

**FARMER AND NON-FARMER ATTITUDES  
TOWARD ENVIRONMENTAL POLICY ISSUES:  
AN EXPLORATORY SURVEY**

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**University Center for Water Research  
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Stillwater, Oklahoma**

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Abstract

This paper reports on a preliminary study for the investigation of ground water policy and management practices in Oklahoma agriculture. It begins by assessing the scope of the issues involved and recent work on the socio-economic relationships between water quality and agricultural practices. Using a sample of Oklahoma rural leaders, the study focuses on the testing and examination of a set of attitudinal scales reflecting basic beliefs concerning political, economic and environmental issues. The overall objectives of the project are to provide a basis for a more substantial indepth investigation of both the public opinion context for developing water quality policies and programs and the attitudinal components of farm operator decision-making with respect to land use practices which impact on groundwater quality in Oklahoma. It concludes that the attitudinal scales are relevant and applicable in contemporary rural Oklahoma and that there is potential support for innovative water quality protection initiatives which further investigation could help to specify.

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Introduction

Farmers in America have long been considered the stewards of the land, cultivating and maintaining our land and water resources while providing food and fiber to the nation. Recently, however, the behaviors of these stewards have come under fire. During the 1970s, the Federal Water Pollution Control Act Amendments in effect exempted farmers from water quality regulation (Buttel and Swanson, 1986). Although some enforceable provisions were established at the state and federal levels, voluntary compliance with regulations combined with financial incentives has been the norm, much as with soil conservation policies under the provisions of agricultural legislation since the 1930s (Copeland and Zinn, 1986). Growing concern over the quality of our nation's drinking water supplies (50% of which are supplied by groundwater) is forcing a reconsideration of policies which have allowed private property owners to act without regard for environmental impacts (Zinn, 1988). This concern is creating momentum for legislation which takes a proactive stance toward agricultural practices involving agrichemicals (especially nitrates and pesticides). The Environmental Protection Agency (EPA) having established policies to regulate point source pollution is now turning to the regulation of agricultural practices (EPA, 1987). Non-point sources of groundwater pollution are more difficult to regulate because they are less visible and more geographically dispersed. Furthermore, regulation will be more difficult for the EPA because, unlike other industries, agriculture has its own governmental institutions at the federal, state and local levels (Cameron, 1988). Although clearly designated as a state and local matter by both the EPA and the USDA, states are, nevertheless, being required to establish policies.

The implications for private property owners and the agricultural practices of farmers are immense. However, little is known about how farmers and land owners will respond. At a time when the nation is shifting from water development policies to water management policies, it is necessary to ascertain how those with effective implementation capacity are most likely to respond. This is even more important when some of the most successful tools for implementing conservation compliance policies (crop subsidies, the Rural Clean Water Cost Sharing Program and other federal financial assistance programs) are politically challenged with extinction (Duttweiler and Nicholson, 1983). All federal policy makers claim that groundwater contamination is an issue requiring state and local regulation, yet it is they who are initiating action. In order to act wisely, state and local policy makers need to know more about the concerns and beliefs, as well as actual and potential behavioral responses, of the populations which they will regulate.

The policy issues are complex. The contradictory nature of the current system of agricultural subsidies which stimulates farmers to ever higher levels of chemical application has come under increasing scrutiny (Cox and Batie, 1988; Buttel and Swanson, 1986). The pressure to survive in the market has put farmers in the position of foresaking their role as caretakers and emphasizing their profit-maximizing role as businessmen (Moore, 1987a; Swanson et al,

1986). The economics of farming has apparently dictated that the maintenance of water quality does not pay the farmer, even when discounted over the long term. Indeed, many of the returns do not even accrue to the farm family, but to others downstream.

Change in agricultural land use practices is on the agenda. A wide range of policy options are being considered, ranging on the more restrictive side from permits and taxes on chemicals to land use zoning to penalties and liabilities for off-farm damages (Kovan, 1988; Bird, 1985). All are expected to have some impact on farm practices, the viability of farm operations and the future structure of agriculture. To what extent these changes can be induced voluntarily has yet to be determined. In addition, the level of awareness and concern among the non-farming population will constitute a major component in the debate over non-point source pollution policies (Abdalla and Libby, 1987) and should be involved in any general educational efforts conducted.

Padgitt and Hoyer (1987) found that there may be little difference between farmers and non-farmers with respect to water quality beliefs and concerns, although they note that this has not been a frequent finding. Others (Buttel and Swanson, 1986) have highlighted differing perceptions and interests. These issues need to be clarified within the varying circumstances of contemporary Oklahoma. In Oklahoma, we know very little about the extent of consensus on problem definition, let alone having a consensus on local policy initiatives. For that matter we are unaware of even the level of knowledge in the population at large about the problem.

