Manure Storage

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by
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MANURE STORAGE

1. NAL Call No.: S671.I84--nr.59
Lagring og handtering av husdyrgjodsel = Storage and handling of farmyard manure.
Includes bibliographical references (p. 58-59).

2. NAL Call No.: SF481.J68
Fate of selected bacterial pathogens and indicators in fractionated poultry litter during storage.
Kelley, T. R.; Pancorbo, O. C.; Merka, W. C.; Thompson, S. A.; Cabrera, M. L.; Barnhart, H. M.
Includes references.
3. NAL Call No.: 290.9-Am32P
A multi-media based educational program for safe manure pit entry.
Shutske, J. M.; Lausted, C.

4. NAL Call No.: S671.A66
Simulation to evaluate dairy manure systems.
Borton, L. R.; Rotz, C. A.; Person, H. L.; Harrigan, T. M.; Bickert, W. G.
Includes references.

Abstract: An existing dairy forage system model (DAFOSYM) was expanded to include submodels for manure production, collection, storage, and application to crop land. The original DAFOSYM simulated the growth, harvest, storage, and utilization of alfalfa and corn on a dairy farm over 25 years of weather. The revision allowed simulation of the quantity and nutrient content of manure produced as a function of feed composition and consumption, milk production, and animal growth. Nutrient losses in manure handling, storage, and application were subtracted to determine nutrients available for crop growth. The facilities, machinery, labor, and fuel required were modeled to determine the costs of manure handling. The integrated model provided a tool for evaluating and comparing the long term performance and economics of alternative manure systems for dairy farms and their interaction with feed production. Manure systems using long-term storage with spreading, injection, or irrigation have greater direct costs to the farmer than the daily haul system commonly used in the upper midwest. If long-term storage systems are required to protect the environment, the annual net cost of manure handling will increase up to $65/cow for small (60 cow) and $45/cow for large (250 cow) dairy farms.

5. NAL Call No.: S544.3.N9C46
Assessing your livestock and dairy operation.
Weston, D.
6. NAL Call No.: TD930.A32
Methane emissions from typical manure management systems.
Steed, J. Jr.; Hashimoto, A. G.
Includes references.

7. NAL Call No.: TD930.A32
Biotreatment of swine manure by intensive lagooning during winter.
La Noue, J. d.; Sevrin Reyssac, J.; Mariojouls, C.; Marcel, J.;
Sylvestre, S.
Includes references.

8. NAL Call No.: S631.F422
Methane production/emission in storages for animal manure.
Zeeman, G.
Fertil-res v.37, p.207-211. (1994).
In the special section: Methane and nitrous oxide: the other greenhouse gases / edited by A.R. van Amstel and A.R. Mosier.

Abstract: Results of extended research on laboratory scale have shown that relatively high gas productions can occur at digestion of animal manure in fed-batch (=Storage)-systems at ambient temperatures. High gas productions are also reported at on-farm storage of animal manure. In order to predict the gas production during the storage of animal manure at different conditions, a model is developed based on first order kinetics for the hydrolysis and on Monod kinetics for methanogenesis. Results of anaerobic digestion of manure in both CSTR- and fed-batch systems have been used for the estimation of constants. The model predicts that, when continuously 15% of the storage is filled, no gas production is produced, at a temperature of 15 degrees C and a storage capacity less than or equal to 100 days and at a temperature of 10 degrees C and a storage capacity less than or equal to 150 days. At higher temperatures and longer storage capacities methane gas is always produced.

9. NAL Call No.: QH84.8.B46
Mineralization of carbon and nitrogen from fresh and
anaerobically stored sheep manure in soils of different texture.
Sorensen, P.; Jensen, E. S.
Includes references.

Descriptor: mineralization--; nitrogen--; carbon--; soil-flora;
biological-activity-in-soil; sheep-manure; storage--;
aerobic-conditions; ammonium-sulfate; immobilization--;
sandy-loam-soils; sand--; mixtures--; clay-fraction;
soil-fertility; carbon-dioxide; gas-production;
fresh-sheep-manure; anaerobic-storage; inorganic-nitrogen

10. NAL Call No.: S635.P44--1994
Concrete manure storages handbook. 1st ed.
Pedersen, J. H.; Runestad, J. A.; Midwest Plan Service. Ames, IA :
Midwest Plan Service, Agricultural and Biosystems Engineering
Dept., Iowa State University, 1994. 70 p. : ill..
"Most of this book updates and compiles information previously
published by the Midwest Plan Service"--Pref.
Descriptors: Farm-manure-Storage-Handbooks,-manuals,-etc;
Concrete-tanks-Design-and-construction-Handbooks,-manuals,-etc

11. NAL Call No.: S671.I84--nr.51
Uisolert tallenhus for kjøttfe med små utekver og gjødseldam =
Straw-bedded confinement for beef cattle with small feedlots and
lined manure storage pond. Straw-bedded confinement for beef
cattle with small feedlots and lined manure storage pond.
Skjelhaugen, O. J. As [Norway] : Norges landbrukshogskole,
Institutt for tekniske fag, 1994. 20 p. : ill..
In Norwegian, with English abstract and summary.

