21. **Agricultural sedimentation impacts on lakeside property values.**
Bejranonda, S.; Hitzhusen, F. J.; and Hite, D.
Agricultural and Resource Economics Review 28 (2): 208-218. (1999)
NAL Call #: HD1773.A2N6; *ISSN:* 1068-2805
This citation is provided courtesy of CAB International/CABI Publishing.

22. **Agriculture and dynamics of soil erosion in the United States.**
Uri, Noel D and Lewis, James A
Journal of Sustainable Agriculture 14 (3): 63-82. (1999)
NAL Call #: S494.5.S86S8; *ISSN:* 1044-0046
Descriptors: Soil erosion---United States/ Soil conservation---United States/ United States---Agricultural policy---Environmental aspects/ Agriculture---Environmental aspects/ United States---Environmental policy
Abstract: Examines soil conservation programs' effectiveness in reducing erosion; educational, technical and financial assistance, research and development, land retirement, regulation, tax, and incentives policies meant to affect production practices adoption. Some focus on the Food Security Act of 1985, the Federal Agriculture Improvement and Reform Act (FAIR) of 1996, and the Conservation Reserve Program (CRP).

23. **Assessment of soil quality in Conservation Reserve Program and wheat-fallow soils.**
Staben, M. L.; Bezdicek, D. F.; Smith, J. L.; and Fauci, M. F.
Soil Science Society of America Journal 61 (1): 124-130. (1997)
NAL Call #: 56.9-So3; *ISSN:* 0361-5995 [SSSJD4]
Descriptors: soil/ quality/ assessment/ land use/ land diversion/ grassland soils/ agricultural soils/ wheat soils/ soil organic matter/ carbon/ nitrogen content/ carbon nitrogen ratio/ soil flora/ soil fauna/ biomass/ soil enzymes/ enzyme activity/ soil ph/ mineralization/ respiration/ soil management/ Washington/ soil respiration
Abstract: Chemical and microbial aspects of soil quality are an important consideration when evaluating the benefits of soil conservation efforts such as the Conservation Reserve Program (CRP). The objective of this study was to evaluate the quality of CRP and wheat-fallow (W-F) soils using soil biological and chemical parameters and C and N mineralization processes. The study was conducted on 20 CRP/W-F paired sites in eastern Washington, on Ritzville silt loam (coarse-silty, mixed, mesic Calciorthidic Haploxerolls). Soils collected from the paired fields were analyzed for chemical and biological parameters that have been suggested as indicators of soil quality. Potential enzyme activities and soil N were higher in the CRP soil than the W-F soil. Although there were no significant differences in total organic carbon (TOC) or microbial biomass carbon (MBC) the C mineralization potentials and C pools were significantly different between the CRP and W-F soils. Soil biota measurements showed there was greater active bacterial biomass in the CRP soil but greater fungal-feeding nematodes, flagellates, and amoebae in the W-F soil. The C mineralization study suggests that there is a significant increase in the secondary C pool of the CRP soil, which may indicate a buildup of higher quality soil organic matter and the potential for higher enzyme levels. When grass or straw was added to each soil type, the W-F soil produced more CO2 with either substrate than the CRP soil, indicating C limiting conditions in the W-F soil. Since it is unknown what constitutes good soil quality, these shifts in chemical and biological parameters may seem subtle. However, in general, trends in the data indicated that soil quality in the CRP was improved after 4 to 7 yr, compared with its previous management in W-F cropland.
This citation is from AGRICOLA.

24. **Assessment of soil quality in fields with short and long term enrollment in the CRP.**
Baer, S. G.; Rice, C. W.; and Blair, J. M.
Journal of Soil and Water Conservation 55 (2): 142-146. (2000)
NAL Call #: 56.8 J822
This citation is provided courtesy of CAB International/CABI Publishing.

25. **Comparing performance of the 1985 and the 1990 Conservation Reserve Programs in the West.**
Young, D.; Bechtel, A.; and Coupal, R.
Journal of Soil and Water Conservation 49 (5): 484-487. (1994)
NAL Call #: 56.8 J822; *ISSN:* 0022-4561
Descriptors: soil conservation/ government supports/ cropland/ cost analysis/ environmental effects/ policy making/ soil management/ Western/ erosion control/ government programs/ economics/ environmental impact/ United States/ Watershed protection/ Environmental action/ Conservation/ United States
Abstract: Despite its widespread popularity, the Conservation Reserve Program (CRP) has been criticized for its cost ineffectiveness in achieving soil conservation goals. The objective of this study was to compare how the more targeted revision of the CRP

in the 1990 Farm Bill compares with the 1985 Farm Bill CRP in concentrating enrollment in highly erodible western U.S. counties. Correlations between CRP enrollment and erodibility for counties in California, Idaho, Oregon, and Washington show that the 1990 CRP has been more successful than the 1985 CRP in concentrating enrollment in erodible counties. Fixed bid caps in the 1985 CRP often directed enrollment to counties with lower productivity and modest erodibility, which reduced cost-effectiveness. While the 1990 reforms appear to have improved the targeting of the CRP, the 1 million ha (2.3 million ac) 1990 CRP is small in terms of economic and environmental impact compared to the 14 million ha (34 million ac) 1985 CRP.

26. **Conservation Reserve Program effects on soil quality indicators.**
Karlen, D. L.; Rosek, M. J.; Gardner, J. C.; Allan, D. L.; Alms, M. J.; Bezdicek, D. F.; Flock, M.; Huggins, D. R.; Miller, B. S.; and Staben, M. L.
Journal of Soil and Water Conservation 54 (1): 439-444. (1999)
NAL Call #: 56.8 J822
Descriptors: Conservation Reserve Program/ State conservation programs/ Regional conservation programs/ Iowa/ Minnesota/ North Dakota/ Washington
Abstract: Reviewed soil data from areas in the U.S. for their responses to the CRP and whether the soil quality indicators currently used are an accurate measure of ecosystem responses to CRP.

27. **Cost effectiveness and equity aspects of soil conservation programs in a highly erodible region.**
Young, D. L.; Walker, D. J.; and Kanjo, P. L.
American Journal of Agricultural Economics 73 (4): 1053-1062. (Nov. 1991)
NAL Call #: 280.8-J822; *ISSN:* 0002-9092
Descriptors: erosion/ soil conservation/ cost effectiveness analysis/ federal programs/ farmers/ agricultural regions/ economic impact/ social costs/ profits/ integer programming/ program participants/ Washington/ food security act of 1985/ distribution of costs/ taxpayers mixed integer programming models/ Whitman County, Washington
Abstract: The Conservation Reserve (CRP) and Conservation Compliance Programs could divide the soil conservation burden between farmers and taxpayers. In a highly erodible southeastern Washington region, however, a uniform region-wide CRP bid cap and relaxed compliance requirements resulted in little or no projected burden for farmers in arid, less productive subregions. In contrast, farmers in a more productive subregion were projected to bear 50% or more of the costs of soil conservation. The projected government cost per ton of soil conserved also increased threefold from the most to the least productive subregion.
This citation is from AGRICOLA.

