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Polyacrylamide (PAM) and Soils

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Polyacrylamide (PAM) and Soils

1. Additive and synergistic effects on plant growth from polymers and organic matter applied to soil simultaneously.
Wallace, A.; Wallace, G. A.

Soil-Sci v.141, p.334-342. (1986).
Includes references.
Descriptors: lycopersicon-esculentum; triticum-aestivum; growth-; polyacrylamide-; organic-matter-in-soil; physical-properties-of-soil; manures-; application-methods; synergism-; utah-
NAL Call No.: 56.8-SO3
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2. Adsorption isotherms of polyanions on soils using tritium labeled compounds.
Nadler, A.; Letey, J.

Soil-Sci-Soc-Am-J v.53, p.1375-1378. (1989).
Includes references.
Descriptors: polyacrylamide-; guar-; tritium-; isotope-labeling; adsorption-; sorption-isotherms; aggregates-; stability-; physical-properties-of-soil
Abstract: Although the effects of polymers on various soil physical properties have been investigated, adsorption of polymers by soils has not been extensively studied. Adsorption isotherms were determined by the batch technique for three tritium-labeled polyanions on one soil which received various pretreatments. Two polyacrylamide (PAM) compounds in which the NH2 was substituted with OH at 2% (2J) and 21% (21J), rendering them negatively charged, were used. Additionally, a guar compound (4246) used in the study was negatively charged and had a lower molecular weight than PAM. The soil was used without pretreatment and also with pretreatment to create a Ca soil, Na soil, organic matter-depleted soil, and high-pH soil. Polyanion type had a relatively greater effect than did soil pretreatment on adsorption, except for the Na soil, which had very low adsorption as compared to the other soil pretreatments. The more negatively charged polyanions (21J and 4246) had linear adsorption isotherms except for 21J on the Na soil. The 2J had adsorption isotherms that plateaued at higher concentrations. The amount of adsorption was in the general order 21J > 4246 > 2J. The exception was for the Na soil in which adsorption for all polymers was low and in the order 4246 > 23 > 21J. Aggregate stability was determined by wet sieving on all the samples. No direct association between the amount of adsorption and aggregate stability was found. The general effectiveness of the polyanions for improving aggregate stability of the natural soil was in the order 2J > 21J > 4246. The reverse trend was observed for the Na soil.
NAL Call No.: 56.9-SO3
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3. Adsorption of polyacrylamide and polysaccharide polymers on soil materials.
Malik, M.; Letey, J.

Soil-Sci-Soc-Am-J v.55, p.380-383. (1991).
Includes references.
Descriptors: polyacrylamide-; polymers-; polysaccharides-; sampling-; soil-chemistry; soil-conditioners; soil-physical-properties; adsorption-; movement-in-soil
Abstract: Knowledge of adsorptive behavior of polymers is useful in predicting their mobility in soil, depth of effective treatment, and other factors related to soil physical conditions. Adsorption isotherms were determined by batch technique for six tritium labeled polymers on three soils, one of which was pretreated to create a high exchangeable sodium percentage (ESP) of 34, and on washed

quartz sand of three size fractions. The three anionic polyacrylamide (PAM) compounds had negative charge density of 40J > 21J > 2J, and the three polysaccharide compounds (guar) had a higher positive charge (T-4141), lower positive charge (CP-14), and a negative charge (T-4246). Adsorption of CP-14,21J, and T4246 was measured on montmorillonitic clay extracted from one soil and a specimen sample of montmorillonite clay. Adsorption of a given polymer on the low ESP soils was not significantly different but was significantly higher on the high ESP soil. The adsorption isotherms were T-4141 greater than or equal to 21J > CP-14 >> 40J greater than or equal to 2J > T-4246, and adsorption on sand was only a little less thin on soil. The adsorption on clay was CP-14 >> T-4246 > 21J. The data suggest that the PAM and guar polymers studied do not penetrate the aggregates, because adsorption was approximately the same for all soils of similar aggregate sizes. Molecular size, molecular conformation, and electrostatic charge significantly affected the adsorption isotherms.
NAL Call No.: 56.9-SO3
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4. Adsorption of polymers on clays as affected by clay charge and structure, polymer properties, and water quality.
Ben Hur, M.; Malik, M.; Letey, J.; Mingelgrin, U.

Soil-Sci v.153, p.349-356. (1992).
Includes references.
Descriptors: soil-conditioners; guar-; polyacrylamide-; adsorption-; illite-; montmorillonite-; soil-structure; pore-size; surface-area; cation-exchange- capacity; charge-characteristics; charge-density; size-; water-quality; electrical-conductivity; electrolytes-; mineralogy-; soil-micromorphology; interactions-; ratios-; polymer-soil-interactions; sodium-adsorption-ratios; specific-surface-areas
NAL Call No.: 56.8-SO3
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5. Aggregate stability and seal formation as affected by drops' impact energy and soil amendments.
Shainberg, I.; Levy, G. J.; Rengasamy, P.; Frenkel, H.

Soil-Sci v.154, p.113-119. (1992).
Includes references.
Descriptors: alfisols-; semiarid-soils; aggregates-; stability-; sealing-; surface-layers; soil-degradation; clay-; hydrodynamic-dispersion; rain-; kinetic- energy; exchangeable-sodium; ion-strength-effects; soil-solution; polyacrylamide-; infiltration-; permeability-; soil-organic-matter; smectites-; israel-
NAL Call No.: 56.8-SO3
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6. Agricultural polymers polyacrylamide preparation, application and prospects in soil conditioning.
Azzam, R. A. I.

Commun-Soil-Sci-Plant-Anal. New York, Marcel Dekker. 1980. v. 11 (8) p. 767-834.
Literature review.

NAL Call No.: S590.C63
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7. Amelioration of sodic soils with polymers.
Wallace, A.; Wallace, G. A.; Abouzamzam, A. M.

Soil-Sci v.141, p.359-362. (1986).
Includes references.
Descriptors: sodic-soils; soil-conditioners; polymers-; polyacrylamide-; application-methods; lycopersicon-esculentum; particle-size; seedling- emergence; penetration-; physical-properties-of-soil
NAL Call No.: 56.8-SO3
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8. Roberts, G. P.; Leps, W. T.; Silver, L. E.; Brill, W. J. T.

Applied-Environ-Microbiol. Washington, D.C., American Society for Microbiology. Feb 1980. v. 39 (2) p. 414-422. ill.
24 ref.

NAL Call No.: 448.3-AP5
****

9. Roberts, G. P.; Leps, W. T.; Silver, L. E.; Brill, W. J. T.

Applied-Environ-Microbiol. Washington, D.C., American Society for Microbiology. Feb 1980. v. 39 (2) p. 414-422. ill.
24 ref.

NAL Call No.: 448.3-AP5
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10. Biodegradation of naphthalene in montmorillonite/polyacryamide suspensions.
Magdaliniuk, S.; Block, J. C.; Leyval, C.; Bottero, J. Y.; Villemin, G.; Babut, M.

Water-sci-technol v.31, p.85-94. (1995).
In the series analytic: Biological degradation of organic chemical pollutants in biofilm systems / edited by E. Arvin.
Descriptors: pseudomonas-cepacia; naphthalene-; microbial-degradation; montmorillonite-; polyacrylamide-; mixtures-; suspensions-; adsorption-; desorption-
NAL Call No.: TD420.A1P7
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11. Birch seedling response to irrigation frequency and a hydrophilic polymer amendent in a container medium.
Tripepi, R. R.; George, M. W.; Dumroese, R. K.; Wenny, D. L.

J-Environ-Hortic v.9, p.119-123. (1991).
Includes references.
Descriptors: betula-pendula; container-grown-plants; growing-media; ornamental-woody-plants; gels-; polymers-; polyacrylamide-; absorbents-; plant- water-relations; irrigation-scheduling; transpiration-; water-stress; stomatal-resistance; hydrogels-
NAL Call No.: SB1.J66
****

12. Calcium inhibition of polyacrylamide gel hydration is partially reversible by potassium.
Bowman, D. C.; Evans, R. Y.

HortScience v.26, p.1063-1065. (1991).
Includes references.
Descriptors: soil-amendments; hydrophilic-polymers; polyacrylamide-; gels-; hydration-; inhibition-; calcium-nitrate; potassium-nitrate; inorganic-salts; interactions-; hydrogels-
Abstract: Hydration of a commercial hydrophilic polyacrylamide gel in 20 meq Ca(NO3)2/liter was reduced to < 10% of the maximum hydration in deionized water. Repeated soaking with deionized water to remove soluble salts restored hydration to approximately 30% of maximum. Incorporating KNO3 at concentrations ranging from 5 to 40 meq liter-1 with the Ca(NO3)2 in the hydration solution partially reversed the Ca2+ inhibition of hydration following repeated soaking. Potential hydrogel hydration increased to 50% of maximum with 40 meq K+/liter. Potassium nitrate supplied separately following hydration in Ca(NO3)2 was much more effective at reversing Ca2+ inhibition of hydrogel hydration than joint application. Potential hydrogel hydration (following repeated soaking) was doubled after treatment with 5 meq KNO3/liter and reached 77% of maximum at 40 meq KNO3/liter.
NAL Call No.: SB1.H6
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13. Characterization of soil humic matter by polyacrylamide gel electrophoresis in the presence of denaturating agents.
Trubetskoj, O. A.; Kudryavceva, L. Yu.; Shirshova, L. T.

