how best to link GCTE science research and policy research. Researchers need to be: (a) concerned at many scales, from local to global; (b) able to predict and allow for the influences of technical change; (c) able to model biophysical processes and behavioral norms and responses in an integrated way. Interactive models in which biophysical processes impact on human behavioral response and vice versa are increasingly required. Even where land use and socio-economic models are not formally linked, significant gains may be made from multidisciplinary approaches and information exchange that develop common scenarios under which biophysical and economic analyses are made separately, but at least in complementary ways.

192. **Future land use decisions of North Dakota Conservation Reserve Program participants.**
Gustafson, Cole. and Hill, Chester Lewis.
Fargo, ND: Dept. of Agricultural Economics, Agricultural Experiment Station, North Dakota State University; v, 43 p.: map. (1993)
Notes: Cover title. "August 1993." Includes bibliographical references (p. 29-31).
NAL Call #: 281.9-N814A-no.302
Descriptors: Conservation Reserve Program--- United States/ Agricultural Conservation Program--- North Dakota/ Soil conservation projects--- North Dakota
This citation is from AGRICOLA.

193. **Goal-oriented agricultural water quality legislation.**
Gannon, R. W.; Osmond, D. L.; Humenik, F. J.; Gale, J. A.; and Spooner, J.
Water Resources Bulletin 32 (3): 437-450. (June 1996)
NAL Call #: 292.9-Am34; *ISSN:* 0043-1370 [WARBAQ]
Descriptors: agriculture/ water quality/ water pollution/ pollution control/ legislation/ nonpoint source pollution/ 1995 Farm Bill/ Clean Water Act/ Coastal Zone Management Act
Abstract: While significant nonpoint source (NPS) pollution control progress has been made since passage of Section 319 in the 1987 Water Quality Act, existing federal legislation does not provide for the most timely and cost-effective NPS pollution reduction. In this paper, we use findings from the Rural Clean Water Program and other nationwide agricultural NPS pollution control programs, building on legislative history, to recommend a coordinated and efficient direction for agricultural water quality legislation. A collaborative framework should be established to accomplish the goals of the Clean Water Act (CWA), Coastal Zone Management Act (CZMA), and the Conservation Title of the Farm Bill. Valuable elements of the 1990 CZMA amendments that created a coastal NPS program should be subsumed into the CWA. The CWA should reemphasize use of receiving water quality criteria and standards and should allow states flexibility to tailor basin-scale NPS program implementation to local needs. Implementation should involve targeting of NPS pollution control efforts to critical land treatment areas and use of systems of best management practices to address these targeted water quality problems. The 1995 Farm Bill should reorient production incentives toward water quality to support the collaborative framework, implementing ecologically sound source reduction principles. The Farm Bill and the CWA should contain interrelated provisions for voluntary, incentive-assisted producer participation and fallback regulatory measures. Such coordinated national water quality and Farm Bill legislation that recognizes the need for flexibility in state implementation is supported as the most rational and cost-effective means of attaining water quality goals.
This citation is from AGRICOLA.

194. **A group incentive program for farmer adoption of best management practices: An application to the nitrate pollution problem in central Illinois.**
Ipe, V. C. and DeVuyst, E. A.
Selected papers from the annual meeting of the American Agricultural Economics Association (1999)
NAL Call #: HD1405-.A44.
Notes: Supplemental online access through http://agecon.lib.umn.edu. Meeting held August 8-11, 1999 in Nashville, Tennessee.
Includes references.
Descriptors: farm management/ pollution control/ nitrate/ farmers' attitudes/ innovation adoption/ incentives/ program participants/ Illinois/ best management practices
This citation is from AGRICOLA.

195. **Growers' perceptions and acceptance of soil quality indices.**
Andrews, S. S.; Flora, C. B.; Mitchell, J. P.; and Karlen, D. L.
Geoderma 114 (3/4): 187-213. (2003)
NAL Call #: S590.G4; *ISSN:* 0016-7061

196. **A hedonic analysis of herbicides: Do user safety and water quality matter?**
Beach, E. D. and Carlson, G. A.
American Journal of Agricultural Economics 75 (3): 612-623. (1993)
NAL Call #: 280.8 J822; *ISSN:* 0002-9092

197. **How do growers deal with regulatory induced change?**
Matthews, Charles H Jr and Botts, Daniel A
Soil and Crop Science Society of Florida: Proceedings 55: 74-76. (1996)
NAL Call #: 56.9 So32; *ISSN:* 0096-4522
Descriptors: agriculture/ best management practices/ hazardous analysis and critical control points techniques/ regulatory induced change/ silviculture/ water disposal
Abstract: Florida fruit and vegetable growers continue to face a myriad of regulatory challenges. These challenges result in constant changes for growers. This paper discusses how growers deal with regulatory induced changes, including examples of 1) the adoption of silviculture BMPs for surface-water protection during forest-related operations, 2) the development of BMPs dealing with water disposal from tomato packinghouse dump tanks, and 3) the application of Hazardous Analysis and Critical Control Points (HACCP) techniques to minimize microbiological contamination of food products. Florida-based scientists (i.e., academia) are encouraged to avoid the adoption of far-reaching conclusions based solely on basic research and/or preliminary results, and to become more heavily involved in the extension or implementation of research findings to the point of grower-ready techniques.

198. **How does water price affect irrigation technology adoption.**
Green, G.; Parker, D.; Sunding, D.; Trotter, C.; Ziberman, D.; and Collup, S.
California Agriculture (California Agricultural Experiment Station) 50 (2): 36-40. (Mar. 1996-Apr. 1996)
NAL Call #: 100-C12Cag; *ISSN:* 0008-0845 [CAGRA3]
Descriptors: irrigation systems/ innovation adoption/ decision making/ irrigation water/ water costs/ crops/ agricultural soils/ permeability/ slope/ field size/ probabilistic models/ California/ low volume irrigation
This citation is from AGRICOLA.

199. **How economic incentives for growers can benefit biological diversity.**
Howitt, R. E.
California Agriculture (California Agricultural Experiment Station) 49 (6): 28-33. (Nov. 1995-Dec. 1995)
NAL Call #: 100-C12Cag; *ISSN:* 0008-0845 [CAGRA3]
Descriptors: wetlands/ species diversity/ irrigated farming/ environmental impact/ economic policy/ agricultural policy/ California/ biodiversity management
This citation is from AGRICOLA.

200. **How to organise nature production by farmers.**
Slangen, L. H. G.
European Review of Agricultural Economics 24 (3/4): 508-529. (1997); *ISSN:* 0165-1587
This citation is provided courtesy of CAB International/CABI Publishing.

201. **Identification of farmer characteristics and farm strategies explaining changes in environmental management and environmental and economic performance of dairy farms.**
Ondersteijn, CJM.; Giesen, GWJ.; and Huirne, RBM.
Agricultural Systems 78 (1): 31-55. (2003)
NAL Call #: HD1.A3; *ISSN:* 0308-521X.
Notes: Number of References: 49; Publisher: Elsevier Sci Ltd
Descriptors: Agriculture/ Agronomy/ strategic management/ environmental management change/ environmental performance change/ farmer characteristics/ farm strategies/ dairy farming/ LISREL analysis/ conservation practices/ efficiency/ diversification/ behavior/ decision/ models/ goals
Abstract: In 1998, the Mineral Accounting System (MINAS) was introduced in The Netherlands. MINAS penalises farms with a levy if the farm nutrient surpluses exceed a certain threshold. The threshold is strict, meaning that most farmers need to change their environmental management and performance to avoid high levies. Since MINAS is designed to leave ample room for farmers to follow the course of change of their choice, it is crucial to know whether or not different farmers and different farm strategies lead to different environmental results. A strategic management framework is used to model changes in implementation and performance on specialised dairy farms. Financial and nutrient bookkeeping data of 114 farms, collected over the period 1997-1999 are combined with survey data on farmer characteristics and farm strategies. Results of Linear Structural Equation Analysis (LISREL) showed that the main farmer characteristic explaining change in environmental management was education. Better-educated farmers chose to increase the intensity of the farming system, and cope with the corresponding increase in environmental pressure by improving the production capacity of the herd and improving operational management. Farm strategies explain the differences in the changes in nutrient management. A strategy of process control focuses on optimising tactical management, whereas a growth strategy and a diversification strategy are strongly related to changes in farm structure. Changes in technical and environmental performance in addition to changes resulting from implementation changes are positively affected by education, but show no strong relationship with any strategy, indicating that environmental improvements can be achieved regardless of the

way a farmer chooses to develop his farm. Finally, an improvement of financial performance was shown to be significantly related to an improvement of environmental performance. (C) 2003 Elsevier Ltd. All rights reserved.

202. **Impact of irrigation water use on water quality in the central Colorado water conservancy district.**
Emond, H.; Loftis, J. C.; and Podmore, T.
Fort Collins, CO: Colorado Water Resources Research Institute, Colorado State University, 1993.
Notes: COMPLETION REPORT: 179
Descriptors: irrigation water/ water quality/ environmental effects/ water management/ surface runoff/ percolation/ nitrates/ water quality standards/ groundwater pollution/ fertilizers/ water conservation/ United States, Colorado, Greeley/ irrigation/ runoff/ agriculture/ environmental impact/ groundwater contamination/ agricultural pollution/ Sources and fate of pollution/ Use of water of impaired quality/ Freshwater pollution/ Prevention and control
Abstract: This paper presents the results of a two year study sponsored by the Colorado Water Resources Research Institute, the United States Geological Survey, and the United States Environmental Protection Agency on the impact of irrigation water use on water quality in the agricultural area near Greeley, Colorado. Data on water management techniques, consumptive use, irrigation application efficiency, deep percolation, surface runoff and nitrate levels were collected. Results indicated a wide range of application efficiencies and deep percolation percentages. Nitrate levels in the pumped ground water often exceeded EPA drinking water standards, while nitrate levels of water from the South Platte River were generally below the drinking water standards. There are opportunities for improving irrigation application efficiency in this area, but there may be repercussions for downstream water users. Decreasing the quantity of nitrate going into the ground water can occur through increased water conservation and through reducing the actual amount of nitrates applied in the irrigation water or fertilizers. There is currently little incentive for farmers to implement these measures.

