

Sustainable biomass land reserves for a sustainable future

As the United States responds to significant energy and climate challenges, swift progress is needed to move us away from a fossil fuel economy toward a carbohydrate economy based on sustainable renewable energy. However, in our haste to achieve greater energy independence, we should not simply focus on increased production. We must also focus on implementing conservation measures that reduce our insatiable demand for energy, and we must insure that the methods of renewable energy production are truly sustainable. Such a two-pronged approach will provide the best chance of achieving a healthier planet for future generations.

The next U.S. Farm Bill offers an historic opportunity to have a dynamic public debate over the role that agriculture should play in the different paths to a post-fossil fuel economy. If we make the right choices, the 2007 Farm Bill could move our country towards a rural renaissance that provides prosperity to farmers and rural communities while safeguarding soil, water and biodiversity both in the United States and abroad.

There are many important questions in the debate over agriculture's appropriate role in helping to meet our legitimate energy needs. For example, which approaches should be included for this newly emerging bioeconomy with regard to public subsidies, public research, tax and other investment incentives? Which bioenergy technologies should be promoted? Which types of bioenergy production facilities should be built? Which crops should be grown to provide feedstocks to the new bioenergy plants? And who should benefit from the newly emerging bioeconomy—especially when public resources are involved?

To achieve its full promise, new bioenergy production must be done in a manner that benefits independent family farmers, rural communities and the environment. U.S. agricultural policy should promote local and regional use of biomass feedstocks, including on-farm uses, with an emphasis placed on meeting local energy demand. It should encourage farmer and community ownership of sustainable biomass processing facilities. And, U.S. policy should also require sustainable practices in crop production and processing, and focus the greatest attention on the most environmentally beneficial biomass feedstocks, such as native perennial grasses.

Because of decades of public and private investment into annual crop production like corn and soybeans, the 2007 Farm Bill must establish substantial economic incentives for farmers to shift their existing crop acreage from industrial monoculture crops to diversified biomass crops that can be used as feedstocks for bioenergy production facilities. To ensure that farmers and rural communities benefit from this shift, incentives must target those bioenergy technologies that are most conducive to farmer and community ownership. Policy makers must also target those technologies that encourage farmers to grow feedstocks that meet sustainability criteria, and that are ecologically appropriate to the region and climate in which they are grown.

Several policy options should be considered in the 2007 Farm Bill to help us achieve these goals.

Existing Conservation Reserve Program (CRP) lands should not be opened to biomass crop production. CRP has provided enormous environmental, wildlife and public recreational benefits



Written by Dennis Olson, IATP Trade and Global Governance Program

Institute for Agriculture and Trade Policy

2105 First Avenue South | Minneapolis, Minnesota 55404 | USA | (612) 870-0453 | iatp.org

April 2007. ©2007 Institute for Agriculture and Trade Policy. All rights reserved.

that must not be ploughed under in the rush to energy independence. Many agree that CRP is a successful program, but there is growing concern about the continuation of the program due to the expiration of 26 million of the approximate 34.9 million acres of CRP contracts from 2007 – 2010 due to budgetary pressures; and due to increasing political pressure to open CRP to alleviate the high price of corn. However, the American Corn Growers Association commissioned a 2006 study that projected eliminating CRP would: increase government payments by \$31 billion; lower crop market returns by \$22 billion; and decrease net farm income by \$9 billion. CRP is a very popular program that has enjoyed considerable support from farmers, hunters and environmental groups. Besides the economic and environmental reasons to maintain existing CRP acreage, opening up CRP lands would create a backlash against the emerging bioenergy economy. Existing CRP lands should be kept in the program, and CRP should continue as a viable policy tool for meeting a broad range of conservation objectives.

Re-enroll CRP lands into a new Working Lands Conservation Reserve Program. With 26 million acres of CRP contracts set to expire in the next three years, and much of that land not likely to be re-enrolled in the program, it is imperative that we create a new program that would offer a high enough premium to convince these farmers to enroll those outgoing CRP acres into sustainable biomass production, rather than plant them into corn or other monoculture crops. CRP should be amended to allow lands scheduled to come out of the program to be re-enrolled into a modified Working Lands Conservation Reserve Program, which would allow limited harvests of biomass feedstock crops that meet minimum sustainability standards while still enhancing wildlife habit.