As Buttel and Swanson (1986) convincingly argue, voluntary behavioral change by farmers is unlikely to be based on their own profit and loss calculations. The alternative, they suggest, involves dramatic changes in agricultural policy which would transform the basis for those calculations. On their own, environmental protection policies are likely to infringe on the traditional rights of private property owners. In either case, behavioral change by farmers will depend on their attitudes and beliefs concerning these issues, as they influence either policy formulation or behavior. This report has two goals. The first is to test the applicability of various attitudinal scales and examine the distribution of and variation in these attitudes among a sample of rural Oklahoma leaders (both farmer and non-farmer). The second is to provide a basis for examining the public opinion context for establishing environmentally-sound agricultural practices and appropriate non-point source pollution policies.

Questions arise over whether, and to what extent, the government should be involved in regulating behaviors on private property. Regulation of farmers is felt to be ideologically unacceptable (Buttel & Swanson, 1986). It is ideologically unacceptable not only because it threatens individual freedoms, but also because it threatens a most basic American institution -- the family farm, the agrarian basis for American economic prosperity. Formulated in this way the issue comes down to environmental protection versus economic growth. On the other hand, those concerned with environmental protection ask why farming shouldn't be considered an industry like any other? If it is, what are the bases of rural political support for the environmental regulation of agricultural practices? Can the issues involved be formulated without the opposition of environmental degradation and loss of productivity? What is the potential for replacing this old logic with a more environmentally-sound one?

## METHODOLOGY

Data for this study were collected in November 1987, at three separate meetings of rural leaders in Oklahoma: the Kerr Center Conference on Managing Water Resources for Development; the Fall Meeting of the Oklahoma Agricultural Economics Association; and the Oklahoma Agricultural Leadership Conference. A 50 percent response rate was achieved from each of these meetings, resulting in 56 useable questionnaires. This sample selection was based on two criteria: convenience and the belief that these meetings provided a representative sampling of opinion leaders for rural Oklahoma.

The survey instrument was designed to evaluate the applicability of several attitudinal scales (totalling 88 individual items) developed in previous research. Items from each of the five tested scales were intermixed in the survey instrument along with questions on the respondent's demographic and structural characteristics: age; sex; level of education; occupation; place of residence; gross income; net family income; whether they farmed full-time, part-time or not at all; percent of income from farming; size of farm operation; and primary products. Taken together the considerable depth of information provides a sound basis for this exploratory investigation.

In order to gage general political and economic attitudes, items from Dunlap and Van Liere's (1984) Dominant Social Paradigm Scale were included. They liken the Dominant Social Paradigm to a Kuhnian paradigm at the socio-cultural level (worldview) reflecting ideological commitments to free enterprise, individualism, private property rights, the efficacy of science and technology, economic growth, materialism, and limited government. Each of these can be identified as separate components of the overall scale. Items included in this and the subsequent scales are included in the Appendix. Using data from a statewide sample of Washington residents in 1976, Dunlap and Van Liere (1984) found that there was a strong negative relationship between their measure of support for the Dominant Social Paradigm and environmental concerns.

Within rural society, agrarianism has constituted the dominant social paradigm. Although largely consistent with the Dominant Social Paradigm as formulated by Dunlap and Van Liere (1984), it also emphasises the symbolic importance of the family farm. Moore's (1987a) 4-item scale of support for the Traditional Family-Oriented Farm has been included to measure this additional aspect of agrarianism. Moore found that attitudes toward family farming among a 1979 sample of Wisconsin farmers varied along two interrelated dimensions: a commercial/non-commercial dimension; and a lifestyle dimension emphasizing either propertied status or work roles. It was these latter two which identified with the traditional family-oriented farm. On the other hand, conservation attitudes were most likely to be espoused by those who were either the most commercial or most concerned with a propertied lifestyle (i.e., part-time farmers with professional occupations). Economically marginal small-scale farmers and part-time farmers who aspire to full-time status most strongly espoused agrarian values and seemed to be the least concerned about maintaining conservation practices on their operations.