203. **Impact of participation in government programs on tenant and landlord risk-returns for crop shared rice.**
Parsch, L. D.; Cao, G.; and Rhoades, S. R.
Research Series - Arkansas Agricultural Experiment Station (No. 456): 198-205. (1997)

204. **Impact of Spring 2000 Drought Forecasts on Midwestern Water Management.**
Changnon, S. A. and Vonnahme, D. R.
Journal of Water Resources Planning and Management 129 (1): 18-25. (2003)
NAL Call #: TC401.A45; *ISSN:* 0733-9496
Descriptors: United States, midwest/ Water Management/ Weather Forecasting/ Drought/ Case Studies/ Management Planning/ Social Impact/ Economic Impact/ Surveys/ Attitudes/ Case study/ Sociology/ Economics/ Survey/ Water resources/ Droughts / Sociological aspects/ United States, Midwest/ Evaluation process/ Water Resources and Supplies
Abstract: In March 2000, the National Oceanic and Atmospheric Administration issued forecasts of spring and summer droughts for five Midwestern states. Summer brought heavy rains across the Midwest, ending the drought and revealing the forecast's failure. The uses of forecasts and the resulting impacts were assessed by interviewing 45 state agency water managers in the drought region plus managers of 31 community water systems facing serious shortages. All state water managers had received the forecasts and most believed the forecast was accurate. As a result of the forecast, 70% of them initiated various activities, primarily by warning managers of water short communities and initiating meetings of state drought response groups. Many managers of water-short local systems reported that the forecast led them to impose water use restrictions or to seek new sources of water. Most state water officials and local managers felt the forecast-based actions were beneficial and created few problems. State climatologists handled many complaints, primarily from agricultural interests who claimed large losses resulting from use of the forecast. The forecast failure led to a loss of credibility over future use of climate forecasts by water managers. Long-range weather forecasts issued without expressing levels of uncertainty are misleading.

205. **Impacts of Voluntary Conservation Initiatives in the Darby Creek Watershed of Ohio.**
Napier, T. L. and Johnson, E. J.
Journal of Soil and Water Conservation 53 (1): 78-84. (1998)
NAL Call #: 56.8 J822; *ISSN:* 0022-4561
Descriptors: Ohio/ Darby Creek/ Watersheds/ Soil Conservation/ Water Conservation/ Public Participation/ forming / Assessments/ Agricultural Practices/ volunteers/ Conservation in agricultural use/ Conservation/ United States
Abstract: Land owner-operators in the Darby Creek watershed located in central Ohio were provided the opportunity to participate in a comprehensive soil and water conservation program sponsored by

several public and private conservation organizations. Extensive human and economic resources were appropriated by the cooperating organizations to implement a conservation effort that emphasized information, education, and cost-sharing to motivate land owner-operators to adopt soil and water protection practices at the farm level. Data were collected in 1991 prior to the implementation of the conservation program and again in 1994 after conservation efforts had been in operation for approximately 3 years. Analysis of longitudinal data revealed that conservation efforts were not very successful in motivating land owner-operators to change production practices. While significant modifications in production practices were observed over time, the changes were not uniformly desirable from the perspective of soil and water conservation. The findings also revealed that land owner-operators within the study area become more polarized in terms of the types of farm production systems employed. Such findings suggest that it may become more difficult to motivate land owner-operators who have resisted using conservation production systems in the past to adopt conservation production systems in the future. Study findings bring into serious question the utility of continuing to implement soil and water conservation practices using traditional voluntary approaches such as those used in the Darby Creek watershed.

206. **Implementation of landscape planning and nature conservation in the agricultural landscape: A case study from Saxony.**
Luetz, M and Bastian, O
Agriculture, Ecosystems and Environment 92 (2-3): 159-170. (2002)
NAL Call #: S601 .A34; *ISSN:* 0167-8809
Descriptors: agri-environmental measures: farm income, subsidies/ agroecosystems: agriculture society interface
Abstract: The interface between environment, agriculture and society needs more attention to improve nature conservation in rural landscapes. The present paper attempts to identify the conditions on which ecological landscape plans can be implemented in agricultural practice, considering the prevailing conditions of agricultural policy. The case study was carried out in a local authority area in Saxony (Germany). Calculation of variable margins indicated that most of the measures proposed by the landscape plan (such as planting hedgerows, reduction of land use intensity, establishment of field margins rich in arable weeds) can be realised without loss of farmers' income. That is 6% of the agricultural area can be withdrawn from cultivation without any negative financial effect for the farmers. In addition, a certain proportion of arable fields and grassland can be managed less intensively. Nevertheless, the attitude of farmers towards nature conservation was an obstacle in the realisation of ecological measures, even with generous economic incentives. The method applied was adequate to show that agriculture in this area is dependent on payments from agri-environmental programmes. It is proposed to strengthen the link between such subsidies and more effective agri-environmental measures.

207. **Implementing irrigation efficiency: The energy savings incentive.**
Pinkham, R.
In: Basin planning and management: Water quantity and quality/ Mueller, D. K.; Fort Collins, CO: Colorado Water Resour. Res. Inst., Colorado State Univ. (Series: Information Series of the Colorado Water Resources Institute 73), 1993. pp. 39-42
Notes: Conference: 1993 Basin Planning and Management Symp., Thornton, CO (USA), 5 Mar 1993
Descriptors: irrigation efficiency/ energy/ water demand/ technology/ cost analysis/ environmental effects/ water quality/ water resources management/ water conservation/ irrigation water/ water use/ United States/ water resources/ water management/ Conservation in agricultural use/ Protective measures and control
Abstract: Efficient use of water in irrigation is increasingly important throughout the western United States. Desired crop yields can be obtained using less water, and saved water can be applied to additional fields, sold to other users, or devoted to environmental needs and enhancement. Irrigation efficiency may reduce groundwater overdraft, helping perpetuate the agricultural future of some regions. Reduced water applications can also reduce leaching of salts and agricultural chemicals, thereby maintaining or enhancing surface and groundwater quality. These benefits of efficient irrigation are well-known. So too are the many technologies and practices that can increase on-farm water efficiency. As with any good idea, the critical question in irrigation efficiency is how to implement it. How can farmers be motivated to change equipment and management techniques? Wherever water is pumped, rather than moved by gravity, cutting the cost of energy use can be an important motivation for implementing water-efficient irrigation technologies and practices. Even where water itself has a zero or low price, irrigation efficiency may provide economic payoffs by reducing the pumping costs to move water to farms, to distribute water to fields, and to pressurize water application systems. These energy savings can be significant for individual farmers and for water

providers. They have also become important to energy utilities, many of which, as this paper will show, are developing innovative programs to work with farmers and water districts.

208. **Improving farmers' access to advice on land management: Lessons from case studies in developed countries.**
Garforth, C.; Angell, B.; Archer, J.; and Green, K.;
Network Paper - Agricultural Research and Extension Network No.125, 2003. iv, 19 p.
This citation is provided courtesy of CAB International/CABI Publishing.

209. **Incentive payments to encourage farmer adoption of water quality protection practices.**
Cooper, J. C. and Keim, R. W.
American Journal of Agricultural Economics 78 (1): 54-64. (Feb. 1996)
NAL Call #: 280.8-J822; *ISSN:* 0002-9092 [AJAEBA]
Descriptors: water quality/ farm management/ incentives/ innovation adoption/ probit analysis/ integrated pest management/ legumes/ manures/ soil water/ nitrogen fertilizers/ application rates/ profits/ costs/ legislation/ federal programs/ USDA/ farmers' attitudes/ mathematical models/ legume crediting/ manure testing/ willingness to accept
Abstract: Farmers can be encouraged to voluntarily adopt environmentally sound management practices through the use of incentive payments. This paper uses both a bivariate probit with sample selection model and a double hurdle model on data from a survey of farmers to predict farmer adoption of the practices as a function of the pay merit offer. The five management practices addressed here are integrated pest management, legume crediting, manure testing, split applications of nitrogen, and soil moisture testing. Also estimated are models that predict the acreage on which these practices would be applied given the decision to accept the incentive payments estimated.
This citation is from AGRICOLA.

210. **Incentives for avoiding the tragedy of the commons.**
Uphoff, Norman and Langholz, Jeff
Environmental Conservation 25 (3): 251-261. (1998)
NAL Call #: QH540.E55; *ISSN:* 0376-8929
Descriptors: biodiversity/ common property/ environmental protection/ incentives/ natural resources/ Tragedy of the Commons
Abstract: Efforts to protect vulnerable environmental resources have focused largely on legal prohibitions and sanctions or on economic rewards or penalties. The role and importance of social and cultural factors have been much less considered. While theoretical arguments have addressed whether state institutions must be involved in resource protection, or whether private incentives can be manipulated to achieve desired outcomes, this preoccupation with either public sector or private sector solutions to the problems of environmental conservation has caused a neglect of social values and community consensus. The analysis offered here seeks to enlarge the debate from being two-sided to three-cornered. By bringing in a third set of considerations, the sociocultural, the analysis underscores that individual decisions are embedded in community and local contexts. All three kinds of incentives are considered to be potentially of equal importance for resource-conserving behaviour (RCB) vis-a-vis resource-degrading behaviour (RDB). The analysis is concerned first with the strength of different incentives in favour of RCB compared to RDB, comparing legal and economic with sociocultural considerations affecting RCB and RDB. Efforts to protect vulnerable resources can seek to alter in an RCB direction the attitudes and incentives of people along any or all of these three dimensions of motivation, or they can seek to make a particular domain of motivation more salient if it is supportive of environmental conservation. This analysis is proposed in part to get the sociocultural domain taken more seriously alongside the legal and economic domains, as well as to prompt more systematic consideration of different kinds of policies, investments, actions or pronouncements that could shift the net balance of incentives in favour of RCB. While the analysis is admittedly simplified, there is utility in encouraging focused comparisons and evaluations of conservation alternatives. Examples of efforts to promote RCB in Madagascar and Costa Rica are given to illustrate this.