Soil-Biol-Biochem v.23, p.1179-1181. (1991).
Includes references.
Descriptors: humus-; characterization-; fractionation-; podzolic-soils; grey-forest-soils; chestnut-soils; chernozems-; red-soils; soil-types-genetic; physicochemical-properties; sds-page-; optimization-; urea-; denaturation-; black-compact-soils
Abstract: The humic materials displaced by a carboxylate resin from six genetically different soil samples were fractionated by electrophoresis in 10% polyacrylamide gel with urea and sodium dodecyl sulphate. As a buffer system 89 mM Tris-borate buffer at pH 8.3 was used. The humic material of each soil studied separated into four discrete bands which differ greatly in electrophoretic mobility. The

electrophoregram scans at 480 nm revealed clear differences in correlation of peak heights corresponding to the humic matter fractions in the six soils.
NAL Call No.: S592.7.A1S6
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14. Characterization of vesicular-arbuscular mycorrhizal fungi (Glomus spp) by selective enzyme staining following polyacrylamide gel electrophoresis.
Sen, R.; Hepper, C. M.

Soil-Biol-Biochem v.18, p.29-34. ill. (1986).
Includes references.
Descriptors: glomus-; mycorrhizal-fungi; spores-; taxonomy-; enzyme-activity; identification-; electrophoresis-; forests-
NAL Call No.: S592.7.A1S6
****

15. Chemical amendments for erosion control.
Norton, L. D.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers,. Winter 1992. (92-2551/92-2570) 9 p.
Paper presented at the "1992 International Winter Meeting sponsored by the American Society of Agricultural Engineers," December 15- 18, 1992, Nashville, Tennessee.
Descriptors: soil-amendments; polyacrylamide-; rill-erosion; interrill-erosion; infiltration-; losses-from-soil; disturbed-soils; gypsiferous-byproduct
NAL Call No.: 290.9-Am32P
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16. Comments on trends in structure, plant growth, and microorganism interactions in the soil by Arie Nadler and Yosef Steinberger.
Wallace, A.; Wallace, G. A.

Soil-sci v.156, p.365-366. (1993).
Comments on the article: Trends in structure, plant growth, and microorganism interactions in the soil, A. Nadler and Y. Steinberger, Soil Science, 155(2), p. 114-122.
Descriptors: zea-mays; sandy-soils; loam-soils; clay-soils; polyacrylamide-; application-rates; soil-structure; soil-water-retention; soil-flora; soil- invertebrates; growth-
NAL Call No.: 56.8-So3
****

17. Compound promises to curb soil erosion.
Boettinger, J.

Utah-sci v.55, p.6-7. (1994).
Descriptors: soil-; gypsum-; erosion-; particles-; polyacrylamide-; irrigation-water; organic-matter; soil-structure; erosion-control
NAL Call No.: 100-Ut1F
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18. Control of soil erosion by polymeric soil conditioners.
Wallace, G. A.; Wallace, A.

Soil-Sci v.141, p.363-367. (1986).
Includes references.
Descriptors: erosion-; erosion-control; polyacrylamide-; aggregates-; application-methods; soil-properties
NAL Call No.: 56.8-SO3
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19. Controlling nitrate leaching and erosion on irrigated land.
Carter, D. L.; Westermann, D. T.; Sojka, R. E.; Meek, B. D.; Wright, J. L.; Brown, M. J.; Lehrsch, G. A.

Clean water, clean environment, 21st century team agriculture, working to protect water resources conference proceedings, March 5-8, 1995, Kansas City, Missouri /. St. Joseph, Mich. : ASAE, c1995.. v. 2 p. 27-30.
Includes references.
Descriptors: zea-mays; medicago-sativa; triticum-aestivum; phaseolus-vulgaris; nitrate-; nitrate-nitrogen; soil-fertility; leaching-; band-placement; erosion-; polyacrylamide-; straw-; whey-; water-erosion; irrigation-; no-tillage-; nutrient-uptake; sequential-cropping; idaho-
NAL Call No.: TD365.C54-1995
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20. Desorption of polyacrylamide and polysaccharide polymers from soil materials.
Nadler, A.; Malik, M.; Letey, J.

Soil-Technol v.5, p.91-95. (1992).
Includes references.
Descriptors: alfisols-; vertisols-; sand-; soil-treatment; polyacrylamide-; guar-gum; charge-density; adsorption-; desorption-; movement-in-soil; spatial- distribution; soil-depth; profiles-; aggregates-; stability-; wetting-; drying-; soil-water-content; polymer-treatment
NAL Call No.: S590.S65
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21. Effect of a medium-incorporated hydrogel on plant growth and water use of two foliage species.
Wang, Y. T.; Boogher, C. A.

J-Environ-Hortic. Washington, D.C. : Horticultural Research Institute. Sept 1987. .v. 5 (3) p. 127-130.
Includes references.
Descriptors: nephrolepis-exaltata; chlorophytum-comosum; evapotranspiration-; growing-media; water-use; water-use-efficiency; irrigation-; transpiration-; container-grown-plants; polyacrylamide-; growth-
NAL Call No.: SB1.J66
****

22. Effect of diffusion on the kinetics of biodegradation: experimental results with synthetic aggregates.
Scow, K. M.; Alexander, M.

Soil-Sci-Soc-Am-J v.56, p.128-134. (1992).
Includes references.
Descriptors: pseudomonas-; soil-bacteria; biological-activity-in-soil; microbial-degradation; p-nitrophenol-; phenol-; glutamates-; mineralization-; bioavailability-; kinetics-; polyacrylamide-; kaolinite-; aggregates-; particle-size; sorption-; diffusion-; diffusivity-; mass-transfer; population- density; spatial-distribution; deterministic-models; polyacrylamide-gel-exclusion-beads
Abstract: The rates of biodegradation in soil often do not conform to the predictions of kinetic models, such as the first-order and Michaelis-Menten models, developed to describe metabolic processes occurring in solutions in which microorganisms and their substrates are well mixed. To test whether the kinetics of biodegradation in the presence of aggregates could be described by explicitly accounting for chemical diffusion, studies were conducted in well-defined experimental systems. The kinetics of biodegradation of low concentrations of 14C-labeled phenol and glutamate by Pseudomonas sp. Strain K in buffer containing spherical aggregates of kaolinite that exclude bacteria were significantly different from the kinetics measured in the absence of aggregates. Both the biodegradation rate and the percentage of the initial compound degraded were lower in the presence of aggregates than in their absence. Using measurements of biodegradation, diffusion rates, and physical properties of the experimental system as input parameters, the diffusion-sorption-biodegradation (DSB) model simulated the biodegradation of phenol and glutamate originating inside aggregates. The model also simulated the initial period of biodegradation of glutamate in an experimental system containing gel-exclusion chromatography beads. Clay aggregates reduced the concentration of available p-nitrophenol sufficiently to lower the apparent rate constant for its biodegradation. Microscopic mass-transfer processes, such as diffusion, may be important to consider in quantitative descriptions of the biodegradation of organic chemicals in soil.
NAL Call No.: 56.9-SO3
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23. The effect of gel-forming polymers on seed germination and establishment.
Woodhouse, J. M.; Johnson, M. S.

J-Arid-Environ v.20, p.375-380. (1991).
Includes references.
Descriptors: hordeum-vulgare; lactuca-sativa; trifolium-repens; seed-germination; establishment-; polymers-; polyvinyl-alcohol; polyacrylamide-; gels-; soil-amendments; water-binding-capacity; starch-copolymers
NAL Call No.: QH541.5.D4J6

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24. Effect of latex, polyacrylamide and mulching of soil with a film on potato yields.
Gil', A. F.; Konkin, P. I.

Agrokhimiia. Moskva, U.S.S.R., "Nauka" Feb 1982. (2) p. 75-79.
4 ref.

NAL Call No.: 385-AG89
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25. Effect of polyacrylamide on seedling emergence in crust-forming soils.
Cook, D. F.; Nelson, S. D.

Soil-Sci v.141, p.328-333. (1986).
Includes references.
Descriptors: medicago-sativa; polyacrylamide-; seedling-emergence; crusts-; arid-soils; physical-properties-of-soil; aggregates-; resistance-to-penetration; zea-mays; utah-
NAL Call No.: 56.8-SO3
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26. Effect of polyacrylamide on seedling emergence of three grass species.
Rubio, H. O.; Wood, M. K.; Cardenas, M.; Buchanan, B. A.

Soil-Sci v.148, p.355-360. (1989).
Includes references.
Descriptors: polyacrylamide-; crusts-; infiltration-; shear-strength; soil-moisture; greenhouse-experimentation; bouteloua-curtipendula; sporobolus- airoides; eragrostis-chloromelas; seedling-emergence
NAL Call No.: 56.8-SO3
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27. Effect of polymers in solution culture on growth and mineral composition of tomatoes.
Wallace, A.

Soil-Sci v.141, p.395-396. (1986).
Includes references.
Descriptors: lycopersicon-esculentum; growth-; plant-nutrition; leaf-analysis; nutrient-contents-of-plants; minerals-; polymers-; polyacrylamide-; polysaccharides-; guar-; nutrient-solutions; ph-; yields-
NAL Call No.: 56.8-SO3
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28. Effect of soil surface treatments of runoff and wheat yields under irrigation.
Stern, R.; Van Der Merwe, A. J.; Laker, M. C.; Shainberg, I.

Agron-J v.84, p.114-119. (1992).

Includes references.
Descriptors: triticum-aestivum; irrigation-water; runoff-; infiltration-; clay-loam-soils; soil-treatment; polyacrylamide-; phosphogypsum-; surface- treatment; dikes-; soil-structure; irrigation-scheduling; water-use-efficiency; soil-water-content; crop-yield; grain-; growth-rate; seal-formation
Abstract: In arid and semi-arid regions, where soil structure is unstable, surface runoff due to seal formation reduces irrigation water use efficiency. This study was conducted to determine the efficiency of surface treatments in reducing runoff and increasing wheat crop productivity. Surface runoff from wheat plots on a non-sodic, silty clay loam soil (Rhodudalf silty clay loam), sprinkler irrigated with a good quality irrigation water, was collected using flumes and collection boxes. Percentages runoff were 36.1% of the total irrigation during the growing season for the control (Ct), 12.8% for phosphogypsum (PG), 1.4% for polyacrylamide plus PG (PAM), and 1.1% for pitting plus PG (Pt) treatments. The mulching effect of the growing canopy did not reduce runoff during consecutive irrigations as the season progressed. Water content in the profile was correlated with the amount of water that infiltrated into the soil. The crop biomass production in the Pt and PAM treatments was significantly higher than the PG and Ct treatments (8.81 and 7.91 vs. 6.41 and 5.47 Mg ha-1, respectively). The Pt and PAM treatments also gave significantly higher grain yield (3.66 and 3.02 vs. 2.25 and 2.12 Mg ha-1, respectively). The Pt, PAM, and PG treatments resulted in significantly higher irrigation water use efficiency (IWUE) than the Ct. The PAM is the least known treatment and is given special attention in this study. In regions where water is scarce and costly, improving the efficiency of irrigation by tillage or soil ameliorants should be considered.
NAL Call No.: 4-AM34P
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29. Effect of soluble salts on water absorption by gel-forming soil conditioners.
Johnson, M. S.

