



# **Enhancing Agricultural Sustainability Through Changes in Federal Commodity Policy:**

## **Marginal Versus Radical Change**

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## *Preface*

This paper is the second in a new series of "Policy Studies Program Reports" published by the Henry A. Wallace Institute for Alternative Agriculture. The first, Neill Schaller's (1993a) **Farm Policies and the Sustainability of Agriculture: Rethinking the Connections**, contained an exploration of the reasons why U.S. farm policies up to now have been inadequate in fostering agricultural sustainability. Schaller considered the effects of past and present policies on both **farming practices** and the **structure of agriculture**. He considered various types of agricultural policies, including ones related to commodity price supports, conservation and environmental protection, research and education, taxation, and marketing.

The present paper is focused primarily on **commodity policies**; treatment of other policies is left to authors of future papers in this series. Following Schaller, both farming practice and structure of agriculture effects of commodity policies are considered. I have attempted to be forward looking in the sense that alternative courses of future action are examined. Recent and possible future changes—some "marginal" and some "radical"—in farm commodity policy are assessed. It is hoped that this paper will serve as a useful guide to some major commodity policy options in upcoming farm bill debates.

The review of policy options for this paper, and the initial drafting, began during Spring 1993 while I was a Visiting Scholar at the Wallace Institute—on sabbatical leave from South Dakota State University. I greatly appreciate the support of Garth Youngberg and others at the Wallace Institute for this effort. Special thanks go to Neill Schaller, not only for coordinating my Visiting Scholar program, but for the many valuable intellectual interactions during and since my stay at the Institute. The administrative support of Sarah Byler and the secretarial assistance of Stephanie Filcheck, both at the Wallace Institute, also was much appreciated. At South Dakota State University (SDSU), I am indebted to Lon Henning for tending to much of my research while I was on sabbatical and to Verna Clark for subsequent typing assistance on final drafts of this report. Ongoing support of SDSU's Economics Department and Agricultural Experiment Station, through the project on "Policy and Economic Aspects of Sustainable Cropping Systems", enabled me to complete this report upon return from sabbatical leave. SDSU's Research Support Fund financed my travel between South Dakota and the Wallace Institute during the sabbatical.

Sincere thanks are due to Neill Schaller, Larry Janssen, and Ferd Hoefner for carefully reviewing a complete draft of this report. Short sections also were reviewed by others, including: Willard Cochrane, Tim Denley, Jim Langley, Kathleen Painter, Ford Runge, Jim Smolik, and Jeff Williams. None of these reviewers, of course, can be held responsible for any of the opinions, interpretations, or possible errors contained in the final version of this report. Likewise, views and opinions expressed in the report are not necessarily those of the Wallace Institute or of SDSU.

Finally, I wish to thank the many individuals in the Washington, D.C. area whom I informally interviewed during March, April, and May 1993. Among those interviewed about present and possible future directions in U.S. farm policy were: Congressional staff; U.S. Department of Agriculture and Environmental Protection Agency professionals; representatives of various farm organizations and of environmental organizations; analysts in resource policy institutes; and private consultants. I have chosen not to list here, by name, the individuals interviewed, partly because the list would be very long and partly because I do not want to appear to associate any of the individuals with particular policy options or views identified in this paper. Nevertheless, the

cooperation of these individuals made my review of policy options much richer than it otherwise could have been.

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## *Introduction*

Two contrasting scenarios presently are being articulated by agricultural policy makers and observers in early stages of discussion about the shape of the 1995 "Farm Bill".

**The radical change scenario:** According to this scenario, agricultural policy is now at a fundamental turning point, not totally unlike that of the 1930s, though the forces at work then were quite different. Increased pressure on the Federal budget, continued demographic shifts from rural to suburban areas and associated shifts in the U.S. House of Representatives, growing concerns about the environment, and perceptions that substantial portions of Federal spending on agriculture go to farmers who are relatively well off are forces seen likely to cause radical or near-radical departures from farm programs whose basic structures date back to the New Deal. Observers who see this scenario feel that the political economy circumstances are now ripe for change.

**The marginal change scenario:** Other policy makers and observers see the same forces at work but feel that political conflict and inertia will prevent radical change. Rather, they expect continued change at the margin—gradual erosion in the level of income support for agriculture, continued evolution of environmental compliance measures, refinement in some of the recently introduced flexibility and incentive programs aimed at sustainable farming, and perhaps some tightening of payment limitations—but no fundamental departure from the current basic structure of farm programs. If income supports continue to erode, current commodity programs may increasingly become irrelevant under this marginal change scenario, but that would come about by default rather than by design.

The pressures to make agricultural commodity policy more compatible with "sustainability" concerns will continue to induce policy change, if not radical, then at least at the margin. One set of agricultural sustainability goals is almost certain to continue to gain momentum during the remainder of the 1990s. That set relates to natural resource conservation and environmental quality. There is growing awareness in the body-politic, not only in the United States but world wide, that greater attention must be paid to farming systems which will better preserve the long-run productive capacity of soil and water resources. Concomitant with that awareness is the growing insistence that agricultural practices which result in adverse "external" (off-farm) environmental effects be curbed. Especially sharp attention is being paid to the impacts of chemical-intensive farming practices on water quality.

A second set of sustainability goals is experiencing a resurgence of emphasis among some agricultural and rural groups, but has a less firm hold on support from the broad "environmental" community. That set relates to "structure of agriculture" and rural community vitality concerns—specifically, to maintaining the economic viability and competitiveness of moderate-sized family farms and keeping strong farm communities. Some groups such as the Center for Rural Affairs (in Walthill, Nebraska), for example, consider agricultural sustainability to consist of two sets of equally important (and compatible) goals: (1) preserving natural resource capacities and enhancing the environment; **and** (2) maintaining a structure of agriculture which consists of many moderate-sized farms and rural towns. This latter set of goals last received major **national** attention during the late 1970s when Bob Bergland was Secretary of Agriculture.<sup>2</sup> However, structure of agriculture concerns have increasingly become part of the sustainable agriculture dialogue during the past 2 to 3 years. Environmental groups are generally friendly to these concerns, but are less committed to them as major goals than are some of

the farm advocacy groups. The constituency of many environmental groups is substantially urban and suburban. That constituency more readily identifies with goals related to the "natural environment" than to ones related to "family farm" and "rural community". Thus, environmental groups appear reluctant to expend scarce political capital on family farm policy objectives, even though they are not unfriendly to those objectives.

Several changes and initiatives have recently been made in Federal farm policy, starting with the 1985 Farm Bill, to accommodate the growing sustainability concerns in the **first** category above (dealing with natural resource conservation and environmental externalities). Descriptions will be presented here only for those measures which I refer to at some length later in the paper (including the triple base provision, which came about for budgetary reasons). Other measures, such as new initiatives in sustainable agriculture research and education, are not covered here.

**Conservation Reserve Program.** The Food Security Act of 1985 (1985 Farm Bill) authorized the Conservation Reserve Program (CRP), a voluntary long-term cropland retirement program aimed primarily at wind- and water-borne soil erosion. Through a bid signup process, 36 million acres of highly erodible and other environmentally sensitive cropland had been retired as of early 1993. Most of that CRP land is planted to grass or trees under 10-year contracts (Osborn and Heimlich, 1993).

**Conservation Compliance, Sodbuster, and Swampbuster Provisions.** Several other provisions of the 1985 Farm Bill were designed to use the commodity and other farm programs as leverage to induce farmers to avoid certain farming practices. Under these provisions, farmers lose their eligibility for price supports, crop insurance, disaster payments, and loans if they: (1) fail to develop conservation plans with the Soil Conservation Service (SCS) for their highly erodible cropland fields by the end of 1989, and fail to have those plans fully implemented by the end of 1994; (2) break out highly erodible range, pasture, or forest areas without following approved conservation plans; or (3) convert wetlands to crop production (Cook, et al., 1992; Schaller, 1993b).