Two separate scales were used to tap levels of environmental concern. Dunlap and Van Liere (1978) developed and tested a 12-item New Environmental Paradigm Scale using the sample mentioned above (Dunlap and Van Liere, 1984)

and, to test its overall validity, a sample from an environmental organization. They found substantial support both among the general public and within the environmental organization for the emergence of this new paradigm. They further determined that the New Environmental Paradigm Scale was an internally consistent, unidimensional and valid instrument. Using more tangibly formulated items, Weigel and Weigel (1978) tested a 16-item "attitude measure capable of assessing an individual's relatively enduring beliefs and feelings about ecology". This Environmental Concern Scale was found to be internally consistent, with a high degree of stability and validity both with respect to known groups and long term behavioral predictability. They note, however, that the populations sampled were from communities of less than 100,000. Both of these scales are recommended by Grey et al (1985) in their survey of ecological attitude research.

Padgitt (1987) using a set of 15 attitudinal items in his survey of the Big Spring Basin of northeastern Iowa found that farmers were generally supportive of regulatory policies, concerned about the health risks and amenable to adjustments in their farming practices. In another survey conducted in the same area, Padgitt and Hoyer (1987) found that there was little difference between farmers and non-farmers with respect to water quality beliefs and concerns. Although they note that this has not been a frequent finding, it does suggest that attitudes may be changing.

#### FINDINGS

The first step in the analysis was to test the reliability of these scales. Factor analysis demonstrated that they were highly consistent with the original authors' findings. The measure of internal consistency of the scales, Cronbach's alpha (Nunnally, 1978), was high: Padgitt's Water Quality Scale, .89; Weigel and Weigel's Environmental Concern Scale, .86; Dunlap and Van Liere's New Environmental Paradigm Scale, .84; Dunlap and Van Liere's Dominant Social Paradigm Scale, .90; and Moore's Traditional Family Farm, .53. One modification, however, had to be made in the Dominant Social Paradigm Scale. The items relating to maintenance of the status quo loaded negatively on the primary factor. Since this was not consistent with the findings of Dunlap and Van Liere, nor with a common sense understanding of this worldview, they were dropped from the scale. Nevertheless, separate analyses for each of the components of the Dominant Social Paradigm are included below. These individual components were also internally consistent with alpha's ranging from .56 to .86.

#### Distribution of Scaled Responses

Each scale was collapsed into the five individual response categories for this part of the analysis. This was done to highlight the overall levels of concern/unconcern or agreement/disagreement within the sample. This aggregation, however, obscures substantial relative variation which is addressed in subsequent analyses. Rural Oklahoma leaders tend to be concerned about the environment and water quality (Table 1). Only a quarter to just over a third are uncertain about these issues. The expression of unconcern over the quality of our water and other environmental resources appears to be a rare occurrence. This suggests that Oklahoma's rural leadership has reached a consensus that environmental problems exist and must be confronted. However, one cannot conclude that this represents a consensus over what specifically

constitutes an environmental problem or how it should be dealt with. The relative weakness of strong concern registered on the New Environmental Paradigm scale suggests that only a very few rural leaders would presently advocate an alternative, more environmentally-attuned, perspective. It should be noted that expressed (public) uncertainty may mask private unconcern.

Table 1: Percent Distribution of Rural Oklahoma Leadership Attitudes Toward Water Quality and the Environment by Level of Concern (n=56)

	<u>Strongly Concerned</u>	<u>Tend to be Concerned</u>	<u>Uncertain</u>	<u>Tend to be Unconcerned</u>	<u>Strongly Unconcerned</u>
Water Quality	17.9	48.2	32.1	1.8	---
Environmental Concern	19.6	57.1	23.2	1.8	---
New Environmental Paradigm	10.7	48.2	37.5	3.6	---

Contrasting environmental concern and support for the dominant political and economic beliefs highlights some of the meaning of these environmental concerns. The environmental and water quality scales intercorrelate highly ( $r=.74$  to  $.86$ ) and, as was found by Dunlap and Van Liere (1984), are negatively related to support for the Dominant Social Paradigm ( $r=-.63$  to  $-.66$ ). Table 2 shows the overall distribution of scaled responses for the Dominant Social Paradigm as well as the distributions for its scaled components. Surprisingly, rural Oklahoma leaders express little agreement with the majority of tenets of the Dominant Social Paradigm and nearly two-thirds of them express an overall uncertainty about where they stand. Nevertheless, as noted above, there is substantial relative variation. An examination of the scale components will further clarify some of the issues involved.