J-Sci-Food-Agric v.35, p.1063-1066. (1984).
Includes 4 references.
Descriptors: soil-conditioners; water-absorption; solubility-; salts-; polyacrylamide-; polyvinyl-alcohol; water-storage
NAL Call No.: 382-SO12
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30. The effect of synthetic soil conditioners on microbial biomass.
Steinberger, Y.; Sarig, S.; Nadler, A.; Barnes, G.

Arid-soil-res-rehabil v.7, p.303-306. (1993).
Includes references.
Descriptors: soil-flora; biomass-; carbon-; sandy-soils; loam-soils; polyacrylamide-; application-rates;

biological-activity-in-soil
NAL Call No.: S592.17.A73A74
****

31. The effect of two polymers and water qualities on dry cohesive strength of three soils.
Aly, S. M.; Letey, J.

Soil-Sci-Soc-Am-J v.53, p.255-259. (1989).
Includes references.
Descriptors: sandy-loam-soils; sandy-soils; clay-loam-soils; crusts-; soil-conditioners; polymers-; guar-; polyacrylamide-; water-composition-and- quality; canals-; wells-; soil-strength; cohesion-; tensile-strength; rupture-; soil-hardness; california-; modulus-of-rupture; well-water; canal-water
Abstract: The effects of two polymers, cationic guar (CP-14) and anionic polyacrylamide (PAM), and two water qualities on dry cohesive strength of three soils were studied. The soils were Fallbrook sandy loam (fine-loamy, mixed, thermic, Typic Haploxeralf), Bosanko sandy clay loam (fine, montmorillonitic, thermic, Chromic Pelloxererts), and Hanford loamy sand (coarse-loamy, mixed, nonacid, thermic, Typic Xerorthents). The two polymers were applied with synthesized Friant-Kern Canal or well water typical of the San Joaquin Valley of California (EC 0.05 and 0.7 dS m-1, respectively). The soil was used either directly (nonpretreated) or pretreated by spraying the waters containing polymers to create concentrations of 0, 25, 50 and 100 mg polymer per kg soil and then air-drying the soil. Soil briquets and soil cores of pretreated soil were saturated with untreated water and nonpretreated soil was saturated with waters containing polymer concentrations of 0, 5, 25, 50 and 100 mg L-1. The saturated soil was drained, dried at 60 degrees C for 48 h and then the dry cohesive strength was measured by modulus of rupture (MR) of soil briquets and tensile strength (S) of soil cores. The rupture stress (RS) required for crushing three group sizes (2-4,4-5.66 and 5.66- 8 mm) of artificially prepared soil aggregates using the various solutions was also measured. Both polymers were effective in ameliorating soil hardness, but PAM was more effective than CP-14 in either water. The degree to which MR, S and R decreased with polymer applications was dependent upon the soil type, water quality, polymer concentration and method of polymer application. Pretreated Bosanko soil showed higher MR values in canal water than in well water for both polymers. Fallbrook soil showed the same trend as Bosanko soil with CP-14 and opposite results with PAM. Higher values of MR were obtained in nonpretreated soil than in pretreated soil for Bosanko soil in both canal and well water. In general, differences in MR between pretreated and nonpretreated Fallbrook soil were not great. Reasonable agreement was found between measured MR and RS of the three soils and predicted results based on flocculation and polymer adsorption on montmorillonite.
NAL Call No.: 56.9-SO3
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32. The effects of gel-forming polyacrylamides on moisture storage in sandy soils.
Johnson, M. S.

J-Sci-Food-Agric v.35, p.1196-1200. ill. (1984).
Includes 8 references.
Descriptors: soil-conditioners; polyacrylamide-; soil-moisture; sandy-soils; soil-water-relations; water-storage
NAL Call No.: 382-SO12
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33. Effects of polyacrylamide and irrigation method on soil physical properties.
Terry, R. E.; Nelson, S. D.

Soil-Sci v.141, p.317-320. (1986).
Includes references.
Descriptors: polyacrylamide-; irrigation-systems; clay-loam-soils; bulk-density; aggregates-; stability-; infiltration-; penetrometers-; resistance-to- penetration; physical-properties-of-soil; utah-
NAL Call No.: 56.8-SO3
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34. Effects of polyacrylamide on establishment and growth of crested wheatgrass seedlings and sagebrush tubelings.
Al Rowaily, S. L.; West, N. E.

Gen-tech-rep-INT p.275-280. (1994).
Paper presented at the symposium on "Ecology, Management, and Restoration of Intermountain Annual Rangelands," May 18-22, 1992, Boise, Idaho.
Descriptors: polyacrylamide-; agropyron-desertorum; artemisia-tridentata; growth-; seedling-emergence; crusts-; utah-; soil-moisture
NAL Call No.: aSD11.A48
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35. Effects of polyacrylamide soil conditioner on the iron status of soybean plants.
Wallace, A.; Wallace, G. A.; Abouzamzam, A. M.; Cha, J. W.

Soil-Sci v.141, p.368-370. (1986).
Includes references.
Descriptors: glycine-max; iron-; mineral-deficiencies; polyacrylamide-; chlorosis-; soil-aeration; drainage-; calcareous-soils; california-
NAL Call No.: 56.8-SO3
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36. Effects of soil conditioners on emergence and growth of tomato, cotton, and lettuce seedlings.
Wallace, A.; Wallace, G. A.

Soil-Sci v.141, p.313-316. (1986).

Includes references.
Descriptors: lycopersicon-esculentum; gossypium-hirsutum; lactuca-sativa; soil-conditioners; seedling-emergence; growth-; polyacrylamide-; polysaccharides-; application-methods
NAL Call No.: 56.8-SO3
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37. Effects of very low rates of synthetic soil conditioners on soils.
Wallace, A.; Wallace, G. A.

Soil-Sci v.141, p.324-327. (1986).
Includes references.
Descriptors: soil-conditioners; application-methods; infiltration-; polymers-; polyacrylamide-; polysaccharides-; porosity-; cost-benefit-analysis
NAL Call No.: 56.8-SO3
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38. Enhancement of the effect of coal fly ash by a polyacrylamide soil conditioner on growth of wheat.
Wallace, A.; Wallace, G. A.

Soil-Sci v.141, p.387-389. (1986).
Includes references.
Descriptors: triticum-aestivum; coal-; fly-ash; polyacrylamide-; growth-; dry-matter-accumulation; physical-properties-of-soil; waste-disposal; waste-utilization; clay-soils; calcareous-soils; california-
NAL Call No.: 56.8-SO3
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39. The environmental crisis in the Sudan: the effect of water-absorbingh synthetic polymers on tree germination and early survival.
Callaghan, T. V.; Abdelnour, H.; Lindley, D. K.

J-Arid-Environ v.14, p.301-317. (1988).
Includes references.
Descriptors: woody-plants; plant-establishment; survival-; deserts-; desertification-; water-absorption; polyacrylamide-; polyvinyl-alcohol; soil- conditioners; rain-; irrigation-water; water-use-efficiency; sudan-
NAL Call No.: QH541.5.D4J6
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40. Erosion takes a powder.
Senft, D.

Agric-Res-U-S-Dep-Agric-Res-Serv v.41, p.16-17. (1993).
Descriptors: erosion-control; polyacrylamide-; irrigation-water; runoff-
NAL Call No.: 1.98-AG84
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41. Fertilizer salts reduce hydration of polyacrylamide gels

and affect physical properties of gel-amended container media.
Bowman, D. C.; Evans, R. Y.; Paul, J. L.

J-Am-Soc-Hortic-Sci v.115, p.382-386. (1990).
Includes references.
Descriptors: soil-amendments; polyacrylamide-; gels-; hydrophilic-polymers; hydration-; fertilizers-; salts-; water-absorption
Abstract: Hydration of three commercial hydrophilic polyacrylamide gels in deionized water ranged from 340 to 420 g per gram of gel. Hydration was progressively inhibited by fertilizer salt concentrations from 0 to 20 meq.liter-1. Hydration of the gels in the presence of divalent cations (Ca2+ and Mg2+) and monovalent cations (K+ and NH4+) at 20 meq.liter-1 was reduced to approximately 10% and 20% of maximum, respectively. The valence of the accompanying anion did not affect hydration. Gel hydration was unaffected by urea over the range of 2 to 20 mM. Sequential rinses of the hydrated gels with deionized water completely reversed the inhibition due to the monovalent, but not the divalent, cations. The electroconductivity (EC) of the external solution increased during gel hydration. In the presence of fertilizer salts, the physical properties of a 2 redwood sawdust : 1 sand (v/v) container mix were unaffected by hydrophilic gel additions of 1.2 and 2.4 kg.m-3 (1 X and 2 X the recommended rate, respectively).
NAL Call No.: 81-SO12
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42. Field results using polyacrylamide to manage furrow erosion and infiltration.
Lentz, R. D.; Sojka, R. E.