**"Flex" acre provisions.** As a result of last-minute budget compromises, the Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Farm Bill) produced the "triple base" provision. This provision made 15 percent of base, over and above set-aside acres, ineligible for deficiency payments; however, farmers are allowed to grow and harvest any crops except fruits, vegetables, and dry edible beans (including peas and lentils) on these so-called "normal" flex acres without losing program base. Also, program crops grown on these flex acres are eligible for price support loans. The 1990 Farm Bill also provided for additional "optional" flex acres totaling 10 percent of base, under which farmers could voluntarily forgo deficiency payments in return for crop planting flexibility and base protection like that for the "normal" flex acres. Additional flexibility is available under the "0/92" and "50/92" programs which were continued, with some changes, in the 1990 Farm Bill (Hoefner, et al., 1992). The Clinton Administration's early 1993 deficit reduction plan submitted to Congress called for the "normal" flex acres to increase to 25 percent of base starting in 1996. The U.S. House of Representatives Committee on Agriculture recommended 20 percent for the years 1994 through 1998, but that increase was rejected by the Senate. The final budget deal, passed and signed in August 1993, included **no** increase in normal flex acres.

**Integrated Farm Management Program.** One result, though in compromised form, of concerted efforts by sustainable agriculture proponents to reduce financial "penalties" for diversified crop rotations and other conservation practices was the 1990 Farm Bill's pilot Integrated Farm Management (IFM) program. This voluntary commodity program was designed to give farmers additional flexibility in developing more diverse, resource-conserving crop rotations. The IFM program provides farm program payments for planting resource-conserving crops on acres eligible for deficiency payments and allows **some** harvesting on set-aside acres. To participate in the IFM program, a farmer must plant at least 20 percent of his or her crop acreage base to resource-conserving crops. The law specifies that a total of 25 million acres may be enrolled in this program between 1991 and 1995 (Dobbs, et al., 1992; Hoefner, et al., 1992).

**Integrated Crop Management Program.** The Agricultural Conservation and Stabilization Service (ASCS) began offering a new Integrated Crop Management (ICM) cost-share program under its existing Agricultural Conservation Program (ACP) starting in the 1990 crop year. "ICM incorporates pest and nutrient management, crop selection and rotation, and conservation measures into a more comprehensive management program..." (Hoefner, et al., 1992, p. 15). Participating farmers are eligible for cost-share payments of up to \$7 per acre for small grains and row crops and \$20 per acre for orchards, vegetables, and other specialty crops. ICM payments and agreements usually cover three years, with payments not to exceed \$3,500 per year. Technical assistance for implementing ICM practices may be provided by the Cooperative Extension Service, the Soil Conservation Service, or certified private consultants. Eligible farmers can participate in both ICM cost-share and the IFM program, with a single farm plan serving both. As of 1992, ICM participation was limited to five counties per state and up to 20 farms in each designated county, except that states could also offer the ICM program in counties within USDA-designated water quality project areas, and in those areas there was no limit on the number of farmers who could participate. The ASCS announced in July 1993 that ICM will be made available to all states and counties starting with the 1994 crop year, subject to authorization by the ASC State Committee and concurrence by the SCS or the Extension Service (Denley, 1993; Hoefner, et al., 1992).

**Water Quality Incentive Program.** The 1990 Farm Bill authorized a new Water Quality Incentive Program (WQIP). The program was not funded, but funds were appropriated under the ACP to implement water quality practices similar to those authorized under the Farm Bill. Under the ACP, WQIP projects have been implemented which provide incentive payments to farmers for practices that will enhance water quality, such as irrigation water management, waste utilization, soil testing, field scouting, well testing, planting conservation cover crops, and integrated management of crop systems for efficient use of nutrients and pesticides. The program is administered on a watershed basis, with states submitting plans to the USDA for proposed project areas. Farmers in approved project areas can sign up for (normally) a three-year period, and receive incentive payments up to \$35 per acre, depending on the practices involved (total payments for an individual contract can not exceed an average of \$25/acre). Participants can receive up to \$3,500 per year in WQIP payments. Farmers can participate in both the WQIP and the ACP, but payments can not be for the same practice under WQIP and ACP and can not exceed \$3,500. The SCS is the primary technical assistance agency for the WQIP. Technical assistance for plan development can also be provided by others such as Extension agents, private consultants, and state water agency staff, but plans must be certified by the SCS. The WQIP was first offered in the 1992 crop year, with \$6.75 million in funding nationwide. The program was funded at \$15 million for the 1993 crop year (Denley, 1993; Hoefner, et al., 1992).

The programs just described constitute changes "at the margin" in the recent past. Such changes do have the **potential** to move us in the direction of a more sustainable agriculture. I will attempt to assess these and other potential efforts to "fine tune" current farm policies in a subsequent section of this paper. After that, I will examine some potential changes of a more radical nature. First, however, it is necessary to briefly review some fundamental issues underlying decisions about alternative courses of action.

## *Issues*

The prominence (or absence) of several key issues in the 1995 Farm Bill debate could substantially affect the outcome of that debate. These issues relate to: (1) the social and economic value of a moderate-sized family farm structure of agriculture; (2) the capitalized value, to present farms and rural communities, of expected future benefits from existing commodity programs; and (3) the interrelationships between international trade policies and domestic policies for agricultural sustainability.

## Structure of Agriculture

I noted in the introductory pages of this paper that "structure of agriculture" goals are of central importance to some sustainable agriculture advocates, but not to others. Moreover, some sustainable agriculture groups consider a moderate-sized family farm structure of agriculture not only to have important social and economic value in its own right, but also to be an important contributor to enhanced natural resource conservation and environmental quality. According to this view, full-time operators of moderate-sized family farms are better able to devote the labor and managerial attention generally needed for diverse, integrated, sustainable farming systems than are either the operators of very large farms or part-time operators of small farms.

In a series of papers, Smith (1992a, 1992b, and 1993) has articulated the most recent argument connecting the development and adoption of modern technologies with continued decreases in U.S. farm numbers. Smith argues that both research policies and commodity policies have contributed to moving value-added agricultural activities off of farms and into the agricultural input and marketing sectors, resulting in farmers spreading their management time over more acres. This has tended to result in less diverse, less integrated, more chemically dependent farming systems. Thus, the view of many is that past and present policies have led U.S. agriculture away from **both** a moderate-sized farm structure of agriculture **and** environmental sustainability.

Some, such as Bird (1992), however, suggest that larger farms have economies of size and scale that may be critical to adoption of technologies thought by them to be associated with agricultural sustainability. Bird's particular attention is focused on the Great Plains, where he refers to potential economies associated with specialized management services, efficient crop rotation, and disposal of animal wastes. He suggests that alignment of farms to entire watersheds could enhance the environment by making it easier to take advantage of such alleged size and scale economies.

The **strength** of the argument that moderate-sized family farms are an important element in environmental sustainability will greatly influence the extent to which environmental groups support the structure of agriculture agenda of family farm groups in the 1995 Farm Bill debate. This, in turn, could influence the magnitude of political support for "targeting" farm program benefits on the basis of such criteria as farm size or family income. There is both **growing public support for** and **continued strong resistance within portions of the farm community to** more restrictive targeting based upon size or income. The relative political weight of those forces in the upcoming farm bill debate will determine whether or not targeting becomes an integral part of farm program reform.

## Capitalization of Commodity Program Benefits

A second issue is the built-in resistance to significant change in farm commodity programs due to the capitalization of future benefit streams. Direct government payments under the grains and cotton programs constituted 20 percent of U.S. net farm income during 1986-91 (Economic Research Service, 1993, pp. 21 and 35), but they constituted a much higher percent of net income in areas where program crops are concentrated. Expected future benefits of price supports (in particular, deficiency payments) have historically been built into the bid prices of land with "program crop" acreage bases. Any permanent reduction in price supports then, of course, has the effect of lowering land values. Farmers argue that such changes in the "rules of the game" unfairly destroy their asset values. This can be a severe problem for those who have borrowed heavily against those assets or who are counting on the value of those assets for much of their retirement income. In a similar manner, to the extent farm support payments trickle through local economies in the form of agricultural input and consumer goods purchases, communities come to count on the continued existence of those farm programs. Public and private investment decisions, particularly in the communities that are relatively more farming-dependent, tend to include a capitalization of the future income associated with those local purchases by farmers. Therefore, merchants and public officials in small rural communities are natural allies with farmers in

resisting significant cuts in farm program supports.

Any attempts to radically change farm commodity programs will need to contend with this issue. This also is a major political economy issue in proposals for major structural change in other sectors of the U.S. economy at present, of course, most especially in the spheres of health care and national defense.