Support for laissez-faire policies (limited government intervention/regulation of business) correlated highly ( $r=.88$ ) with the Dominant Social Paradigm Scale and exhibits greater dispersion. Maintaining the status quo, an original component of the Dunlap and Van Liere scale, but not included in the overall scale, correlated negatively with the Dominant Social Paradigm ( $r=-.10$ ). Given the high level of disagreement, this might signify an underlying change in the beliefs of Oklahoma's rural leaders. Two specific issues, both expressed by the majority of the sample, are suggested here: the lack of support for private property rights and for individual rights. In fact, support for individual rights was the only component positively correlated with maintaining the status quo ( $r=.12$ ). Support for economic growth was weak, fully half of this group of rural leaders expressing uncertainty. Greatest support was elicited in the areas of faith in: science and technology; material abundance; and future prosperity. The latter two also had a large portion of detractors. In sum, it may be concluded that, as a whole, Oklahoma's rural



leadership is at a crossroads with respect to dominant beliefs concerning political, economic and environmental issues. No clearly articulated position has either polarized or unified them.

Table 2: Percent Distribution of Rural Oklahoma Leadership Support For Dominant Political and Economic Beliefs (n=56)

	<u>Strongly Agree</u>	<u>Tend to Agree</u>	<u>Uncertain</u>	<u>Tend to Disagree</u>	<u>Strongly Disagree</u>
Overall Dominant Social Paradigm	---	8.9	64.3	25.0	1.8
Laissez Faire Philosophy	1.8	19.6	48.2	28.6	1.8
Maintain the Status Quo	---	7.1	21.4	48.2	23.2
Support Private Property Rights	1.8	10.7	25.0	41.1	21.4
Faith in Science and Technology	1.8	35.7	48.2	12.5	1.8
Support Individual Rights	5.4	10.7	14.3	42.9	26.8
Support Economic Growth	---	16.1	50.0	26.8	7.1
Faith in Material Abundance	7.1	32.1	16.1	33.9	10.7
Faith in Future Prosperity	5.4	41.1	17.9	25.0	10.7

As an indicator of this potential sea-change in rural opinion, Table 3 presents the distribution of support for and against the traditional full-time family-oriented farm. Although over a third tend to support this rural institution in its traditional form, nearly another third tend not to support it. Rural leaders seem to be divided on this ideal, partly one suspects, because many see it as no longer a realistic possibility in contemporary rural Oklahoma.

Table 3: Percent Distribution of Rural Oklahoma Leadership Support For The Traditional Family-Operated Farm (n=56)

	<u>Strongly Support</u>	<u>Tend to Support</u>	<u>Uncertain</u>	<u>Tend not to Support</u>	<u>Strongly do not Support</u>
Traditional Family Farm	3.6	35.7	30.4	26.8	3.6

## Structural and Individual Sources of Differing Rural Leadership Attitudes

Are there systematic bases for attitudinal differences which would belie the monolithic appearances thus far presented? Below several criteria are examined in order to discover the potential for such differences between farmers and non-farmers, rural and urban dwellers, and levels of education and of income. In tables in this section, lower scores represent lower levels of concern for the environment or less support for the Dominant Social Paradigm and its components. With the exception of support for laissez-faire philosophy, components of the Dominant Social Paradigm were not included unless they exhibited statistically significant differences.

Of major concern has been whether or not farmers, as land owners/users, are less likely to be concerned over the environment because of the presumed consequences of production modifications on their economic prosperity. Differences in mean scale scores between farmers and non-farmers (Table 4A) are minimal with the exception that farmers are significantly more supportive of laissez-faire policies than non-farmers. Table 4B tells a slightly different story, however. When full-time farmers are separated from part-time farmers, significant differences emerge. Full-time farmers are significantly more supportive of the Dominant Social Paradigm, particularly its laissez-faire and private property components. Although full-time farmers appear less concerned over water quality and the environment, these differences are not significant, that is, support for the Dominant Social Paradigm does not appear to have been translated into explicit opposition to environmental concerns. It should also be noted that, although not significant, full-time farmers are least supportive of the traditional family-oriented farm.

For the most part, there are few important differences between rural and urban residents (Table 5). Urban residents have a significantly greater faith in the capacity of science and technology to resolve our environmental problems and rural folk are more supportive of traditional family-oriented farming.

Level of educational attainment is often considered an important determinant of environmental concern, usually because environmental issues tend to be complex requiring access to more technical and specialized information. Nevertheless, it should be recognized that it is also an indicator of social status and, in farming communities, it has often been used as a proxy for age. (An analysis of age was carried out but there were no significant findings.) The most striking findings in this analysis (Table 6) are the consistently low levels of environmental concern expressed by college graduates as compared to either those with little or no college training or those with post-graduate training. This finding is significant for the New Environmental Paradigm. The pattern carries over into the Dominant Social Paradigm, although those with some college or less more nearly approach the mean scores of college graduates. Those with post-graduate training are significantly less supportive of the Dominant Social Paradigm, particularly with respect to their Faith in Science and Technology. A contrast of the post-graduate trained with those with only a college degree suggests that a little knowledge may be dangerous. On the other hand, those who believe that education is primarily a matter of socialization to society's norms may conclude that college education is relatively successful and over-education destabilizing.