28. **Earthworm (Lumbricidae) survey of North Dakota fields placed in the U.S. Conservation Reserve Program.**
Deibert, E. J. and Utter, R. A.
Journal of Soil and Water Conservation 58 (1): 39-45. (2003); *ISSN:* 0022-4561

29. **Effects of long-term cropping on chemical aspects of soil quality.**
Eck, H. V. and Stewart, B. A.
Journal of Sustainable Agriculture 12 (2/3): 5-20. (1998)
NAL Call #: S494.5.S86S8; *ISSN:* 1044-0046

30. **Enzyme activities in semiarid soils under Conservation Reserve Program, native rangeland, and cropland.**
Acosta-Martinez, V.; Klose, S.; and Zobeck, T. M.
Journal of Plant Nutrition and Soil Science / Zeitschrift fur Pflanzenernahrung und Bodenkunde 166 (6): 699-707. (2003)
NAL Call #: 384 Z343A; *ISSN:* 1436-8730.
Notes: Number of References: 39;
Publisher: Wiley-V C H Verlag Gmbh
Descriptors: Agriculture/ Agronomy/ specific enzyme activities/ arylamidase activity/ beta glucosaminidase activity/ crop rotations/ cotton/ sunflowers/ beta glucosaminidase activity / microbial biomass/ residue management/ cropping systems/ arylamidase activity/ organic matter/ chloroform fumigation/ cotton yield/ tillage/ nitrogen
Abstract: There is limited knowledge of biochemical processes in low carbon content soils of semiarid regions under different land use and management. This study investigated several enzyme activities of C, N, P, and S transformations in semiarid soils with different clay (10-21 %) and sand (59-85%) contents that were under Conservation Reserve Program (CRP), native rangeland (NR), and cropland (CL) under sunflowers (Eriophyllum ambiguum (Gray)), continuous cotton (Gossypium hirsutum L.), or in rotations with wheat (Triticum aestivum L.) or sorghum (Sorghum bicolor L.) in West Texas, USA. Soils under CRP and NR showed higher total C and N contents than cultivated soils under continuous cotton, but soil pH (6.7-8.4) was not affected by the management or land use studied. The activities of beta-glucosidase, beta-glucosaminidase, arylamidase, acid and alkaline phosphatase,

phosphodiesterase, and arylsulfatase (mg product (kg soil)(-1) h(-1)) were lower in CL under continuous cotton compared to cotton in rotation with other crops, CRP, and NR. The enzyme activities were also lower when compared to soils from other regions. Linear regression analyses indicated positive correlations between enzyme activities and total C (r values up to 0.96, P < 0.01). There was a positive relationship between enzyme activities and total N, but soil pH showed the opposite trend. Enzyme activities were significantly intercorrelated with r values up to 0.98 (P < 0.001). The specific enzyme activities (mg product (g organic C)(-1)) were lower in continuous cotton in comparison to the uncultivated soils (i.e., NR and CRP) reflecting differences in organic matter quantity and quality due to cultivation. Among the enzymes studied, the specific activities of beta-glucosidase and arylamidase showed a more pronounced decrease with increasing soil depth. In general, soils under CRP or wheat-cotton rotations revealed higher enzyme activities than soils under the common agricultural practice for these regions, i.e., continuous cotton under conventional tillage.

31. **Erosion estimates and the effects of land use changes on soil savings estimates--Insights from the 1992 National Resources Inventory: Benefits.**
Kellogg, R. L. and Wallace, S.
In: Proceedings of the 50th Annual Meeting of the Soil and Water Conservation Society. (Held 7-9 Aug, 1995 at Des Moines, Iowa.); pp. 37-38; 1995.
Descriptors: USA/ natural resources/ erosion rates/ cropland/ wind erosion/ land use/ sheet erosion/ rill erosion/ soil conservation/ 1992 National Resources Inventory/ Conservation Reserve Program/ Erosion and sedimentation
Abstract: The 1992 National Resources Inventory shows that average erosion rates on cropland fell dramatically during the 10-year period from 1982 to 1992. The sheet and rill erosion rate fell from an average of 4.1 tons per acre per year on 421 million acres of cropland in 1982 to 3.1 tons per acre per year on 382 million acres of cropland in 1992. At the same time, the average rate of wind erosion fell from 3.3 tons per acre per year to 2.4 tons per acre per year. The combined wind and water erosion rate reduction translates to a saving of nearly 1 billion tons of soil per year, with approximately equal savings arising from reductions in sheet and rill erosion rates and wind erosion rates. Of this, about 395 million tons per year is due to the enrollment of land in the Conservation Reserve Program, 529 million tons per year is due to improved conservation practices on croplands acres, 158 million tons per year is due to conversion of cropland to other uses (such as developed land, pastureland, etc.). These savings are offset to some extent by an increase in erosion of 102 million tons per year on noncropland in 1982 converted to cropland by 1992. The paper includes a detailed breakdown of these soil savings estimates for eight major field crops-corn, cotton, soybeans, wheat, potatoes, sorghum, barley, and rice.

32. **Erosion potential of a Torrertic Paleustoll after converting Conservation Reserve Program grassland to cropland.**
Unger, P. W.
Soil Science Society of America Journal 63 (6): 1795-1801. (1999)
NAL Call #: 56.9-So3; *ISSN:* 0361-5995 [SSSJD4]
Descriptors: mollisols/ clay loam soils/ wind erosion/ water erosion/ erodibility/ grassland soils/ land use/ conversion/ tillage/ soil management/ grasses/ plant residues/ Texas/ grass management
Abstract: Extensive cropland areas were covered by the Conservation Reserve Program (CRP) in the semiarid southern Great Plains. Because soils were highly erodible, would erosion again become a problem when CRP land was converted to cropland? The erosion potential due to tillage methods used to convert CRP grassland to cropland was determined on Pullman clay loam (Torrertic Paleustoll). Tillage methods were no-, sweep, disk, and moldboard + disk tillage with CRP grass retained or removed (mowing and baling), and grass burning followed by sweep or disk tillage. Wind erosion potential was based on percentage of > 0.84-mm diam. and mean weight diameter (MWD) of dry aggregates at 2 to 3 yr after converting to cropland. Water erosion potential was based on MWD and percentage of < 0.25-mm water-stable aggregates, and water stability of 1-to 2-mm aggregates at crop planting and harvest. Few differences due to tillage methods were significant. For dry aggregates, more than 60% were > 0.84-mm diam. and MWD was >10 mm with all tillage methods, indicating a low wind erosion potential. Wet aggregate stability and MWD values at some sampling times indicated water erosion could occur. Although erosion potential was low, continued use of residue-incorporating tillage could lead to greater potentials. Because of initially low potentials, CRP land on Pullman and similar soils could be converted to cropland by any tillage method. Then, a conservation tillage system (e.g., no-tillage) could be implemented before erosion by wind or water became a serious problem.
This citation is from AGRICOLA.