Soil-sci v.158, p.274-282. (1994).
Includes references.
Descriptors: irrigated-soils; furrow-irrigation; water-erosion; erosion-control; infiltration-; soil-treatment; polyacrylamide-; application-rates; runoff-; sediment-; phosphorus-; nitrate-; losses-from-soil
NAL Call No.: 56.8-So3
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43. Field studies on effect of soil conditioners and mulch on runoff from kaolinitic and Illitic soils.
Stern, R.; Laker, M. C.; Merwe, A. J. v. d.

Aust-J-Soil-Res v.29, p.249-261. (1991).
Includes references.
Descriptors: clay-soils; kaolinite-; illite-; water-erosion; erosion-control; phosphogypsum-; polyacrylamide-; mulches-; runoff-; rain-
NAL Call No.: 56.8-AU7
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44. Flow of water containing additives of polyacrylamide in a duralumin pipe of UDS-25 sprinkler.

Vasil'ev, B. A.; Grukolenko, V. K.; Shakirova, E. A.

Nauchno-Tekh-Biul-Agron-Fiz p.59-61. (1977).
Includes references.
Descriptors: sprinkler-irrigation; equipment-; water-; flow-; polyacrylamide-; additives-; hydraulic-resistance
NAL Call No.: S589.A1A35
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45. Formation and properties of the kaolinite-polyacrylamide complex in aqueous media.
Nabzar, L.; Carroy, A.; Pefferkorn, E.

Soil-Sci v.141, p.113-119. (1986).
Includes references.
Descriptors: kaolinite-; soil-formation; soil-properties; culture-media; polyacrylamide-; adsorption-
NAL Call No.: 56.8-SO3
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46. Frankia diversity in an alder stand as estimated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis of whole-cell proteins [Nitrogen-fixing symbiosis with actinomycetes].
Benson, D. R.; Hanna, D.

Can-J-Bot-J-Can-Bot v.61, p.2919-2923. ill. (1983).
Paper presented at the "International Conference on the Biology of Frankia," August 4-6, 1982, Madison, Wisconsin.

NAL Call No.: 470-C16C
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47. Frankia diversity in an alder stand as estimated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis of whole-cell proteins [Nitrogen-fixing symbiosis with actinomycetes].
Benson, D. R.; Hanna, D.

Can-J-Bot-J-Can-Bot v.61, p.2919-2923. ill. (1983).
Paper presented at the "International Conference on the Biology of Frankia," August 4-6, 1982, Madison, Wisconsin.

NAL Call No.: 470-C16C
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48. High-tech polyacrylamides as soil conditioners in the reclamation and stability of desert lands.
Wallace, G. A.; Wallace, A.

Gen-Tech-Rep-INT-U-S-Dep-Agric-For-Serv-Intermt-Res-Stn p.58-63. (1989).
Paper presented at a "Symposium on Shrub Ecophysiology and Biotechnology," June 30-July 2, 1987, Logan, Utah.
Descriptors: land-reclamation; deserts-; polyacrylamide-; soil-stabilizers
NAL Call No.: aSD11.A48

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49. Hydraulic flow and water quality characteristics in rill erosion.
Shainberg, I.; Laflen, J. M.; Bradford, J. M.; Norton, L. D.

Soil-Sci-Soc-Am-j. [Madison, Wis.] Soil Science Society of America. July/Aug 1994. v. 58 (4) p. 1007-1012.
Includes references.
Descriptors: hapludults-; rill-erosion; water-flow; exchangeable-sodium; water-quality; calcium-chloride; polyacrylamide-; erodibility-; surface-layers; stresses-; soil-sodicity; soil-detachment; shear-stresses; stream-power
Abstract: The effects of interaction between water flow characteristics, soil sodicity, and water quality on the detachment of soil particles by flowing water was studied in the laboratory. Specific objectives of this study were to evaluate: (i) the use of flow shear stress and stream power for estimating soil detachment, (ii) the effect of low soil sodicity (exchangeable sodium percentage [ESP] < 10) and water quality (deionized water [DW] and 0.005 M CaCl2 solution [TW]) on soil detachment, and (iii) the effect of negatively charged polyacrylamide (PAM) polymer on soil detachment. Detachment rates were measured in a small hydraulic fume. Several bed slopes and flow rates were studied. Detachment rate increased linearly with both shear stress and stream power of the flow. The rill erodibility of the Miami soil (fine-loamy, mixed, mesic Typic Hapludalf) agreed well with field data. Water quality had no effect on rill erodibility for the soil tested when ESP < 3.0. Use of TW reduced the erodibility of soils with ESP 5 and 10 compared with DW. Surface treatment with PAM [0.05 g m(-2)] prevented soil detachment in flows with high shear stress. The formation of a surface soil layer with high cohesion and aggregate stability prevented soil detachment. Soil surface properties and not bulk soil properties determined soil detachment.
NAL Call No.: 56.9-So3
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50. Hydrophilic polyacrylamide and fertilizer affect growth and water relations of Chlorophytum comosum and Plectranthus australis during winter production.
Wang, Y. T.; Boogher, C. A.

J-Rio-Grande-Val-Hortic-Soc. Weslaco, Tex. : The Society. 1989. v. 42 p. 51-58.
Includes references.
Descriptors: chlorophytum-comosum; plectranthus-parviflorus; winter-; cultivation-; shoots-; roots-; growth-; responses-; irrigated-conditions; irrigation-scheduling; water-relations; hydrophilic-polymers; slow-release-fertilizers; texas-
NAL Call No.: 81-L95
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51. Identification of vesicular-arbuscular mycorrhizal fungi in roots of leek (Allim porrum L.) and maize (Zea mays L.) on

the basis of enzyme mobility during polyacrylamide gel electrophoresis.
Hepper, C. M.; Sen, R.; Maskall, C. S.

New-Phytol v.102, p.529-539. (1986).
Includes references.
Descriptors: allium-porrum; zea-mays; roots-; glomus-caledonicus; glomus-fasciculatus; glomus-mosseae; enzyme-activity; electrophoresis-
NAL Call No.: 450-N42
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52. Impact of hydrogel on physical properties of coarse-structured horticultural substrates.
Fonteno, W. C.; Bilderback, T. E.

J-Am-Soc-Hortic-Sci v.118, p.217-222. (1993).
Includes references.
Descriptors: pine-bark; polyacrylamide-; soil-physical-properties; soil-water; water-availability; horticultural-soils
Abstract: Addition of a polyacrylamide hydrogel to pine bark and pine bark + sand substrates had no effect on total porosity, regardless of incorporation rate. Container capacity was increased with increasing rate of hydrogel in both substrates. Air space in pine bark was slightly increased at the lowest rate but was reduced with higher incorporation rates. Air space in pine bark + sand was reduced with all hydrogel additions. The dry weight of hydrogel cubes recovered from both substrates was similar to amounts predicted. This result indicates that blending hydrogel granules into the substrates was uniform and did not contribute to variability in hydrogel studies. After allowing dry hydrogel granules to expand freely in distilled water for 24 hours, hydrogel granules expanded 317 and 372 times their dry weights at the lowest and highest rates, respectively. Reduction of expansion (in water) at higher rates may have been due to physical restriction of expansion. Conversely, recovered hydrogel cubes from substrates watered to drainage (approximately 10% excess) for 6 weeks absorbed 25 to 55 times their dry weight while in the container. Subsequent rehydration of extracted gels in distilled water was greater for hydrogel cubes from the pine bark + sand medium (104 to 130) than in pine bark alone (51 to 88). Because of anomalies in hydraulic conductivity and pressure plate contact, three techniques were used to study unavailable water content in gels expanded in distilled water. Hydrogel cubes placed in direct contact with the pressure plate released approximately 95% of their water at pressures less than or equalt to 1.5 MPa. Effectiveness of polyacrylamide gels in coarse-structured substrates is influenced by physical restrictions to expansion in the substrate and hydraulic conductivity between the hydrogel cubes and the surrounding substrate.
NAL Call No.: 81-SO12
****

53. Improving the bearing capacity of top soil layers by means of a polymer mixture grout.
Impe, W. F. v.; Boodt, M. d.; Meyus, I.

Impact of water and external forces on soil structure : selected papers of the 1st Workshop on Soilphysics [sic] and Soilmechanics [sic], Hannover 1986 / J. Drescher, R. Horn and M. de Boodt (Editors). Cremlingen-Destedt : Catena, c1988. p. 1-14. ill.
Descriptors: soils-; erosion-control; polymers-; polyacrylamide-; sodium-silicate; soil-stabilization; slopes-; glyoxal-
NAL Call No.: S593.2.W6-1986
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54. Influence of gel additives on nitrate, ammonium, and water retention and tomato growth in a soilless medium.
Bres, W.; Weston, L. A.

HortScience v.28, p.1005-1007. (1993).
Includes references.
Descriptors: lycopersicon-esculentum; growing-media; soilless-culture; gels-; additives-; hydrophilic-polymers; polyacrylamide-; water-holding- capacity; ammonium-nitrate; nutrient-uptake; nitrate-nitrogen; ammonium-nitrogen; leaves-; seedling-growth
Abstract: Experiments were conducted to evaluate the effect of incorporated hydrogel amendments to a soilless growth medium on ammonium, nitrate, and water retention and tomato (Lycopersicon esculentum Mill.) seedling growth. HydroSource and Agri-gel were incorporated into a 1 peat : 1 perlite : 1 vermiculite soilless medium at rates of 1, 2, or 3 g.liter-1 with 0.88 g of ammonium nitrate fertilizer. Water retention by the growth medium increased linearly with gel application; HydroSource generally was more effective than Agri-gel. Between 90% and 96% of the applied nitrate-N was recovered in the resulting leachate of the gel-amended media, while 33% to 55% of the ammonium-N was recovered. Nitrate-N and ammonium-N retention was higher when 3 g.liter-1 of either gel was added to the growth medium than when lower amounts or no gel was added. Gel amendment did not affect tomato seedling growth. Total foliar N concentration in tomato leaves was significantly higher in the Hydrosource treatments than in the control or Agri-gel treatments.
NAL Call No.: SB1.H6
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55. Interaction of FeSO4 with polyacrylamide and urea formaldehyde in aggregating light-textured soils.
Sharma, P. K.