Table 4A: Differences in Mean Scale Scores Between Farmers and Non-Farmers

	<u>Farmers (n=30)</u>	<u>Non-Farmers (n=26)</u>
Water Quality	56.7	57.5
Environmental Concern	62.6	62.8
New Environmental Paradigm	42.4	44.4
Overall Dominant Social Paradigm	92.3	88.1
Laissez Faire Philosophy*	34.6	29.8
Traditional Family Farm	12.3	12.7

\* difference in means significant at the .05 level.

\*\* difference in means significant at the .01 level.

Table 4B: Differences in Mean Scale Scores Between Full-time Farmers, Part-time Farmers and Non-Farmers

	<u>Full-time Farmers (n=12)</u>	<u>Part-time Farmers (n=18)</u>	<u>Non-Farmers (n=26)</u>
Water Quality	55.7	57.4	57.5
Environmental Concern	60.5	64.1	62.8
New Environmental Paradigm	39.4	44.4	44.4
Overall Dominant Social Paradigm*	101.2	86.3	88.1
Laissez Faire Philosophy**	37.8	32.4	29.8
Support Private Property Rights**	12.2	8.3	9.3
Traditional Family Farm	11.2	13.1	12.7

\* difference in means significant at the .05 level.

\*\* difference in means significant at the .01 level.

Table 5: Differences in Mean Scale Scores Between Urban and Rural Residents

	<u>Urban (n=22)</u>	<u>Rural (n=34)</u>
Water Quality	56.0	57.8
Environmental Concern	62.0	63.2
New Environmental Paradigm	42.8	43.7
Overall Dominant Social Paradigm	92.4	89.0
Laissez Faire Philosophy	31.5	32.9
Faith in Science and Technology*	17.2	15.1
Traditional Family Farm*	11.4	13.2

\* difference in means significant at the .05 level.

\*\* difference in means significant at the .01 level.

Table 6: Differences in Mean Scale Scores Between Levels of Educational Attainment

	<u>high school/ some college (n=10)</u>	<u>college graduate (n=25)</u>	<u>post-graduate studies (n=20)</u>
Water Quality	59.9	54.1	59.2
Environmental Concern	65.1	60.2	64.4
New Environmental Paradigm*	46.8	40.4	45.1
Overall Dominant Social Paradigm**	93.8	97.4	80.1
Laissez Faire Philosophy*	34.3	35.4	27.5
Faith in Science and Technology**	16.0	17.4	14.0
Support Individual Rights*	5.1	5.3	3.9
Faith in Future Prosperity*	7.1	6.5	5.3
Traditional Family Farm	12.7	12.2	12.7

\* difference in means significant at the .05 level.

\*\* difference in means significant at the .01 level.

Gross family income is the most consistent predictor of differences in levels of concern over water quality and the environment (Table 7). It might best be considered as a measure of level of investment in the economy which is threatened by environmental concerns. Those with low levels of gross family income are significantly more concerned over water quality and the environment and have little faith in the prospects for material abundance. On the other hand, those with high levels of gross family income are significantly more supportive of the Dominant Social Paradigm, particularly laissez-faire policies. Table 8 links these relationships with agricultural production by presenting them in terms of the family's dependence on farm income. Essentially the same pattern emerges as for gross family income, although with less frequent achievement of significance levels. High dependence on farm income is associated with low levels of concern for the environment and high levels of support for the Dominant Social Paradigm, particularly laissez-faire policies.

Table 7: Differences in Mean Scale Scores By Gross Family Income

	less than \$30,000 (n=20)	\$30,000 to \$70,000 (n=23)	more than \$70,000 (n=12)
Water Quality**	62.3	54.2	52.9
Environmental Concern*	66.5	61.5	58.1
New Environmental Paradigm*	46.8	42.1	39.1
Overall Dominant Social Paradigm**	81.9	92.5	101.4
Laissez Faire Philosophy**	29.1	31.8	39.1
Faith in Material Abundance*	4.8	6.7	6.0
Traditional Family Farm	13.7	11.7	12.2

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\* difference in means significant at the .05 level.

\*\* difference in means significant at the .01 level.