33. **Establishment of range plants in the northern Great Plains.**
Reis, R. E.; White, R. S.; and Lorenz, R. J.
In: General Technical Report RM.
Fort Collins, Colo.: Rocky Mountain Forest and Range Experiment Station, 1988; pp. 29-34.
Notes: Report Series ISSN: 0277-5786; Proceedings of a Symposium on "Impacts of the Conservation Reserve Program in the Great Plains," held Sept 16-18, 1987, Denver, Colorado. Includes references.
NAL Call #: aSD11.A42
Descriptors: resource conservation/ soil conservation/ legislation/ replanting/ northern plains states of USA/ food security act of 1985/ Conservation Reserve Program
This citation is from AGRICOLA.

34. **Evaluating Agricultural Nonpoint-Source Pollution Programs in Two Lake Erie Tributaries.**
Forster, D. L. and Rausch, J. N.
Journal of Environmental Quality 31 (1): 24-31. (2002)
NAL Call #: QH540.J6; *ISSN:* 0047-2425
Descriptors: Economics/ Agriculture/ Nonpoint pollution/ Soil erosion/ Water pollution control/ Water conservation/ Government programs/ tributaries/ Costs/ Performance assessment/ Governments/ Erosion control/ Pollution control/ Agricultural pollution/ North America, Erie L/ United States, Maumee River/ United States, Ohio, Sandusky River/ Agricultural Watersheds/ Nonpoint Pollution Sources/ Best Management Practices/ Government Supports/ Expenditures/ Economic Evaluation/ Economic Efficiency/ Catchment areas/ Erosion/ Pollution (Nonpoint sources)/ United States, Erie L/ United States, Ohio, Sandusky River/ United States, Ohio, Maumee River/ Environmental action/ Prevention and control/ Watershed protection/ Water Quality/ Water Pollution: Monitoring, Control & Remediation/ Water quality control
Abstract: During the past three decades, numerous government programs have encouraged Lake Erie basin farmers to adopt practices that reduce water pollution. The first section of this paper summarizes these state and federal government agricultural pollution abatement programs in watersheds of two prominent Lake Erie tributaries, the Maumee River and Sandusky River. Expenditures are summarized for each program, total expenditures in each county are estimated, and cost effectiveness of program expenditures (i.e., cost per metric ton of soil saved) are analyzed. Farmers received nearly $143 million as incentive payments to implement agricultural nonpoint source pollution abatement programs in the Maumee and Sandusky River watersheds from 1987 to 1997. About 95% of these funds was from federal sources. On average, these payments totaled about $7000 per farm or about $30 per farm acre (annualized equivalent of $2 per acre) within the watersheds. Our analysis raises questions about how efficiently these incentive payments were allocated. The majority of Agricultural Conservation Program (ACP) funds appear to have been spent on less cost-effective practices. Also, geographic areas with relatively low (high) soil erosion rates received relatively large (small) funding.

35. **An ex post evaluation of the conservation reserve, federal crop insurance, and other government programs: Program participation and soil erosion.**
Goodwin, B. K. and Smith, V. H.
Journal of Agricultural and Resource Economics 28 (2): 201-216. (2003)
NAL Call #: HD1750.W4; *ISSN:* 0162-1912

36. **Impacts of tillage and no-till on production of maize and soybean on an eroded Illinois silt loam soil.**
Hussain, I.; Olson, K. R.; and Ebelhar, S. A.
Soil and Tillage Research 52 (1/2): 37-49. (1999)
NAL Call #: S590.S48; *ISSN:* 0167-1987

37. **Integrated dryland crop and livestock production systems on the Great Plains: Extent and outlook.**
Krall, J. M. and Schuman, G. E.
Journal of Production Agriculture 9 (2): 187-191. (Apr. 1996-June 1996)
NAL Call #: S539.5.J68; *ISSN:* 0890-8524 [JPRAEN].
Notes: Paper presented at the symposium "Cropping Systems of the Great Plains" held during the ASA-CSSA-SSSA annual meetings 1994, Seattle. Includes references.
Descriptors: dry farming/ sustainability/ farming systems/ integrated systems/ livestock farming/ crop production/ land use/ censuses/ trends/ environmental impact/ soil organic matter/ farm management/ soil fertility/ great plains states of USA
Abstract: Soil organic carbon levels have declined 24 to 60% on many Great Plains soils since initial cultivation. Integrated crop and livestock systems could help reverse this trend, therefore we examined the extent of use, the factors affecting use, and the potential for this system. The 1992 U.S. Department of Commerce data indicate that land in integrated systems is limited to less than 10% of the agricultural land. However, expiration of the USDA Conservation Reserve Program (CRP) has created interest in integrated systems. Economists report that after CRP contracts expire, perennial forages and livestock systems may be the most profitable; however, a

survey of growers indicates that 63% of all CRP acres will go back to crop production. Recent research in Wyoming shows that returning CRP land to production using wheat (Triticum aestivum L.)-fallow practices quickly degrades soil quality. A doubling of grazing fees would mean an 18% reduction in demand for public land, which could mean more options for CRP acreage after contract expiration. Exemplified successful systems are the Australia wheat-sheep (Ovis aries L.) system, perennial legume-wheat rotation in southern Alberta, grass community establishment on marginal Wyoming cropland, and an alternative (organic) farming system in South Dakota. Benefits include the opportunity for soil quality improvement, economic diversity, and pest control. However, tradition, lack of managerial experience, and necessary alteration in farm-ranch infrastructure may slow adoption. Generally, dryland integrated systems are agriclimatic zone specific, and represent a potential ecologically and economically sustainable form of agriculture. Scientists and producers have to identify and develop appropriate integrated systems that fit the natural resource base.
This citation is from AGRICOLA.

38. **Land use biodiversity index as a soil quality indicator.**
Bloodworth H; Sobecki T; and Santen E van.
In: Making conservation tillage conventional: Building a future on 25 years of research -- Proceedings of 25th Annual Southern Conservation Tillage Conference for Sustainable Agriculture. (Held 24 Jun 2002-26 Jun 2002 at Auburn, AL.);
pp. 219-221; 2002.
This citation is provided courtesy of CAB International/CABI Publishing.