12. NAL Call No.: 275.29-M68Ext
Managing animal waste nutrients.
Bonner, J.; Thomas, J.; Crenshaw, M.; McKinley, B.; Burcham, T. N.
Publ-Miss-State-Univ,-Coop-Ext-Serv. State College, Miss. :
Cooperative Extension Service, Mississippi State University. Mar
Descriptors: animal-wastes; animal-manures; farms--; management--;
storage--; regulations--; nutrient-content; irrigation--; handling--;
lagoons--; sampling--; odors--; mississippi-

13. NAL Call No.: 275.29-In2Id
Animal manure as a plant nutrient resource.
ID-Purdue-Univ-Coop-Ext-Serv. West Lafayette, Ind. : Purdue
University, Agricultural Extension Service : Agricultural
Descriptors: animal-manures; livestock--; feed-rations;
liquid-manures; nutrient-content; storage-losses;
nitrogen-content; phosphorus--; potassium--; fertilizers--;
application-to-land; application-rates; application-methods;
denitrification--; nutrient-availability; nitrification-inhibitors
14. NAL Call No.: 275.29-I09PA
Manure storage poses invisible risks.
Lorimor, J.; Schwab, C. V.; Miller, L.
Descriptor: manures--; storage--; gases--; air-pollution; safety--; iowa--

15. NAL Call No.: S561.6.A82E96
Lagoon management.
In subseries: manure management.
Descriptor: pig-manure; lagoons--; waste-disposal; management--; terminology--

16. NAL Call No.: 290.9-Am32P
Costs and issues associated with implementing the confined space standard in waste storage facilities.
Descriptor: accident-prevention; farms--; safety-devices; equipment--; costs--; animal-wastes; storage--

17. NAL Call No.: 290.9-Am32P
Chemical treatments for struvite control.
Buchanan, J. R.; Mote, C. R.; Robinson, R. B.
Descriptor: animal-wastes; management--; lagoons--; recycling--; systems--; components--; minerals--; chemical-precipitation; scale--; prevention--

18. NAL Call No.: 290.9-Am32P
Manure storage pH adjustment to control gas release.
Veenhuizen, M. A.; Qi, R.
Descriptor: animal-manures; storage--; odor-abatement; ammonia--; release--; ph--; air-quality
19. NAL Call No.: 290.9-Am32P
Manure storage criteria and policy development in Minnesota.
Brach, J. C.; Ellingboe, R. L.; Nelson, D.
Paper presented at the "1992 International Winter Meeting sponsored by the American Society of Agricultural Engineers,"
Descriptor: animal-manures; storage-; guidelines-; water-quality; minnesota-

20. NAL Call No.: 290.9-Am32P
Swine-lagoon seepage in sandy soil.
Westerman, P. W.; Huffman, R. L.; Feng, J. S.
Paper presented at the "1993 International Winter Meeting sponsored by the American Society of Agricultural Engineers,"
Descriptor: animal-wastes; pigs-; waste-disposal; lagoons-; sandy-soils; seepage-; groundwater-; water-quality; environmental-impact

21. NAL Call No.: 290.9-Am32T
Struvite control by chemical treatment.
Buchanan, J. R.; Mote, C. R.; Robinson, R. B.
Includes references.
Descriptor: magnesium-ammonium-phosphate; chemical-precipitation; control-; inhibitors-; water-systems; waste-treatment; animal-wastes; lagoons-; water--; precipitation-inhibitors; antiprecipitants-; recycle-water

