clemson.edu/edisto/beef-db/beef-db.htm

Database contains links to extension educational materials on beef cattle breeding and genetics, reproduction, body condition scoring, pastures and forages, health, management, and handling facilities.

Colonel K.L. Campbell Centre for the Study of Animal Welfare
http://www.aps.uoguelph.ca/~csaw/

Located at the University of Guelph, the Centre’s mission is to promote the welfare of animals through research and education. Research projects focus on: alternatives for the use of animals in teaching; assessing animal well being; enriching the lives of laboratory animals; ethical issues of animal use; animal breeding and genetic engineering; humane husbandry systems alleviating animal suffering; and relationships between animals and people.

Combined Livestock Issues Database Information
http://www.depts.ttu.edu/liru_afs/refman/index.htm

A reference database compiled for farm animal researchers and educators. The database provides references on contemporary issues in animal agriculture.

Companion Animals and Livestock: Beef

This site is provided by New South Wales Department of Agriculture. Beef pages contain information on health, nutrition, drought, herd management, quality assurance, and facilities.

Cooperative State Research Education and Extension Service (CSREES) Home Page
http://www.csrees.usda.gov

CSREES link the research and education programs of the U.S. Department of Agriculture and works with land-grant institutions in each state, territory and the District of Columbia. The mission of CSREES is in cooperation with partners and customers, to advance a global system of research, extension and higher education in the food and agricultural sciences and related environmental and human sciences to benefit people, communities, and the Nation. A clickable map of extension programs by state is available at:
http://www.nifa.usda.gov/qlinks/partners/state_partners.html

Beef producers are encouraged to use this site to locate extension materials that are specific to their state’s climatic conditions, types of housing, feed resources, etc.

Cow-Calf Corner
http://sunup.okstate.edu/ccc-acs.html
Information Resources for Beef Cattle

Extension site covering a wide range of topics regarding beef cow-calf management. Topics covered include estrus synchronization, pregnancy checking, calving time management, cow herd health, bull management, nutrition, and more.

Determining the Condition of Beef Cattle

A series of photographs of beef cattle with fat scores ranging from 1-4 is presented. Fat scores are discussed in relationship to their impact on cattle welfare.

Dr. Temple Grandin’s Web Page
http://www.grandin.com

Full text, abstracts, reviews, and general information based on or related to the work of applied ethologist Temple Grandin. Topics include livestock behavior, design of stockyards and restraining systems, humane and ritual slaughter, stress and meat quality, current research, animal welfare/rights, and books. A fact sheet entitled “Critical Control Points on Feedlots, Ranches, and Stocker Operations” provides beef producers with tips on proper management practices to ensure optimal cattle welfare.

Effects of Body Condition on Productivity
http://edis.ifas.ufl.edu/AN004

Body condition can be used by cattle producers to make management decisions. Decisions about grouping cattle and the type and level of supplemental feed for maximum profit should take into consideration body condition. This publication reviews the relationship of body condition to productivity, provides pictures of beef cattle representative of different body condition scores (BCS), and gives examples of how body condition can be used to help in making herd management decisions.

Encyclopedia of Farm Animal Behavior (EFAB)
http://www.depts.ttu.edu/liruafs/EFAB/default.asp

This online encyclopedia containing audio and video clips of farm animals exhibiting various behaviors, is intended for research and teaching purposes. The encyclopedia is provided by the USDA, ARS, Southern Plains Area, Livestock Issues Research Unit, and Multimedia Division.

European Commission on Animal Welfare
http://europa.eu.int/comm/food/animal/index_en.htm

The European Commission’s activities on animal welfare recognize that animals are sentient beings. The Directorate General for Health and Consumer Protection is responsible for setting standards for the welfare of animals on the farm, during transport and at slaughter. Links are available to animal welfare policy objectives, legislative action, ongoing initiatives, and international animal welfare issues.

Healthy Animals
http://www.ars.usda.gov/is/np/ha/index.html

The Healthy Animals Website offers an online compilation of animal health related research news. The site is maintained by the U.S. Department of Agriculture’s chief scientific agency, the Agricultural Research Service.