39. **Land-use management using a soil survey geographic database for Finney County, Kansas.**
Wu, J.; Ransom, M. D.; Kluitenberg, G. J.; Nellis, M. D.; and Seyler, H. L.
Soil Science Society of America Journal 65 (1): 169-177. (2001)
NAL Call #: 56.9-So3; *ISSN:* 0361-5995 [SSSJD4]
Descriptors: land use / geographical information systems/ databases/ soil surveys/ land management/ land use planning/ aquifers/ thickness/ land banks/ remote sensing/ satellite imagery/ fallow/ grasslands/ physiographic features/ soil organic matter/ soil texture/ surface layers / ground cover/ agricultural land/ crop production/ triticum aestivum/ sorghum bicolor/ zea mays/ medicago sativa/ horizons/ irrigated farming/ maps/ Kansas/ Conservation Reserve Program/ land cover/ land use
land cover maps
Abstract: The determination of best management practices for land resources is often complicated by the lack of a means for evaluation and lack of quality data. Soil surveys are an important source of data that can be used to improve farm and ranch planning and environmental protection. In this study, we examined the use of a soil survey geographic (SSURGO) database within a geographic information system (GIS) coupled with remote sensing data for land-use management in Finney County, Kansas. The objectives were (i) to identify land-use change; (ii) to evaluate the influence of soil, groundwater, and physiography on land use; and (iii) to assess land-use potential and present management alternatives. Land-use/land-cover (LULC) maps for 1987, 1989, and 1992 were derived from Landsat Thematic Mapper data. These LULC layers were manipulated with layers: organic matter content, thickness, and texture of the surface soil horizon; land capability class; aquifer thickness (AT); and physiography. The acreage of fallow land decreased and the acreage of grassland increased from 1987 to 1992 because of an increase in the acreage of land used in the Conservation Reserve Program (CRP). Broad cropping patterns (irrigated vs. nonirrigated) did not change significantly between 1987 and 1992 and were related to AT. Some currently cropped areas had high erosion potential, whereas some grasslands had relatively low erosion hazards. These grasslands could be used as alternatives for cropping. The study demonstrates the potential of using SSURGO within a GIS coupled with remote sensing information in planning and management for natural resources.
This citation is from AGRICOLA.

40. **Legume, grass, and Conservation Reserve Program effects on soil organic matter recovery.**
Robles, M. D. and Burke, I. C.
Ecological Applications 7 (2): 345-357. (1997)
NAL Call #: QH540.E23; *ISSN:* 1051-0761
Descriptors: United States, Wyoming/ legumes/ grasses/ soil conservation/ organic matter/ Reclamation
Abstract: Active pools of soil organic matter (SOM) can recover to native levels on formerly cultivated fields that are abandoned for approximately 50 yr, but the short-term (<10 yr) recovery dynamics of SOM and nutrient supply have not been widely investigated. In several fields on a farm in southeastern Wyoming that had been involved in the Conservation Reserve Program (CRP, a federal program that pays landowners to convert cultivated land into revegetated grasslands), we compared C and N in several SOM pools (coarse particulate organic matter [POM, between 500 mu m and 2 mm], fine POM [53-500 mu m], and total SOM), and we compared potential C and N mineralization in active pools responsible for nutrient supply. The two CRP treatments, planted 6 yr prior to this study, were an approximately 80% legume:20% grass mixture (HL CRP) and a 20% legume:80% grass mixture (LL CRP). To quantify SOM accumulations directly due to

increased plant inputs within CRP fields, we also compared SOM pools under legumes and grasses relative to plant interspaces, where we expected plant inputs to be minimal. The net impacts of increased plant inputs and the cessation of tillage generally increased pools of mineralizable and coarse-POM C and N by factors of two to four relative to wheat-fallow fields (alternate years in winter wheat and in fallow), but had negligible effects on total SOM. Recovery of microsite (approximately 10-cm scale) soil heterogeneity, an important structural attribute of native arid and semiarid ecosystems, was accelerated under legumes, which produced more labile tissue than grasses. Soils under legumes contained larger pools of coarse-POM C and N and exhibited higher net N mineralization rates than soil under grasses or in plant interspaces. Grasses grown in HL CRP soils, which had the highest rates of potential net N mineralization, produced more labile tissue than the same grasses grown in the more nutrient-depleted LL CRP fields, suggesting that plant/soil feedbacks were important. Therefore, recovery of labile soil and plant N was enhanced when the proportion of legumes was high, and this may lead to improved grain or animal N nutrition if these CRP fields are subsequently cropped or grazed.

41. **Management considerations for returning CRP lands to crop production.**
Lindstrom, M. J.; Schumacher, T. E.; and Blecha, M. L.
Journal of Soil and Water Conservation 49 (5): 420-425. (1994)
NAL Call #: 56.8 J822; *ISSN:* 0022-4561
Descriptors: soil conservation/ agriculture/ erosion control/ government supports/ cropland/ soil management/ crop production/ government programs / crops/ Watershed protection/ Environmental action
Abstract: The Conservation Reserve Program (CRP) was initiated in 1985 under the Food Security Act with the intention of converting up to 18 million hectares (45 million acres) of highly erodible land (HEL) to permanent cover. Twelve sign-up periods has resulted in 377,000 contracts nationally. Eight percent of the cropland in the U.S. is enrolled in CRP. By 1993, 14.8 million hectares (36.5 million acres) of highly erodible or environmentally sensitive land were enrolled in CRP. The first contracts will begin to expire in 1995. By 1997, 8.9 million hectares (22 million acres) will be released from their CRP contracts. Fifty-five percent of CRP acres (8.1 million hectares or 20 million acres) are located in the 10 Great Plains States. Average erosion reduction is estimated to be 42.6 Mg ha super(-1)/yr (19 t/ac) for land enrolled in CRP. As the year 1995 nears and CRP lands become eligible for release, landowners will be faced with many options, including leaving the lands in grass for hay or livestock production, or establishing some type of wildlife or recreation practices. However, recent surveys show that many acres will be cropped if CRP contracts are not renewed. As global concern about soil degradation increases, landowners will be directed toward maintaining the environmental benefits of CRP, even on land returning to crop production.