## **International Trade**

International trade issues have long been part of agricultural policy debates but have only recently begun to rise in importance in debates about **sustainable** agriculture policies. The lowering of loan rates in the 1985 Farm Bill was a response to the U.S.'s loss of international market share due (in part) to previous loan rates that were considerably above world market prices. Now, we also are beginning to see that domestic environmental policies for the agricultural sector—both within the U.S. and within competitor countries—have the potential to significantly impact international trade. For example, tighter restrictions on chemical pesticide use in U.S. fruit and vegetable production would tend to increase costs per unit of output, making U.S. producers less competitive with producers in countries having more lax chemical pesticide restrictions. This type of potential tradeoff can not be ignored in the policy making process. Likewise, international trade policies have increasingly important implications for agricultural sustainability (French, 1993). Changes in trade barriers which affect incentives for crop and livestock production in different parts of the world, for example, "could worsen the environment, as in groundwater pollution, in some countries or regions while relieving it in others" (Sullivan, et al., 1993, p. 1).

The complications of international trade are not likely to play a major role in decisions about the "marginal change" approaches to U.S. agricultural policy in the following section of this paper, except for the higher loan rate and more stringent supply management approach. They could have a larger part to play in decisions about some of the "radical change" approaches discussed in the subsequent section.

## ***Marginal Change Approaches***

I will first discuss several recent or potential attempts to make "marginal changes" in agricultural policy. The topics covered here are meant to be indicative, rather than exhaustive. Some of the approaches have been introduced or proposed for the specific purpose of encouraging more sustainable farming systems. The Integrated Farm Management program, the Integrated Crop Management program, and the Water Quality Incentives Program are approaches of that type. Others, such as higher loan rates, have sometimes been proposed for other reasons. However, in each case I will attempt to briefly assess the apparent implications of the particular approach for enhancing the goals of sustainable agriculture. The coverage of this paper is too broad and the space is too limited to present full-blown evaluations of each alternative approach. Rather, my intention is to provide a general guide to some major alternative courses of action, including an indication of some strengths and weaknesses of the various options.

## **Triple Base and Integrated Farm Management Program Flexibility**

The net result of the "triple base" provision and the Integrated Farm Management (IFM) pilot program in the 1990 Farm Bill is somewhat greater crop planting flexibility for farmers. Many people have felt that the previous **inflexibility** of commodity programs has been an impediment to the use of sustainable crop rotations. Were the modest changes made in the 1990 legislation a significant step in the right direction?

An analysis of the triple base flex acre provisions by the Center for Resource Economics (Cook, et al., 1992) showed mixed results for the environment in the 1991 crop year. First, only a relatively small amount of acreage was shifted out of the original program crops to which they were planted—about 7.5 million acres, compared to about 33 million acres that could have been shifted. Second, much of the acreage shifted was to soybeans. Some of the new soybean acreage came from corn base, implying less use of nitrogen fertilizer, on balance. However, some came from less intensive small grain crops (barley, oats, and wheat); while nitrogen fertilizer use is less on soybeans than on the small grains, the difference is less than in comparison to corn. Moreover, herbicide and insecticide use is likely to be greater on soybeans than on small grains. Cotton was the only program crop found to experience a net gain in acreage due to flexing. The Center for Resource Economics felt that "Both soybean and cotton production present a greater erosion hazard than corn, wheat, oats, or barley ...", and concluded that flexed acres "probably presented a negative net effect on the environment: soil erosion on cropland probably increased, as did pesticide use, while fertilizer use may have declined only slightly" (Cook, et al., 1992, p. 5).

Herbel and Williams (1992) recently reported an economic analysis of the triple base flex provisions for a central Kansas farm. They found that while growing alfalfa on flex acres is economically feasible, slightly higher net returns in the short run can be obtained by growing soybeans. A similar analysis in eastern Kansas by Williams and Diebel (1992) included both the triple base flex and the IFM provisions. This and subsequent analysis (Williams, 1992) indicated that the flex and IFM provisions do offer some incentives to convert a limited amount of corn and wheat acreage to alfalfa, provided alfalfa prices do not fall very much as a result of such conversions. If alfalfa prices fall by very much, soybeans tend to be more attractive on the required flex acres. In some situations, the IFM program does not provide much more incentive to grow alfalfa than does the required flex acre provision. If the current IFM restrictions were relaxed to allow either one or two cuttings of hay on all IFM program acres, that would considerably increase the attractiveness of the IFM program—again, provided that did not unduly depress hay prices (Williams and Diebel, 1992).

Langley and Barbarika (1992) also conducted a budgeting analysis of the IFM program, using a hypothetical farm that normally grows corn, wheat, and soybeans. They examined the net returns implications of moving from a three-year corn/wheat/soybeans rotation to a five-year corn/wheat/oats-clover/soybeans/rye-vetch rotation, under both the 0/92 program and the IFM program. Shifting to the five-year rotation caused net returns to decrease under either program, but by less under the IFM program.

Dobbs and Becker (1991) conducted analyses of converting from conventional to low-input/sustainable farming systems in two corn-soybean areas and one spring wheat area of South Dakota with the assistance of the IFM program. They concluded that the IFM program was insufficient (at least as implemented during its first year) to cause the low-input/sustainable systems to be economically attractive to farmers in the corn-soybean areas. The IFM program did make inclusion of resource conserving crops in farm plans more economically feasible than was the case without the program, however. In the wheat area, where the low-input/sustainable system appeared to be more profitable than the conventional system even without the IFM program, the IFM program provided added incentive to make the switch.

These case analyses tend to show that the IFM program can be helpful to farmers considering conversions to more sustainable farming systems if the economic attractiveness of those systems is already reasonably good or if there are other strong motives for the switch (such as accomplishing long-term soil conservation or significant reduction in chemical use). However, the economic incentives in this program, by themselves, are somewhat weak. The studies help demonstrate why only 96,039 acres nationwide had been enrolled in the IFM program by the end of 1992 (Langley, 1993). This is an average of less than 50,000 acres per year during the first two years of the program, compared to the five million acres per year allowed by law. Late guidelines and initial inertia in implementation of the program also explain some of the lack of participation, as does the tremendous complexity of the program. It is difficult to envision widespread participation in this program unless and until it is simplified, more flexibility is added, and there is clear and extensively available information on how to use it.

Ironically, the complexity of such programs as this may work adversely to the moderate-sized family farm goals of sustainable agriculture, since larger farms can spread the costs of investing time and effort to understand such programs over more acres than can moderate-sized farms.

Among the provisions that have been suggested by various groups to make the IFM program more attractive and workable are the following by the Sustainable Agriculture Working Group:

- haying and grazing year-round on resource-conserving crop paid acres, or at least one stand in one year;
- locking in deficiency payments at signup for the life of the contract, or at least year-by-year;
- crediting resource-conserving crop acres against set-aside requirements, allowing payments and harvesting on such credited acres;...and
- requiring upward base adjustments for participants who have previously instituted longer rotations or other conservation practices which caused them to forfeit base

(Hoefner, et al., 1992).

To really make the IFM program workable, however, the program should be redesigned in such a way that the triple base flex acres and the IFM conserving use acres are somehow fully integrated for IFM participants. Thus, IFM participants would read one clear set of rules describing their set-aside and flex acre requirements and payment provisions, and farm program participants who are not exercising the IFM option would read another.

## **Integrated Crop Management Program**

Dicks, et al. (1993) have recently conducted an analysis of first-year (1990) participation in the Integrated Crop Management (ICM) program. The principal data source for their analysis consisted of evaluation sheets completed by farmers upon implementation of their ICM plans. They had available to them useable evaluation sheets for 680 farms in 17 of the 45 states eligible to participate in the ICM program in 1990. Although the ICM program could include rather comprehensive whole-farm strategies aimed at sustainability, Dicks, et al. found initial-year participation largely having more narrow foci on efficient pesticide and fertilizer use. Evidence on actual impacts of the ICM program on chemical pesticide use was mixed, possibly because of differences in intensity and duration of pest infestations between 1989 (the year prior to implementation of the ICM program) and 1990. A more clear pattern of reduced chemical fertilizer use **was** evident, however. This was observed for both nitrogen and phosphorus, and was attributed to soil and leaf analyses.

"In fiscal year 1992, 1,400 producers in 35 states received \$1.7 million to adopt ICM systems" (Wallace Institute for Alternative Agriculture, 1993, p. 3). This is less than 1 percent of the approximately \$194 million in Agricultural Conservation Program (ACP) funds appropriated for that year (Denley, 1993). That percentage could change in the future, however, with potential availability of the program in all states and counties.

