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Stewardship Incentives:  
Toward Profitable Farms that Protect the Environment

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## **Executive Summary**

The environmental challenges of Midwest agriculture are extremely serious, and they are unlikely to be solved by better farming practices within the dominating corn-soybean cropping system. The focus of pollution prevention in agriculture must be on the long-term need to diversify crops. Current farm policy is the major barrier to diversification. An alternative farm policy of stewardship incentives would reward farmers for the full range of environmental benefits they provide to society. The Conservation Security Act is proposed legislation that provides an excellent approach to stewardship incentives, to be considered by Congress as the farm bill is rewritten by 2002.

### **1. The Environmental Challenges of Midwest Agriculture**

Current Midwest farming systems are contributing to surface water pollution, groundwater pollution, a zone of hypoxia in the Gulf of Mexico, increased flooding, depletion of groundwater, air pollution, excessive odors, climate change, loss of wildlife habitat, degradation of natural ecosystems, loss of pollinators, loss of soil quality, soil erosion, and those are just the big categories. The leading concern is water quality, because the primary cause of surface water pollution in the US is agriculture which contributes to 70% of impaired rivers, 49% of impaired lakes and 27% of impaired estuaries, according to EPA<sup>1</sup>.

Not only are the environmental challenges of the current system of agriculture in the Midwest numerous, they are often interrelated. Impacts on water quality, hydrology, air quality, human health, wildlife, and natural ecosystems are pervasive, and they often jump from one category to another. For example, evaporation of agricultural pesticides, nitrogen and methane into the air results in deposition of those same substances in rainfall, leading to another avenue of surface water pollution, as well as contributing to climate change. Excessive soil erosion leads to sedimentation of streams with resultant water quality and aquatic biota problems; sedimentation of stream bottoms, reservoirs, and lakes results in flooding which then causes more erosion. It is fruitless to target individual environmental “symptoms” when the entire system is “diseased”.

Trends are generally not improving, though some may have stabilized at their current problematic levels. Nitrogen fertilizer use has been approximately level over the past fifteen years in the upper Mississippi River basin.<sup>2</sup> Total manure production is level, but concentration into feedlots has led to manure spills causing 3.3 million fish to be killed in 250 spills in the five Midwest states bordering the upper Mississippi River from 1995-1998.<sup>3</sup> Erosion has not improved over the past five years, leveling off at 1.9 billion tons per year, mostly generated in the Midwest.<sup>4</sup> Meanwhile, average rates of pesticide use per acre are increasing, and U.S. pesticide sales have increased steadily, topping \$7 billion in 1995.<sup>5</sup> The massive National Water Quality Assessment Program found two or more pesticides in almost every water and fish sample collected from streams, and in about half of all wells sampled.<sup>6</sup>

### **Best Management Practices Not the Solution**

Can adoption of Best Management Practices, or BMPs, solve the environmental problems of a Midwest agriculture dominated by corn and soybeans? It appears extremely unlikely that even extensive adoption of BMPs can do more than stabilize current environmental problems, because the farming system itself drives the environmentally destructive practices.

An illustrative example of the way that agriculture's environmental impacts are intimately tied to the system of farming is the Dead Zone in the Gulf of Mexico. (Many of these ideas were discussed among scientists at the "Nitrate Reduction Strategy Session" hosted by the Mississippi Riverwise Partnership in Ames, IA, in December 2000.) An unprecedented rise in nutrient and sediment pollution flowing down the Mississippi River is causing an annual zone of death the size of New Jersey, up to 8000 square miles. The nutrients cause explosive growth in phytoplankton in the ocean. When the plant life eventually dies, most of the oxygen in the water is consumed (hypoxia), which then suffocates the shrimp, fish, and other aquatic life. The people of Louisiana and Texas are up in arms with dead fish swamping their shores and devastation to the seafood industry.

Meanwhile, far upstream in the cornbelt of the Midwest, farmers who apply nitrogen and manure to fertilize their crops are often oblivious to the faraway impacts of their actions. They have gotten used to applying "insurance" levels of nutrients to their crops, knowing that some will be lost due to spring melt,

evaporation, and torrential spring rains. Crop prices are low while fertilizer has been cheap (until this year), so it made sense to put plenty on to ensure a good crop. Farmers may not realize that their runoff, when combined with smaller amounts from cities and industry, is causing an environmental disaster far down at the end of the Mississippi. But fertilizer use itself is only part of the problem.