42. **Microbial diversity along a transect of agronomics zones.**
Ibekwe, A. M.; Kennedy, A. C.; Frohne, P. S.; Papiernik, S. K.; Yang, C. H.; and Crowley, D. E.
FEMS Microbiology Ecology 39 (3): 183-191. (Mar. 2002)
NAL Call #: QR100.F45; *ISSN:* 0168-6496 [FMECEZ]
Descriptors: soil management/ soil flora/ soil bacteria/ community ecology/ precipitation/ Washington/ ammonia oxidizing bacteria/ soil quality
Abstract: The diversity of microbial communities constitutes a critical component of good soil-management practices. To characterize the effects of different management practices, molecular indicators such as phospholipid fatty acid (PLFA), denaturing gradient gel electrophoresis (DGGE) and composition of ammonia-oxidizing bacteria were used to analyze bacterial community structure and diversity from four eastern Washington State soils. Samples from four sites were collected representing a transect of high-precipitation to low-precipitation areas that covered different agronomic zones with different management and cropping practices. Biomass amounts estimated from extractable PLFA were significantly higher in the no-till (NT) soil than in the conventional-till (CT) soil. Similarities among the different 16S rDNA DGGE band profiles were analyzed quantitatively using correspondence analysis and this confirmed that the CT soil was the most dissimilar soil. DGGE analysis of 16S rDNA ammonia-oxidizing bacteria from the four soils revealed two identical bands, indicating little effect of agronomic practices and precipitation on these species. A second set of primers, specific for amoA (ammonia monooxygenase) genes, was used to examine ammonia oxidizers in the samples. Six banding patterns (clusters) from amplified rDNA restriction analysis of 16S rDNA fragments were observed after restriction analysis with HinfI. Sequencing of these clones revealed the presence of only Nitrosospira-like sequences. Analysis of the sequences showed that ammonia oxidizers from the NT soil were more diverse compared to those from the CT and Conservation Reserve Program soils. Our data showed that management and agronomic practices had more impact on bacterial community structure than annual precipitation.
This citation is from AGRICOLA.

43. **A note on the use of conservation practices in U.S. agriculture.**
Boyd, R. and Uri, N. D.
Environmental Monitoring and Assessment 72 (2): 141-178. (Nov. 2001)
NAL Call #: TD194-.E5; *ISSN:* 0167-6369 [EMASDH]
Descriptors: agriculture/ conservation tillage/ conservation/ agricultural production/ productivity/ carbon/ soil organic matter/ federal programs/ economic sectors/ mathematical models/ United States/ carbon sequestration/ Conservation Reserve Program/ conservation buffer strips/ dynamic computable general equilibrium models
This citation is from AGRICOLA.

44. **On-site and off-site impacts of soil erosion: Their implications for soil conservation policy.**
Segarra, E.; Ervin, R. T.; Dicks, M. R.; and Taylor, D. B.
Resources, Conservation and Recycling 5 (1): 1-19. (1991); *ISSN:* 0921-3449
Descriptors: erosion/ conservation/ federal policies/ environmental management/ soils/ Land pollution/ Landslides and erosion/ Environment
Abstract: Using dynamic optimization modeling, impacts of the Conservation Reserve Program (CRP) and the Conservation Compliance Provision (CC) contained in the Conservation Title of the 1985 US Food Security Act was evaluated for a representative farm in South-Central Virginia. Results provide insights on the optimal course of action with respect to what, how, and when to produce agricultural commodities, such that maximization of net present value of returns is achieved when considering the alternatives of enrolling in CRP, meeting CC requirements, or neither.

45. **Post-contract land use effects on soil carbon and nitrogen in conservation reserve grasslands.**
Dao, T. H.; Stiegler, J. H.; Banks, J. C.; Boerngen, L. B.; and Adams, B.
Agronomy Journal 94 (1): 146-152. (Jan. 2002-Feb. 2002)
NAL Call #: 4-AM34P; *ISSN:* 0002-1962 [AGJOAT]
Descriptors: bothriochloa ischaemum/ triticum aestivum/ land use/ soil fertility/ nitrogen/ soil organic matter/ grasslands/ nature reserves/ nature conservation/ erosion/ cultivation/ semiarid zones/ tillage/ conservation tillage/ no-tillage/ mineralization/ land banks/ Oklahoma
Abstract: Carbon and N changes in highly erodible croplands (HELs) under the Conservation Reserve Program (CRP) and the effects of reverting to cultivation in semiarid regions are not well understood. The effects of four transitional production systems [Old World bluestem (Bothriochloa ischaemum L.)-unfertilized (OWBUF), Old World bluestem-fertilized (OWBF), conservation-tillage (CT), and no-till (NT) wheat (Triticum aestivum L.)] on soil C and N were determined in two CRP fields in western Oklahoma. Soil potentially mineralizable C (PMC) and N (PMN) were determined in cores collected before and after the reinitiation of cultivation in 1994 and in 1997. Compared with soils of the same series from adjoining cultivated fields, Old World bluestem (OWB) cover increased soil PMC, primarily in the 0- to 0.1-m depth of Dalhart (Aridic Haplustalfs) and La Casa-Aspermont (Typic Paleustolls) soils before 1994. Negative PMN required a high level of fertility management to improve stand productivity. Shift from OWB to wheat increased soil PMC and PMN in the short-term. No-till and CT treatments had PMC averaging 8.9 and 9.6 g m(-3) d(-1) or 23 to 32% higher than those from OWB treatments in the 0- to 0.3-m depth of Dalhart soil. Soil PMC of the CT treatment averaged 7.2 g m(-3) d(-1) or 73% higher than that of the La Casa-Aspermont under OWB. The trend of higher mineralizable C and N suggested that post-CRP conservation practices, in particular NT, contributed to HEL restoration by also controlling the upward movement and loss of CO3-C, maintaining these lands as C sinks in semiarid regions.
This citation is from AGRICOLA.

46. **Properties and productivity of recently tilled grass sod and 70-year cultivated soil.**
Zobeck, T. M.; Rolong, N. A.; Fryrear, D. W.; Bilbro, J. D.; and Allen, B. L.
Journal of Soil and Water Conservation 50 (2): 210-215. (1995)
NAL Call #: 56.8 J822; *ISSN:* 0022-4561
Descriptors: cultivated lands/ soil erosion/ productivity/ grasslands/ trees/ soil physical properties/ cropland/ erosion control/ Conservation Reserve Program/ Watershed protection
Abstract: The 1985 Food Security Act established the Conservation Reserve Program (CRP) whereby highly erodible land was placed into sod or trees for 10 years. Detailed information on the effects of grass sod on soil properties and productivity is needed in order to fully understand the impact of returning the retired land to production. In this study, land that had been in grass sod for about 30 years was converted to cotton and sorghum production in 1985. Yields were measured from 1985 through 1991 on that land and land that was continuously cultivated for 70 years. Selected soil properties were also measured after the study. Silt content, organic matter, and wet soil stability were higher in the surface soil of the grass sod than in the cultivated fields. Clod density was lower in the grass sod than in the cultivated fields. Sorghum biomass was higher in the recently converted field but yield differences between the converted and continuously cultivated field were not observed after fertilization. Cotton lint yields did not increase on the recently converted grassland. These

results suggest economists must consider the crop grown when estimating yields of crops grown on land previously in the CRP. Crops may differ in yield and how they respond to management after conversion.