Abstract: Struvite is a phosphate mineral which can form hard-scale deposits in the recycle components of livestock waste management systems that utilize recycled lagoon effluent to transport waste. Previous research of struvite formation has been directed toward acid-cleaning the recycling system after struvite has been deposited. Such systems incorporate a separate acid injection network that circulates acid through the components and dissolves the scale. The major limitations to this approach are that the operation of the waste management system must be suspended while cleansing takes place and that acids are hazardous to handle and difficult to administer. The research reported in this article explores the possibility of keeping the recycled components free of struvite by continuously injecting scale control agents into the system. Twenty products commonly used for water stabilization were tested in a bench-top study to determine if struvite formation could be inhibited. Described herein are the products, procedures, and results of this research. Of the 20 products originally identified, 7 products are recommended for further study.
22. NAL Call No.: 290.9-Am32P
Use of riparian zones for animal waste treatment.
Hubbard, R. K.; Vellidis, G.; Lowrance, R.; Newton, G. L.; Davis, J.; Dove, R.
Descriptor: animal-wastes; waste-treatment; riparian-vegetation; waste-disposal; groundwater--; water-quality; lagoons--; georgia-

23. NAL Call No.: 290.9-Am32P
Tracking seepage with terrain conductivity survey and wells.
Huffman, R. L.; Westerman, P. W.
Descriptor: animal-wastes; lagoons--; seepage--; groundwater--; water-quality; monitoring-

24. NAL Call No.: 290.9-Am32P
Mapping contaminant plumes using geophysical methods.
Brune, D. E.; Zheng, M.
Descriptor: animal-wastes; waste-disposal-sites; lagoons--; groundwater--; water-quality; soil--; conductivity--; pollution--; expert-systems

25. NAL Call No.: 290.9-Am32P
The Pennsylvania Manure Storage Study.
Thompson, R.
Descriptor: agricultural-wastes; storage--; pennsylvania--

26. NAL Call No.: 56.9-So3
Water content effect on denitrification and ammonia volatilization in poultry litter.
Cabrera, M. L.; Chiang, S. C.
Abstract: Poultry litter is a mixture of excreta, bedding material, waste feed, and some soil that is removed from poultry houses and applied to soil as fertilizer. Because litter is commonly stockpiled outdoors before land application, losses of inorganic N may occur through denitrification and NH3 volatilization. This work was conducted to evaluate the effect of litter water content on denitrification and NH3 volatilization during storage. Litter samples from two broiler houses in northern Georgia were incubated (25 degrees C) at four water contents for 13 d. Water contents used were 230 g H2O kg(-1) in Litter A, 160 g H2O kg(-1) in Litter B, and 800, 1200, and 2400 g H2O kg(-1) in both litters. These water contents were equivalent to 8, 26, 40, and 79% water-holding capacity (WHC) in Litter A and to 7, 33, 49, and 99% WHC in Litter B, respectively. Denitrification was evaluated by measuring emission from samples incubated with 10 kPa C2H2 with and without additional NO3(-) (15 mg N g(-1)). Ammonia volatilization was evaluated by measuring NH3 evolved from samples incubated without C2H2. Denitrification was significant at the highest water content and increased with the addition of NO3(-). Measured denitrification losses varied between 41 and 79% of the initial NO3(-), although final NO3(-) levels suggested that denitrification losses were larger (92-100%) and that part of the N2O produced remained entrapped in the litter. Ammonia volatilization losses ranged from 32 to 139% of the initial NH4(+), and were increased by increasing water content. These results suggest that poultry litter should be stored under dry conditions to reduce N losses.
29. NAL Call No.: S655.A55--1989
Animal waste storage.
Springman, R.; Milwaukee Metropolitan Sewerage District.
[Milwaukee : Milwaukee Metropolitan Sewerage District, 1989?] 1
folded sheet (4 p.) : ill.
Descriptors: Manures-Wisconsin-Storage;
Animal-waste-Wisconsin-Storage

30. NAL Call No.: 56.9-So3
Nitrogen mineralization and ammonia volatilization from
fractionated poultry litter.
Merka, W. C.; Thompson, S. A.
Soil-Sci-Soc-Am-j. [Madison, Wis.] Soil Science Society of
Includes references.
Descriptor: sandy-soils; poultry-manure; fractionation-;
application-to-land; surface-treatment; incorporation-;
nitrogen-; mineralization-; ammonia-; volatilization-;
losses-from-soil; respiration-; storage-; water-content