Soil-Sci v.146, p.185-191. (1988).
Includes references.
Descriptors: light-textured-soils; ferric-sulfate; soil-conditioners; polyacrylamide-; urea-formaldehyde; physico-chemical-properties-of-soil

NAL Call No.: 56.8-SO3
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56. Interactions between a polyacrylamide and a polysaccharide as soil conditioners when applied simultaneously.
Wallace, A.; Abouzamzam, A. M.; Cha, J. W.

Soil-Sci v.141, p.374-376. (1986).
Includes references.
Descriptors: lycopersicon-esculentum; polyacrylamide-; polysaccharides-; soil-conditioners; responses-; growth-; interactions-
NAL Call No.: 56.8-SO3
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57. Interactions between polymer soil conditioners and organic amendments in the improvement of physical properties of soil.
Wallace, A.; Wallace, G. A.

J-Plant-Nutr v.13, p.437-450. (1990).
Paper published in "Interactions of Limiting Factors in Crop Production", a special issue devoted to research papers by Dr. Arthur Wallace.
Descriptors: triticum-aestivum; lycopersicon-esculentum; lactuca-sativa; seedlings-; dry-matter-accumulation; crop-yield; yield-response-functions; soil- treatments; polyacrylamide-; lignite-ash; poultry-manure; composts-; limiting-factors; interactions-; soil-properties; multiple-fraction-yield-plot; liebig-type-limiting-factor
NAL Call No.: QK867.J67
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58. Interactions of certain polyacrylamides with soil bacteria.
Grula, M. M.; Huang, M. L.; Sewell, G.

Soil-sci v.158, p.291-300. (1994).
Includes references.
Descriptors: soil-bacteria; pseudomonas-; strains-; sulfate-reducing-bacteria; growth-; culture-media; polyacrylamide-; nutrient-sources; biodegradation- ; viscosity-; interactions-; polyacrylamide-bacteria-interactions
NAL Call No.: 56.8-So3
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59. Interactions of soil conditioner with other limiting factors to achieve high crop yields.
Wallace, A.; Abouzamzam, A. M.

Soil-Sci v.141, p.343-345. (1986).
Includes references.
Descriptors: lycopersicon-esculentum; limiting-factors; soil-deficiencies; nitrogen-; phosphorus-; soil-conditioners; physical-properties-of-soil; polyacrylamide-; crop-yield;

california-
NAL Call No.: 56.8-SO3
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60. Isoelectric focusing of humic substances on ultrathin polyacrylamide gels: evidence of fingerprint performance.
Kutsch, H.; Schumacher, B.

Biol-fertil-soils v.18, p.163-167. (1994).
Includes references.
Descriptors: humus-; isoelectric-focusing; page-; rapid-methods
NAL Call No.: QH84.8.B46
****

61. Isolation, purification and some physico-chemical properties of soil humic substances fractions obtained by polyacrylamide gel electrophoresis.
Trubetskoj, O. A.; Trubetskaya, O. E.; Khomutova, T. E.

Soil-Biol-Biochem v.24, p.893-896. (1992).
Includes references.
Descriptors: humus-; isolation-; purification-; grey-forest-soils; physicochemical-properties
Abstract: A method of preparative isolation and purification of humic substances (HS) fractions obtained by electrophoresis in 10% polyacrylamide gel has been developed. For removal of admixture and concentration of HS fractions, eluted from the gel, precipitation by trichloroacetic acid or ethanol has been used. Electrophoretic mobility of HS fractions after their eluation from the gel and purification does not change. Absorption spectroscopic investigations in the u.v. and visible ranges have been carried out. Correlation between a gradual increase of E4/E6 of HS fractions and an increase of their electrophoretic mobilities assumes distribution of fractions in the gel matrix according to molecular weights. The differences obtained between some physico-chemical properties of HS fractions point out the possible differences in their structural organization and chemical composition.
NAL Call No.: S592.7.A1S6
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62. A laboratory method for investigating the stabilization of mole channels.
Davies, R. S.; Adey, M. A.

J-Agric-Eng-Res v.48, p.303-314. ill. (1991).
Includes references.
Descriptors: mole-drainage; channels-; soil-blocks; laboratory-methods; stabilizing-; polyacrylamide-; treatment-; mole-plows
Abstract: A method has been devised to allow production of model mole channels in blocks of soil under laboratory conditions. Subsequently, the channels were subjected to a combination of treatments including wetting and drying of the whole soil block and the passage of water down through the

soil to the channel and along the channel itself. Erosion from within the channel was monitored by measurement of sediment yield and the structure of the channel was itself examined by use of an endoscope. Mole channels produced with polyacrylamide, had smoother walls initially than those without and also after subsequent testing by water flow. Additionally, channels treated with polyacrylamide, also produced less sediment than untreated channels. Such models were used to study the beneficial effects of polyacrylamide on mole channel stability but could also be used to study other aspects of mole channel production and stability under varying controlled conditions.
NAL Call No.: 58.8-J82
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63. Mixing of concentrated polyacrylamide solutions in pipelines.
Vasil'ev, B. A.; Grukolenko, V. K.; Shakirova, E. A.

Nauchno-Tekh-Biul-Agron-Fiz p.33-37. (1978).
Includes references.
Descriptors: drainage-systems; irrigation-systems; pipelines-; polyacrylamide-; water-flow-resistance; mathematical-models
NAL Call No.: S589.A1A35
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64. Modification of hydrophysical properties of a sandy loam soil with soil conditioners [Polyvinylalcohol, polyacrylamide, polyvinyl acetate, India].
Sundara Sarma, K. S.; Nagarajarao, Y.

Indian-J-Soil-Conserv v.11, p.19-27. ill. (1983).
Includes 17 references.
Descriptors: India-
NAL Call No.: S625.I47S6
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65. Modification of hydrophysical properties of a sandy loam soil with soil conditioners [Polyvinylalcohol, polyacrylamide, polyvinyl acetate, India].
Sundara Sarma, K. S.; Nagarajarao, Y.

Indian-J-Soil-Conserv v.11, p.19-27. ill. (1983).
Includes 17 references.
Descriptors: India-
NAL Call No.: S625.I47S6
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66. N,N'-methylene bisacrylamide-crosslinked polyacrylamide for controlled release urea fertilizer formulations.
Abraham, J.; Rajasekharan Pillai, V. N.

Commun-soil-sci-plant-anal v.26, p.3231-3241. (1995).
Includes references.
Descriptors: urea-; slow-release-fertilizers; acrylamides-; polyacrylamide-; coatings-; polyvinyl-acetate;

polyvinyl-chloride; rubber-; polystyrenes-; formulations-; evaluation-; comparisons-
Abstract: Controlled release urea fertilizers based on N,N'-methylene bisacrylamide (NNMBA)-crosslinked polyacrylamide soil conditioner are described. Laboratory preparation and evaluation of coated urea fertilizers were conducted. Urea was initially coated with the co-polymer of acrylamide and NNMBA. Ethylene vinylacetate (EVA), natural rubber (NR), and polyvinylchloride (PVC) were compared with polystyrene (PS) for their suitability to be used as sealant material in coating fertilizer urea with the co-polymer of acrylamide and NNMBA. The coated system with EVA was found to have greater slow release character than that with PS while NR and PVC systems had a lesser slow release character.
NAL Call No.: S590.C63
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67. Negatively charged PAM efficacy as a soil conditioner as affected by the presence of roots.
Nadler, A.

Soil-Sci v.156, p.79-85. (1993).
Includes references.
Descriptors: sandy-soils; loam-soils; clay-soils; polyacrylamide-; application-rates; efficacy-; soil-water-retention; soil-structure; zea-mays; roots-; irrigation-requirements
NAL Call No.: 56.8-SO3
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68. Oil application of a hydrophilic conditioner in relation to moisture, irrigation frequency and crop growth.
Baasiri, M.; Ryan, J.; Mucheik, M.; Harik, S. N.

Commun-Soil-Sci-Plant-Anal v.17, p.573-589. (1986).
Includes 8 references.
Descriptors: cucumis-sativus; soil-conditioners; semiarid-soils; hydrophilic-polymers; polyacrylamide-; crop-yield; irrigation-scheduling; growth-; soil- moisture; soil-water-relations
NAL Call No.: S590.C63
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69. Organic polyanions' effect on aggregation of structurally disrupted soil.
Nadler, A.; Letey, J.

Soil-Sci v.148, p.346-354. (1989).
Includes references.
Descriptors: aggregates-; polyacrylamide-; polysaccharides-; guar-; stability-; sieving-; particle-size-distribution; adsorption-; soil-water-content; soil- ph; charge-density; disturbed-soils
NAL Call No.: 56.8-SO3
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70. Organic polymers and soil sealing in cultivated soils.
Shainberg, I.; Levy, G. J.

Soil-sci v.158, p.267-273. (1994).
Includes references.
Descriptors: agricultural-soils; sealing-; surface-layers; soil-treatment; polymers-; soil-conditioners; aggregates-; stability-; clay-; dispersion-; infiltration-; soil-properties; soil-solution; electrolytes-; polyacrylamide-; erosion-control; residual-effects
NAL Call No.: 56.8-So3
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71. PAM application techniques and mobility in soil.
Nadler, A.; Magaritz, M.; Leib, L.

Soil-sci v.158, p.249-254. (1994).
Includes references.
Descriptors: polyacrylamide-; viscosity-; soil-treatment; clay-soils; sandy-loam-soils; penetration-; movement-in-soil; application-rates; aggregates-; stability-; pore-size-distribution; soil-water-retention; water-holding-capacity; israel-
NAL Call No.: 56.8-So3
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72. Pesticide leaching under different irrigation systems.
Singh, G.; Spencer, W. F.; Yates, S. R.