Dramatic changes in the landscape of farming have unwittingly contributed to the tragedy in the Gulf. The increased nutrient pollution trend of the past 25 years has paralleled almost precisely the increase in planting of corn, a rowcrop that uses more fertilizer and leaves soil exposed to more runoff potential. Concurrent reductions in acreage of hay, pasture, and small grains have meant there is less land in resource conserving cover vegetation. More drain tile is installed every year – 20,000 miles in Minnesota alone last year – which hastens the speed of water flushing nutrients out of soil and into the rivers. Massive feedlots increase the concentration of manure in small areas, and drive the demand for corn-soybean feeds with their attendant landscape impacts, rather than using hay and pasture to feed livestock.

In the case of hypoxia, it is not the nitrogen use per se, it is the entire system of corn-soybean farming with its attendant drainage, annual tillage, loss of cover, and decline in soil quality. Dr. Gyles Randall, a University of Minnesota scientist who has spent his career studying these issues in the field, concludes, “the corn-soybean rotation is not sustainable.” There is no doubt that better management of nitrogen fertilizer by farmers could help reduce runoff without reducing yields or profits, but even full implementation of such best management practices would not be sufficient to significantly reduce the Dead Zone. Such small improvements might help, but won’t achieve the 30-40% reduction in nitrogen output that scientists estimate is necessary to significantly shrink the Dead Zone. Broader landscape changes are needed to significantly reduce nutrient losses.

The complexity and interrelatedness of agriculture’s environmental problems leads to rejection as ultimately ineffective the policy choices that try to isolate and address one problem at a time. Multiple government initiatives each focused on one problem, such as on pesticides, on erosion, on nutrients, on wildlife – are doomed to fail, for three reasons. First, they will not create environmental health even if they do achieve a reduction in a single pollutant because only a few “symptoms” can be ameliorated by

adoption of BMPs alone. Second, there will never be enough political will or resources to launch the number of discrete programs needed. Finally, the BMP approach will fail because farmers are unable to respond to conflicting BMPs and regulations for multiple problems within the context of their current farming system—they will ignore it, fight overregulation, and society does not have the political will to force them. The farmer can only effectively address major environmental impacts when solutions are integrated into their specific farming system. Some form of whole farm planning is the model needed to bring multiple solutions into reality on the farm.

## **2. A New Vision for Midwest Agriculture: Diversification**

*The focus of pollution prevention in agriculture must be on diversification of crops.* Longer crop rotations, including resource-conserving crops and more pasture acreage, are needed in order for pollution flows and other environmental ills to significantly diminish. Cover crops, rotational grazing, perennial pastures, energy crops, and improved soil biological life are also part of the new landscape picture. To be specific, corn and soybeans must be interspersed with resource conserving crops in four to six year cycles, and livestock must graze more and be fed more hay.

Anyone involved in agriculture knows there are great barriers to diversification, but they are mainly economic and driven by policy decisions, not inherent in geography. For example, Minnesota produced 34 different commodities in 1920, but now focuses on only a handful. A recent listing of Minnesota – grown opportunities included 174 crops and 42 types of livestock that are feasible.<sup>7</sup> Illinois recently reported that the “green industry”, producing ornamental landscape and indoor plants, surpassed corn and soybean production in economic importance in 1999, with \$2.9 billion in sales compared to \$2.6 for corn and \$2.1 for soybeans, on a fraction of the acreage.<sup>8</sup> It is widely recognized that US farm policy, namely the subsidies for corn and soybeans in the Midwest, is the primary force driving over-specialization.

### **Qualities of a Diverse Cropping System?**

No one can presume to name the ideal crops to take the place of corn-soybean dependence, because it will vary by farm, by farmer, and the market. The elusive “third crop” is a poorly named goal, because it

only extends the current lack of diversity. Many crops should be included in rotations. However it is worthwhile to explore the attributes of a sustainable system.