47. **Restoration of microbial residues in soils of the Conservation Reserve Program.**
Amelung, W.; Kimble, J. M.; Samson Liebig, S.; and Follett, R. F.
Soil Science Society of America Journal 65 (6): 1704-1709. (2001)
NAL Call #: 56.9-So3; *ISSN:* 0361-5995 [SSSJD4]
Descriptors: land banks/ arable soils/ grassland soils/ agricultural land/ soil flora/ biomass/ nitrogen content/ carbon/ amino sugars/ chemical composition/ carbon nitrogen ratio/ soil organic matter/ soil conservation/ great plains states of USA/ western states of USA/ Minnesota
Abstract: To elucidate the role of microorganisms for C and N sequestration in arable soils converted to grassland (sites of the Conservation Reserve Program; CRP), we determined amino sugars as indicators for microbial residues in surface samples (0-5 cm) obtained from each of 10 adjacent native grassland, CRP, and cropland sites across the U.S. Great Plains. The CRP sites were 6 to 10 yr and the cropland sites were >80 yr old. Compared with native grasslands, the CRP sites had lost between 17 and 50% and the cropland sites between 32 and 94% of their surface soil organic matter (SOM). The C/N ratio was not significantly different among the three land-use systems, indicating that C and N losses occurred at similar intensity. The mean amino sugar concentrations decreased in the order native grassland (70 g kg(-1) C; 750 g kg(-1) N) > CRP (53 g kg(-1) C; 570 g kg(-1) N) > cropland (47 g kg(-1) C; 450 g kg(-1) N). This decrease in the element-normalized concentrations of amino sugars indicated that they responded faster to management than other C or N containing compounds. The response of individual amino sugars related to soil compaction and the temperature regime. We suggest that the resequestration of C and N into the residues of bacteria and fungi requires several years, but as it depends on land use it could be manipulated using, for example, soil decompacting techniques to improve CRP efficiency.

48. **Soil C and N changes on Conservation Reserve Program lands in the central Great Plains.**
Reeder, J D; Schuman, G E; and Bowman, R A
Soil and Tillage Research 47 (3-4): 339-349. (1998)
NAL Call #: S590.S48; *ISSN:* 0167-1987
Descriptors: carbon/ soil storage/ nitrogen/ soil change/ Conservation Reserve Program lands/ crop management/ fallow/ soil technology/ crop (Angiospermae)/ wheat (Gramineae)/ Monocots/ Plants/ Spermatophytes/ Vascular Plants
Abstract: The Conservation Reserve Program (CRP) was initiated to reduce water and wind erosion on marginal, highly erodible croplands by removing them from production and planting permanent, soil-conserving vegetation such as grass. We conducted a field study at two sites in Wyoming, USA, in order to quantify changes in soil C and N of marginal croplands seeded to grass, and of native rangeland plowed and cropped to wheat-fallow. Field plots were established on a sandy loam site and a clay loam site on wheat-fallow cropland that had been in production for 60+ years and on adjacent native rangeland. In 1993, 6 years after the study was initiated, the surface soil was sampled in 2.5 cm depth increments, while the subsurface soil was composited as one depth increment. All soil samples were analyzed for total organic C and N, and potential net mineralized C and N. After 60+ years of cultivation, surface soils at both study sites were 18-26% lower (by mass) in total organic C and N than in the A horizons of adjacent native range. Six years after plowing and converting native rangeland to cropland (three wheat-fallow cycles), both total and potential net mineralized C and N in the surface soil had decreased and NO3-N at all depths had increased to levels found after 60+ years of cultivation. We estimate that mixing of the surface and subsurface soil with tillage accounted for 40-60% of the decrease in surface soil C and N in long-term cultivated fields; in the short-term cultivated fields, mixing with tillage may have accounted for 60-75% of the decrease in C, and 30-60% of the decrease in N. These results emphasize the need to evaluate C and N in the entire soil solum, rather than in just the surface soil, if actual losses of C and N due to cultivation are to be distinguished from vertical redistribution. Five years after reestablishing grass on the sandy loam soil, both total and potential net mineralized C and N in the surface soil had increased to levels equal to or greater than those observed in the A horizon of the native range. On the clay loam soil, however, significant increases in total organic C were observed only in the surface 2.5 cm of N-fertilized grass plots, while total organic N had not significantly increased from levels observed in the long-term cultivated fields.

49. **Soil erosion potential of former Conservation Reserve Program sites.**
Gilley, J. E. and Doran, J. W.
Transactions of the ASAE 41 (1): 97-103. (Jan. 1998-Feb. 1998)
NAL Call #: 290.9-Am32T; *ISSN:* 0001-2351 [TAAEAJ]
Descriptors: erodibility/ water erosion/ estimation/ simulation models/ computer simulation/ conservation areas/ soil conservation/ federal programs/ land use/

universal soil loss equation/ Mississippi/ Nebraska/ South Dakota/ water erosion prediction project (WEPP)/ revised universal soil loss equation (RUSLE)
Abstract: Conservation Reserve Program (CRP) areas that are returned to crop production will initially be much less erodible than fields which were farmed using conventional practices. In this study, a rainfall simulator was used to measure runoff and erosion from former CRP areas in Mississippi, Nebraska and South Dakota over approximately a two year period. Soil loss rates measured immediately following tillage on each of the three sites were similar to values obtained on the undisturbed CRP treatments. However, when left in a fallow condition, the erosion-reducing effectiveness of the sod appeared to have lasted less than one year. The rapid increase in soil erodibility following tillage was attributed to a reduction in surface cover and organic material. The WEPP and RUSLE models are currently used extensively in conservation planning and assessment. The experimental data collected in this study were used to derive selected parameter values for use in these models.
This citation is from AGRICOLA.