Clean water, clean environment, 21st century team agriculture, working to protect water resources conference proceedings, March 5-8, 1995, Kansas City, Missouri /. St. Joseph, Mich. : ASAE, c1995.. v. 2 p. 215-218.
Descriptors: trifluralin-; chlorpyrifos-; methamidophos-; dicofol-; pendimethalin-; herbicide-residues; insecticide-residues; leaching-; subsurface- irrigation; trickle-irrigation; furrow-irrigation; irrigation-; groundwater-pollution; polyacrylamide-; irrigation-water; runoff-water; sediment- yield; furrows-; california-; lepa-irrigation-kelthane; low-energy-precision-application-irrigation
NAL Call No.: TD365.C54-1995
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73. Physical properties of sodium-treated soil as affected by two polymers.
Aly, S. M.; Letey, J.

Soil-Sci-Soc-Am-J v.54, p.501-504. (1990).
Includes references.
Descriptors: soil-conditioners; polymers-; polyacrylamide-; guar-; aggregates-; stability-; flocculation-; soil-strength; physical-properties-of-soil; sodium-adsorption-ratio; rupture-stress
Abstract: Increasing values of sodium adsorption ratio (SAR) lead to decreasing aggregate stability, increasing dry cohesive strength, and decreasing flocculation of soil.

Soils with high SAR values occur in many semiarid and add regions of the world. This research investigated the effectiveness of an anionic polyacrylamide (40J) and a cationic guar (T-4141) polymer in increasing aggregate stability and flocculation and decreasing the aggregate rupture stress of soils treated to have SAR values of 1, 5, and 15. The aggregate stability of soil at all three SAR values increased with increasing concentrations of 40J but was not greatly affected by T-4141. Both polymers had similar effects on the rupture stress of aggregates where the rupture stress (with one exception) decreased with increasing polymer concentration. Both polymers increased flocculation, compared with the control, for the soil at SAR equal to 1 and 5, whereas only T-4141 produced measurable increase in flocculation of the soil with SAR equal to 15. The polymer 40J was more effective than T-4141 in promoting flocculation at SAR equal to 1 and 5 at lower polymer concentrations but less effective at higher concentrations. The effects of polymers on one soil property such as flocculation cannot be extrapolated to the effects on another soil property such as aggregate stability or rupture stress.
NAL Call No.: 56.9-SO3
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74. Polyacrylamide application in irrigation water to increase infiltration.
Mitchell, A. R.

Soil-Sci v.141, p.353-358. ill. (1986).
Includes references.
Descriptors: gossypium-; polyacrylamide-; irrigation-water; application-methods; infiltration-; permeability-; arid-soils; clay-loam-soils; irrigated-soils; california-
NAL Call No.: 56.8-SO3
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75. Polyacrylamide cel preparation by ionizing radiation for conditioning soil.
Azzam, R.; Seyam, T.

Ann-Agric-Sci-Moshtohor. Moshtohor, Zagazig Univ., Faculty of Agricultural Science. 1980. v. 13 p. 215-223. ill.
Bibliography p. 219-222.

NAL Call No.: S341.A5
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76. Polyacrylamide characteristics related to soil applications.
Barvenik, F. W.

Soil-sci v.158, p.235-243. (1994).
Includes references.
Descriptors: soil-amendments; polyacrylamide-; chemistry-; characterization-; chemical-properties; industrial-applications; formulations-
NAL Call No.: 56.8-So3

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77. Polyacrylamide effect on furrow erosion and infiltration.
Trout, T. J.; Sojka, R. E.; Lentz, R. D.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers,. Summer 1993. (932036) 10 p.
Paper presented at the "1993 International Summer Meeting sponsored by The American Society of Agricultural Engineers, and The Canadian Society of Agricultural Engineering," June 20-23, 1993, Spokane, Washington.
Descriptors: furrow-irrigation; polyacrylamide-; erosion-; irrigation-water
NAL Call No.: 290.9-Am32P
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78. Polyacrylamide effect on furrow erosion and infiltration.
Trout, T. J.; Sojka, R. E.; Lentz, R. D.

Trans-ASAE v.38, p.761-766. (1995).
Includes references.
Descriptors: soil-; erosion-; irrigation-; furrows-; polyacrylamide-; sediment-; soil-stabilization; application-rates; infiltration-; erosion-control; idaho-
Abstract: Erosion from furrow irrigated land is a serious problem in southern Idaho and elsewhere in the western United States. High molecular weight anionic Polyacrylamide (a water soluble polymer), increases soil aggregate stability and flocculates suspended sediments, thereby reducing sediment detachment and transport in irrigation furrows. Application of 0.7 kg/ha/irrigation of polyacrylamide in irrigation water has reduced furrow erosion by 85 to 99%. In the present work, sediment movement and infiltration were measured in a recirculating furrow infiltrometer with two polyacrylamide treatments. Mean erosion reduction was 70%. Polyacrylamide increased mean infiltration by 30%, probably the result of reduced sediment movement and furrow surface seal formation. Infiltration was inversely related to maximum sediment concentration in the flowing water for both treated and untreated furrows. Farmers who use polyacrylamide must adapt their irrigation management to the higher infiltration to maintain desired irrigation efficiencies.
NAL Call No.: 290.9-Am32T
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79. Polyacrylamide gel as a soil amendment for mulched, microirrigated bell-pepper, Capsicum annuum L., cv. Bell Captain.
Csizinszky, A. A.; Stanley, C. D.; Clark, G. A.

Proc-annu-meet-Fla-State-Hort-Soc. [S.l.] : The Society,. May 1992. v. 104 p. 234-237.
Meeting held Oct 29-31, 1991, Miami Beach, Florida.
Descriptors: polyacrylamide-; capsicum-annuum; trickle-irrigation; mulches-; gels-; crop-yield
NAL Call No.: SB319.2.F6F56
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80. A polyacrylamide (guar) as a soil conditioner.
Wallace, A.

Soil-Sci v.141, p.371-373. (1986).
Includes references.
Descriptors: cyamopsis-tetragonoloba; galactomannans-; guar-; soil-conditioners; flocculation-; aggregates-; growth-; lactuca-sativa; lycopersicon- esculentum; seedling-emergence; california-
NAL Call No.: 56.8-SO3
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81. Polyacrylamide review: soil conditioning and environmental fate.
Seybold, C. A.

Commun-soil-sci-plant-anal v.25, p.2171-2185. (1994).
Includes references.
Descriptors: soil-stabilization; polyacrylamide-; water-erosion; erosion-control; environmental-impact; toxicity-; soil-; interactions-; reviews-
Abstract: The adoption of polyacrylamide (PAM) in reducing irrigation induced erosion in California's San Joaquin Valley has been stymied by the lack of information about its toxicity and environmental fate. A review of the literature was conducted to bring to the forefront knowledge of polyacrylamide, its effectiveness in controlling erosion and its environmental fate. Polyacrylamide is a water-soluble, high molecular weight synthetic organic polymer that primarily interacts with the clay fraction of soils. The degree of interaction depends on both the properties of the polymer and properties of the soil. It is effective in stabilizing soil aggregates, reducing soil erosion, and increasing water infiltration, and also has an indirect significant impact upon crop growth and yield. For the most part, polyacrylamide is resistant to microbial attack, and its degradation is mainly through physical breakdown. Polyacrylamide has been shown to be non-toxic to humans, animals, fish, and plants; the only concern has been the toxicity of its residual monomer (acrylamide) content, which is a known neurotoxin to humans. The residual monomer is bio-degradable and does not accumulate in soils. The major source of acrylamide that is released into the environment if from the use of polyacrylamide products, so the FDA regulates the residual monomer content of PAM used in food contact products. If the acrylamide content is kept to a minimum, PAM itself does not pose any environmental threat, and thus, can be used effectively as a soil conditioner.
NAL Call No.: S590.C63
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82. Polyacrylamide to improve water flow and salt removal in a high shrink-swell soil.
Malik, M.; Amrhein, C.; Letey, J.

Soil-Sci-Soc-Am-J v.55, p.1664-1667. (1991).

Includes references.
Descriptors: montmorillonitic-soils; mollisols-; reclamation-; desalinization-; polyacrylamide-; soil-treatment; cracks-; stability-; hydraulic-conductivity; salts-in-soil; leaching-; exchangeable-cations; sodium-; calcium-; magnesium-; potassium-; exchangeable-sodium; wetting-; drying-; shrinkage-; swelling-; infiltration-; drainage-; irrigation-water; california-; wetting-and-drying-cycles; exchangeable-sodium-percentages
Abstract: Reclamation of salt-affected high shrink-swell soils using chemical amendments combined with deep loosening and tile drainage is very expensive. As an alternative, the utilization of cracks as pathways for water and salts is possible if these cracks could be stabilized by the application of a polyacrylamide (PAM) polymer and their complete closure prevented upon rewetting. A laboratory column study was conducted on two soil samples with exchangeable sodium percentages (ESP) of 8 and 25 from a heavy-textured, swelling soil. The soil samples were packed into columns, ponded with irrigation water for 24 h, then drained and dried to create cracks. After drying, the soil samples were ponded for 24 h with irrigation water containing 0, 25, 75, and 200 mg L-1 of an anionic polyacrylamide polymer, allowed to drain, and dried. The treated soils were then ponded without drainage for 1, 6, 12, and 24 b to allow crack closure and the hydraulic conductivity (HC) and effluent salinity were measured. The experiment was repeated except that the polymer solution was added to the soil without initially creating the cracks. An additional study was carried out to test the durability of the polymer when subjected to wetting and drying cycles. Increasing the amount of polymer significantly increased the HC and salt removal in the cracked soils. When the polymer solution was applied directly onto soils without initially creating cracks, there was no increase in HC on the ESP 8 soil and a small increase on the ESP 25 soil. The polymer had a stabilizing effect on soil cracks, but the increase in HC did not persist through several wetting and drying cycles.
NAL Call No.: 56.9-SO3
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83. Polymer effects on runoff and soil erosion from sodic soils.
Levy, G. J.; Levin, J.; Shainberg, I.