Over the landscape, on average, we need to see a much longer period of soil vegetative cover, including earlier growth in the spring, faster growth in early summer, and soil coverage through fall and winter. This will reduce erosion and weed germination. We need to have more fertilizer fixed by legumes and applied in organic mixes such as manure and compost, in order for it to be held more tightly in the organic matter of the soil. We need three to six year crop rotation sequences to disrupt pest, disease, and weed cycles, thereby diminishing the need for pesticides. Crop rotation also has a beneficial effect on soil fertility as different rooting structures extract nutrients at varying depths. We need to build the quality of the soil with cover crops and perennials to increase organic matter and maximize biotic life. We need perennial plants on the most vulnerable hills, riparian buffers, and erosive to avoid exposing the soil to rainfall and runoff. We need to provide for nature to take over some parts of every farm, in the form of wetlands, streambanks, woodlots, or wildlife corridors, in order for wildlife and natural ecosystems to flourish.

The qualities of a sustainable system as described above can only be met in two ways: either with diversified crop rotations, or with perennial systems such as grazing or agroforestry. Diversification is the key that unlocks the possibilities beyond corn/beans and it can be met in dozens of cropping systems. A rotation can add resource conserving cover crops, spring growing perennials, legumes, spring annuals, winter annuals, cover crops, etc. Bringing livestock back into the operation is another key to new crop opportunities, so livestock can again become the consumers of pastures, forages, and a significantly wider array of feed grains, such as oats, barley, and buckwheat.

### **Current Barriers to Diversification**

Most of these diversified options are not terribly new. They have been extensively grown in years past and still are by many sustainable and organic farmers. Indeed, my home region in southeast Minnesota is still dominated by such diversity and small integrated livestock farms, though the numbers are declining. Suitable growing conditions are not a significant barrier. Minor barriers exist in finding suitable seed

strains, appropriate equipment, and technical experience, but these are relatively easy to remedy. The primary barriers to diversification are completely interrelated: lack of ready markets for anything besides corn and soybeans; low prices for alternative crops; and a US government policy that subsidizes only a few commodities. These three facets result from one government policy and drive corn-soybean dominance in this region. A belief that agricultural exports should be the means to balance our trade deficit as well as the solution to oversupply is probably the underlying reason for such policies with their unintended landscape consequences.

Overt requirements to grow commodity crops were eliminated in the 1996 farm bill, but the results are still the same. Freedom to Farm abandoned the connection between payments and a farm's production of commodity crops, hence the "freedom" to plant more diverse crops -- though not fruits and vegetables. However, the barriers to diversification are nevertheless built in. Transition AMTA payments are still based on past base acres of commodity production, so subsidies keep flowing to those most specialized, putting diversified farmers at a disadvantage. Emergency doubling of payments amplified the effect in each of the last three years. Loan Deficiency Payments, a little known provision hidden in the '96 farm bill for times of record low prices, have emerged as a full blown direct subsidy only available to commodity producers. Again, those growing alternatives bear more risks and must compete against subsidized crops.

### **3. A New Policy Option Needed**

Prior to the 96 farm bill, all farm bills used various schemes to pay farmers a higher price for commodities in return for reducing commodity production by not planting some acres of the farm, in order to raise deficient prices. The 96 Farm bill ended that policy purpose. Payments were supposedly on a six-year transition schedule toward the elimination of government support, to let the "free market" set prices unimpeded by government policy. But falling prices and falling payments would have sentenced too many farmers to bankruptcy, so Congress has made sure the money continued to flow -- \$28 billion in 2000, accounting for half of all money made by farmers. In eight states -- including MN, IA, IL, and IN -- governmental aid made up 100% of net farm income.<sup>9</sup> We seem to be left with a policy vacuum,

transferring taxpayer dollars to farmers and requiring very little in return. The basic theory of the 96 farm bill is intellectually bankrupt, since clearly the government is not going to “get out of agriculture.”

If a farm is only valued by society as a unit of commodity production, then we would have let the 96 farm bill run its course and lost another generation of farmers. But of course there are many reasons to keep farmers afloat. The real reason Americans care about farmers and rural communities goes further. A farm is more than a unit of production it is the economic flywheel for rural communities, it produces a beautiful landscape and environmental protection when working well, and for many it is core to our very democracy. The functions of the working landscape could be said to have monetary value to society, functions for which we are willing to pay. This is especially true since we are paying the farmers generously already!