The \$3,500 per year ICM payment limitation implies that the program is likely to have more economic significance for moderate-sized than for very large farms. That and the per acre payment limitations also imply that the program is most likely to help induce the use of particular environmentally friendly **practices**—as the Dicks, et al. (1993) study discovered—rather than to induce changes in whole farm **systems**, such as major changes in crop rotations.

## **Water Quality Incentive Program**

Since 1992 was the first year in which the Water Quality Incentive Program (WQIP) was implemented, there is little evidence yet available on which to judge the program's impacts.<sup>3</sup> The WQIP includes a broader set of practices than does the ICM program. However, that does not necessarily mean that whole-farm **system** changes are more likely to come about under the WQIP. In fact, though per acre payment limits encompass a wide range,

varying with the practice involved, those limits—together with the \$3,500 annual limit per participant—are likely to result in a focus primarily on **practices**. This, by itself, is not bad. The total effect of such farming practice changes may prove very beneficial for particular water quality goals in some watersheds. However, where whole-farm system changes are needed to accomplish sustainability objectives, the WQIP is likely to be inadequate.

A recent, somewhat related analysis by Helmers, et al. (1992) is encouraging in some respects, however. The authors examined the potential costs of a hypothetical government program to reduce nitrogen fertilizer use, assuming farmers would continue to use conventional farming **systems**. They analyzed the case of anhydrous ammonia under eastern Nebraska farming conditions. They found such a program to require "minimum" cost. "In fact, under widespread participation output reductions lead to increased market prices thereby reducing necessary target prices and government cost" (Helmers, et al., 1992, p. 9). They concluded that

a direct focus on nitrogen use on current production systems is possible, and such an approach may attain more social goals than other indirect approaches such as the development of incentives to increase the use of long term forage based rotations (Helmers, et al., 1992, p. 10).

A possible implication of the Helmers, et al. analysis is that so long as programs such as the WQIP are aimed at narrow (though important) environmental problems, the direct approach of government "buying" changes in particular farming **practices** sometimes may be cost-effective. Many environmental problems in agriculture call for **systems** solutions, however. Simply decreasing commercial nitrogen use, for example, may leave unresolved such soil problems as erosion and inadequate organic matter.

## **Addition of Targeting**

Substantial disparities exist in the distribution of Federal farm program payments among the approximately one-third of U.S. farms that receive them. Deficiency payments, constituting the bulk of these payments, were less than \$4,400 each for half of the recipient farms in 1991; they were less than \$11,484 each for three-quarters of the farms. The 5 percent of farms receiving the largest payments, however, each collected more than \$36,000 (Whittaker and Ahern, 1993).

The recent debates over the Clinton Administration budget have reignited discussion of more stringent "targeting" of farm program payments on the basis of income or farm size. As originally submitted to Congress in the Spring of 1993, the Clinton budget cut off deficiency payments to individuals with non-farm income over \$100,000. This proposal proved to be highly sensitive and did not survive, in part because a direct link to income would make abundantly clear to the non-farm public that commodity support payments are being justified in terms of farmers' financial needs rather than their production or their idling of acres. This could make it increasingly difficult politically to sustain farm supports at anywhere near their current levels in the years ahead, since average farm household income—which includes both on- and off-farm income—has been well above that of non-farm households in recent years (Gardner, 1993).

One coalition of farm, sustainable agriculture, environmental, and church groups recently proposed an alternative form of targeting that consists of a "graduated triple base". Under this proposal, "the triple base percentage on the initial units of production would be decreased while the triple base percentage on subsequent units of production would be progressively increased" (Signatory organizations, 1993). As a possible example for a farmer with corn base: the first 40,000 bushels of production could constitute tier one and be subject to 10 percent unpaid flex; the next 40,000 bushels could constitute tier two and be subject to 40 percent unpaid flex; and all production above 80,000 bushels could constitute tier three and be entirely (100 percent) unpaid flex—i.e., that portion of the production would receive no deficiency payments (Hoefner, 1993). Bushel (or bale or cwt.) limits would be specified in a similar manner for each of the other program crops, with the crop limits for farms having base in more than one crop being independent of one another.

Among other targeting reforms being pushed by some groups is one to tighten the language and effectiveness of the nominal \$50,000 per "person" payment limitation on deficiency payments. One of the concerns about tightening and lowering payment limits, however, is that if operators of larger farms decide not to participate in farm programs because of the lower limits, much of the current leverage for farming in environmentally sound ways could be lost. Also, if larger farms are no longer in the farm commodity program, the supply management and associated price protection purposes of the program would be more difficult to achieve (Schaller, 1993b). However, unless compliance costs and acreage set-aside opportunity costs were much higher than they are at present, it is not clear that operators of very many large farms **would** drop out of the commodity programs because of a **real** \$50,000 payment limitation.

A very different targeting criterion recently has been proposed in which farm payments would be based on the value of **sales** or the amount of **value added** contribution by farmers (Smith, 1993). Payments would be conditioned on farmers using environmentally sound farming practices. They could be targeted to moderate-sized full-time farms, with payment rates reduced as sales exceed some level and phased out altogether at some sales level. If payments were based on value added, there would be incentive for farmers to replace some purchased inputs with family labor and soil building crops. In Smith's view, "The incentives would encourage more farming and result in more family farms" (Smith, 1993, p. 7).

The biggest drawback to most forms of size- or means-type targeting is the difficulty of achieving their intended purpose over any extended period of time. People in all walks of life, not just farmers, are ingenious at finding legal ways around all kinds of targeting criteria if given enough time. In addition, some individuals find illegal but hard-to-detect ways around whatever criteria are established.

In spite of this drawback, there may be no alternative to some kind of targeting reform, in the current budgetary and political climate, **if** substantial sums of money are to continue to go to farmers **through the commodity programs**. The kind of reform which is both the most administratively feasible **and** perhaps the least distorting of resource allocation is that which ties payment limitations to income from all sources, using tax return definitions of income and tax returns as proof of income. The ease and clarity of this approach is its biggest political liability, however, since most farm groups will resist the "welfare" connotation of this type of targeting.

## **Striving for Administrative Simplification**

Legislation aimed at simplifying and streamlining conservation and other environmental planning for farms is currently under consideration. Hearings were held in Spring 1993 on the proposed "Site-specific Agricultural Resource Management Act of 1993" (H.R. 1440), introduced in the U.S. House of Representatives by Congressman Glenn English of Oklahoma. To quote from Rep. English's opening statement at the April 1, 1993, hearing:

The legislation...is intended to provide for a more rational approach for dealing with an increasing number of conservation and environmental requirements on land use in agricultural production. Currently, within the Department of Agriculture, there are at least 15 programs that provide for separate plans relating to soil and water conservation needs and other environmental concerns on farms and ranches.

Under the bill, if more than one of these plans are provided by the Department for an agricultural land unit, the Soil Conservation Service (SCS) would have to develop an integrated comprehensive site-specific plan for the land....

The legislation...provides a mechanism under which the conservation and environmental-related requirements on agricultural land of other Federal and State agencies can be integrated into the

comprehensive site-specific plans. This will be done through agreements with the Secretary of Agriculture.

The SCS will be given the primary responsibility for developing the site-specific plans for agricultural land units, as well as determining compliance with their terms and approving any cost-sharing and other assistance, permits, exemptions, and waivers in connection with their plans.

In this regard, the bill would not transfer to SCS any responsibility of another agency for administration of any cost-share program or the dispersal of funds thereunder. The legislation merely provides that requests for cost-sharing assistance on land under an integrated site-specific plan will be made through and approved by the SCS before such cost-sharing assistance is provided....

If the Secretary determines that a site-specific plan is properly implemented, the land user will be deemed to be in compliance with all conservation and environmental requirements covered by the plan with respect to the land.

(English, 1993)

Complex issues of inter-agency turf, staffing, coordination, and overall administration must be resolved in consideration of a measure such as this. Nevertheless, measures such as this which attempt to simplify the environmental planning and oversight related to commodity and other agricultural programs need to receive serious consideration. They can help existing programs aimed at agricultural sustainability to be more workable for both farmers and the implementing agencies. Moreover, **consolidation** of environmentally-related farm planning such as that called for in English's bill could be a necessary condition for eventually more radical change embodied in a major shift from commodity to "stewardship" payments. Also, steps would have to be taken to improve training and build capacity for technical assistance and information sharing in designing sustainable farming systems.