211. **Incentives for countryside management: The case of environmentally sensitive areas.**
Whitby, Martin and C.A.B. International.
Wallingford: CAB International; ix, 286 p.: ill., maps. (1994)
Notes: Includes bibliographical references (p. 273-280) and index.
NAL Call #: QH77.G7I53--1994;
ISBN: 0851988970 (pbk)
Descriptors: Landscape protection---Great Britain/ Agricultural conservation---Great Britain
This citation is from AGRICOLA.

212. **Incentives in soil conservation: From theory to practice.**
Sanders, David W. and World Association of Soil and Water Conservation.
Enfield, N.H.: Science Publishers; xvii, 384 p.: ill., maps. (1999)
Notes: "World Association of Soil and Water

Conservation." Includes bibliographical references and index.
NAL Call #: S627.I54-I53-1999; *ISBN:* 1578080614
Descriptors: Incentives in soil conservation
This citation is from AGRICOLA.

213. **Information and Farmers' Attitudes About Pesticides, Water Quality, and Related Environmental Effects.**
Lichtenberg, E. and Zimmerman, R.
Agriculture, Ecosystems and Environment 3: 227-236. (1999)
NAL Call #: S601 .A34; *ISSN:* 0167-8809.
Notes: DOI: 10.1016/S0167-8809(99)00053-5
Descriptors: United States, Mid Atlantic states/ Attitudes/ Surveys/ Agricultural Chemicals/ Pesticides/ Environmental Quality/ Wildlife/ Drinking Water/ Information Systems/ Farms/ Agricultural pollution/ Sociological aspects/ Water quality/ Environmental protection/ Ecosystem disturbance/ Agriculture/ Agrochemicals/ Perception/ Public concern/ Occupational safety/ Environmental impact/ Information exchange/ United States/ farmers' attitudes/ Evaluation process/ Behavior and fate characteristics/ Environmental action
Abstract: This paper investigates the effects of information from different sources on farmers' attitudes regarding the effects of pesticides and other agricultural chemicals on environmental quality using a survey of 2700 farmers in three mid-Atlantic states. Farmers' beliefs are similar to those of the general public on average, but are distributed more uniformly, suggesting that the farm community may be more polarized on environmental issues than the general public. Farmers regard first-hand sources of information such as direct field observation and pesticide labels as being the most important. Chemical dealers and extension rank next in importance. Farmers who attached greater importance to information from news media and extension expressed greater environmental concern. Farmers who found information from chemical dealers more important expressed greater concern about injury to wildlife and pesticides in drinking water but less concern about general environmental quality problems associated with agricultural chemicals.

214. **Information and the adoption of precision farming.**
Daberkow, S. G. and McBride, W. D.
Selected papers from the annual meeting of the American Agricultural Economics Association (2001)
NAL Call #: HD1405-.A44.
Notes: Supplemental online access through http://agecon.lib.umn.edu. Meeting held August 5-8, 2001, in Chicago, Illinois. Includes references.
Descriptors: site specific crop management/ information services/ innovation adoption/ decision making/ farming systems
This citation is from AGRICOLA.

215. **Information for policy design: Modelling participation in a farm woodland incentive scheme.**
Crabtree, B.; Chalmers, N.; and Barron, N. J.
Journal of Agricultural Economics 49 (3): 306-320. (1998); *ISSN:* 0021-857X
This citation is provided courtesy of CAB International/CABI Publishing.

216. **Innovating conservation agriculture: The case of no-till cropping.**
Coughenour, C. M.
Rural Sociology 68 (2): 278-304. (2003); *ISSN:* 0036-0112
This citation is provided courtesy of CAB International/CABI Publishing.

217. **Integrated Land and Water Management in the United Kingdom: Narrowing the Implementation Gap.**
Ducros, C. and Watson, N. M.
Journal of Environmental Planning and Management 45 (3): 403-423. (2002); *ISSN:* 0964-0568.
Notes: DOI: 10.1080/09640560220133423
Descriptors: British Isles/ Watershed Management/ Riparian Land/ Environmental Policy/ Policy Making/ Social Participation/ Farms/ Decision Making/ Surveys/ Case Studies/ Statistical Analysis/ Water management/ Farms and farming/ Decision theory/ Survey/ Case study/ British Isles/ riparian buffer zones/ Water quality control/ Water Resources and Supplies/ General Environmental Engineering
Abstract: Riparian buffer zones have been incorporated in land and water management policy for England since 1994, when the Ministry of Agriculture, Fisheries and Food introduced a Water Fringe Option (WFO) as part of a broader habitat conservation scheme. Whilst natural scientists have examined the functioning of riparian buffer zones, understanding of farmers' decision making regarding the adoption or non-adoption of voluntary buffer zone policies is very limited. This paper examines the factors influencing the decision making of farmers who were eligible to join the WFO in three river catchments. Quantitative and qualitative information was collected from farmers using semi-structured interviews and was supplemented with in-depth interviews with representatives of public agencies, agricultural groups and independent experts. Data analysis was completed using the 'Framework' analytical approach and the Statistical Package for the Social Sciences 8.0 computer software. The research revealed that decisions to participate in the WFO were influenced by a mix of

situational, psychological and sociological characteristics, which suggests that policy makers must attach greater importance to implementation conditions and farmers decision making if riparian buffer zones are to play a more prominent role in the management of land and water in rural catchments. Tightly structured schemes will only appeal to a narrow segment of the farming population and will not lead to widespread re-creation of riparian habitats. A more flexible and collaborative style of policy development is needed in order for riparian buffer zone policies to meet the circumstances and needs of the diverse UK farming community.

218. **Integrated pest management systems: Back to basics to overcome adoption obstacles.**
Herbert, D. A.
Journal of Agricultural Entomology 12 (4): 203-210. (1995)
NAL Call #: SB599.J69; *ISSN:* 0735-939X.
Notes: Conference: Symposium: The Crisis in IPM: Is There a Solution to the Gap Between Theory and Practice?, at Annual Meeting of the Entomological Society of America, Indianapolis, IN (USA), Dec 1993
Descriptors: integrated control/ agricultural practices/ Agricultural & general applied entomology
Abstract: Adoption of Integrated Pest Management (IPM) practices into agricultural programs and the constraints affecting adoption are topics that have been addressed since the mid-1970s when the implementation of agricultural IPM programs began. Adoption has never occurred at the levels hoped for and the constraints slowing this process have been well reviewed by many authors. The purpose of this work is to highlight the primary obstacles to IPM adoption and discuss solutions that could bring about positive change. As the title implies, these solutions are not new, but basic to implementation of any innovative system or change. With a new focus on these basic solutions, it is hoped that those involved with IPM may be reminded of their importance and reemphasize them in the planning, development, and implementation phases of programs.

219. **Integrating crop and livestock production in Inland Northwest farming systems.**
Hardesty, L. H. and Tiedeman, J. A.
American Journal of Alternative Agriculture 11 (2/3): 121-126. (1996)
NAL Call #: S605.5.A43; *ISSN:* 0889-1893 [AJAAEZ].
Notes: Paper presented at the U.S.-Middle East Conference and Workshop on "Dryland Farming Systems and Technologies for a more Sustainable Agriculture" held October 18-23, 1993, Moscow, Idaho. Includes references.
Descriptors: crop production/ animal production/ dry farming/ farming systems/ integrated systems/ integration/ sustainability/ Pacific Northwest states of USA/ ecological integration/ economic integration
Abstract: The demand for more ecologically and economically sustainable agriculture arises because we currently integrate products economically in a fashion that distorts ecological relationships. Early farms were ecologically integrated through feeding of forage crops and crop residues to livestock, with livestock contributing draft power and manure for crops. Today we have almost entirely uncoupled plant and animal production, eliminating the contribution that each can make to the productivity of the other. Barriers to integrating farming systems include the large volume of information needed for sophisticated production systems and the lack of infrastructure. Also, many chemicals used on crops have not been evaluated for their safety in food animals. Winter feeding and calving may conflict with crop production cycles; balancing year-round forage supplies is another obstacle. Opportunities include using the Conservation Reserve Program to shift land to livestock production. Domestic demand for meat is changing, and range livestock production is seen by some people as more humane than confinement. Animals fed less grain may be more acceptable in some markets. As agriculture responds to changes in society, ecological integration may become more compatible with economic integration.
This citation is from AGRICOLA.

220. **An interactive and participative approach to water quality management in agro-rural watersheds.**
Mtetwa, S and Schutte, C F
Water SA (Pretoria) 28 (3): 337-344. (2002); *ISSN:* 0378-4738
Descriptors: agro rural watershed/ environmental degradation / farming/ land use practices/ river/ rural community/ stakeholder participation/ water pollution/ water quality
Abstract: An interactive and participative approach to involve and mobilise rural communities in water quality control programmes was investigated. Agro-rural watersheds are experiencing serious environmental degradation mainly because of inappropriate land use practices due to various competing and opposing priorities in the community. The communities tend to concentrate on availability of land and water for their activities regardless of the state of that resource. The methodology is designed to bring awareness to the rural farmers of the amounts of pollutants they contribute to a river system and the benefits of adhering to good land-use and farming practices both in terms of production and environmental protection. It is based

on a pilot project, dealing with an argo-rural watershed in a semi-arid developing area. A strong emphasis was put on stakeholder participation, an area neglected by many researchers. It became clear that pollutant flushes from the catchments are influenced by many factors, of which agricultural practices is only one.