Irrig-sci v.16, p.9-14. (1995).
Includes references.
Descriptors: sodic-soils; erosion-control; irrigated-conditions; polyacrylamide-; application-rates; irrigation-water; water-quality; runoff-; physicochemical-properties; infiltration-
Abstract: High levels of soil sodicity, resulting from intensive irrigation with saline-sodic waters, lead to an increased soil susceptibility to seal formation and to severe problems of runoff and soil erosion. The objective of this study was to investigate the efficacy of the addition of small amounts of an anionic polyacrylamide (PAM) to the

irrigation water in controlling seal formation, runoff and soil erosion. Two predominantly montmorillonitic soils were studied, a grumusol (Typic Haploxerert) and a loess (Calcic Haploxeralf), having naturally occurring exchangeable sodium percentage (ESP) >12. The soils were exposed to 60 mm of simulated irrigation with commonly used tap water (TW, electrical conductivity=0.8 dS m-1; sodium adsorption ratio (SAR)=2), or saline water (SW, electrical conductivity=5.0 dS m-1; SAR>12). PAM effectiveness in controlling runoff and erosion from the sodic soils was compared with runoff and erosion levels obtained from untreated soils having low ESPs (< 4). For both soils and for both water qualities and polymer concentrations in the irrigation water, PAM was efficient in controlling runoff at low ESP levels and inefficient at high ESP levels. At moderate ESP levels, PAM's efficacy in controlling runoff was inconsistent and varied with water quality and polymer concentration. Conversely, in general, soil loss originating from rill erosion, was significantly and effectively reduced in moderate and high ESP soils by addition of PAM to the irrigation water, irrespective of water quality and polymer concentration. PAM was more effective in reducing rill erosion than in reducing runoff in the moderate and high ESP samples, because the energy involved in generating runoff is much. formation and runoff production; but they were stable enough to resist the hydraulic shear exerted by the runoff flow.
NAL Call No.: S612.I756
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84. Polymer effects on the hydraulic conductivity of saline and sodic soil conditions.
El Morsy, E. A.; Malik, M.; Letey, J.

Soil-Sci v.151, p.430-435. (1991).
Includes references.
Descriptors: sandy-loam-soils; saline-sodic-soils; semiarid-zones; hydraulic-conductivity; sodic-water; saline-water; irrigation-; polysaccharides-; guar-; polyacrylamide-; adsorption-; electrical-conductivity; sodium-adsorption-ratio; electrolyte-concentration
NAL Call No.: 56.8-SO3
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85. Polymer type and water quality effects on soil dispersion.
Helalia, A. M.; Letey, J.

Soil-Sci-Soc-Am-J v.52, p.243-246. (1988).
Includes references.
Descriptors: soil-structure; soil-treatments; polyacrylamide-; guar-; flocculation-; clay-; aggregates-; dispersion-; colloidal-properties-of-soil; water-composition-and-quality; electrolytes-; canals-; wells-; california-
Abstract: Ten polyacrylamide (PAM) and derivatized guar compounds, with different charges were tested at 0, 10, and 50 mg L-1 concentration with low electrolyte solution (1

mol(c) m-3) at 0, 5, and 20 sodium absorption ratio values for their ability to reduce dispersion of three soils. Dispersion was determined by measuring the soil settling rate in solution. All compounds were effective in promoting clay flocculation at a concentration of 10 mg L 1. When compared at comparable charge, the PAM compounds were more effective than the guar compounds. This result is consistent with their higher molecular weight. The order of effectiveness of the compounds was cationic greater than nonionic greater than anionic. No cationic PAM compounds were available and the cationic guar compound (CP-14) was comparable to the nonionic PAM. Flocculation decreased very slightly as the SAR increased, suggesting that the effect of low electrolyte concentration was the prominent factor in dispersion. The cationic guar "CP-14" was tested separately with low (0.05 dS m-1) and moderate (0.7 dS m-1) electrolyte concentrations simulating canal and well waters from California. Its effect on flocculation was very high at 5 mg L-1 concentration in both waters after only 10-min settling. Increasing the concentration greater than 10 mg L 1 did not improve the flocculation results.
NAL Call No.: 56.9-SO3
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86. Polymers as soil conditioners under consecutive irrigations and rainfall.
Ben Hur, M.; Faris, J.; Letey, J.

Soil-Sci-Soc-Am-J v.53, p.1173-1177. (1989).
Includes references.
Descriptors: polyacrylamide-; polysaccharides-; guar-; rain-; sprinkler-irrigation; crusts-; infiltration-; impact-strength; stability-; adsorption-; aggregates-; calcium-chloride; sandy-loam-soils; application-of-amendments; california-
Abstract: Low water infiltration caused by crust formation during rain or sprinkler irrigation is a significant problem in some arid and semi-arid regions. Polymers may be applied in irrigation water through a sprinkler system, but must be applied directly to the soil under rainfall conditions. The objectives of this rainfall simulator study were to: (i) determine the effect of drying of crusted vermiculitic soil on the subsequent crust properties and infiltration rate (IR) values, (ii) determine the effect of polymers applied at low concentration in irrigation water of two qualities on the IR under consecutive water applications, and (iii) determine the effectiveness of polymer application to the soil as would be required rainfall conditions. Two cationic polysaccharide guar derivatives having a higher (HCCP) and a lower (LCCP) charge density and a polyacrylamide (PAM) with a low negative charge density were used in the study. Applications of polymers with the sprinkler water maintain IR in the order HCCP greater than LCCP greater than PAM greater than untreated. Except for PAM, the polymer applications were relatively ineffective in subsequent sprinkler applications with plain water applied with impact energy. The beneficial effects were preserved under water

application without impact energy. Spraying concentrated polymer solutions on the soil surface was not effective in preventing crust formation by following rain events except for the case when LCCP was sprayed on in CaCL2 solution. The results are explained on the basis of polymer adsorption and penetration into the soil surface layer and agregates.
NAL Call No.: 56.9-SO3
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87. Polymers check furrow erosion, help river life.
McCutchan, H.; Osterli, P.; Letey, J.

Calif-agric v.47, p.10-11. (1993).
Descriptors: runoff-irrigation; sediment-; pesticide-residues; polyacrylamide-; irrigation-water; erosion-control; infiltration-; furrows-; furrow-irrigation
NAL Call No.: 100-C12Cag
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88. Polymers' effects on infiltration and soil erosion during consecutive simulated sprinkler irrigations.
Levy, G. J.; Levin, J.; Gal, M.; Ben Hur, M.; Shainberg, I.

Soil-Sci-Soc-Am-J v.56, p.902-907. (1992).
Includes references.
Descriptors: vertisols-; alfisols-; sprinkler-irrigation; runoff-; water-erosion; erosion-control; polyacrylamide-; polysaccharides-; comparisons-; infiltration-; aggregates-; stability-
Abstract: Impact energy of water drops from overhead sprinkler irrigation can cause seal formation, and an increase in runoff and in soil erosion. The effects of low concentrations (5, 10, and 20 g m-3) of two polymers, an anionic polyacrylamide (PAM) and a cationic polysaccharide (PSD), on soil permeability and erosion from a grumusol (Typic Chromoxerert) and a loess (Typic Haploxeralf), were studied during live consecutive irrigations of 60 mm each. The polymers were added to the irrigation water during the first three consecutive irrigations, and thereafter the soils were subjected to two additional irrigations of water only. During the first three irrigations, the final infiltration rates (FIR) of the soils were significantly higher than those of the untreated samples (control). In the subsequent two irrigations with water only, the FIR values of the treated samples decreased to values similar to those of the control. The low residual effect of the polymers was explained by erosion of the thin treated layer and an insufficient amount of the polymers. A lower concentration of PAM (10 g m-3) was needed for optimal effect on the FIR and cumulative infiltration, compared with PSD (20 g m-3). For the optimal treatments, infiltration parameters were generally higher in the PAM- than in the PSD-treated soils. Soil losses in all the PAM treatments were significantly lower than those in the PSD treatments. Both polymers stabilized soil aggregates, but PAM also cemented aggregates together and increased their resistance to erosion.
NAL Call No.: 56.9-SO3

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89. Possible use of high-molecular-weight polymers to flocculate soil in testing soils for available nutrients.
Wallace, A.; Wallace, G. A.

Soil-Sci v.141, p.397. (1986).
Includes references.
Descriptors: polymers-; polyacrylamide-; nutrient-availability; flocculation-; molecular-weight; soil-testing; test-procedure
NAL Call No.: 56.8-SO3

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90. Presumptive fecal streptococci in environmental samples characterized by one-dimensional sodium dodecyl sulfate-polyacrylamide gel electrophoresis.
Niemi, R. M.; Niemela, S. I.; Bamford, D. H.; Hantula, J.; Hyvarinen, T.; Forsten, T.; Raateland, A.