This vision of the ‘multi-functional’ benefits of agriculture opens the door to a new rationale for government support – to reward good stewards of natural resources who conserve biodiversity and safeguard the sustainability of production for the future.

### **Stewardship Incentives**

Stewardship incentives, sometimes called Green Payments, are an alternative farm policy intended to create profitable farms that protect the environment by rewarding the conservation benefits achieved by farmers. Stewardship incentives are an alternative to some or all of the current system of commodity based payments.

The following basic principles of a new, major stewardship incentives policy were developed collectively by the participants of the Midwest Sustainable Agriculture Working Group and the National Campaign for Sustainable Agriculture Stewardship Incentives Committee.

1. Payments to farmers would be based on conservation results provided by farmers that benefit society. The goal is to improve a robust range of environmental concerns, including surface water quality, groundwater protection, air quality, fish and wildlife habitat, carbon sequestration, soil quality, biodiversity, and genetic preservation. The highest rewards would go to those achieving economically and environmentally sustainable land, energy, and resource use over the long term.

2. Payments would reward farmers who have already achieved a high level of resource protection in their farming system, and would encourage others to improve their farm production methods to increase the value of the environmental benefits they provide. Note that previous “good actors” would not be left out, and “bad actors” would not be disproportionately rewarded for fixing their problems.

3. Stewardship incentives are for working farms, and are designed to complement other conservation programs largely designed to set land aside for conservation. The Conservation Reserve Program and Wetlands Reserve Program would still play a critical role in taking fragile lands out of production. EQIP would still target funds to impaired areas.

4. The payment system would require a substantial commitment to conservation on the part of farmers, with real world changes and benefits on the farm. Payments would not subsidize practices required by current regulations, but would reward exceeding requirements. Monitoring and tracking of environmental improvements would be an important part of the program.

5. Participation would be open to all types of farms in all areas of the country, not just those raising “program crops” such as corn, wheat, and cotton. Livestock producers would also be fully included.

6. Benefits would be available to any size farm. The payment structure would place strict caps on payments per farm owner or operator, so a typical family scale farm could obtain the highest payment while a large or corporate farm would max out at the same level.

7. The program would be based on voluntary, “automatic sign-up”; farmers meeting the established criteria would be automatically eligible for enrollment, with amount of payment determined by a formula calculating environmental benefits, costs of implementation, etc. The program would be funded through the Commodity Credit Corporation to allow program costs to reflect the level of participation, and not be subject to the whims of the appropriations process that could leave some otherwise eligible farms without benefits.

8. Farmers would develop a multi-year conservation plan designed for their whole farm, with demonstrated progress towards meeting conservation goals. Each plan would specifically address all relevant locally identified priority concerns. Transition to organic and organic certification plans would be eligible. Farmers who develop whole farm plans would receive the highest reward because they achieve the maximum level of management for conservation security. Innovative practices would be eligible for consideration, and research components to document effectiveness would be funded.

9. A secondary goal of stewardship incentives is to improve income for family farmers. The benefits would not just reimburse farmers for improvement costs, but would financially reward farmers for reaching high levels of sustainability. Complementary programs should also support marketing, to encourage farmers to adopt resource-conserving crops, alternative crops or livestock, and other sustainable strategies and gain the ability to profitably sell what they produce.

10. Substantial resources must be committed to implementing the program. Adequate funding is required for outreach and education to farmers; additional agency staff and training; and on-farm planning assistance by conservation professionals, third party consultants, non-profits, and experienced farmers.

11. While a stewardship incentives program does not directly address subsidies of commodity program crops or curbing of overproduction, indirectly it uses a portion of CCC funding (say a quarter of the \$28 billion spent in 2000) that might have gone to subsidies. It also indirectly addresses overproduction by rewarding crop diversification.

*A farm policy of stewardship incentives is the key to enabling farmers to both adopt BMPs as they can integrate them into their current system, as well as to go much further to change their basic cropping system to maximize environmental benefits and prevent environmental degradation.*

The Conservation Security Act as introduced in late 2000 (S. 3260 and H.R. 5511) incorporates nearly all of the principles noted above. The bill was introduced in the Senate by Senators Tom Harkin (D-IA) and Gordon Smith (R-OR), and in the House by a bipartisan group of 25 Representatives.