221. **An interdisciplinary approach to integrate a range of agro-landscape values as proposed by representatives of various disciplines.**
Van Mansvelt, J D
Agriculture Ecosystems and Environment 63 (2-3): 233-250. (1997)
NAL Call #: S601 .A34; *ISSN:* 0167-8809
Descriptors: aesthetics/ agriculture/ agro landscape values/ biobusiness/ biotope diversity/ conservation/ eco coherence/ ethics/ humane development/ interdisciplinary approach/ landscape development/ philosophy and ethics/ resource efficiency/ rural conditions/ system integration
Abstract: A Concerted Action has been initiated to discuss the assessment of sustainable agro-landscape values in the EU. The objective is to find out how criteria and parameters can be defined that would help farmers, authorities and politicians to manage the agro-landscape towards sustainability and socio/cultural appreciation. Such parameters should most probably consist of a general mainframe with compatible regional specifications. They could eventually be a base for income support/cross-compliance type of payments that farmers receive for their landscape management performance. Referring to the papers presented in this special issue, an effort is made to integrate the values proposed by the wide range of participating disciplines into a consistent and knowledgeable system. This is done by linking the different values as mentioned by the participants to the human motivations, phrased according to Maslow, that they are meant to serve. The disciplines present have been provisionally clustered into three areas with two main issues: (1) environment (resource conditions) and ecology (biological relations); (2) economy (flows of finances and services) and sociology (participative procedures); (3) psychology (appreciation and aesthetics) and anthropology (history and ethics). In these three realms, they are perceived as representing a double hierarchy of priorities: from the environment onward they represent the evolutionary option of basic human needs, evolving from sheer survival to the development of the individual potentials (food first, then ethics). From the cultural aspect of ethics to the environmental conditions they represent a more humanistic (humane), immaterial priority of ethical values, leading social and economic priorities to their environmental impacts. From this effort, indications are derived pointing at options for a coherent system of agro-landscape values, especially when seen in the perspective of sustainable land use. A table showing the various agro-landscape quality aspects is presented. Throughout this paper, the agro-landscape is perceived as an integrated product of human actions, of agro-technical, political and mental (ethical) character.

222. **Interrelationship between conservation tillage and energy and other input use in U.S. agriculture.**
Uri, Noel D
Energy Sources 18 (8): 917-940. (1996);
ISSN: 0090-8312
Descriptors: agronomy/ conservation/ conservation tillage adoption decision/ corn production/ pesticide application/ rainfall/ tillage practices
Abstract: An important issue with regard to the overall effectiveness of conservation tillage practices in reducing the impact of agricultural production on the environment concerns what happens to energy, pesticide, and fertilizer use as these practices are more extensively adopted To gain some insight into this, the conservation tillage adoption decision is modeled. Starting with the assumption that the conservation tillage adoption decision is a two-step procedure-the first is the decision whether or not to adopt a conservation tillage production system and the second is the decision on the extent to which conservation tillage should be used-appropriate models of the Cragg and Heckman (dominance) type are estimated. Based on farm-level data on corn production in the United States for 1987, the profile of a farm on which conservation tillage was adopted is that the cropland had above average slope and experienced above average rainfall, the farm was a cash grain enterprise, and it had an above average expenditure on pesticides, a below average expenditure on energy, and a below average expenditure on custom pesticide applications. Additionally, for a farm adopting a no-tillage production practice, an above average expenditure was made on fertilizer.

223. **Iowa prairie: Original extent and loss, preservation and recovery attempts.**
Smith, Daryl D
Journal of the Iowa Academy of Science 105 (3): 94-108. (1998)
NAL Call #: Q11.J68; *ISSN:* 0896-8381
Descriptors: ecosystem recovery/ grassland/ history/ natural resources/ original land surveys/ prairie demise/ prairie reconstruction/ prairie restoration/ savanna/ settlement
Abstract: Iowa's prairie has to be assessed in the

context of the pre- and post-agriculturally dominated ecosystem in which it now exists. This requires an understanding of prairies and of society's perspective of prairies. Therefore, the attitudes of people through time have to be considered; (1) those who were involved in the demise of the prairie, (2) those who helped saved the pieces of the prairie and (3) those who may be called upon to recover the prairie ecosystem. of Iowa prairie to agriculture was rapid and extensive. Most of the Iowa prairie was settled and much of it converted to agriculture Prairie preservation was recommended in the Twenty-Five Year Conservation Plan 14 years after it was first suggested by Hayden in 1919. A committee chaired by Shimek proposed a 5000 acre preserve in NW Iowa as a part of a continental plan to conserve the North American prairie. During the 1940s, Hayden emerged as a leader of a major effort of the Iowa Academy of Science to identify and preserve prairies. These preservation efforts culminated in the dedication of Iowa's first prairie preserve in 1947. Hayden's information also was valuable in subsequent preservation of prairies by conservation organizations and governmental agencies. In the past two decades, interest in locating and protecting prairie remnants has increased. Remaining prairie is best represented in western Iowa's Loess Hills and in the northwestern pan of the state. Many prairie remnants have survived because they were used as hay fields. In spite of increased efforts to preserve prairie, remnants are still being degraded or lost to agriculture and urban sprawl. Within the past decade there has been increased recognition of the importance of ecosystem recovery. Iowa's roadsides are now acknowledged as a valuable natural resource for establishment and restoration of prairie. This recognition has led to the development of a program of integrated roadside vegetation management chat utilizes native prairie as a means of controlling weeds, reducing soil erosion, improving aesthetics and reducing costs. The 580,000 acres of primary and secondary roadsides in the state have the potential of becoming a statewide network of prairie corridors. Furthermore, three large-scale prairie recovery projects are in various stages of development (1) Walnut Creek National Wildlife Refuge by the U. S. Fish and Wildlife Service, (2) Waterman Creek Project by the Iowa Department of Natural Resources and (3) the Loess Hills Landscape Conservation Plan by the Nature Conservancy. All prairie recovery projects face numerous challenges, but such attempts are essential if we hope to recover a vanishing ecosystem.

224. **IPM implementation and acceptance by cucurbit growers over a 5 year period in the Lower Rio Grande Valley, Texas.**
Anciso, Juan R; Trevino, Gloria E; and Torres, Norma
Subtropical Plant Science 53: 40-43. (2001)
Descriptors: cucurbit (Cucurbitaceae): vegetable crop/ whitefly (Homoptera): pest/ Angiosperms/ Animals/ Arthropods/ Dicots/ Insects/ Invertebrates/ Plants/ Spermatophytes/ Vascular Plants/ alternative techniques implementation/ cucurbit growers/ current practices/ economic/ action thresholds/ educational meetings/ perceptions/ spring crop
Abstract: Questionnaires mailed to cucurbit growers in two Texas counties (Cameron and Hidalgo) in 1995 and 1999 were used to assess perceptions and current practices regarding integrated pest management (IPM). A total of 32 of the 79 surveys (41%) solicited from potential cucurbit growers in the two county area were returned in 1995. However, IPM concepts in general were not widely accepted in 1995 since only 44% were willing to participate or practice IPM strategies even if improved recommendations were proven with sound field or grower experience. In 1999, a post-questionnaire was mailed to 78 cucurbit producers in the two county area to determine whether the adoption of IPM practices had increased due to the response effort of educational meetings and implementation of alternative techniques through the various grower demonstrations. This questionnaire was conducted during the fall of 1999 after the spring crop of cucurbits to determine any changes in attitudes, knowledge, or practices as compared to 1995. A total of 45 of the 78 surveys (58%) mailed and solicited from potential cucurbit growers in the two county area were returned in 1999. Of the 45 that responded, 96% answered that IPM strategies were important in their cucurbit production system in 1999. The use of economic/action thresholds and monitoring is fundamental to the practice of IPM. Respondent's attitudes about the use of action thresholds and monitoring were assessed in 1995 and the majority used them (77%) but this did not increase in 1999 since 77% still practiced them. The results indicated that the growers perceptions have not changed on the use of action thresholds and monitoring mainly because some distrust them but the majority use these practices. However, a dramatic increase occurred in practicing or participating in IPM strategies from 44% in 1995 to 96% in 1999. The IPM strategies identified as important did not solely depend on monitoring and action thresholds but were quite varied from planting earlier, spraying earlier for the whitefly, awareness/conservation of beneficials and increasing fertility.

225. **IPM: Overcoming conflicts in adoption.**
Trumble, J. T.
Integrated Pest Management Reviews 3 (4): 195-207. (Dec. 1998)
NAL Call #: SB950.9.I572; *ISSN:* 1353-5226 [IPMRF5]
Descriptors: integrated pest management/ innovation adoption/ economics/ literature reviews
This citation is from AGRICOLA.

226. **Irrigation scheduling revisited: Historical evaluation and reformulation of the concept.**
Clyma, W.
In: Evapotranspiration and irrigation scheduling: Proceedings of the International Conference. (Held 3 Nov 1996-6 Nov 1996 at San Antonio, Texas.) Camp, C. R.; Sadler, E. J.; and Yoder, R. E. (eds.); pp. 626-631; 1996. *ISBN:* 0-929355-82-2
This citation is provided courtesy of CAB International/CABI Publishing.

227. **Joint adoption of multiple technologies: A dual, latent demand approach.**
Lichtenberg, E. and Strand, I. E.
College Park, MD: Department of Agricultural and Resource Economics, University of Maryland; 00/14, 2000 . 28 p. Working Papers: Department of Agricultural and Resource Economics, University of Maryland.
This citation is provided courtesy of CAB International/CABI Publishing.

228. **A joint framework for analysis of agri-environmental payment programs.**
Cooper, J. C.
American Journal of Agricultural Economics 85 (4): 976-987. (2003)
NAL Call #: 280.8 J822; *ISSN:* 0002-9092.
Notes: Number of References: 23
Descriptors: Agriculture/ Agronomy/ Economics/ best management practices/ EQIP/ incentive payments/ multinomial probit/ simulated maximum likelihood estimation/ simulated multivariate normal / WTA/ quality protection practices/ contingent valuation/ water quality/ farmer adoption/ simulation/ choice
Abstract: This article presents an approach for simultaneously estimating farmers' decisions to accept incentive payments in return for adopting a bundle of environmentally benign best management practices. Using the results of a multinomial probit analysis of surveys of over 1,000 farmers facing five adoption decisions in a voluntary program, we show how the farmers' perceptions of the desirability of various bundles change with the offer amounts and with which practices are offered in the bundle. We also demonstrate an estimator for the mean minimum willingness to accept for the adoption of a practice conditional on the cost share offers for other practices.