## **Higher Loan Rates and More Stringent Supply Controls**

Various forms of supply control have been built into U.S. food and feed grain programs since the 1930s. Most of the time, "voluntary" measures have been emphasized, in that individual farmers could decide whether or not to reduce production by agreeing to "set aside" portions of their crop acreage in return for payments or price supports of one form or another. At times, however, more stringent supply control measures have been proposed or attempted. For example, the 1962 Farm Bill enacted under the Kennedy Administration gave wheat farmers an option to vote in a mandatory control program with no payments for land removed from production and penalties for overplanting individual acreage allotments; in return, farmers would be assured of a \$2.00 per bushel price support on their shares of the national wheat market. Wheat farmers voted down this option in a referendum, however (Cochrane and Runge, 1992, p. 47). In more recent times, a mandatory supply control program ("Save the Family Farm" Act) was proposed in 1986 by Senator Tom Harkin of Iowa. Harkin's proposal, if passed and enacted, would have constituted a dramatic "mid-term" redirection from the then recently passed 1985 Farm Bill, which lowered loan rates in an attempt to reestablish U.S. agricultural competitiveness in international markets. Harkin's bill did not pass, and he did not advance any similar farm program proposal in his Democratic primary campaign for the 1992 Presidential nomination. However, interest in such mandatory supply control options has a way of coming back every few years, particularly in the Great Plains, where the profitability of agriculture has always been marginal and where populist politics are always just below the surface.

Dobbs and Becker (1992) recently reported results of analysis of a mandatory acreage control program patterned in part after Sen. Harkin's proposed 1986 legislation. In the scheme they analyzed, minimum price supports, in the form of loan rates, were set at 72 percent of parity in 1990. There were no target prices or deficiency payments. Relatively high (33 percent) mandatory acreage set-aside requirements were assumed for program crops, including soybeans, in attempts to raise market prices to support levels. Dobbs and Becker applied the analysis to five pairs of "conventional" and "low-input sustainable" farms in different agro-climatic regions of South Dakota, covering corn-soybean, spring wheat, and winter wheat production areas.

Mandatory supply controls implemented through severe restrictions on planted acreage of "program" crops were found by Dobbs and Becker to favor conventional over sustainable farming systems. This is primarily because of the very high prices induced by those restrictions on crops (e.g., corn, soybeans, wheat) tending to predominate in conventional systems. Hertel (1990) also has noted the incentive farmers have to raise yields by increasing the use of purchased chemicals when planted acreage is restricted. Controls on output, as opposed to acreage, on the other hand, encourage greater use of land, relative to purchased inputs. This makes them more compatible with "lower variable input" agriculture (Hertel, 1990).

Other implications of strong acreage- or output-based supply control options are likely to preclude their return to extensive political discussion in the near future in any event. The push for freer trade and associated General Agreement on Tariffs and Trade (GATT) negotiations, possible effects on consumer food prices, and effects on livestock producers of higher feed grain prices all serve as obstacles to acceptance of strong supply control farm programs at this time. Moreover, the higher net farm incomes induced by any permanent and stringent acreage control program would soon be capitalized into higher land values, resulting in demands by the **next** generation of new entrants to farming for measures to push crop prices even higher to pay for the now more expensive land that has acreage allotments.

Less stringent supply tempering programs tied to environmental objectives may have some promise, however. Dobbs, et al. (1988) have pointed out circumstances in which acreage set-aside requirements appear compatible with low-input sustainable farming systems. For example, this can be the case when non-harvested legumes such as sweet and red clover, which are part of some sustainable cropping systems, satisfy farm program set-aside requirements. Thus, the set-aside requirements may be somewhat positive for agricultural sustainability if they are established at relatively modest levels—not at such high levels that the associated high prices for restricted program crops encourage chemically-intensive farming practices.

Some sustainable agriculture groups recently have proposed supply tempering initiatives tied to environmental objectives under such labels as "environmental based supply control" and "environmental diversion bonus" (Hoefner, 1993; Signatory organizations, 1993). Proposed initiatives include such measures as government payments for one- to five-year enrollment in land diversions that protect the environment by: creating contour grass strips, filter strips, or restored wetlands; rotating soil building green manure crops; and planting highly erodible end rows to cover crops. Under this type of program, five-year idling of whole fields would not be allowed. This approach could be enacted as a voluntary diversion option over and above the regular set-asides. Alternatively, the entire set-aside program could be reconstituted as an environmental-based program, with dollars for payments taken from the portion of deficiency payments that compensate for idled acres.

Supply tempering proposals such as these may be the seeds for a broader stewardship program, to be discussed in conjunction with the "radical change" approaches in the next section of this paper.

# *Radical Change Approaches*

More radical changes in farm commodity policy which are receiving some attention generally entail much greater reliance on market forces for enterprise selection. Approaches are discussed here in four broad categories, which are not in all cases mutually exclusive. They are: (1) de facto decoupling through Normal Crop Acreage programs; (2) de jure decoupling in combination with "stewardship" payments; (3) medium- and long-term land retirement; and (4) increased reliance on regulatory methods for environmental protection.

## **De facto Decoupling**

Various proposals for increasing crop planting flexibility were offered and discussed in debates leading up to passage of the 1990 Farm Bill. At least one, the Bush Administration's proposed **Normal Crop Acreage (NCA)** program, was a form of **de facto** decoupling of income supports from crop planting decisions which would have gone beyond the triple base and IFM provision type of flexibility that ultimately appeared in the 1990 Farm Bill. In such a program, an NCA for a farm would be established by summing the individual crop acreage bases and historical oilseed (i.e., soybeans, sunflower, rapeseed, and canola) plantings for the farm. Any combination of program crops and oilseeds may be planted on the NCA. The planting and harvesting of non-program and non-oilseed crops on the NCA results in a reduction in deficiency payments. Government deficiency payments under this program would be based on **historical** plantings and base yields—i.e., essentially "decoupled"—except for deductions based on any harvested acres of non-program or non-oilseed crops on the NCA.

Recent research by Dobbs and Becker (1992) analyzed the implications of an NCA program for sustainable agriculture in South Dakota. In addition to the Bush Administration's version of an NCA program, they analyzed a second version in which harvesting of legumes and other non-program crops (such as millet and buckwheat) planted on the NCA base is allowed without any deduction from deficiency payments. In both versions, set-aside requirements had to be met, meaning legumes or other crops could not be harvested on the set-aside acres.

The South Dakota research indicated that NCA proposals do offer some promise for encouraging more use of sustainable farming systems. Where conventional corn and soybean production is relatively profitable, as in parts of eastern South Dakota, NCA options by themselves appear to be insufficient to induce changeovers from conventional to sustainable cropping systems. In wheat growing areas of northern and western South Dakota, however, where conventional and sustainable systems sometimes are of near equal profitability, NCA policies could significantly influence conversions from conventional to sustainable systems, particularly if deficiency payments are not reduced for harvesting legumes and other non-program crops on NCA base. To achieve this positive effect on the profitability of sustainable systems, it may be necessary for NCA policies to be structured and introduced gradually, in ways that limit adverse effects on the markets for legumes and other non-program crops which are important in rotations of existing sustainable farmers.

Painter and Young also have analyzed an NCA program, in their case by examining farming systems in the Palouse region of eastern Washington and northern Idaho and in the North Carolina Coastal Plain (Painter, 1992; Painter and Young, 1993). They compared several "flexibility" options to the 1990 Farm Bill program, including: (1) the 1990 Farm Bill program with unpaid flex acres increased to 40 percent; (2) the Bush Administration's NCA proposal; (3) "decoupling" of farm program payments from crop planting decisions; (4) "recoupling", which also would divorce farm program payments from planting decisions, but which would condition graduated payments upon certain conservation and environmental criteria; and (5) a free market scenario, under which current commodity programs would be terminated. These policies were compared from the standpoints of returns to farm management, returns to land, benefits to consumers in the form of lower food prices, costs to taxpayers, and environmental damage. Net social welfare associated with each policy was measured by combining monetary estimates of costs and benefits in all of these categories.

When crop prices are at average levels, Painter and Young found little variation in net social welfare over the policy options analyzed in the Palouse region. The **distribution** of benefits and costs among farmers and other affected groups varies considerably, however. For example, estimated net returns to land and management (combined) are lowest under the free market scenario and highest under the NCA program, assuming conventional cropping systems. Environmental damage is reduced most under the decoupling, recoupling, and free market scenarios when alternative cropping systems are made available.