Net family income is an economic indicator more closely associated with consumption rather than production. Nevertheless, as net family income rises there is a decline in concern for the environment, significantly so for water quality, and an increase in support for the Dominant Social Paradigm, particularly in support of economic growth and one's faith in the resultant prospects for material abundance. Interestingly, the middle income range is most supportive of maintaining the status quo, suggesting they may have most to lose or least to gain from change.

Table 8: Differences in Mean Scale Scores By Percent of Net Family Income  
Derived from Farming/Ranching

	None (n=20)	less than 30 percent (n=23)	more than 40 percent (n=12)
Water Quality	58.7	56.4	50.8
Environmental Concern	64.3	62.5	56.2
New Environmental Paradigm*	45.1	43.2	36.2
Overall Dominant Social Paradigm**	85.6	92.2	106.4
Laissez Faire Philosophy**	29.6	33.0	42.1
Traditional Family Farm	10.3	12.3	11.8

\* difference in means significant at the .05 level.

\*\* difference in means significant at the .01 level.

Table 9: Differences in Mean Scale Scores By Net Family Income

	less than \$20,000 (n=21)	\$20,000 to \$29,999 (n=16)	more than \$30,000 (n=18)
Water Quality*	60.2	57.7	52.2
Environmental Concern	64.8	62.6	60.0
New Environmental Paradigm	44.3	44.1	41.1
Overall Dominant Social Paradigm*	84.8	87.5	100.1
Laissez Faire Philosophy	31.0	31.0	35.4
Maintain the Status Quo**	6.0	8.0	5.3
Support Economic Growth**	12.6	13.1	15.9
Faith in Material Abundance*	5.0	5.9	6.8
Traditional Family Farm	13.1	12.7	11.7

\* difference in means significant at the .05 level.

\*\* difference in means significant at the .01 level.

## DISCUSSION

There appears to be a consensus that environmental problems, in particular water quality problems, do exist. Yet, a fully articulated pro-environmental perspective has not emerged. This may, in part, be explained by the structural dominance of those with the most invested in the current economic, specifically agricultural, system. The distribution of support for the Dominant Social Paradigm is suggestive of this. Alternatively, in research on the implementation of environmentally-sound agricultural practices, Korsching and Nowak (1983) suggest that the target audience may not be aware that a problem exists; or, as is more likely in this case, they may be aware, but either believe that it doesn't involve them personally or that the change agency itself is not credible. In fact, it has been found that among farmers there is an inverse relationship between the awareness of the problem and its proximity to the farm operation (Korsching, 1981). Education may be the key policy initiative in this case. Those Oklahomans in this study who are most highly trained exhibit greater concern over environmental problems than those with only a college degree.

Support for the Dominant Social Paradigm seems somewhat ambivalent overall. Nevertheless, significant relative differences do emerge especially with reference to the extent of government intervention in private economic activities. This appears to be of most concern to full-time farmers and those with the greatest economic investments. Those with post-graduate training, on the other hand, show the least support for the Dominant Social Paradigm and laissez-faire policies. Based on a survey of Wisconsin residents in 1974, Buttel and Flinn (1978) found that environmental concern was most strongly supported by upper-middle class liberalism, with level of education being the underlying factor. In their study, they distinguished between "welfare state" liberalism which emphasizes the role of the state in providing for the needy and advancing socio-economic equality; and "anti-laissez-faire" liberalism which emphasizes the role of the state in regulating and controlling private enterprises and individuals for the advancement of the collective good. It is in "anti-laissez-faire" liberalism that the strongest support for environmental reforms is found, rather than in concerns over social equality. This is consistent with both the findings here and those of Dunlap and Van Liere (1984) and is suggestive of a potential polarization on environmental policy issues.

Perhaps more promising for promoting a less divisive pro-environmental perspective, however, are the issues of private property and individual rights where overall support within the sample was relatively weak. Here, the development of more environmentally-attuned attitudes seems potentially viable, if security of investments can be maintained. Full-time farmers are most sensitive on the issue of private property rights (the basis of their investments), but this does not directly transfer over to those with the highest gross incomes. Traditional agrarianism also seems to be in decline as urban values, espoused chiefly by those most commercially-minded farmers and those entirely divorced from agricultural production, increase in rural areas. The traditional family farm is declining as an integral rural institution (Moore, 1987b). This has important implications for all of our traditional conceptions concerning rural phenomena and offers an opportunity for a new, more environmentally-sound, formulation of rural values.