229. **Knowledges in action: An actor network analysis of a wetland agri-environment scheme.**
Burgess, J.; Clark, J.; and Harrison, C. M.
Ecological Economics 35 (1): 119-132. (2000)
NAL Call #: QH540.E26
This citation is provided courtesy of CAB International/CABI Publishing.

230. **Land allocation, soil quality, and the demand for irrigation technology.**
Green, G. P. and Sunding, D. L.
Journal of Agricultural and Resource Economics 22 (2): 367-375. (Dec. 1997)
NAL Call #: HD1750.W4; *ISSN:* 1068-5502
Descriptors: citrus/ vineyards/ crop production/ irrigation systems/ water use/ innovation adoption/ land resources/ resource allocation/ land evaluation/ water costs/ decision making/ mathematical models/ probability/ elasticities/ California/ discrete choice models/ low pressure technology adoption
This citation is from AGRICOLA.

231. **Land application of sewage sludge: Perceptions of New Jersey vegetable farmers.**
Krogmann, U.; Gibson, V.; and Chess, C.
Waste Management and Research 19 (2): 115-125. (2001)
NAL Call #: TD896.W37; *ISSN:* 0734-242X
This citation is provided courtesy of CAB International/CABI Publishing.

232. **Land tenure and the adoption of conservation practices in the United States.**
Soule, M. J. and Tegene, A.
In: Land quality, agricultural productivity, and food security: Biophysical processes and economic choices at local, regional, and global levels/ Wiebe, K., 2003; pp. 319-336.
Notes: ISBN: 1-84064-752-3
This citation is provided courtesy of CAB International/CABI Publishing.

233. **Land Use Characteristics and Water Quality: A Methodology for Valuing of Forested Buffers.**
Basnyat, P.; Teeter, L.; Lockaby, B. G.; and Flynn, K. M.
Springer-Verlag [Also available as: Environmental Management Vol. 26, No. 2, pp. 153-161; DOI: 10.1007/s002670010078], 2000 (application/pdf) http://web6.duc.auburn.edu/academic/forestry_wildlife/forest_policy_ctr/teeter/env-mgt-value.pdf
Descriptors: water quality/ economics/ models

234. **Land-Use Dynamics in a Southern Illinois (USA) Watershed.**
Lant, C.; Loftus, T.; Kraft, S.; and Bennett, D.
Environmental Management 28 (3): 325-340. (2001)
NAL Call #: HC79.E5E5; *ISSN:* 0364-152X
Descriptors: Watersheds/ Land use/ Agriculture/ Environmental economics/ Hydrology/ decision making/ environmental policy/ Resource management/ Environment management/ Agricultural land/ Crop production/ Government policy/ United States, Illinois/ Crops/ Farms/ Cultivated Lands/ Sediment Load/ Nonpoint Pollution Sources/ Agricultural Runoff/ Watershed Management/ United States, Illinois, Cache River/ United States, Illinois/ Environmental action/ Planning and development/ Ecological impact of water development
Abstract: The Cache River of southernmost Illinois is used as a case study for developing and demonstrating an approach to quantitatively link (1) national agricultural policy and global agricultural markets, (2) landowner's decisions on land use, (3) spatial patterns of land use at a watershed scale, and (4) hydrologic impacts, thus providing a basis to predict, under a certain set of circumstances, the environmental consequences of economic and political decisions made at larger spatial scales. The heart of the analysis is an estimation, using logistic regression, of the affect of crop prices and Conservation Reserve Program (CRP) rental rates on farmland owner's decisions whether to reenroll in the CRP or return to crop production. This analysis shows that reasonable ranges for crop prices (80%-150% of 1985-1995 values) and CRP rental rates (0-125% of 1985-1995 rates) result in a range of 3%-92% of CRP lands being returned to crop production, with crop prices having a slightly greater effect than CRP rental rates. Four crop price/CRP rental rate scenarios are used to display resulting land-use patterns, and their effect on sediment loads, a critical environmental quality parameter in this case, using the agricultural non point source (AGNPS) model. These scenarios demonstrate the importance of spatial pattern of land uses on hydrological and ecological processes within watersheds. The approach developed can be adapted for use by local governments and watershed associations whose goals are to improve watershed resources and environmental quality.

235. **Landlord involvement in environmental decision-making on rented Missouri cropland: Pesticide use and water quality issues.**
Constance, D. H.; Rikoon, J. S.; and Ma, J. C.
Rural Sociology 61 (4): 577-605. (Winter 1996)
NAL Call #: 281.28-R88; *ISSN:* 0036-0112
[RUSCA]
Descriptors: landowners/ farmland/ rent/ farm management/ decision making/ participation/ pesticides/ United States/ water quality/ tenure systems/ trends/ sociology/ Missouri
Abstract: The need to better understand landlord involvement in decision-making related to pesticide use and water quality issues is evidenced by several trends. These trends include the increasing documentation of water pollution by farm pesticides, the changing characteristics of farm ownership and operator tenure, and evolutions in resource policy and protection planning. This paper utilizes a theoretical approach to the sociology of land tenure to interpret results from an investigation of landlord involvement in environmental decision making regarding pesticide selection on rented land. Eight counties with high susceptibility of water contamination by pesticides were selected for study. Structured, in-person interviews were administered to in-county landlords, and a mail survey was used to poll out-of-county landlords. Results indicate that participation is generally low with very little difference between landlord groups. Renters make most of the organizational and operational decisions on rented farmland. Landlord participation is predominantly based on economic, rather than on social or environmental, factors. Furthermore, while economic variables are important predictors of participation for both groups, gender and social ties to the renter tend to increase local landlord involvement, but not absentee involvement. These results have important implications for both federal programs and further research on land tenure and environmental stewardship.
This citation is from AGRICOLA.

236. **Landowner decision making about riparian buffers.**
Lynch, L. and Brown, C.
Journal of Agricultural and Applied Economics 32 (3): 585-596. (Dec. 2000)
NAL Call #: HD101.S6; *ISSN:* 1074-0708
Descriptors: land types/ landowners/ decision making/ agricultural land/ land use/ land diversion/ environmental policy/ federal programs/ simulation/ mathematical models/ riparian buffers / Conservation Reserve Enhancement Program
This citation is from AGRICOLA.

237. **Landowner perceptions and the adoption of agroforestry practices in southern Ontario, Canada.**
Matthews, S.; Pease, S. M.; Gordon, A. M.; and Williams, P. A.
Agroforestry Systems 21 (2): 159-168. (1993)
NAL Call #: SD387.M8A3; *ISSN:* 0167-4366
This citation is provided courtesy of CAB International/CABI Publishing.

238. **Legal, institutional and economic indicators of forest conservation and sustainable management: Review and evaluation of available information in the United States.**
Ellefson, Paul V.
St. Paul Minn,: College of Natural Resources and Minnesota Agricultural Experiment Station, University of Minnesota; xi, 64 p. (2002)
Notes: "September 2002."
Includes bibliographical references.
NAL Call #: SD144.M6-S72-no.-163
http://www.cnr.umn.edu/FR/publications/staffpapers/Staffpaper163.pdf
This citation is from AGRICOLA.

239. **The link between local participation and improved conservation: A review of issues and experiences.**
Little, Peter D.
Airlie, Va.: Liz Claiborne Art Ortenberg Foundation; 34 p. (1993)
Notes: Cover title. "Prepared for the Liz Claiborne Art Ortenbreg Foundation Community Based Conservation Workshop, Airlie, Virginia, 18-22 October 1993." Includes bibliographical references (p. 28-32).
NAL Call #: S944.5.C57-L57-1993
Descriptors: Conservation of natural resources---Citizen participation
This citation is from AGRICOLA.

240. **Linking land quality, agricultural productivity, and food security.**
Wiebe, K. Economic Research Service, US Department of Agriculture; Agricultural Economic Report No.823, 2003. iii, 60 p.
http://www.ers.usda.gov/publications/aer823/
This citation is provided courtesy of CAB International/CABI Publishing.

241. **A literature review on the adoption and diffusion of management practices in agriculture.**
Hill, W. Lee.; Mezzatesta, R.; Long, G.; New South Wales. Dept. of Land and Water Conservation. Technical Services Directorate; and New South Wales. Dept. of Land and Water Conservation. Water Quality Services Unit.
Parramatta, N.S.W.: Dept. of Land & Water Conservation, Technical Services Directorate; iv, 43 p. (1995)
Notes: "October 1995" "TS 95.152" "Public document" Includes bibliographical references (p. 34-39).
NAL Call #: S562.A8-H56-1995; *ISBN:* 0731023404
Descriptors: Farm management---Australia---New South Wales/ Agricultural conservation---Australia---New South Wales
This citation is from AGRICOLA.

242. **Livestock and poultry producers' waste management practices and attitudes in North Carolina.**
Hoban, T. J. and Clifford, W. B.
In: Animal waste and the land-water interface. Boca Raton, Fla.: Lewis Publishers, 1995; pp. 441-448.
Notes: ISBN: 1566701899
NAL Call #: TD930.A55-1995
Descriptors: animal wastes/ management/ attitudes/ pollution control/ North Carolina/ best management practices
This citation is from AGRICOLA.

243. **Livestock waste management: Watershed approach in Italy, Florida and Texas.**
Frarey L; Mennella V; Abbozzo P; and Macellari E
Rivista di Ingegneria Agraria 29 (3): 180-191; 25 ref. (1998)
This citation is provided courtesy of CAB International/CABI Publishing.

244. **Local groundwater management effectiveness in the Colorado and Kansas Ogallala region.**
White, S. E. and Kromm, D. E.
Natural Resources Journal 35 (2): 275-307. (1995)
NAL Call #: HC79.E5N3
This citation is provided courtesy of CAB International/CABI Publishing.