Painter and Young's research found the NCA and recoupling programs to perform the best in terms of overall social welfare in North Carolina, under the assumption of average grain prices. The recoupling program provides the highest return to farm management; the NCA program is second. The planting flexibility options, including the NCA, decrease nitrogen leaching relative to the 1990 Farm Bill program. Under the flexibility options, North Carolina Coastal Plain farmers would tend to substitute soybeans for corn and wheat, which use more commercial nitrogen.

NCA and other flexibility programs **except for the recoupling program** do not perform as well with respect to the environment in Painter and Young's analyses when grain prices are high, however. With high grain prices, farmers would tend to concentrate on intensive cropping systems and associated high levels of chemical fertilizer use. They might also decide not to participate in commodity and other Federal farm programs, thereby avoiding conservation compliance requirements.

It should be noted that Young and Painter's research has called attention to the fact that an NCA program would largely eliminate the erosion, over time, of farm program "base" that presently occurs when farmers adopt green manure rotations (Young and Painter, 1990). This would relax one of the constraints to more widespread use of sustainable farming systems.

Huang and Uri (1992) also have recently analyzed variations of an NCA program. They examined incentives for farmers in Iowa to switch from continuous corn to corn-soybean rotations under: (1) an NCA option in which "deficiency payments would be based on an adjustment in the number of acres actually planted in the various program crops" and (2) an option in which "deficiency payments would be detached from the actual number of planted acres and the expected yields" (Huang and Uri, 1992, p. 13). Government payments under the second option would be based on the farmer's historical planting patterns. Huang and Uri's analysis demonstrates that the economic incentive to grow continuous corn is less under this option than under the first NCA option.

## **De jure Decoupling**

There is now an expanding dialogue about the possibilities for, and implications of, **de jure** decoupling of income supports from planting decisions and **adding** some type of "stewardship" payments to accomplish environmental objectives. The general thrust of this dialogue is to suggest that income supports be completely divorced from current planting decisions, so that crop selection could more readily respond to market forces, and that "substantial" portions of the funds previously allocated to income supports be shifted to stewardship payments. The stewardship payments would be tied either (a) to farming practices intended to accomplish specific environmental objectives or (b) to environmental results. Such a stewardship program could consist of elements like the supply tempering initiatives briefly referred to earlier in this paper. However, the stewardship program would be quite broad, so that environmental objectives in agriculture could be pursued largely through this program, rather than through continued marginal changes in commodity-based income support programs.

The "recoupling" program analyzed by Painter and Young—discussed in preceding pages of this paper—is a type of stewardship program. Young describes the program as follows:

Recoupling, like decoupling..., would dismantle food grain, feed grain, and cotton payments and the Export Enhancement Program. Farmers could raise and sell what they wished for prevailing market

prices, and collect a payment from the government. Unlike decoupling, this payment would be based on meeting specific environmental criteria (Young, 1992, p. 8).

He goes on to indicate the assumptions used in their analysis of such a program in the Palouse region:

...the Recoupling payment is based on total soil loss and nitrogen leaching. For every ton of projected soil loss less than the average of 14 tons per acre for the Palouse River Basin, the farmer receives \$3. In addition, a nitrogen leaching penalty of \$0.67 per projected pound leached over an average of 10 pounds per acre for the entire farm is assigned (Young, 1992, p.8).

This particular version of a stewardship program consists of both payments and penalties, tied to environmental results rather than to practices.

I indicated previously that the recoupling (stewardship) program performed well with respect to environmental objectives and with respect to overall social welfare in Painter and Young's analysis. Young summarized their results in the following testimony before Congress:

The durable performance of Recoupling in protecting the environment and maintaining social welfare during periods of high market prices provides an important policy choice for policymakers. If society wants to avoid losing environmental gains during periods of strong demand and high prices, farm program payments based on environmental performance—not traditional program crop acreages and yields—should be considered. However, the gains to farmers and society from Recoupling comes at increased cost to taxpayers. In some regions, such as the Pacific Northwest Palouse, movement toward free markets, together with development of proven sustainable technology, yields good environmental results at much lower taxpayer cost under conditions of average market prices. However, environmental protection seriously lags under free market conditions when world grain markets are strong. Congress will need to balance the importance of budgetary reductions and environmental protection in deciding between free market versus Recoupling policies. One promising possibility is design of cost effective targeted Recoupling policies which protect the environment at reasonable cost to taxpayers and farmers. Further research and development to perfect environmentally sound and profitable sustainable farming technologies will help this effort (Young, 1992, p. 13).

Designing cost-effective stewardship policies will indeed be a challenge. Part of the challenge in making such policies cost-effective is to design them in such a way that they are tailored to the particular agro-climatic conditions and environmental problems of different regions **but** are not too complex to administer. Basing the stewardship payments on environmental results, as does Young and Painter's recoupling policy, is certainly the economic ideal, but that may not generally be administratively feasible. Basing payments on results, at this time, would require the kind of monitoring that likely would be prohibitively expensive and sometimes would not even be possible. Instead, it probably would be necessary to base payments on compliance with sets of practices. Wherever possible, farmers would be permitted to choose among alternative practices that are judged (on the basis of current scientific knowledge) adequate to achieve the relevant environmental objectives. In this way, within certain constraints, farmers would be able to seek least-cost alternatives. However, it must be acknowledged that, over time, there would be tremendous political pressure to broaden the list of "qualifying practices" beyond that which could reasonably be warranted on technical grounds.

In a sense, the approach just described builds upon the approach being used in the **Integrated Crop Management (ICM)** program and the **Water Quality Incentive Program (WQIP)** described earlier in this paper. Various practices are identified which qualify for payments under those programs. As I noted in the discussion of those programs, however, the foci tend to be on farming practice changes, rather than on whole-farm system changes. If U.S. farm policy is to undertake a major reorientation in the direction of stewardship programs, the focus needs to be on whole-farm system changes—to the extent that is

administratively feasible. As an example, a stewardship program in the wheat growing areas of the Northern Great Plains might be heavily oriented around the use of green manure legumes, rather than black fallow, in rotations. This could result in additional ground cover to reduce wind erosion, as well as reduce the need for purchased chemical fertilizers and herbicides. Within the framework of general agronomic and environmental guidelines, farmers could qualify for stewardship payments by developing and implementing farm plans based upon green manure systems.

Shifting a substantial portion of the Federal farm program budget from commodity programs to a stewardship program would constitute a major break with past policy. Unless political economy compromises are carefully crafted, this change could result in major income gains to some regions and major losses to others. Some farming areas that currently are quite dependent on commodity program payments may not be eligible for very much income transfer in the form of stewardship payments, depending upon how environmental criteria are specified and weighted. Conversely, some areas which currently receive relatively little in the form of commodity payments may have agriculturally related environmental problems which society considers to be quite severe, thus making farmers in those areas eligible for stewardship payments that could be substantial, in aggregate. Politically acceptable compromises may need to take a broad view of environmental and agricultural sustainability issues, initially allocating about the same amount (or proportion) of dollars to stewardship programs in each region that are "taken out" of commodity programs in that region. Those dollars could then be focused on the most severe environmental problems associated with the agriculture of each respective region.

Even if such political compromises are struck, there would be gainers and losers among farmers and among other economic entities **within** areas if Federal policy were to shift emphasis to stewardship payments. For this and other reasons, a continued but much altered Federal role in farm income protection may be warranted. It would be logical to emphasize **stabilization** and **extreme downside protection**. I turn now to some forms of stabilization or protection that might be provided alongside a market-oriented stewardship program.

**Cochrane-Runge prices paid/prices received approach.** Cochrane and Runge (1992) have recently presented a comprehensive agenda for Federal farm policy reform. They propose an end to the current system of price supports, target prices, and deficiency payments. All existing field crops, including both crops that are and crops that are not currently "program" crops, would be merged into a single "farm base" for each farm. Instead of the present commodity-specific payments, farmers would be eligible for income stabilization payments. Cochrane and Runge provide this explanation of their stabilization payment mechanism:

...an income stabilization payment, based on the relationship of the Index of Prices Paid to the Index of Prices Received for a regional "basket" of commodities...the payment is intended to provide an income safety net in periods of *deteriorating terms of trade* for the farm sector. It does not exist to *support* farm income through good times and bad. It exists to *stabilize* farm income when prices paid out for feed, seed, fertilizer, interest on debt to plant a crop, and fuel costs are *rising* and/or prices received for the basket of regional commodities are *falling*. When the *terms of trade are improving*, the payments would disappear.