The Conservation Security Act establishes a program that provides annual payments to farmers who establish on-farm conservation practices that produce environmental benefits. It allows producers to enter into voluntary, flexible, site-specific 5-10 year conservation security plans that improve and protect water and air quality; improve soil health and productivity; restore, conserve and enhance wetlands and wildlife habitat; and provide on-farm energy conservation and greenhouse gas reduction, carbon sequestration, and similar conservation goals. It directs the financial incentives to producers who implement land practices that achieve resource and environmental benefits, but does not require retirement of land from production. It rewards both new and existing conservation practices. It complements and enhances existing conservation programs. It is open to all farmers: livestock as well as row crop, who implement a conservation plan. Farmers may choose a level of involvement based on the specific resources identified on the farm and on their own stewardship goals.

The Conservation Security Program establishes three tiers of participation:

- Tier I: Annual payments up to \$20,000 for adoption of basic land management and vegetative conservation practices that address local resource concerns on all or part of the farm or ranch. Practices may include nutrient management; integrated pest management, soil conservation and residue management; irrigation management; grazing, pasture and rangeland management; wildlife habitat management, and cover cropping, contour farming, and related practices.
- Tier II: Up to \$35,000 annually for the implementation of Tier I practices that meet resource management systems criteria on the whole farm, plus land-use adjustment practices such as resource conserving crop rotations, rotational grazing and conservation buffer strips, restoration of wildlife habitats, wetlands, prairies and related practices.
- Tier III: Up to \$50,000 annually for integrating a full complement of conservation practices in a whole farm plan to address all resource concerns and foster environmental enhancement and the long-term sustainability of the natural resource base of an entire agricultural operation.

The Conservation Security Act of 2000 implements the previous list of principles with very few departures. Note that Tier 1 participation in the bill does not require a whole farm plan; in order to entice

farmers just starting with conservation planning, it was decided to let them apply it to just a portion of the farm. The one practice excluded under the bill is manure storage facilities, partly because such facilities are usually required by feedlot regulations and thus ineligible, and partly to prevent subsidizing further concentration of livestock into confinement operations. However, size is not mentioned, so even small operations will not be able to fund manure storage practices. Manure management and land application will be eligible practices for all in Tier 1. Also, the bill does not directly address market enhancement for alternative crops.

### **Barriers to Adoption of Stewardship Incentives**

While the purpose of the Conservation Security Act is to capture a significant portion of subsidy dollars for conservation purposes, the bill itself does not directly deal with important questions of what to do about subsidies, LDPs, crop insurance, and emergencies. These policy questions remain to be worked out in the overall context of the farm bill revision, and undoubtedly will have environmental impacts as well. The Conservation Security Act is not a total panacea for all farm policy problems. However, its adoption could be likened to turning a large boat: If some significant portion, say a quarter, of subsidy dollars are redirected to reward environmental performance, then the beginnings of a transformation in US policy will have begun. A future farm bill will be able to build on the success and taxpayer popularity of a stewardship incentives approach.

### **4. Leverage Points for Change**

**Fiscal Resources:** How to pay for a \$4-7 billion program would seem insurmountable if we weren't already spending \$28 billion on agriculture payments in 2000. No problem! The critical concept is to not think of The Conservation Security Act as fighting for a share of the limited conservation pie – only \$3 billion versus the \$28 billion in direct payments. It must be viewed as an alternative way of distributing some portion of the direct payments. The money would still flow to support farmers, but Americans would be getting something in return: a cleaner environment.

**Time is Right:** There can be no doubt that farm policy will be addressed by Congress soon, because the current farm bill expires in 2002. Unlike the Clean Water Act and other bills it does not carry on

without congressional action. The fundamental content of the current farm bill is a series of diminishing transition payments that will end in 2002. What policy comes next? There appears to be virtually no call to follow through on the vision of Freedom to Farm by eliminating the government role in supporting farm income. There appears to be little call for going back to the previous illogical policy of combining production controls with subsidies that maximized commodity production. It seems unthinkable that Congress or taxpayers would support continuation of the current \$28 billion a year bailouts as a perpetual entitlement to program crop growers, with nothing in return and nothing to change the prospect of an endless bailout. Stewardship Incentives is already on the table as a viable policy option.