Appl-environ-microbiol v.59, p.2190-2196. (1993).
Includes references.
Descriptors: streptococcus-; enterococcus-; fecal-flora; indicator-species; sds-page-; bacterial-proteins; identification-; fatty-acids; isolation-; feces-; cattle-; wild-birds; anas-; streams-; sewage-; pulp-mill-effluent; water-pollution
Abstract: The use of fecal streptococci as fecal indicators requires better knowledge of the ecology of these bacteria. We isolated 371 presumptive fecal streptococci from environmental samples-domestic wastewater, forest industry wastewater, contaminated surface and seawater, well water, cow dung, bird droppings, and pristine waters--and clustered them according to their protein profiles in one-dimensional sodium dodecyl sulfate-polyacrylamide gel electrophoresis analysis. Some clusters could be tentatively identified with the help of reference strains. Samples from each environment had a typical composition of streptococcus types. Enterococcus faecalis was present, but not as a dominating enterococcal species, in samples in which fecal contamination was probable. Enterococcus faecium, Enterococcus durans, Enterococcus hirae, and Enterococcus mundtii had protein profiles that were difficult to distinguish from each other. These bacteria were found in a variety of samples. Enterococcus casseliflavus and Enterococcus gallinarum had identical protein profiles. On the basis of the maximum temperatures for growth and pigment production, isolates of this protein profile group common in forest industry wastewaters were identified as E. casseliflavus. Lactococcus lactis subsp. lactis was also found in this environment. Nearly all strains from pristine waters belonged to protein profile groups which could not be identified with the aid of known Aerococcus, Enterococcus, Lactococcus, or Streptococcus strains. The maximum temperatures for growth and the results of fatty acid analysis were in general agreement within each protein profile group.
NAL Call No.: 448.3-Ap5

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91. Production of vegetable transplants for NFT in pure hydrogel.
Paschold, P. J.; Kleber, J.

Acta-hortic p.297-304. (1995).
Paper presented at the XXIVth International Horticultural Congress on Hydroponics and Transplant Production, August 21-27, 1994, Kyoto, Japan.
Descriptors: lactuca-sativa; hydrophilic-polymers; polyacrylamide-; polyacrylic-acid; growing-media; transplanting-; nutrient-film-techniques
NAL Call No.: 80-Ac82
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92. Rain energy and soil amendments effects on infiltration and erosion of three different soil types.
Levin, J.; Ben Hur, M.; Gal, M.; Levy, G. J.

Aust-J-Soil-Res v.29, p.455-465. (1991).
Includes references.
Descriptors: soil-types; rain-; droplets-; impact-; soil-amendments; phosphogypsum-; polyacrylamide-; effects-; infiltration-; runoff-; erosion-; israel-
NAL Call No.: 56.8-AU7
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93. Reclamation of a saline sodic soil using synthetic polymers and gypsum.
Zahow, M. F.; Amrhein, C.

Soil-Sci-Soc-Am-J v.56, p.1257-1260. (1992).
Includes references.
Descriptors: clay-soils; sodic-soils; saline-soils; reclamation-; hydraulic-conductivity; exchangeable-sodium; polyacrylamide-; gypsum-; guar-gum; hydrodynamic-dispersion; swelling-; soil-slaking
Abstract: The water infiltration rate of saline sodic soils often limits the rate of reclamation. Column leaching studies were conducted to determine if water-soluble, synthetic polymers would be beneficial in improving the hydraulic conductivity and aid reclamation of a heavy-textured, salt-affected soil. Soil samples from a swelling soil (fine, montmorillonitic [calcareous] Thermic Vertic Haplaquoll) were collected from a field site that had exchangeable sodium percentages (ESP) of 8, 12, 20, 25, 32, and 35. The air-dried soil samples were treated with polyacrylamide polymers (one nonionic and two anionic) and one cationic guar-derivative polymer at a rate of 50 mg kg-1. Polymer treatments had a highly significant effect on increasing the saturated hydraulic conductivity of the soil samples with ESP values < 15, but had no significant effect on the samples with values > 15. The addition of gypsum increased the hydraulic conductivity from 0.0 to 0.063 mm h-1 in the soil with an ESP of 32. When polymers were used in conjunction with gypsum, the hydraulic conductivity increased to 0.28 mm h-1. We

attributed the improvement in hydraulic conductivity with polymer treatment at low ESP values and in the gypsum-treated soil to a reduction in soil slaking and dispersion. At ESP values > 15, an additional mechanism that may have been controlling the hydraulic conductivity was swelling, and none of the polymers reduced soil swelling.
NAL Call No.: 56.9-SO3
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94. Runoff, erosion, and polymer application in moving-sprinkler irrigation.
Ben Hur, M.

Soil-sci v.158, p.283-290. (1994).
Includes references.
Descriptors: irrigated-soils; sprinkler-irrigation; soil-treatment; polyacrylamide-; polysaccharides-; soil-conditioners; water-erosion; erosion-control; infiltration-; runoff-; losses-from-soil; crop-production; land-productivity
NAL Call No.: 56.8-So3
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95. Soil erosion and pesticide transport from an irrigated field.
Singh, G.; Letey, J.; Hanson, P.; Osterli, P.; Spencer, W. F.

J-environ-sci-health,-Part-B,-Pestic-food-contam-agric-wastes. New York, Marcel Dekker. 1996. v. B31 (1) p. 25-41.
Includes references.
Descriptors: dicofol-; polyacrylamide-; irrigated-conditions; runoff-; erosion-; losses-from-soil; pesticide-residues; agricultural-soils
NAL Call No.: TD172.J61
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96. Structure and function of water-storing agricultural polyacryulamides.
Johnson, M. S.; Veltkamp, C. J.

J-Sci-Food-Agric v.36, p.789-793. ill. (1985).
Includes 8 references.
Descriptors: polyacrylamide-; ultrastructure-; scanning-electron-microscopy; water-holding-capacity
NAL Call No.: 382-SO12
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97. Studies on the flocculation characteristics of pyrites cinder in dilute sulphuric acid with polyacrylamide
Fertilizer manufacture.
Kapoor, J. N.; Mathur, D. P.

Fert-Technol v.18, p.184-188. (1981).
Includes references.

NAL Call No.: TP963.A1T4
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98. Time for yet another look at soil conditioners.
Sojka, R. E.; Lentz, R. D.

Soil-sci v.158, p.233-234. (1994).
Includes references.
Descriptors: soil-conditioners; polyacrylamide-; technical-progress
NAL Call No.: 56.8-So3
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99. Time responses of sugar beet germination, oxygen diffusion and redox potential to crust formation, polyacrylamide stabilization and peroxide fertilization.
Callebaut, F.; Gabriels, D.; Boodt, M. de.

Geoderma. Amsterdam, Elsevier Scientific. May 1981. v. 25 (3/4) p. 275-283. ill.
20 ref.

NAL Call No.: S590.G4
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100. Trends in structure, plant growth, and microorganism interrelations in the soil.
Nadler, A.; Steinberger, Y.

Soil-Sci v.155, p.114-122. (1993).
Includes references.
Descriptors: zea-mays; sandy-soils; loam-soils; clay-soils; polyacrylamide-; application-rates; soil-structure; soil-water-retention; soil-flora; soil- invertebrates; growth-
NAL Call No.: 56.8-SO3
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101. Use of two-dimensional polyacrylamide electrophoresis to demonstrate that putative Rhizobium cross-inoculation mutants actually are contaminants.
Leps, W. T.; Roberts, G. P.; Brill, W. J.

Applied-Environ-Microbiol. Washington, D.C., American Society for Microbiology. Feb 1980. v. 39 (2) p. 460-462. ill.
7 ref.

NAL Call No.: 448.3-AP5
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102. Use of two-dimensional polyacrylamide electrophoresis to demonstrate that putative Rhizobium cross-inoculation mutants actually are contaminants.
Leps, W. T.; Roberts, G. P.; Brill, W. J.

Applied-Environ-Microbiol. Washington, D.C., American Society for Microbiology. Feb 1980. v. 39 (2) p. 460-462. ill.
7 ref.

NAL Call No.: 448.3-AP5
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103. Using hydrophilic polymers to improve uptake of manganese fertilizers by soybeans.
Mikkelsen, R. L.

Fertil-res v.41, p.87-92. (1995).
Includes references.
Descriptors: glycine-max; manganese-fertilizers; nutrient-sources; application-rates; polyacrylamide-; manganese-; nutrient-availability; nutrient-uptake; nutrient-content; leaves-; stems-; dry-matter-accumulation; agronomic-efficiency
Abstract: Manganese deficiency in soybeans (Glycine max (L.) Merr.) is a common problem in many parts of the world. Recent research has demonstrated that the addition of gel-forming hydrophilic polymers with plant nutrients may enhance the availability and effectiveness of some soil-applied nutrients. This greenhouse study was designed to determine if the addition of hydrated cross-linked polyacrylamide polymers could increase plant recovery of commonly used Mn fertilizers by soybeans. Four Mn sources (MnO, MnSO4.4H2O, MnCl2, and MnEDTA) were band applied at two concentrations to a low-Mn soil with and without one of two polymers. Addition of either polymer alone or MnO had no effect on leaf or stem Mn concentration, but when MnSO4.4H2O, MnCl2, or MnEDTA were added with a polymer, leaf Mn accumulation swere increased an average of 89%, compared with those Mn sources applied alone. Plant accumulation of Mn from MnO was no greater than the control treatment and uptake was not increased following the addition of polymer. At the conclusion of the experiment, the polymers were still hydrated and the fertilizer band contained an abundance of roots. The use of a hydrophilic polymer with soluble Mn fertilizers appears to enhance the recovery by plants and may lead to lower Mn application rates or perhaps less frequent applications.
NAL Call No.: S631.F422
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104. Water movement in a conditioner-treated sandy soil in Saudi Arabia.
Sabrah, R. E. A.

J-arid-environ. London, New York, Academic Press. Aug 1994. v. 27 (4) p. 363-373.
Includes references.
Descriptors: sandy-soils; soil-conditioners; polyacrylamide-; soil-water-movement; application-rates; saturated-flow; unsaturated-flow; water- conservation; evaporation-; saudi-arabia; hydro-grow-400
NAL Call No.: QH541.5.D4J6
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105. Water quality and PAM interactions in reducing surface sealing.

Shainberg, I.; Warrington, D. N.; Rengasamy, P.

Soil-sci v.149, p.301-307. (1990).
Includes references.
Descriptors: alfisols-; vertisols-; sealing-; surface-layers;
infiltration-; polyacrylamide-; application-rates;
water-quality; electrolytes-; concentration-; soil-solution;
aggregates-; stability-
NAL Call No.: 56.8-So3

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