National Institute for Animal Agriculture (NIAA)
http://www.animalagriculture.org

The National Institute for Animal Agriculture (NIAA) is an umbrella organization of producers, veterinarians, processors, corporations, and commodity organizations that advocate programs that improve animal health, care, and food safety. NIAA produces educational videos and pamphlets on animal care, behavior, handling, transportation, and disease. Authors include animal scientists working in academic research institutions and commercial production facilities. Videos, pamphlets, and meeting proceedings may be ordered directly from NIAA.

**NetVet**  
http://netvet.wustl.edu/vet.htm

NetVet focuses on veterinary resources with links to veterinary education, listservs, organizations, publications, and images. This award-winning site is an excellent starting point for looking for materials for training personnel in care and use of agricultural animals. A useful feature of NetVet is the Electronic Zoo. Among the Electronic Zoo animal group icons are horses, cows, pigs, small ruminants, and birds. Each icon contains a list of Websites related to these species.

**Ohio Agricultural Education WWW Server**  
http://www-cms.ag.ohio-state.edu/Home.html

This server provides ordering and pricing information for Learning Laboratory Kits, interactive CDs, books, videos, and brochures. Subject coverage includes quality assurance, animal care, welfare, and handling, of beef, dairy, swine, goats, sheep, rabbits, and dogs. Teaching materials for FFA projects are listed as well.

**Oklahoma State University, Department of Animal Science Web Page**  
http://www.ansi.okstate.edu

This is a quality Website containing sections covering breeds of livestock, free ration formulation software, extension publications, youth instructional materials, and more.

**Ontario, Canada, Ministry of Agriculture, Food and Rural Affairs, Livestock Web Page**  
http://www.gov.on.ca/OMAFRA/english/livestock

Web pages are available for dairy, beef, swine, goats, and alternative livestock. The swine page includes information on animal welfare, housing, health, genetics, reproduction, and more.

**The International Veterinary Information Service (IVIS)**  
http://www.ivis.org

A not-for-profit organization created to provide clinically relevant, up-to-date information to veterinary practitioners, veterinary students, clinicians and researchers worldwide using the internet. The IVIS Website allows users free access to original, electronic textbooks, reviews, updates, and other resources on a wide variety of veterinary topics. All publications are original contributions written specifically for the IVIS Website and reviewed by the editor(s) of the book. Each book includes links to information about relevant medications. Book chapters can be printed on a desktop printer for easy reading. Veterinary related information available for farm, laboratory, companion, and exotic animal species.

**USDA APHIS Veterinary Services (VS) Centers for Epidemiology and Animal Health (CEAH)**  
http://www.aphis.usda.gov/vs/ceah/cnahs

Information on bio security strategies for farms. E coli, Salmonella and other disease pathogens covered.

**Welfare of Cattle Kept for Beef Production**  
Information Resources for Beef Cattle

This is a report of the Scientific Committee on Animal Health and Animal Welfare, and was adopted in April 2001. This report discusses the welfare of cattle kept for beef production and topics covered include definitions and assessment of animal welfare, production zones in the European Union, beef production systems, cattle fattening systems, housing systems, behavior of cattle, effect of housing on the welfare of animals, and the effects of management on cattle welfare. This 150 page document is in PDF, which requires.

Welfare of Cattle and Calves
http://www.defra.gov.uk/animalh/welfare/farmed/cattle


Worldcat
http://www.worldcat.org/

This is a great way to locate library resources near your home or farm. Your local librarian can assist you in borrowing training materials from state libraries and/or the National Agricultural Library (NAL). However, not all local libraries have web pages. For libraries not listed check your local telephone directly.

XPLOR, University of Missouri, Cooperative Extension: Beef Publications
http://muextension.missouri.edu/explore/agguides/ansci/beef.htm

This site contains fact sheets and abstracts relating to beef breeding, feeding, health, and management.

Return to Contents