**Favorable Trade Rules:** The Conservation Security Act is likely to gain momentum because it is a farm policy that fits the future. US trade commitments at the World Trade Organization commit farm policy to designing subsidies that do not distort trade under WTO rules. Export subsidies and production limiting programs are subject to severe limitations. THE CONSERVATION SECURITY ACT fits into the so-called “green box” of allowable farm subsidies directed to legitimate environmental concerns or other forms of domestic support.

**TMDL Implementation:** As EPA moves forwards to address the leading source of pollution from nonpoint sources, the Total Maximum Daily Load: process is quickly gaining momentum. Impaired watersheds are each undertaking a process of allocating responsibility for pollution reduction to various sources. Agriculture is sure to be a major source in many watersheds, and the watershed plans to reduce pollution loads voluntarily or by regulation will have to be developed. The Conservation Security Act provides an avenue for significant money to flow to farmers to help reduce their pollution without the need for onerous regulations and the resultant backlash.

**Geographic shift in payments:** There is a need for analysis of the likely distribution of payments under the Conservation Security Act and how it will differ from current patterns. Some areas that have not benefited from commodity programs might do better under the Conservation Security Act; Midwest grain farmers might be able to deliver enough environmental benefits to capture an amount equal to current payments; while Plains farmers might be the big money losers. This is purely conjecture.

Without a rigorous economic analysis, what is known is that Congress will want to know where the money goes and how it affects their districts.

**Urban and suburban support:** A huge base of support for the Conservation Security Act could come from urban and suburban voters who care only a little about farmers, but care a lot about the environment.

**Carbon Sequestration:** The bill explicitly supports in its goals and purposes energy conservation, alternative energy, and carbon sequestration as possible avenues to address climate change. The formula for payment is left for future rulemaking and will need considerable work to figure out appropriate amounts to pay for various practices. The bill provides a structure for an integrated program, ready to be shaped as the science and politics of climate change comes together.

**Support for Organic:** Farmers wishing to transition to organic, or carry out their organic certification plan, will almost surely be eligible for Tier 2 payments, since they are required to rotate crops and put livestock on pasture at times. Many would qualify for Tier 3 with additional wildlife or other practices. The Conservation Security Act could become a major means of support for organic farmers, thereby building the support of the organic industry and organic consumers.

## 5. Conclusion

The Conservation Security Act embodies support for environmental improvements that benefit all of society as well as farm income. It provides a framework that allows for integration of multiple environmental concerns. It lets farmers voluntarily decide their level of conservation involvement, adopting BMPs or whole farm systems change. It is designed to be big enough, and commit enough resources, to entice enough farmers to significantly change their operations and make dramatic improvements to the environment. It is a farm policy that makes sense.

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## Endnotes

<sup>1</sup> U.S. Environmental Protection Agency. 2000. *National Water Quality Inventory: 1998 Report to Congress*.

<sup>2</sup> Keeney, D. and Muller, M. September 2000. *Nitrogen and the Upper Mississippi River*. Institute for Agriculture and Trade Policy.

<sup>3</sup> Frey, M., Hopper R., and Fredregill, A. August 2000. *Spills and Kills: Manure Pollution and America's Livestock Feedlots*. Clean Water Network, Izaak Walton League of America, and Natural Resources Defense Council.

<sup>4</sup> U.S. Department of Agriculture - Natural Resources Conservation Service. 2000. *National Resources Inventory: Background and Highlights*.

<sup>5</sup> Benbrook, Charles. 1996. *Pest Management at the Crossroads*. Consumers Union.

<sup>6</sup> U.S. Geological Survey. 1999. *The Quality of Our Nation's Waters: Nutrients and Pesticides*.

<sup>7</sup> Minnesota Department of Agriculture, University of Minnesota. 2000. *Minnesota Grown Opportunities*.

<sup>8</sup> Progressive Farmer. January 22, 2001. *Move Over Illinois Corn and Soybeans, Here Come Petunias*.

<sup>9</sup> Egan, T. December 24, 2000. *Ever-Larger US Dole Keeping Farms Afloat*. New York Times.