50. **Soil hydraulic properties of cropland compared with reestablished and native grassland.**
Schwartz, R. C.; Evett, S. R.; and Unger, P. W.
Geoderma 116 (1-2): 47-60. (2003)
NAL Call #: S590.G4; *ISSN:* 0016-7061.
Notes: Number of References: 32
Descriptors: Agriculture/ Agronomy/ hydraulic properties/ porosity/ hydraulic conductivity/ soil management/ tillage/ infiltrometers/ unsaturated soils/ tillage/ infiltration/ conductivity/ infiltrometers/ model/ disc
Abstract: Conversion of cropland to perennial grasses will, over time, produce changes in soil hydraulic properties. The objective of this study was to characterize and compare hydraulic properties of fine-textured soils on adjacent native grassland, recently tilled cropland, and reestablished grassland in the Conservation Reserve Program (CRP) at three locations in the Southern Great Plains. A tension infiltrometer was used to measure unconfined, unsaturated infiltration over a range of supply pressure heads (nominally, h = -150, -100, -50, and -5 mm H2O) at the soil surface. Intact soil cores were sampled within the Ap and Bt horizons to determine bulk density and water desorption curves, theta(h), at potentials ranging from -0.15 to -100 kPa. Unsaturated hydraulic conductivity K(h) over the range in supply pressure heads was estimated using Wooding's equation for steady-state flow from a disc source. The van Genuchten water retention model was fitted to theta(h) data to estimate parameter values. Soils in CRP had greater surface bulk densities than their grassland and cropland counterparts. The shape of the soil water retention curve for grassland and CRP land were similar, suggesting that converted croplands had fully reconsolidated. Mean near-saturated hydraulic conductivities of cropland at h = -5 mm were not significantly different from grassland. However, at -150 mm supply pressure head, cropped soils had a mean unsaturated conductivity 2.3 and 4.1 times greater than CRP land and grassland, respectively. Sites in CRP had the lowest (P < 0.05) near-saturated hydraulic conductivities (h = -5 mm), which suggest that after 10 years, grasses had not fully ameliorated changes in pore structure caused by tillage. Comparison of unsaturated conductivities for grassland and CRP land suggest that long-term structural development on native grasslands was principally confined to effective pore radii greater than 300 mum. Land use practices had a greater effect on water movement than did soil series, indicating that the modifying effects of tillage, reconsolidation, and pore structure evolution on hydraulic properties are important processes governing water movement in these fine-textured soils. (C) 2003 Elsevier Science B.V. All rights reserved.

51. **Soil organic matter recovery in semiarid grasslands: Implications for the Conservation Reserve Program.**
Burke, I. C.; Lauenroth, W. K.; and Coffin, D. P.
Ecological Applications 5 (3): 793-801. (1995)
NAL Call #: QH540.E23; *ISSN:* 1051-0761
Descriptors: grasslands/ soil/ organic matter/ cultivation/ regeneration/ United States, Colorado/ Conservation/ Reclamation
Abstract: Although the effects of cultivation on soil organic matter and nutrient supply capacity are well understood, relatively little work has been done on the long-term recovery of soils from cultivation. We sampled soils from 12 locations within the Pawnee National Grasslands of northeastern Colorado, each having native fields and fields that were historically cultivated but abandoned 50 yr ago. We also sampled fields that had been cultivated for at least 50 yr at 5 of these locations. Our results demonstrated that soil organic matter, silt content, microbial biomass, potentially mineralizable N, and potentially respirable C were significantly lower on cultivated fields than on native fields. Both cultivated and abandoned fields also had significantly lower soil organic matter and silt contents than native fields. Abandoned fields, however, were not significantly different from native fields with respect to microbial biomass, potentially mineralizable N, or respirable C. In addition, we found that the characteristic small-scale heterogeneity of the shortgrass steppe associated with individuals of the dominant plant, Bouteloua gracilis, had recovered on abandoned

fields. Soil beneath plant canopies had an average of 200 g/m super(2) more C than between-plant locations. We suggest that 50 yr is an adequate time for recovery of active soil organic matter and nutrient availability, but recovery of total soil organic matter pools is a much slower process. Plant population dynamics may play an important role in the recovery of shortgrass steppe ecosystems from disturbance, such that establishment of perennial grasses determines the rate of organic matter recovery.

52. **Soil organic matter recovery on Conservation Reserve Program fields in southwestern Wyoming.**
Robles, M. D. and Burke, I. C.
Soil Science Society of America Journal 62 (3): 725-730. (1998)
NAL Call #: 56.9-So3; *ISSN:* 0361-5995 [SSSJD4]
Descriptors: land management/ land use/ land diversion/ semiarid soils/ grassland soils/ wheat soils/ soil organic matter/ carbon/ nitrogen/ mineralization/ soil fertility/ Wyoming/ soil carbon pools/ mineralizable carbon/ mineralizable nitrogen/ soil nitrogen pools
Abstract: Soil C and N changes following cessation of cultivation in semiarid soils is not well understood. We hypothesized that returning cultivated fields in southeastern Wyoming to perennial grasses through the Conservation Reserve Program (CRP) would (i) increase labile pools of soil organic matter (SOM), and (ii) increase small-scale heterogeneity of SOM. Carbon and N in labile and passive pools of SOM were measured in CRP fields seeded with perennial grasses intermediate wheatgrass (Elytrigia intermedia [Host] Nevski ssp. intermedia), pubescent wheatgrass (Elytrigia intermedia [Schur.] A. Love ssp. barbulata) and smooth brome (Bromus inermis Leysser), and in winter wheat (Triticum aestivum L.)-fallow fields. Mineralizable C increased from 0.37 g m-2 d-1 in wheat-fallow fields to 0.99 g m-2 d-1 in CRP fields; mineralizable N and coarse particulate C were consistently but not significantly higher in CRP fields. Fine particulate and total soil C and N were not significantly different between CRP and wheat-fallow. Within CRP fields, mineralizable C was significantly higher under grasses than in interspaces (1.96 vs. 0.73 g m-2 d-1, respectively), and mineralizable N and coarse particulate C and N were consistently but not significantly higher under grasses than in interspaces. Soil C and N have increased only slightly after 6 yr of CRP management, and future changes in land use management on these CRP fields, including grazing and cropping, may accrue some small benefits associated with improved soil fertility status.
This citation is from AGRICOLA.

53. **Soil property changes during conversion from perennial vegetation to annual cropping.**
Wienhold, B. J. and Tanaka, D. L.
Soil Science Society of America Journal 65 (6): 1795-1803. (2001)
NAL Call #: 56.9-So3; *ISSN:* 0361-5995 [SSSJD4]
Descriptors: crop production/ hay/ medicago sativa/ agropyron/ triticum aestivum/ pisum sativum/ rotations/ tillage/ no-tillage/ perennials/ bulk density/ soil water/ soil organic matter/ soil chemistry/ soil fertility/ biomass/ carbon/ mineralization/ North Dakota/ return-to-crop production/ haying/ Conservation Reserve Program
Abstract: Management practices for conversion of land supporting perennial vegetation to crop production are needed. Effect of haying (hayed or not hayed), cropping (annual crop with no-tillage, minimum tillage, or conventional tillage, and no-tilled perennial crop), and N fertilization (0 or 67 kg ha(-1)) on soil properties were measured in 1995 and 1997 at a Conservation Reserve Program (CRP) site in North Dakota having an Amor loam (Fine-loamy, mixed, superactive, frigid, Typic Haplustoll) soil in a spring wheat (Triticum aestivum L.), winter wheat, pea (Pisum sativum L.) rotation. Soil physical properties were not affected negatively by the management practices used. Haying and tillage practices influenced soil chemical properties. Organic C and total N content declined (1.2 Mg ha(-1) for C and 0.1 Mg ha(-1) for N) from 1995 to 1997. In hayed plots, organic C and total N increased as tillage intensity decreased while in non-hayed plots no pattern was observed. Haying and tillage influenced soil biological properties. Potentially mineralizable N at 0 to 0.05 m increased as tillage intensity decreased in 1997. In the 0.05- to 0.15-m depth, potentially mineralizable N increased from 1995 (118 kg ha(-1)) to 1997 (146 kg ha(-1)). By 1997, soil properties in hayed plots responded to cropping practices similarly to those in established cropping systems in this region. In non-hayed plots, management induced patterns had not developed by 1997. Haying, conservation tillage, and annual cropping are viable approaches for converting land to annual crop production.
This citation is from AGRICOLA.