245. **Local perceptions and values for a Midwestern river corridor.**
Ryan, Robert L
Landscape and Urban Planning 42 (2-4): 225-237. (1998)
NAL Call #: QH75.A1L32; *ISSN:* 0169-2046
Descriptors: landscape architecture: education, research/ river corridor: local perceptions, values/ rural landscape planning
Abstract: Rivers are vital natural corridors under increasing environmental pressure from rural development. This study addressed rural resident's perceptions and values, including their preferences for and attitudes toward riparian landscapes. Study participants were 120 rural property owners living in two communities near the River Raisin of southeastern Michigan. They completed a mailed survey which included a schematic diagram to determine their perceptions of those landscapes which form the river corridor, a photo-questionnaire to measure preference for scenes typical of the river corridor, and written questions to assess perceptions of both positive and negative characteristics of riverfront land. The results showed that local residents see the river corridor as four inter-connected zones: the river, woods, farms and built areas. New residents showed significantly higher

preference for more natural areas, such as woods and river zone, than did long-time residents. Farmers, by contrast, had a higher preference for less natural landscapes such as farms and built areas. Residents' landscape preference related more to their surrounding landscape-type than to the actual distance between their home and the river, although water quality problems were felt more strongly by those living near the river. The results point to the need to consider the riparian corridor as a series of inter-connected landscapes in planning efforts. Decisions about protection and development in these zones require not only an ecological understanding of these resources but an appreciation of the residents' values as well.

246. **Making conservation tillage conventional: Building a future on 25 years of research -- Research and extension perspective.**
Derpsch, R.
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.) Santen, E. van (eds.); pp. 25-29; 2002.

247. **Making soil and water conservation sustainable: From coercion and control to partnerships and participation.**
Pretty, J N and Shah, P
*Land Degradation and Development 8 (1): 39-58. (*1997)
NAL Call #: S622.L26; *ISSN:* 1085-3278
Descriptors: conservation/ conservation program/ erosion/ rural development policy/ soil conservation/ sustainable agriculture/ sustainable conservation/ water conservation
Abstract: For close to a century, rural development policies and practice have taken the view that farmers are mismanagers of soil and water. This paper reviews the history of farmers being advised, paid and forced to adopt new soil and water conservation measures and practices. Many have done so, and environments and economies have benefitted in the short term, but ill-conceived policies and badly designed programmes and projects have undermined these efforts in the name of conservation. Most efforts have been remarkably unsuccessful, often resulting in more erosion. They have undermined the credibility of conservation and wasted huge sums of money. For a new era of soil and water conservation, new initiatives are showing how to make conservation sustainable. Farmers are now considered the potential solution rather than the problem, and so the value of local knowledge and skills is being put at the core of new programmes. This involves a major focus on building farmers' capacity to innovate and develop technologies appropriate to their own conditions. Local organizations are strengthened through participatory processes, this participation being interactive and empowering. Recent evidence is indicating that these new interactions between professionals and farmers are producing considerable productive and sustainable benefits. For widespread impact, enabling policy frameworks are still needed to encourage the spread of more sustainable practices for agriculture.

248. **Making Watershed Partnerships Work: A Review of the Empirical Literature.**
Leach, W. D. and Pelkey, N. W.
Journal of Water Resources Planning and Management 127 (6): 378-385. (2001)
NAL Call #: TC401.A45; *ISSN:* 0733-9496
Descriptors: Water Resources Management/ Watershed Management/ Organizations/ Literature Review/ Public Policy/ Theoretical Analysis/ Institutional Constraints/ Remedies/ Factor Analysis/ Water management/ Catchment areas/ Public opinion/ Water policy/ Economics/ Water law and institutions/ Water Resources and Supplies
Abstract: Two main goals are achieved in this review of the empirical literature on factors affecting conflict resolution in watershed partnerships. The first is an assessment of two public policy theories relevant to partnership structure and function. The second is a set of practical suggestions for designing successful partnerships. The 37 available studies collectively identified 210 "lessons learned," which were grouped into 28 thematic categories. The most frequently recurring themes are the necessity of adequate funding (62% of the studies), effective leadership and management (59%), interpersonal trust (43%), and committed participants (43%). Exploratory factor analysis was used to search for patterns in the lessons. Four factors were identified, which together explain 95% of the variance in the 28 themes. The first two factors emphasize the importance of (1) balancing the partnership's resources with its scope of activities; and (2) employing a flexible and informal partnership structure. The third and fourth factors offer modest support for two theoretical perspectives on collaborative resource management--the alternate dispute resolution framework and the institutional analysis and development framework.

249. **Managing agricultural resources at the urban-rural interface: A case study of the Old Mission Peninsula.**
Westphal, Joanne M
Landscape and Urban Planning 57 (1): 13-24. (2001)
NAL Call #: QH75.A1L32; *ISSN:* 0169-2046
Descriptors: agricultural resource management/ land use/ landscape planning/ urban rural interface
Abstract: Despite the vast landmass of the United States, resource managers, landscape architects, and planners are becoming increasingly aware of the difficulty in protecting natural resources at the urban-rural interface. Because of the legal framework of the United States, individual states retain the rights to regulate and manage the affairs of land use within their jurisdictions. Each state, in turn, has transferred portions of this right to county and local bodies of government through "enabling legislation". Because each of these layers of government has different agenda, oftentimes, a coordinated, effective land use planning effort that could protect natural resources, especially at the urban-rural interface, is impossible to develop. This paper examines one local community's effort to preserve farmland and open space at the urban-rural interface. As a case study, it presents some of the historic land use management tools in Michigan that have been used to protect farmland. It also discusses the political and economic factors that determine the success or failure of these tools. Because of the inadequacies of some of the tools to protect open space and farmland, the township adopted an alternative land use planning strategy. It appears that this strategy has successfully integrated the best of the old planning tools with some of the newer alternatives to curb urban sprawl in a rapidly growing area in Michigan, USA.

250. **Managing material transfer and nutrient flow in an agricultural watershed.**
Nord, E. A. and Lanyon, L. E.
Journal of Environmental Quality 32 (2): 562-570. (2003)
NAL Call #: QH540.J6; *ISSN:* 0047-2425

251. **Manure Management for Water Quality: Costs to Animal Feeding Operations of Applying Manure Nutrients to Land.**
Ribaudo, Marc; Gollehon, Noel; Aillery, Marcel; Kaplan, Jonathan; Johansson, Robert; Agapoff, Jean; Christensen, Lee; Breneman, Vince; and Peters, Mark; Economic Research Service.
U. S. Department of Agriculture [Also available as: Agricultural Economic Report No. 824; AER824], 2003 (application/pdf)
http://www.ers.usda.gov/publications/aer824/aer824.pdf
Descriptors: agricultural economics/ animal manure management/ animal manures/ nutrients/ nitrogen/ phosphorus/ water quality/ concentrated animal feeding operations/ animal feeding operations / Chesapeake Bay/ land application/ Clean Water Act/ manure management/ livestock waste/ CAFOs/ AFOs/ manure hauling/ ERS
Abstract: Nutrients from livestock and poultry manure are key sources of water pollution. Ever-growing numbers of animals per farm and per acre have increased the risk of water pollution. New Clean Water Act regulations compel the largest confined animal producers to meet nutrient application standards when applying manure to the land. The additional costs for managing manure have implications for feedgrain producers and consumers as well. This report's farm-level analysis examines onfarm technical choice and producer costs across major U.S. production areas. A regional analysis focuses on off-farm competition for land to spread surplus manure, using the Chesapeake Bay region as a case study. Finally, a sectorwide analysis addresses potential long-term structural adjustments at the national level and ultimate costs to consumers and producers.

252. **Market-based incentives for addressing non-point water quality problems: A residual nitrogen tax approach.**
Huang, W. and LeBlanc, M.
Review of Agricultural Economics 16 (3): 427-440. (Sept. 1994)
NAL Call #: HD1773.A3N6; *ISSN:* 1058-7195
Descriptors: zea mays/ nitrogen fertilizers/ water quality/ taxes/ groundwater/ economic impact/ farm income/ incentives/ profits/ case studies/ Corn Belt States of USA
Abstract: This study analyzes the implications of a nitrogen tax for agricultural producers. A tax scheme is examined that penalizes farmers for applying nitrogen in excess of a crop's nitrogen uptake. Farmers are taxed for the potential leaching of residual nitrogen into groundwater and are rewarded for growing crops that capture and utilize residual soil nitrogen. Corn production is used to illustrate the differential impacts of a residual nitrogen tax on farm income in Corn Belt States.
This citation is from AGRICOLA.

253. **Maxims for the Third Resource Conservation Act Appraisal.**
Shogren, J. F. and Johnson, S. R.
Ecological Economics 10 (2): 113-123. (1994)
NAL Call #: QH540.E26; *ISSN:* 0921-8009
Descriptors: conservation/ agricultural practices/ government policy/ United States/ economics/ Legislation/ Conservation

Abstract: The paper explores three issues in the development of an ecological economics approach to the USDA's Third Resource Conservation Act (RCA) Appraisal. First, profit-maximizing farmers respond to incentives provided by both the USDA and the EPA, implying that explicit interagency policy strategies are critical. Second, evaluating sustainable agriculture options with the Appraisal can improve our understanding of the attractiveness of widespread adoption, but only if systematic operational systems are developed to evaluate the economic and environmental trade-offs. Third, the Appraisal policy options should be evaluated in light of the argument that preferred policies often only resolve a problem by transferring the problem to another time or location. The Appraisal offers a unique opportunity to address these and other issues.

254. **Microcatchment water harvesting for agricultural production: Socio-economic considerations.**
Renner, H. F. and Frasier, G.
Rangelands 17 (3): 79-82. (June 1995)
NAL Call #: SF85.A1R32; *ISSN:* 0190-0528.
Notes: Subtitle: [Part] II.
Descriptors: water harvesting/ cost benefit analysis/ semiarid zones/ sustainability/ innovation adoption
This citation is from AGRICOLA.