## CONCLUSIONS

This exploratory study has demonstrated the applicability and usefulness of these attitudinal scales in the context of rural Oklahoma. Each scale was determined to be reliable and internally consistent. Two qualifications should be noted, however. The Traditional Family-Oriented Farm Scale was by far the weakest of the scales. It was also found necessary to drop the Maintain the Status Quo component in the Dominant Social Paradigm Scale. Both of these may be attributed to the changing circumstances of rural Oklahoma and reflective of deeper attitudinal change. Although both environmental scales proved to be valid and reliable, the New Environmental Paradigm Scale was more sensitive to differences in perspectives.

Generally, differences among Oklahoma's rural leadership do not divide along farm/non-farm lines. However, full-time farmers differ from part-time farmers and non-farmers, particularly over the issues of laissez-faire policies and private property rights, where full-time farmers have a distinctly negative opinion of regulation. In this respect, Padgitt and Hoyer's conclusions should be viewed with care. Laissez-faire philosophy was the most consistently divisive issue among the components of the Dominant Social Paradigm. It divided farmers from non-farmers, those with graduate training from those without, high levels of gross income from lower levels, and high levels of farm income from lower levels. Although this issue most frequently divided the sample, it does not divide it along rural/urban lines, nor according to level of net family income. This suggests two underlying dimensions of differentiation on laissez-faire policies: (1) full-time engagement in agricultural production; and (2) educational status/professional (often government) employment.

Differences between farmers and non-farmers over their concern for the environment were not found. Full-time farmers appear to be less concerned, however, than part-time farmers and non-farmers. This is also consistent with less concern shown by those with high levels of gross income or dependence on farm income. Those with only a college degree were also less concerned about the environment than those with lower and higher levels of education. Only gross and net family income showed any difference in one's level of concern over water quality, with higher levels being least concerned.

Given the ambivalent attitudes presented here greater efforts at increasing public understanding of environmental issues could pay off in increased support for more environmentally-sound policies -- even at the expense of individual and private property rights. One area in particular which could yield benefits would be putting more emphasis on environmental issues and concerns in undergraduate curriculums. Nevertheless, the concerns of farmers with high levels of investment in production agriculture (and potentially the greatest non-point source polluters) must be taken into account. More work needs to be done to determine the specifics of a public awareness program suitable to the new conditions of agriculture as we move into the 21st century.



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APPENDIX: LISTING OF ITEMS INCLUDED IN ATTITUDINAL SCALES

Respondents were asked to respond to each of these items on a 5-point Likert scale (strongly agree; tend to agree; uncertain; tend to disagree; and strongly disagree).

Padgitt's Water Quality Scale Items

I am confident that agricultural pesticides, if used as directed, are not a threat to the environment.

We cannot be too careful when it comes to putting new pesticides on the market.<sup>1</sup>

Should groundwater supplies become contaminated, I am confident scientists will develop ways to purify them.

We already have too much regulation on the use of agricultural pesticides.

So little pesticide residue ever enters the groundwater, it could never pose a health risk for humans.

Instead of worrying about the effects of pesticides, we should spend more effort in solving other problems in farming.

Water quality is more an issue for the future -- today the threat from agriculture is quite small.

I worry about the purity of drinking water in my county.<sup>1</sup>

Too much money is being spent in my county to study agricultural residues in groundwater.

Although some farmers could reduce fertilizer and pesticide expenses by more precise applications, for me these savings probably would not justify the added time, cost and effort.

Although manure has significant nutrient value, the cost of capturing this may outweigh the return.

Pollution control requirements have gone too far; they already cost more than they are worth.

Protecting the environment is so important that the requirements cannot be too high, and continuing improvements must be made regardless of costs.<sup>1</sup>

We must relax environmental standards in order to achieve economic growth.

We must accept slower economic growth in order to protect the environment.<sup>1</sup>

Weigel and Weigel's Environmental Concern Scale Items

The federal government will have to introduce harsh measures to halt pollution since few people will regulate themselves.<sup>1</sup>

We should not worry about killing too many game animals because in the long run things will balance out.

I'd be willing to make personal sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant.<sup>1</sup>

Pollution is not personally affecting my life.

The benefits of modern consumer products are more important than the pollution that results from their production and use.

We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves.<sup>1</sup>

Courses focusing on the conservation of natural resources should be taught in the public schools.<sup>1</sup>

Although there is continual contamination of our lakes, streams, and air nature's purifying processes soon return them to normal.

Because the government has such good inspection and control agencies, it's very unlikely that pollution due to energy production will become excessive.

The government should provide each citizen with a list of agencies and organizations to which citizens could report grievances concerning pollution.<sup>1</sup>

Predators such as hawks, crows, skunks, and coyotes which prey on farmer's grain crops and poultry should be eliminated.

The currently active anti-pollution organizations are really more interested in disrupting society, than they are in fighting pollution.