...propose that a three-year moving average of Prices Received and Prices Paid be calculated annually by the USDA for the six main regions of the country...For each of these regions, the percentage change in each of the indices in a given year from the previous year would be calculated. (It is also possible to calculate these indices for smaller geographic areas if finer distinctions in the types of agriculture practiced are needed.) Whenever the percentage measure of change for the Index of Prices Paid exceeded the percentage measure of change for the Index of Prices Received, a stabilization payment to eligible farmers would be triggered (Cochrane and Runge, 1992, pp. 121-122).

These stabilization payments would be made on a per acre basis on the farmer's whole-farm base. The maximum stabilization payment for any individual farm would be \$20,000.

Cochrane and Runge also envision a ceiling being placed on the aggregate (national) amount that could be paid out in stabilization payments in any given year. They propose a \$7 billion ceiling. However, because of the regional structure of the stabilization program, they expect payments to normally run below that level. By comparison, direct government payments under the Federal feed grains, wheat, rice, and cotton programs averaged \$8.5 billion annually during 1986-91, with a high of \$13.1 billion in 1987 and a low of \$5.6 billion in 1989 (Economic Research Service, 1993, p. 35). Part of the budget savings in Cochrane and Runge's proposed shift from the current commodity price support program to this income stabilization program would be used to strengthen environmental programs in the agricultural sector.

**Strengthened Federal Crop Insurance Program.** Cochrane and Runge also call for a strengthening of the Federal Crop Insurance Program. They advocate continued Federal subsidization of the program and making the program more widely available to all commercial farmers. They feel that elimination of the commodity loan and deficiency programs will make the Crop Insurance Program more necessary and, hence, more attractive to farmers. Disaster payment programs also need to be greatly curtailed—in the view of Cochrane, Runge, and most other economists—if there is to be strong incentive for farmers to purchase Federal Crop Insurance. However, there is little reason to believe Congress is presently any more willing to resist the political pressure for emergency disaster programs now than they have been in the past. That being the case, the prospects for a viable Federal Crop Insurance program that provides the primary protection against yield losses seem bleak.

**Revenue insurance.** The Cochrane-Runge prices paid/prices received proposal, in effect, addresses **price risks**, while crop insurance addresses **production risks**. Many people are skeptical about the political feasibility of any Federal price risk reduction program not eventually becoming a price enhancing program. These people tend to call for more education and assistance to farmers in use of futures and options to shift price risk. In that case, assuming the continued existence of some combination of Federal crop insurance and disaster programs, only the crop yield portion of the farm revenue equation would receive government-supported risk protection. Some economists advocate more comprehensive and coordinated protection against **revenue risk**, however. Cochrane and Runge, for example, state that the Federal government "should work with private insurers to develop an optional, all-risk farm income insurance program" (Cochrane and Runge, 1992, p. 126).

Harrington and Doering (1993) have recently proposed a comprehensive risk management program patterned after the Ontario Market Revenue Program, Ontario's version of the Gross Revenue Insurance Plan (GRIP) used in other parts of Canada. The Harrington-Doering voluntary program would consist of two components: (1) crop yield insurance based on market prices and farmers' own historic moving average yields; and (2) commodity price stabilization, with deficiency payments based on shortfalls below target prices and paid on individual farmers' own moving average yields. The target prices would be set at or below 10- to 15-year moving averages of market prices that are indexed to current production costs. The yield portion of the insurance would be covered by actuarially sound farmer-paid premiums. Price stabilization payments would come from a revolving fund that could initially be established by the Federal government and subsequently (after a phase-in period) be maintained with actuarially sound premiums paid by farmers. Existing commodity programs and their associated price supports and acreage controls would be scrapped, as would disaster payments. The intention of this proposed program is to make revenue risk protection available without distorting market signals for planting decisions.

Reinsel (1993) has taken issue with the Harrington-Doering proposal on several grounds. He questions the ability of gross revenue insurance to pay for itself. He also feels that income stabilization would inevitably become income enhancement. Moreover, if the program **is** subsidized, he feels it could lead to economic distortions such as production in high risk regions and the breakup of marginal land. Reinsel feels that the current commodity programs, even with their shortcomings, get us closer to market orientation than does

Harrington and Doering's proposed program.

## **Medium- and Long-term Land Retirement**

An alternative (or supplement) to the "stewardship" program approach is to couple medium- and long-term land retirement with a market-oriented farm program. At the present time, we have long-term land retirement coupled with a complicated set of commodity-based income support schemes. Long-term land retirement is primarily in the form of the Conservation Reserve Program (CRP), which was authorized as part of the 1985 Farm Bill. Under the CRP, the "USDA pays producers an annual rental payment plus half the cost of establishing conserving land cover in exchange for retiring highly erodible or other environmentally sensitive land from crop production" (Osborn and Heimlich, 1993, p. 1). Thus far, over 36 million acres have been placed in the CRP, under 10-year contracts paying an average rental payment of \$50 per acre. Land under CRP contract represents 8 percent of U.S. cropland and costs the Federal government \$1.8 billion in annual outlays. More than half of the acres are located in the ten Great Plains states (Osborn and Heimlich, 1993).

Some of the CRP land will start to come out from under contract in 1995, and sizeable portions will come out in 1996 and 1997. Most of this land will be subject to conservation compliance requirements if it goes back into crop production. However, a major policy issue is whether to keep some or all of this land out of production and what inducements to use. The budget situation makes it highly unlikely that long-term contracts at anything close to the present costs per acre will be possible on 8 percent of the nation's cropland. Thus, fewer acres will need to be targeted and/or different types of medium- and long-term easements will need to be used on much of this vulnerable cropland.

Cochrane and Runge (1992) describe three types of cropland diversion that would be part of their policy reform package, two of which would be environmental set-asides. Long-term (10-year or permanent) contracts patterned after the CRP would be available for cropland that is **low** in productivity but highly vulnerable to environmental damages. Medium-term (three- to five-year) contracts would be available for highly vulnerable land that is **high** in productivity. Only in periods of commodity gluts would a third type of cropland diversion be exercised—that being mandatory, one-year, unpaid acreage diversions on high productivity land that is not especially vulnerable to environmental damage. Payments for the first two types of cropland diversion, tied to environmental purposes, would not be subject to Cochrane and Runge's \$20,000 limit on individual farm payments. Also, the payments would not be subject to their \$7 billion constraint on farm income support.

The above conceptualization is useful for thinking about least-cost methods of accomplishing environmental objectives through medium- and long-term land retirement. With better targeting and a better method of setting compensation rates than were employed in the CRP program, medium- and long-term retirement of highly vulnerable lands might very well be part of a market-oriented policy reform package.

## **Regulatory Approaches**

Yet another policy alternative is to have a market-oriented farm program and to increasingly rely on regulatory approaches for environmental protection. In fact, quite a number of Washington observers predict that environmental protection in agriculture over the next few years will increasingly be based on "non-farm bill" measures, such as the Federal Clean Water Act (PL 92-500) when it is renewed. There is likely to be political pressure for greater reliance on regulatory methods for two reasons. First, money for farm income supports is likely to be declining or, at best, stagnant; therefore, stronger conservation compliance measures could cause many farmers to forgo Federal farm programs and avoid compliance. Second, a growing segment of the non-farm public is calling for more stringent environmental standards, ones perhaps beyond the reach of normal conservation compliance measures.

Thus far, heavy emphasis has been placed on voluntary inducement methods for achieving environmental objectives in agriculture. This could change, given the political pressures just cited and the expanding agricultural role of the Environmental Protection Agency (EPA). However, as the EPA takes on expanded responsibilities in agriculture, dealing with such elusive problems as nonpoint source water pollution, it is giving greater attention to approaches other than its traditional regulatory approach (Robarge and Benforado, 1992). For example, the Coastal Zone Management Act (CZMA) strategy "calls for a technology-based approach in which States identify a list of best management practices (BMP's). States can use voluntary or regulatory means to see that appropriate practices are adopted" (Ribaudo and Crutchfield, 1993, p. 2). It remains to be seen how this approach will actually operate in different states and how effective it will be.