Expand Conservation Security Program. Another opportunity to shift existing program crop acreage into sustainable biomass feedstocks would be to explore how the current Conservation Security Program (CSP) might be expanded to allow farmers to cultivate more biomass feedstocks on acreage now devoted to conventional program crops. CSP already has sustainability criteria in place that have been refined and tested with years of experience. Congress should substantially bolster federal CSP funding to provide additional economic incentives for farmers to grow sustainable biomass feedstocks on existing croplands.

Create a new Strategic Renewable Energy Working Lands Reserve Program. Congress should consider creating a new program that would mix and match different provisions from CRP and CSP. Legislation now working its way through the Minnesota Legislature has developed some basic principles of sustainability upon which to base such a program, as well as specific mechanisms for implementation. It would provide long-term contracts to farmers for sustainable production of perennial, native bioenergy crops on agricultural lands through the following provisions:

- **Technical Committee.** Like all conservation title programs, a technical sub-committee would provide guidance to state Natural Resource Council personnel for

the development of standards for biomass production that achieve public benefits such as improved water quality and soil health, soil carbon storage, enhanced biodiversity and wildlife habitat, and a reduction of chemical inputs.

- **Easement Payments.** To spur bioenergy crop production by reducing farmer risk and supporting crop production systems that provide important public benefits.
- **Capital Equipment Loans.** A revolving loan fund to support investment in capital equipment required for bioenergy crop establishment, harvest or transport as part of a supply development strategy.
- **Funding for technical assistance and research/monitoring.** To verify water quality, soil carbon storage, biological diversity, wildlife and habitat impacts and benefits of biomass production, and to permit periodic revisions of biomass incentive programs, guidelines, and standards.

BEYOND CORN: MAKING THE LEAP TO THE NEXT GENERATION OF CELLULOSIC ETHANOL

As the ethanol boon gains momentum, an increasing number of studies have warned of the limits to meeting our energy demand with corn ethanol that has so far been at the forefront of the biofuel revolution. In addition to conservation, much hope is being placed in the “next generation” of ethanol, known as cellulosic ethanol.

Cellulosic ethanol is simply ethanol produced from cellulose rich plant fiber rather than starch-rich grains or simple sugars like those found in corn and sugar cane. Cellulose is a complex carbohydrate that is the dominant component of the cell wall of green plants. Cellulosic feedstocks are diverse and include perennial energy crops, such as switchgrass and prairie grass mixtures; trees, especially fast growing varieties such as poplars and willow; crop and forest residues, including straw, corn stalks, and tree trimmings; and residues from food and industrial processing such as grain hulls and sawdust. While all of these sources are expected to be used for biofuel production, crops dedicated to energy production promise the highest potential benefit from both an energy production and environmental perspective, as these crops can also sequester carbon, reduce water pollution and erosion, and enhance biodiversity. In order to ensure that biofuels retain their “green” attributes, advanced energy crop development should be introduced in conjunction with sustainability standards for their growing, harvesting, and processing. If stewardship criteria are not integrated from the beginning, the threat exists that energy crops may not provide the expected environmental and local community benefits that they have the potential to deliver.

Unfortunately, cellulosic ethanol is still estimated to be several years from commercial viability, because its cost of production is still higher than current prices for corn ethanol and gasoline. This has created a “chicken or the egg” problem. We need more research, development and investment to achieve

commercial production of cellulosic ethanol. Getting cellulosic plants to the point of commercial viability requires consolidating enough feedstock in close enough proximity to the plant to ensure a steady, adequate supply. Cellulosic feedstocks tend to be bulky and heavy, and thus they become uneconomical to ship very far. On the other hand, farmers can't easily afford to make the transition to planting cellulosic feedstocks—as opposed to planting conventional crops like corn—if they can't be sure that there will be a market for their new crop. To make the leap to cellulosic will require a strategy that addresses both problems simultaneously.

PUBLIC FUNDING OF RESEARCH AND DEVELOPMENT FOR CELLULOSIC ETHANOL.

Representative Collin Peterson (D-Minn.), the new chairman of the House Agriculture Committee, supports an aggressive research and development package in the 2007 Farm Bill to assess the feasibility of various cellulosic technologies, and is committed to putting into place a comprehensive package to accelerate the commercialization of cellulosic production. The package is likely to strengthen research on alternative sustainable biomass crops and technologies for processing diversified feedstocks. It may also augment extension service and rural development programs by providing capacity building and training support for farmers to produce sustainable biomass. Peterson is a strong proponent of policies that will promote local ownership of the new plants.