255. **Midwestern Farmers' Perceptions of Monitoring for Conservation Compliance.**
Esseks, J. D. and Kraft, S. E.
Journal of Soil and Water Conservation 48 (5): 458-465. (1993)
NAL Call #: 56.8 J822 [JSWCA3]
Descriptors: Erosion control/ Soil conservation/ Compliance/ Monitoring/ Rural areas/ Attitudes/ Agricultural runoff/ Agricultural watersheds/ Midwest/ Regulations/ Public opinion/ Watershed protection/ Evaluation process
Abstract: By 1995, more that 1.2 million producers are supposed to have fully implemented approved conservation plans that collectively have the potential for substantially reducing soil erosion in the U.S. Studies of other regulatory programs suggest that implementation of these plans will depend on various conditions: (1) an assessment of the legitimacy of the regulations; (2) the perception of the net benefits of compliance; (3) the likelihood of noncompliance being detected; and (4) the penalties for not complying. In six diverse Midwestern sites, operators of farms with highly erodible land were interviewed about conservation compliance. In all sites the majority of the respondents believed in at least a medium probability (50-50 chance) of noncompliance being detected. The majority also believed that a 50-50 chance was sufficient to encourage compliance. The results of a logistic regression analysis suggest that farmers are more likely to expect at least a 50-50 probability of detection if they have relatively frequent contact with local U.S. Department of Agriculture offices and also if they believe that monitoring makes use of aerial photography. (Author's abstract)

256. **The Missouri MSEA Project: A model for "the partnership approach" to water quality concerns.**
Smith, M.
In: Proceedings National Watershed Water Quality Project Symposium / National Watershed Water Quality Project Symposium. (Held 22 Sep 1997-26 Sep 1997 at Washington, D.C.)
Washington, D.C.: Environmental Protection Agency, Office of Research and Development, Office of Water; pp. 9-14; 1997.
NAL Call #: TD223.N386-1997
Descriptors: low input agriculture/ pollution control/ water pollution/ atrazine/ herbicide residues/ management systems evaluation area/ best management practices
This citation is from AGRICOLA.

257. **Mitigating climate change by planting trees: The transaction costs trap.**
Kooten, G. C. van; Shaikh, S. L.; and Suchánek, P.
Land Economics 78 (4): 559-572. (2002)
NAL Call #: 282.8-J82; *ISSN:* 0023-7639
This citation is provided courtesy of CAB International/CABI Publishing.

258. **Mitigation options for diffuse phosphorus loss to water.**
Withers, P J A and Jarvis, S C
Soil Use and Management 14 (supplement): 186-192. (1998)
NAL Call #: S590.S68; *ISSN:* 0266-0032
Descriptors: phosphorus: loss mitigation/ eutrophication/ land management/ surface water pollution
Abstract: Agriculture contributes significant loads of P to surface waters. The reductions in these diffuse P inputs necessary to help prevent eutrophication problems and/or assist in the restoration of water quality will require controls over both nutrient inputs and their subsequent transport in land runoff. Specific mitigation options include nutrient budgeting, input management, soil conservation, land use management and the establishment of riparian, and other buffer zones. The variable nature of diffuse P loss suggests that the best approach to control is through integrated management at a range of scales. Critical control concepts at the farm level include targeting source areas adequately, maintaining P input loading rates within

recommended limits and avoiding high-risk management actions. Since eutrophication is a natural phenomenon and with potential conflicts with the need to meet production targets and/or minimize loss of other nutrients (N), some assessment of acceptable levels of P loss, of cost effectiveness of options and some prioritization of goals are necessary to find optimal solutions. As the requirements of individual waterbodies differ, these solutions need to be site specific and their successful adoption requires an appreciation by farmers of the importance of minimizing agricultural P loss both as individuals and collectively within a catchment.

259. **A model of investment under uncertainty: Modern irrigation technology and emerging markets in water.**
Carey, J. M. and Zilberman, D.
American Journal of Agricultural Economics 84 (1): 171-183. (Feb. 2002)
NAL Call #: 280.8-J822; *ISSN:* 0002-9092 [AJAEBA]
Descriptors: irrigation water/ irrigated farming/ technology/ innovation adoption/ investment/ uncertainty/ dynamic models/ farm management/ profit functions/ decision making
Abstract: This article develops a stochastic dynamic model of irrigation technology adoption. It predicts that farms will not invest in modern technologies unless the expected present value of investment exceeds the cost by a potentially large hurdle rate. The article also demonstrates that, contrary to common belief, water markets can delay adoption. The introduction of a market should induce farms with abundant (scarce) water supplies to adopt earlier (later) than they would otherwise. This article was motivated by evidence that, contrary to NPV predictions, farms wait until random events such as drought drive returns significantly above costs before investing in modern irrigation technologies.
This citation is from AGRICOLA.

260. **Modeling multiple adoption decisions in a joint framework.**
Dorfman, J. H.
American Journal of Agricultural Economics 78 (3): 547-557. (Aug. 1996)
NAL Call #: 280.8-J822; *ISSN:* 0002-9092 [AJAEBA]
Descriptors: apples/ innovation adoption/ farm management/ irrigation/ integrated pest management/ technology/ decision making/ Bayesian theory/ multivariate analysis/ probabilistic models/ probit analysis/ California/ Michigan/ New York/ North Carolina/ Oregon/ Pennsylvania/ Virginia/ Washington/ multinomial probit model/ technology bundles
Abstract: A multinomial probit (MNP) model is applied to the modeling of adoption decisions by farmers facing multiple technologies which can be adopted in various combinations. This model allows for full investigation of the interactions between decisions to adopt or not adopt several technologies. Estimation is carried out in a Bayesian framework employing Gibbs sampling to circumvent past difficulties encountered in maximum likelihood estimation of the MNP model. The model is estimated for a sample of U.S. apple growers with four possible sustainable production technology bundles. The results show that adoption decisions are most significantly influenced by off-farm labor supply.
This citation is from AGRICOLA.

261. **Modifying the neo-classical approach to technology adoption with behavioral science models.**
Lynne, G. D.
Journal of Agricultural and Applied Economics 27 (1): 67-85. (July 1995)
NAL Call #: HD101.S6; *ISSN:* 1074-0708.
Notes: Paper presented at the meeting of the Southern Agricultural Economics Association, January 30, 1995, New Orleans, Louisiana. Includes references.
Descriptors: water conservation/ technology/ innovation adoption/ neoclassical economics/ mathematical models/ Florida/ behavioral economics
Abstract: The dualistic nature of humans has been recognized for centuries. The intriguing question is the extent to which the human being with her/his display of concern for others can simultaneously act as an egoist, the latter being descriptive of the homo oeconomicus rendition of the human. Multiple utility theory suggests a way to approach research on such issues. A test case of water conserving technology adoption behavior by Florida growers is examined. Empirical evidence supports moving toward an expanded version of the mono-utility or I-utility model to include a We-utility.
This citation is from AGRICOLA.

262. **Money talks: But to whom? Financial versus nonmonetary motivations in land use decisions.**
Koontz, T. M.
Society and Natural Resources 14 (1): 51-65. (2001)
NAL Call #: HC10.S63; *ISSN:* 0894-1920
This citation is provided courtesy of CAB International/CABI Publishing.

263. **Moral hazard, risk aversion and compliance monitoring in agri-environmental policy.**
Ozanne, A.; Hogan, T.; and Colman, D.
European Review of Agricultural Economics 28 (3): 329-347. (Sept. 2001)
NAL Call #: HD1401.E92; *ISSN:* 0165-1587 [ERAEDA]
Descriptors: environmental policy/ innovation adoption/ efficiency/ costs/ farmers' attitudes/ risk/ social welfare/ simulation models/ monitoring/ United States
This citation is from AGRICOLA.

264. **A multiple utility approach to understanding conservation technology adoption: Application to the Florida tomato industry.**
Casey, C. Franklin University of Florida, 1996.
Notes: Thesis (Ph. D.); Includes bibliographical references (leaves 140-147).
NAL Call #: FU LD1780-1996.C338
Descriptors: Conservation of natural resources---Florida/ Tomato industry---Florida/ Tomatoes---Irrigation/ Water conservation---Economic aspects
This citation is from AGRICOLA.

265. **National Perspectives on Management Options for Lands Concluding Their Tenure in the Conservation Reserve Program (CRP).**
Schumacher, T. E.; Lindstrom, M. J.; Blecha, M. L.; and Langdale, G. W.
In: Crop Residue Management To Reduce Erosion and Improve Soil Quality: Southeast, Conservation Research Report Number 39 United States Department of Agriculture, Agricultural Research Service, 1995.
Descriptors: Conservation Reserve Program/ Regional conservation programs/ Southeastern United States
Abstract: Addressed the options for post-CRP land related to ground cover, grass types, long-tern soil improvement, and management strategies in the Southeast portion of the U.S.

266. **National Watershed Water Quality Project Symposium: Proceedings.**
U. S. Environmental Protection Agency, Office of Water and U. S. Environmental Protection Agency, Office of Research and Development; U. S. Department of Agriculture.
U. S. Environmental Protection Agency [Also available as: EPA625-R-97-008], 1997 (image/tiff)
NAL Call #: TD223 N386 1997
http://www.epa.gov/cgi-bin/claritgw?op-Display&document=clserv:ORD:2084;&rank=4&template=epa
Descriptors: watershed management/ water quality/ nonpoint source pollution/ governmental programs and projects/ pollution control/ innovation adoption/ best management practices/ environmental monitoring/ group process/ Management Systems Evaluation Areas/ United States/ Hydrologic Unit Area/ HUA/ MSEAs/ 319 National Monitoring Program/ BMPs
Abstract: The lessons learned from watershed projects addressing nonpoint source problems are recorded in these proceedings of the National Watershed Water Quality Project Symposium, held September 22-26, 1997, in Washington, D.C. The symposium featured accomplishments of local projects funded under EPA's Section 319 (Clean Water Act) National Monitoring Program and USDA's Demonstration, Hydrologic Unit Area Programs, and Management Systems Evaluation Areas.
This citation is from AGRICOLA.

