

SUMMARY: Making Policy to Achieve Sustainable Agriculture

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To identify policy options, we first have to determine if current farming practices are sustainable. One measure is agricultural productivity. From 1948 to 1980, it increased by 1.4 percent per year. From 1980 to 1994, it rose to 3.3 percent per year, in contrast to a 1.1 percent increase for the non-farm sector. By this measure, agriculture is doing just fine. But agriculture's impact on the environment is a more complicated picture. Soil erosion has declined from 3 billion to 2 billion tons per year—not a threat to future productivity but this has an estimated impact of \$2 billion to \$8 billion per year on nearby streams, rivers, lakes and groundwater. Groundwater depletion rates have fallen and surface water quality has improved but agriculture remains a leading source of impairment. And agriculture is now a net supplier of wetlands—but under current policy can never restore the 100 million acres of wetlands lost over the last two centuries when wetlands were “swamps” and farmers were encouraged to drain them. The Heinz Center develops and tracks sustainability indicators for major ecosystems in this country. Of the 18 indicators for farmland, only nine have sufficient data and show declines over time in wind and water erosion potential of our croplands. USDA's Economic Research Service succinctly summed up farming's sustainability in 1999: “Environmental problems exist and the resource base is depreciating but the extent of the effects is in the range that can be adequately addressed by thoughtful policy.”

Since then, our understanding of factors likely to impact sustainability has improved. Climate change will have a significant impact. The Soil and Water Conservation Society analyzed one of its likely outcomes—significant rain events—and predicted that soil erosion would increase in the range of 4 percent to 95 percent and run-off would increase in the range of 6 percent to 100 percent in some cropland locations. And the American Farm Bureau Federation, looking ahead to 2019, predicts continuing structural change and significant paradigm shifts, including the predictions that farmers and ranchers will produce what they can sell, not sell what they produce and environmental issues are likely to shift to market-driven actions that achieve environmental benefits.

Environmental sustainability can also be measured indirectly by the use of conservation practices. The snapshot here is also complex. Almost 90 percent of farms, regardless of size, use some of the standard conservation practices like conservation tillage, crop rotation and resistant seed. Fewer farms (30 percent to 55 percent) use decision aids like soil or plant tissue testing, pest scouting or soil mapping to decide when pesticides or fertilizers are necessary. And fewer still (10 percent to 20 percent) use management-intensive practices like variable rate application of agricultural chemicals, nutrient management or integrated pest management. Size is a factor, with larger farms more likely to have the wherewithal to adopt more practices. Profitability drives most adoption, structural barriers—lack of financial capital and labor availability—impede adoption and the site-specific nature of conservation practices makes adoption a gamble for some farmers. The perception that using a practice may reduce yields and bottom line profits comes into play. If we use conservation practices as a yardstick, agriculture can certainly improve.

So what kinds of policies might increase our environmental sustainability and which are most likely to succeed? One approach is regulatory—not very popular with either policymakers or landowners. Agriculture is exempt from most environmental regulations but conservation compliance—tying eligibility for federal payments to conservation behavior—has helped stem soil erosion and wetland losses. As long as crop subsidies continue, one approach is to expand compliance to include the use of nutrient management plans. USDA has decided not to recommend this option but does recommend adding a “sod saver” provision. A second option is implementing a “national environmental law” for farming. Pieces of this approach are being used by states: conventional prescriptive regulation for large confinement animal feeding operations, a national pesticide and fertilizer use reporting system, taxing pesticide and fertilizer use, permanently retiring ecologically important land and requiring all farms participate in watershed-based pollutant trading. Given political will, this is not very likely.

Incentive-based approaches to encourage conservation behavior are effective, popular and much more likely to be implemented. Surveys of producers by AFT show that the use of conservation practices doubles or even triples with increases in funds and technical assistance. Conservation is less than 5 percent of the total farm bill outlay and three out of four farmers who apply for help are turned away. USDA, AFT and others recommend increasing funding, consolidating, refining and simplifying programs to make them easier to use and more focused on environmental benefits, and implementing new initiatives like a conservation loan guarantee or more cooperative conservation partnerships.

Finally, the most intriguing and perhaps most promising approach is the possibility of creating markets for the environmental services offered by agriculture. A number of pilot projects are putting ecosystem services to the test. In the United States, 22 water quality trading programs that reduce pollutant runoff allow trades with agriculture. Pilot programs to reduce greenhouse gas emissions, restore wetland functions and enhance wildlife habitat are also underway. Although these efforts develop markets for single benefits, farms are capable of producing multiple benefits and we will eventually develop the frameworks to accommodate this objective. A farm today that sells corn and timber may evolve into a farm that still sells corn and timber but also sells corn stover (residue) to a biofuels plant, wetlands credits to developers, flood control credits to a water district, water quality trading credits to a water supplier, biodiversity credits to a nongovernmental organization and carbon credits to a power company. Both USDA and Farm Bureau acknowledge the promise of this approach and USDA has proposed \$50 million in mandatory funding to help overcome the barriers to make it happen.

With global climate change and the search for alternative energy, agriculture could potentially become a potent environmental service provider. If farmers widely adopt best management techniques to store carbon (while reducing nitrous oxide and methane emissions), we could reduce aggregate U.S. greenhouse gas (GHG) emissions by 5 percent to 14 percent and the use of biofuels could further reduce U.S. GHG by 9 percent to 24 percent. For these reasons, we are cautiously optimistic that the political will and policies to help agriculture implement the necessary conservation practices and become a net provider of environmental services for this country are within our reach.