Abstract: Passing poultry litter through a 0.83-mm sieve
generates a fine fraction higher in N concentration and cheaper
to transport per unit of N than the whole litter. One objective
of this work was to determine if the organic N in the fine
fraction undergoes faster mineralization than that in the whole
litter. Whole litter or fine fraction from three poultry houses
was either mixed with samples of Dothan loamy sand (fine-loamy,
siliceous, thermic Plinthic Kandiudult) or applied on the soil
surface at a rate of 100 kg N ha-1. The treatments were incubated
at water field capacity and 25 degrees C, with samples extracted
at 3, 7, and 14 d. Differences in N mineralization were
relatively small between materials; by Day 14, the organic N had
undergone a slightly higher mineralization in the fine fraction
(51.5%) than in the whole litter (44.5%). A second objective was
to compare the potentials for net N mineralization, NH3
volatilization, and respiration of whole poultry litter and fine
fraction stored for 7 d at 25 degrees C and at two water
contents (unamended [0.12-0.26 kg H2O kg-1] and 0.5 kg H2O kg-1).
On an equal-mass basis, net N mineralization and NH3
volatilization were larger in the fine fraction than in the whole
litter, whereas respiration was similar in both materials. All
processes increased with an increase in water content. These
results suggest that the fine fraction should be managed
similarly to the whole litter when applied to soil and that it
may lose more NH3 than does the whole litter during storage,
particularly at relatively high water contents.

31. NAL Call No.: 290.9-Am32P
Reducing noxious gas emissions & odors from manure storages.
Veenhuizen, M. A.; Qi, R.
Paper presented at the "1992 International Summer Meeting
sponsored by the American Society of Agricultural Engineers,"

Descriptor: manures-; environment-; toxic-gases

32. NAL Call No.: S671.A66
Ice effects on model manure tank walls.
Godbout, S.; Marquis, A.; Masse, D.
Includes references.

Descriptor: pig-manure; cold-storage; tanks-; stresses-; ice-; models-

Abstract: The objective of the study was to evaluate the pressure exerted by frozen manure caps on the walls of concrete manure tanks. The research is aimed at improving design criteria for concrete manure tanks for cold climates. Scale models were used to determine the pressures exerted by ice caps resulting from 2% and 4% solids swine manures and to compare them to that exerted by a fresh water ice cap. For typical Quebec conditions, the highest mean ice pressure measured in laboratory tests was equivalent to 72 +/- 13 kPa from liquid manure. The circumferential stress was influenced by the liquid type but not by the filling methods and was significantly lower for the manure ice caps than for water ice. However, no significant differences in stresses were attributable to the two levels of solids content of the manures. This implies that the stress differences observed between water and manure ice are mainly due to the presence of urea which would have an effect on the thermal expansion.

33. NAL Call No.: TD811.W58--1970
Includes bibliographical references.
Descriptors: Animal-waste; Water-Pollution; Sewage-lagoons

34. NAL Call No.: SF481.2.F56
Farm structures for manure storage and composting mortality.
Ouart, M. D.; Bucklin, R. A.; Douglas, C. R.

Descriptor: farm-storage; farm-buildings; poultry-manure; carcasses-; composting-; carcass-disposal; broilers-

35. NAL Call No.: SF395.P62
Lagoon management.
In subseries: Manure Management (PIH-62), revised June 1993.

Descriptor: lagoons-; pig-manure; waste-treatment; design-; construction-; sludges-; application-to-land
36. NAL Call No.: 4-AM34P
The effect of different methods of storing chicken manure on the viability of certain weed seeds.
Stoker, G. L.; Tingey, D. C.; Evans, R. J.
Includes references.

Descriptor: convolvulus-arvensis; cardaria-draba;
centaurea-picris; weeds-; seeds-; seed-germination; viability-;
poultry-manure; storage-; water-; litter- ; weed-control

Abstract: Seeds of morning glory (Convolvulus arvensis L.), whitetop (Lepidium draba L.) and Russian knapweed (Centaurea picris Poll) were put in wire containers and placed in chicken manure, stored in different ways for various periods of time, and then germinated in soil and on blotter paper. Seeds were removed from the various piles and germinated at different intervals, the shortest being 10 days and the longest 4 months. In no case was the viability of morning glory seed destroyed. The viability of whitetop and Russian knapweed seeds was destroyed after being in the moist, loose manure for 20 days or after being in the moist compacted manure for 1 month. In the unmoistened piles the viability of whitetop and Russian knapweed seeds was not completely destroyed at the end of 4 months.

37. NAL Call No.: 4-AM34P
Effect of bovine digestion and of manure storage on the viability of weed seeds.
Atkeson, F. W.; Hulbert, H. W.; Warren, T. R.
Includes references.