267. **Nature provision by farmers and the principal agent framework: How to achieve environmental improvements in agriculture through improved payment schemes.**
Nuppenau, E. A. and Slangen, L. H. G.; Forum, Reports on Current Research in Agricultural Economics and Agribusiness Management No. 24, 1998. 49 p.
Notes: ISBN: 3-8175-0284-2
This citation is provided courtesy of CAB International/CABI Publishing.

268. **New federal support for priority watershed management needs.**
Ogg CW and Keith GA
Journal of the American Water Resources Association 38 (2): 577-586; many ref. (2002)
NAL Call #: GB651.W315
This citation is provided courtesy of CAB International/CABI Publishing.

269. **Nonchemical pest and nutrient management practices: Limitations to adoption and policy options.**
Ferguson, W.; Yee, J.; and Fitzner, M.
Journal of Sustainable Agriculture 7 (4): 45-56. (1996)
NAL Call #: S494.5.S86S8; *ISSN:* 1044-0046
This citation is provided courtesy of CAB International/CABI Publishing.

270. **North Carolina producers' adoption of waste management practices.**
Hoban, T. J.; Clifford, W. B.; Futreal, M.; and McMillan, M.
Journal of Soil and Water Conservation 52 (5): 332-339. (Sept. 1997-Oct. 1997)
NAL Call #: 56.8-J822; *ISSN:* 0022-4561 [JSWCA3]
Descriptors: intensive livestock farming/ animal wastes/ management/ farm management/ decision making/ innovation adoption/ resistance to change/ waste utilization/ application to land/ environmental

protection/ water quality/ farmers' attitudes/ opinions/ surveys/ North Carolina
This citation is from AGRICOLA.

271. **Nutrient management planning: Justification, theory, practice.**
Beegle, D. B.; Carton, O. T.; and Bailey, J. S.
Journal of Environmental Quality 29 (1): 72-79. (2000)
NAL Call #: QH540.J6; *ISSN:* 0047-2425
This citation is provided courtesy of CAB International/CABI Publishing.

272. **On-farm adaptation of knowledge-intensive nitrogen management technologies for rice systems.**
Balasubramanian, V.; Morales, A. C.; Cruz, R. T.; and Abdulrachman, S.
Nutrient Cycling in Agroecosystems 53 (1): 59-69. (Jan. 1999)
NAL Call #: S631.F422; *ISSN:* 1385-1314 [NCAGFC].
Notes: In the special issue: Resource management in rice systems: nutrients / edited by V. Balasubramanian, J.K. Ladha, and G.L. Denning. Includes references.
Descriptors: oryza sativa/ nitrogen/ crop management/ leaves/ use efficiency/ chlorophyll/ color/ application rates/ technology transfer/ nitrogen content/ nutrient availability/ meters/ decision making/ cultivars/ diagnostic techniques/ literature reviews/ fertilizer requirement determination/ chlorophyll meter
This citation is from AGRICOLA.

273. **On-farm adoption of conservation practices: The role of farm and farmer characteristics, perceptions, and health hazards.**
Traoré, N.; Landry, R.; and Amara, N.
Land Economics 74 (1): 114-27. (1998)
NAL Call #: 282.8-J82; *ISSN:* 0023-7639
This citation is provided courtesy of CAB International/CABI Publishing.

274. **On-farm system performance in the Maricopa-Stanfield Irrigation and Drainage District area.**
Clemmens, A. J.; Dedrick, A. R.; Clyma, W.; and Ware, R. E.
Irrigation and Drainage Systems 14 (1/2): 93-120. (2000)
NAL Call #: TC801 .I66; *ISSN:* 0168-6291
This citation is provided courtesy of CAB International/CABI Publishing.

275. **On-farm water conservation practices in southern Alberta.**
Johnston, T. R. R.; Kromm, D. E.; and Byrne, J. M.
Journal of the American Water Resources Association 37 (3): 737-750. (June 2001)
NAL Call #: GB651.W315; *ISSN:* 1093-474X [JWRAF5]
Descriptors: water conservation/ on farm conservation/ irrigated farming/ irrigation/ innovation adoption/ diffusion of information/ farm surveys/ Alberta
Abstract: In southern Alberta, as elsewhere, pressures on limited water supplies are increasing. Not surprisingly, a great deal of attention has been focused on irrigated agriculture, which accounts for the largest share of water consumed in the region. In order to meet broadly accepted water conservation goals, some commentators have suggested that irrigation water use should be metered and that irrigators should be charged based on the amount of water used. An alternative proposal would have water management authorities rely upon the perceived adaptability of irrigators. This paper offers a perspective on the willingness of irrigators to conserve water. Based on a survey of 183 irrigation farmers conducted over the summer and early fall of 1998, we found that irrigators are generally aware of the need to conserve water and soil moisture, and that a variety of water conserving strategies were being employed. Water saving technologies specific to irrigation agriculture were less widely adopted. The findings suggest that there is considerable potential to reduce the amount of water consumed by the irrigation sector through increased efficiency, but that change will be limited if current economic circumstances and institutional arrangements persist.
This citation is from AGRICOLA.

276. **Optimal adoption strategies for no-till technology in Michigan.**
Krause, M. A. and Black, J. R.
Review of Agricultural Economics 17 (3): 299-310. (Sept. 1995)
NAL Call #: HD1773.A3N6; *ISSN:* 1058-7195
Descriptors: maize/ soybeans/ no-tillage/ farm machinery/ replacement/ decision making/ learning ability/ farmers' attitudes/ risk/ innovation adoption/ dynamic models/ profits/ Michigan/ learning curves
Abstract: Adjustment costs and risk aversion are hypothesized to delay adoption of no-till technology on representative corn and soybean farms in Michigan. The relevant adjustment costs include: (1) the cost of replacing the conventional planter already in use; and (2) the cost of learning how to obtain high crop yields with no till technology. Previous economic analyses of no-till adoption have not considered adjustment costs and risk aversion together. This analysis uses dynamic programming

models to evaluate the effects of machinery replacement, risk aversion, a learning curve, and crop yield expectations on adoption strategies by representative profit-maximizing and risk-averse, expected utility-maximizing farmers in Michigan. Mean net revenues for the no-till technology are higher than net revenues for conventional tillage when mean crop yields are assumed to be equal for the two technologies. The estimated mean corn and soybean yields are higher for the no-till system than for conventional tillage, but the differences are not statistically significant. The representative risk-averse farmer waits until both the conventional planter and the current tractor have aged many years before adopting the no-till technology when equal mean yields and a learning curve are assumed. The representative profit-maximizing farmer replaces this machinery and adopts the no-till technology more quickly, especially when no learning curve is considered. Both representative farmers adopt the no-till technology much more quickly when the estimated mean crop yields are assumed than when equal mean crop yields are assumed. Crop price expectations also exert a large influence on the optimal adoption strategy for the risk-averse farmer. The results support efforts to promote no-till technology by demonstrating superior to yields and lowering learning costs.
This citation is from AGRICOLA.

277. **Oregon's Conservation Reserve Enhancement Program: Likely Participation and Recommendations for Implementation.**
Kingsbury, L.
Corvallis, OR: Oregon State University, 1999.
Notes: M.S. Thesis
Descriptors: State conservation programs/ Conservation Reserve Enhancement Program/ Oregon
Abstract: Assessed the willingness of private riparian landowners to participate in Oregon's CREP under various contract provisions.

278. **Participatory assistance: An alternative to transfer of technology for promoting change on farms.**
Lanyon, L. E.
American Journal of Alternative Agriculture 9 (3): 136-142. (1994)
NAL Call #: S605.5.A43; *ISSN:* 0889-1893 [AJAAEZ]
Descriptors: farming systems/ change/ farm management/ decision making/ innovation adoption/ farmers/ participation/ technology transfer/ comparisons
Abstract: Participatory assistance (PA) is a proposed approach for promoting change that involves both the biophysical processes of farms and the management processes of farmers. It integrates external expertise, inputs, and expectations with the unique character of a particular farming system. It focuses on improving the processes of the farm and farmer rather than on the traditional interests of "outsiders" such as disciplinary researchers, industry sales people, government regulators, consumers, or environmental interest groups. As an alternative to transfer of technology, it promotes learning both by the farmer and by specialists from academia, industry, government, and the public. Participatory assistance can promote innovations in the operation of farms, in the conduct of research and education, in the development of products and services, in the formulation of policy, and in the involvement of the public in agriculture. The outcome is not assumed to be the adoption of the "best" technology, but may be found in the emerging properties that result from innovations. Assessing the improvement that follows each innovation will require clear specification of the relevant performance criteria, provision of appropriate technical support, and reinforcement by the appropriate incentives. Reconciling today's farming with water quality protection illustrates the potential of the PA approach.
This citation is from AGRICOLA.

279. **Participatory landscape ecology: A basis for acceptance and implementation.**
Luz, Frieder
Landscape and Urban Planning 50 (1-3): 157-166. (2000)
NAL Call #: QH75.A1L32; *ISSN:* 0169-2046
Descriptors: participatory landscape ecology: acceptance, implementation
Abstract: Until recently, participation by local actors (decision-makers, lobbyists, farmers or representatives of various interest groups) played little or no role in landscape ecology and planning in Germany. Research in southern Germany between 1990 and 1996 and other more recent studies demonstrate how a lack of communication between scientists, planners, administrators and local stakeholders hinder acceptance and implementation of landscape planning projects. As part of practically-oriented research project, measures to improve communication were applied in several communities and the effects measured over several years. Participatory and communicative methods such as round tables, workshops, marketing of regional products and information campaigns caused significant acceleration of the implementation, suggesting that landscape ecology can be holistic only if public awareness and participation play an equal role with the expert views of natural scientists and planners.