Even if public transportation was more efficient than it is, I would prefer to drive my car to work.

Industry is trying its best to develop effective anti-pollution technology.

If asked, I would contribute time, money, or both to an organization like the Sierra Club that works to improve the quality of the environment.<sup>1</sup>

I would be willing to accept an increase in my family's expenses of \$100 next year to promote the wise use of natural resources.<sup>1</sup>

Dunlap and Van Liere's New Environmental Paradigm Items

We are approaching the limit of the number of people the earth can support.

The balance of nature is very delicate and easily upset.

Humans have the right to modify the natural environment to suit their needs.<sup>1</sup>

Mankind was created to rule over the rest of nature.<sup>1</sup>

When humans interfere with nature it often produces disastrous consequences.

Plants and animals exist primarily to be used by humans.<sup>1</sup>

To maintain a healthy economy we will have to develop a "steady-state" economy where industrial growth is controlled.

Humans must live in harmony with nature in order to survive.

The earth is like a spaceship with only limited room and resources.

Humans need not adapt to the natural environment because they can remake it to suit their needs.<sup>1</sup>

There are limits to growth beyond which our industrialized society cannot expand.

Mankind is severely abusing the environment.

Dunlap and Van Liere's Dominant Social Paradigm Items Arranged by Components

Support for Laissez Faire Government

Governmental regulation and planning always lead to bureaucracy, inefficiency, and stagnation.

Regulation of business by government usually does more harm than good.

The federal government has too much power over citizens and local government.

Just because something is run by the government doesn't mean it will be inefficient and wasteful.<sup>1</sup>

Governmental planning inevitably results in the loss of essential liberties and freedoms.

The federal government should not interfere with the free enterprise system.

The profits of big business and industry should be controlled by government.<sup>1</sup>

There should be more government regulation of business.<sup>1</sup>

There should be more taxes on corporations and less on individuals in the United States.<sup>1</sup>

Federal government should run things which cannot be run effectively at the state and local levels.<sup>1</sup>

The health of our nation depends primarily on the prosperity of business.

#### Faith in Science and Technology

Most problems can be solved by applying more and better technology.

Scientists can solve any problem we might face if they are given enough time and money.

We cannot keep counting on science and technology to solve mankind's problems.<sup>1</sup>

Through science and technology we can continue to raise our standard of living.

Science and technology do as much harm as good.<sup>1</sup>

#### Support for Private Property Rights

Among the fundamental rights in this country is the use of one's property without outside interference.

Property owners have an inherent right to use their land as they see fit.

Government restrictions on the use of private property are necessary in order to insure that the land will not be permanently harmed.<sup>1</sup>

Property owners have the right to abuse their land even if it becomes unfit for use by future generations.

#### Support for Individual Rights

It is often necessary to restrict the rights of individuals for the good of society.

In order to solve some of our society's problems it will be necessary to place restrictions on individuals' behavior.

Government never has the right to force individuals to act contrary to their personal wishes.<sup>1.e</sup>

### Support for Economic Growth

Economic growth improves the quality of life of all citizens in the United States.

The positive benefits of economic growth far outweigh any negative consequences.

The American people would be better off if the nation's economy stopped growing so fast.<sup>1</sup>

There is too much concern with restricting growth in Oklahoma's economy and not enough with encouraging it.

Rapid economic growth often creates more problems than benefits.<sup>1</sup>

### Faith in Material Abundance

Americans are going to have to drastically reduce their level of consumption over the next few years.<sup>1</sup>

Americans are going to have to learn to do without many of the things they have taken for granted in the past.<sup>1</sup>

### Faith in Future Prosperity

The standard of living for the average American will continue to improve for the foreseeable future.

Americans can expect that their quality of life will be better in the future.

### Support for the Status Quo (not included in the overall scale)

We should know if something new will work before taking a chance on it.

If you start trying to change things very much you usually make them worse.

It is better to stick by what we have than try new things we don't really know about.

The best way to solve social problems is to move move cautiously and avoid hasty actions.<sup>2</sup>

Society should be quicker to throw out old ideas and traditions and to adopt new thinking and customs.<sup>1,2</sup>

Moore's Traditional Family-Oriented Farm Scale Items

Ideally, farming should be a full-time occupation and not combined with off-farm work.

The contribution of farm wives and children to the farm operation is necessary to maintain an adequate family income.

Farm size should not go beyond that which can be managed and the work done by the family.

One son or daughter should be encouraged to take over the farm.

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1. Scoring reversed for scale consistency.
  2. Item deleted from DSP components analysis on the basis of factor loadings.