Descriptor: weeds-; seeds-; viability-; manures-; storage-;
bovidae-; digestion-; seed-germination; weed-control; idaho-

Abstract: The results of this experiment indicate that the digestion processes of cattle greatly reduce the percentage viability of most weed seeds under Idaho conditions, thereby tending to minimize manure as a source of weed infestation. However, the number of viable seeds, especially of some plants, after passing through the digestive tract makes manure a possible weed menace if feeds containing large numbers of weed seeds are fed. Storage of manure caused an additional reduction in percentage of viable seeds. Manure which has been stored 3 months could be scattered over fields with little chance of weed infestation so far as weed seeds consumed in feeds are concerned.

38. NAL Call No.: TD930.A32
Use of mineral amendments to reduce ammonia losses from dairy-cattle and chicken-manure slurries.
Termeer, W. C.; Warman, P. R.
Includes references.

Descriptor: dairy-cattle; poultry-manure; slurries-; minerals-;
amendments-; ammonia-; losses-; volatilization-; manures-;
The origin and identification of macropores in an earthen-lined dairy manure storage basin.
McCurdy, M.; McSweeney, K.
Includes references.

Abstract: Earthen-lined basins have been used to store dairy manure in Wisconsin since the early 1970s. Monitoring data indicate that many of these basins are leaking, but little effort has been directed toward explaining the mechanisms responsible for leakage. Morphological and micromorphological techniques were used to identify macropores in the sidewall of an earthen-lined manure storage basin. Laboratory and field dye studies provided evidence of contaminant movement via macropores. Results indicate that physicochemical and biological mechanisms were responsible for creating macropores capable of providing pathways for preferential flow. These mechanisms, and the resulting macropores, can significantly affect the long-term viability of earthen-lined manure storage basins.
Estimating lagoon size for swine waste management.
Nordstedt, R. A.; Baldwin, L. B.
Descriptor: pig-manure; waste-disposal; lagoons-; size-; volume-; estimation-; florida-

44. NAL Call No.: 290.9-AM32P
Advantages of multi-cell animal waste lagoons.
Schneider, J. H.
Descriptor: animal-wastes; lagoons-

45. NAL Call No.: S494.5.E547
Electric energy management on dairy farms.
Brooks, L. A.
In the series analytic: Energy in World Agriculture / edited by K.L. McFate.
Descriptor: dairy-farming; dairy-equipment; electricity-;
electrical-energy; milking--; milking-machines; milk-production;
farm-buildings; ventilation--; fans--; fodder-crops; storage--;
equipment--; silage--; electric-heaters; heat-exchangers; manures--;
dairy-effluent; handling--; pumps--

46. NAL Call No.: TD930.A32
Performance of a dairy manure anaerobic lagoon.
Safley, L. M. Jr.; Westerman, P. W.
Includes references.
Descriptor: dairy-cattle; cattle-manure; anaerobic-treatment;
lagoons--; performance--; methane-production; north-carolina

47. NAL Call No.: TD930.A32
Performance of a low temperature lagoon digester.
Safley, L. M. Jr.; Westerman, P. W.
Includes references.
Descriptor: dairy-cattle; cattle-manure; liquid-wastes; lagoons--;
digesters--; performance--; biogas--; methane-production;
aerobic-digestion

48. NAL Call No.: 275.29-WZ7P
Livestock manure lagoons protect water quality.
Hermanson, R. E.
Includes references.

Descriptor: animal-manures; lagoons-; aerobic-treatment; anaerobic-treatment; design-; management-; water-quality; groundwater-; pollution-; waste- treatment; washington-

49. NAL Call No.: TD171.U5
Wisconsin's "bad actors" programs.
Odgers, E.

Descriptor: water-pollution; legislation-; manures-; storage-; wisconsin-

50. NAL Call No.: TD224.I6W37
Animal agriculture's effect on water quality--waste storage.
Sutton, A. L.
Includes references.

Descriptor: water-pollution; animal-wastes; feedlot-wastes; storage-; indiana-

51. NAL Call No.: 290.9-AM32P
Nitrogen seepage from earthen-built manure storage tanks.
Gangbazo, G.; Cluis, D.; Vallieres, M.
Paper presented at the "1989 International Summer Meeting" jointly sponsored by the American Society of Agricultural Engineers and the Canadian Society of Agricultural Engineering, June 25-28, 1989, Quebec, Canada.

Descriptor: tanks-; cattle-manure; pig-slurry; soil-pollution; seepage-

52. NAL Call No.: TD930.A32
A study on the use of biogas from cowdung for storage insect control.
Mohan, S.; Gopalan, M.
Includes references.

Descriptor: pigeon-peas; stored-products-pests; callosobruchus-chinensis; insect-control; cows-; farmyard-manure; biogas-; fumigation-; airtight- storage; seed-quality; cooking-quality

Return to Bibliographies