In thinking about alternative approaches to dealing with environmental problems in agriculture, Robarge and Benforado provide a useful conceptualization in which they state that "the most sustainable agricultural practices are analogous to pollution prevention strategies for wastes" and "less sustainable agricultural practices more closely resemble waste treatment and control strategies" (Robarge and Benforado, 1992, p. 132). This implies the need for more creative approaches—to encourage sustainable agricultural practices—than the EPA's traditional "command and control" (Robarge and Benforado, 1992, p. 128) approaches. Heavy reliance on uniform ("across-the-board") regulatory requirements actually could work **against** the objectives of agricultural sustainability in some instances. For example, if all farmers in a given crop/livestock area are required to choose from a set of capital-intensive pollution control practices to solve a particular environmental problem, only the large, specialized farms may survive in the short run, even though such farms may be least sustainable ecologically over the long run. Smaller, more diverse farms may be contributing very little to the pollution problem, due to use of internal resources and recycling methods which prevent pollution in the first place. However, if these farms also must adopt one or more of the prescribed capital-intensive pollution prevention practices, they could be forced out of business.

Space does not permit an examination here of other approaches which are not strictly regulatory, such as polluter-pays and input-taxation methods. These approaches pose special difficulties in agriculture. However, various individual and combinations of approaches will need to be carefully considered and evaluated if society decides to move considerably beyond or away from conservation compliance and voluntary inducement approaches to environmental quality in agriculture.

## *Concluding Observations*

Agricultural policy development is rational only to the extent that it follows an internal logic of salvaging as much as possible of the old order of political power in agriculture. The driving force is institutional defense. That's why policy lacks internal consistency, straightforward discussion of program goals, and conscientious forethought about the consequences of new programs. Therefore, the policymaking process continually adjusts at the margins—but only with frustrating slowness. Discussion of national agricultural needs may never take place. In fact, such discussions are often purposely avoided (Browne, et al., 1992).

This view, expressed in **Sacred Cows and Hot Potatoes: Agrarian Myths in Agricultural Policy**, implies that further changes in Federal farm commodity programs are likely to be "marginal change" approaches, rather than "radical change" approaches. In my review of marginal change approaches, I have noted that some recent innovations do have potential to encourage greater use of sustainable farming practices. The Integrated Crop Management (ICM) program and the Water Quality Incentive Program (WQIP), for example, can help enable more farmers to use particular practices that enhance natural resource conservation and environmental quality. However, with some exceptions, these marginal change approaches probably are insufficient to induce major

shifts to sustainable farming systems. Changes in particular farming practices may be adequate to alleviate a number of localized environmental problems. They generally are not adequate to address some of the fundamental long-term environmental concerns, such as those related to fossil fuel use in agriculture and the separation of livestock from crop production. Those concerns, as well as the family farm "structure of agriculture" concerns, call for whole-farm system changes.

Tweeten (1993) recently has articulated a number of reasons for phasing out present commodity programs. Among his reasons are ones related to international competitiveness and environmental quality. He feels that, on the whole, commodity programs have reduced agricultural exports. Also, he says that "commodity programs would need to be radically reformed to cost-effectively protect the environment" (Tweeten, 1993, p. 20). Tweeten advocates a transition program to minimize the adverse short-run effects of radical reform.

For other reasons, rooted in a different vision for agriculture, some proponents of sustainable agriculture doubt the potential effectiveness of marginal change approaches. They realize that the leverage provided by commodity programs to encourage sustainable farming could continue to decline as budgetary pressures reduce funds available for such programs. Also, they may feel that the marginal change approach implicitly condones the continuation of programs that favor an industrialized agriculture.

Even though the political prospects for "radical changes" in commodity policy may not appear promising, approaches representing substantial reform must now be given serious consideration. The current programs are beginning to collapse from their own complexity and loss of credibility. Viable policy options of a radically different nature must be available to replace them, or society may be left only with regulatory and penalty approaches to advance sustainability objectives.

Of the radical change approaches examined in this paper, some version of a Normal Crop Acreage (NCA) program may have the best political prospects in the near future. It could partially or completely decouple payments from farmers' decisions about which crops they grow, thereby making agriculture more responsive to market forces **and** reducing some of the current biases against sustainable farming systems. Even if payments were to gradually decline, the fact that they would be tied to historically determined whole-farm bases would ease the transition. An NCA program, in a sense, could be thought of as a much simplified Integrated Farm Management (IFM) program—but one which becomes the basic program rather than simply a pilot program. The review in this paper indicates, however, that an NCA program (**or** an expanded and simplified IFM program) will not adequately address all environmental concerns, especially when world grain prices are high.

Some type of explicit "stewardship" program would more adequately and consistently address environmental sustainability concerns. To be practical, "stewardship" (or "green") payments probably would need to be based on the use of particular farming systems or sets of practices, rather than on environmental outcomes. Even that approach, however, would involve major technical, administrative, and political challenges in specifying qualifying farming practices and systems. Also, major administrative and resource commitments would be required to build a system capable of providing necessary technical assistance, approval of plans, and compliance determination.

If the Federal government were to adopt a stewardship program approach, in lieu of the current system of commodity supports, should income or farm size restrictions be placed on the stewardship payments? Such restrictions could complicate and undermine achievement of some environmental sustainability goals. However, making large stewardship payments to very high-income farmers may not be politically viable, even if it can be justified on environmental grounds. Thus, some income or farm size restrictions may need to be placed on stewardship payments. Severe environmental problems created by some large farms would then need to be addressed by regulatory approaches.

Complementary programs can more specifically address the "structure of agriculture" sustainability goals. In particular, programs to stabilize farm income should be targeted according to farm size or income criteria. For example, Cochrane and Runge's (1992) proposed "stabilization payments", which make a good deal of sense conceptually, involve targeting in that the maximum annual payment for any individual farm would be \$20,000. Similarly, if a strengthened crop insurance program were to be utilized as a principal stabilization tool, the proportions of premiums covered by Federal subsidy could be graduated in accordance with income. Low-income farmers would have a relatively high premium subsidy, and higher-income farmers proportionately less, with farmers above some income cut-off perhaps paying 100 percent of actuarially sound premiums. However, this approach would have the desired effect **only if** crop disaster payments were done away with **for all farmers**.

Research, extension, and other complementary programs also could be much more heavily focused on support for small- and medium-sized family farms. "Non-farm" policies such as those dealing with taxation and health care also can strongly influence the economic viability of moderate-sized farms. If complementary farm and non-farm programs and policies were reformed to encourage survival of moderate-sized farms, this would directly support sustainable agriculture's "structure of agriculture" goals and, in my view, indirectly support its "conservation and environmental" goals.

Even the radical change approaches to farm policy, such as a stewardship program, would be constrained by the Federal budget and by prevailing beliefs and values. Transforming U.S. agriculture into a system that is fundamentally different—environmentally and structurally—from the current industrial system would require **society-wide** changes in beliefs and values. Society's values regarding material consumption, individual freedom, mobility, nature, and responsibilities to future generations all powerfully influence both individual actions and public policies. Unless and until there is widespread change in some societal values, in other countries as well as in the U.S., the expectations placed on agricultural **and** other economic sectors severely restrict the amount of change that is possible. Unrealistically high expectations have arisen in recent decades for very cheap food, fiber, and energy, and for abundant material goods. The recently emerged world-wide interest in and concern about **sustainable development** is encouraging, however. As the requirements and implications of sustainable development become better understood by citizens, teachers, and leaders of all types, we may start to see significant changes in beliefs and values. Then, even more widespread policy reforms that include but go well beyond agriculture would become possible.

## *Endnotes*

1. Formerly Visiting Scholar (Spring 1993) at the Wallace Institute for Alternative Agriculture and presently Professor of Agricultural Economics, Economics Department, South Dakota State University, Brookings, South Dakota 57007-0895.
2. In its March 1993 Annual Symposium, the Wallace Institute for Alternative Agriculture took a retrospective look at those structure of agriculture concerns during Bergland's tenure at the USDA, and examined how those concerns relate to the present emphasis on sustainable agriculture. A summary of that conference is forthcoming.
3. South Dakota State University has recently begun research under a grant from the USDA's Sustainable Agriculture Research and Education (SARE) program to begin to evaluate the potential effectiveness of the WQIP, the ICM program, and the IFM program in stimulating the use of farming practices and systems that are supportive of groundwater quality goals in an area of eastern South Dakota.

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