54. **Soil quality changes in eastern Washington with Conservation Reserve Program (CRP) take-out.**
Gewin VL; Kennedy AC; Veseth R; and Miller BC
Journal of Soil and Water Conservation 54 (1): 432-438; 30 ref. (1999)
NAL Call #: 56.8 J822

55. **A soil quality framework for evaluating the impact of CRP.**
Karlen, D. L.; Gardner, J. C.; and Rosek, M. J.
Journal of Production Agriculture 11 (1): 56-60. (Jan. 1998-Mar. 1998)
NAL Call #: S539.5.J68; *ISSN:* 0890-8524 [JPRAEN]
Descriptors: soil organic matter/ soil fertility/ soil structure/ soil biology/ sustainability/ monitoring/ respiration/ no-tillage/ tillage/ biomass/ government policy/ land banks/ United States/ Conservation Reserve Program
Abstract: The book entitled "Soil and Water Quality: An Agenda for Agriculture" by the U.S. National Academy of Sciences caused people to ask whether soil quality assessments could be used to evaluate the impact of public policies such as the Conservation Reserve Program (CRP). However, differences in scale, perception of soil quality, and the inability to directly measure soil quality led to significant uncertainty among several potential users. A major challenge was determining how to evaluate and combine information from different indicators to make an overall soil quality assessment that is meaningful. Our objectives are to present a structured approach for interpreting soil quality indicator data and to introduce a conceptual frame-work that can be used to link the various scales of evaluation, including those needed for assessing effectiveness of public policies such as the CRP. The framework and its use are discussed and demonstrated using soil quality indicator data from published and unpublished studies. On-farm measurements suggest that biological indicators such as microbial biomass and respiration were affected most quickly and to the greatest extent when cultivated land was converted to grassland. Applying the conceptual framework to this data suggests that enrolling fragile lands into CRP had a positive soil quality effect. It also indicates that using no-till practices to return CRP land to row-crop production will preserve soil quality benefits of the CRP, but tilling to prepare a seedbed will destroy the benefits almost immediately.
This citation is from AGRICOLA.

56. **Soil quality of two Kansas soils as influenced by the Conservation Reserve Program.**
Huang, X.; Skidmore, E. L.; and Tibke, G. L.
Journal of Soil and Water Conservation 57 (6): 344-350. (Nov. 2002-Dec. 2002)
NAL Call #: 56.8 J822; *ISSN:* 0022-4561
Descriptors: United States, Kansas/ Soil Conservation/ Land Management/ Cultivated Lands/ Best Management Practices/ Indicators/ Soil Properties/ Carbon/ Agriculture/ Techniques of planning
Abstract: Achieving and maintaining a good soil quality is essential for sustaining agricultural production in an economically viable and environmentally safe manner. The transition of land management provides an opportunity to measure soil-quality indicators to quantify the effects of those management practices. This study compared soil chemical and physical properties after 10 years of grass on Conservation Reserve Program (CRP) land with those in continuously cropped land (CCL). The sample sites, located in central Kansas, have two mapping units, Harney silt loam (fine, montmorillonitic, mesic Typic Arigiustolls) and Naron fine sandy loam (fine-loamy, mixed, thermic Udic Argiustolls). Soil samples were collected at two depth increments, 0 to 5 cm and 5 to 10 cm. Soil-quality indicators measured were soil acidity (pH), exchangeable cations, nutrients, total carbon, structure, and aggregation. Soil pH was significantly lower in CCL than in CRP. Soil total C and N in the surface layer (0 to 5 cm) was much greater than in the deeper layer (5 to 10 cm) in the CRP site. The mass of total carbon of Naron soil was significantly higher for 0 to 5 cm and lower for 5 to 10 cm depth in CRP land than in CCL. However, the mass of total carbon of Harney soil was significantly higher in no-tilled CCL than in CRP. Bulk density significantly increased in CCL. Based on dry and wet aggregate stability analysis, the results indicated that CRP land had a greater resistance to erosion by both water and wind than CCL. The improvements in soil quality resulting from CRP included reducing soil acidification, alleviating compaction, and reducing topsoil susceptibility to erosion. However, when CRP was taken out for crop production with conventional tillage, total carbon in the surface layer (0 to 5 cm) and aggregate stability gradually decreased. This suggested that appropriate land management practices are needed to extend residual benefit from CRP on soil quality.

57. **Tillage and fallow effects on selected soil quality characteristics of former Conservation Reserve Program sites.**
Gilley, J. E.; Doran, J. W.; and Eghball, B.
Journal of Soil and Water Conservation 56 (2): 126-132. (2001)
NAL Call #: 56.8 J822; *ISSN:* 0022-4561

58. **Tillage effects on soil erosion potential and soil quality of a former Conservation Reserve Program site.**
Gilley, J. E. and Doran, J. W.
Journal of Soil and Water Conservation 52 (3): 184-188. (June 1997)
NAL Call #: 56.8 J822; *ISSN:* 0022-4561
Descriptors: USA/ Mississippi/ tillage/ soil erosion/ land management/ soil conservation/ simulated rainfall/ fallowing/ degradation/ soil properties / nutrients/ runoff/ Conservation Reserve Program/ soil quality/ Erosion and sedimentation
Abstract: This study was conducted to determine the effects of tillage on soil erosion potential and soil quality characteristics of a former Conservation Research Program (CRP) site. Following tillage, the study area in Northern Mississippi was maintained in a fallow condition for nine months. Soil loss from simulated rainfall events was minimal on recently tilled plots and an adjoining, undisturbed CRP area. In contrast, soil loss from the former CRP site which had been tilled nine months previously was similar to values obtained before the CRP program when the area had been cropped for several years. Tillage and over-winter fallowing caused a degradation in soil quality resulting from the decomposition of biological nutrient reserves. The conservation and soil quality benefits derived from the CRP may rapidly decline once an area is tilled and then left fallow during the non-cropped period.