Also being discussed is a combination of public incentives both for investors looking to build plants, and payments to farmers to induce them to grow new cellulosic feedstocks. Importantly, the U.S. Department of Energy has recently approved a round of federal grants to what may be the first commercially viable cellulosic ethanol plants that come into production. Rep. Peterson and Senator Tom Harkin (D-Iowa), the new Senate Agriculture Committee Chairman, have been holding constructive talks with the chairman of the House and Senate Energy Committees to coordinate efforts to secure maximum funding for research and development for cellulosic ethanol.

In the meantime, the Minnesota cellulosic legislation—mentioned above—includes a second package of incentives designed to encourage public investment in cellulosic pilot plants that are owned and operated by farmers or farmer cooperatives; that use sustainable feedstocks such as native grasses; and that produce low pollutant emissions—including greenhouse gas reductions. Additional provisions include:

- **A Production Incentive.** To energy facilities using perennial, native bioenergy crops that meet minimum sustainability criteria.
- **Cellulosic Biofuels Incentives.** To provide stepped incentives for biofuels converted from a feedstock primarily comprised of cellulose, hemicellulose, and/or lignin to facilities with significant farmer ownership.
- **Ensure pay back of public subsidies that help launch farmer cooperatives if outside investors buy them out later.**

- **Establish a cellulosic target that one-quarter of the Minnesota Renewable Fuel Standard will be designated for cellulosic transportation biofuels.**

BIOENERGY AND INTERNATIONAL TRADE

Up until now, current U.S. agriculture and trade policy has been based on promoting an unsustainable industrial model of monocultural production designed to provide below-cost feed to industrial animal factories; below-cost inputs to the food processing industry; and below-cost crops for agro-export companies to gain export market share. A successful shift to sustainable biomass crops offers a unique opportunity to address some of the most vexing and controversial aspects of current U.S. farm policy. We should seize the opportunity that sustainable biomass offers, and steer it in the most promising direction that will benefit farmers, rural communities and the environment not only in the U.S., but also in other countries.

Such a shift away from existing industrial monoculture export crops to sustainable, diversified biomass crops to meet local energy demand could curtail the current overproduction of major program crops—such as corn and soybeans—helping to stabilize farm prices in what have been highly depressed commodity markets. If major exporting countries could agree to work together to shift a substantial amount their crop acreage away from export crops and towards sustainable bioenergy feedstocks targeted to meet local demand, it could contribute to a global increase in commodity prices. This in turn could reduce the current controversial practice of dumping agricultural commodities onto world markets at below the cost of production, and reduce the need for controversial government subsidy payments in developed countries. Curtailing dumping and raising world crop prices is one of the most effective ways to help farmers around the world receive a fair price for their products, especially in developing countries where farmers make up a large share of the world's poorest people. Additionally, vetting policies designed to promote more sustainable bioenergy production through international negotiations could help prevent counterproductive trade challenges to them. For example, while some advocate the dismantling of the current U.S. tariff on imported ethanol as a way to increase biofuels consumption, such a move could reduce domestic ethanol prices and delay the transition to cellulosic feedstocks. Various proposals such as this need to be scrutinized for both their domestic and international ramifications.

TECHNICAL ASSISTANCE TO DEVELOPING COUNTRIES FOR SUSTAINABLE BIOENERGY PRODUCTION

The United States should offer technical assistance to developing countries for programs that support the research, development and adoption of sustainable bioenergy and other renewable energy technologies. Such programs should prioritize getting such resources directly to farmers and local communities to provide the necessary training to grow sustainable biomass crops appropriate to their situations, and to build infrastructure and facilities to process appropriate biomass feedstocks. Local popu-

lations should be ensured an opportunity for meaningful public review of and participation in government decisions to develop sustainability and criteria for bioenergy crops through a transparent, democratic process, and to implement the resulting sustainability criteria on a project-by-project basis. Such a review process should allow public debate, input and consideration on whether proposed bioenergy projects:

- **Enhance local and regional ownership and control, and protecting human rights and the environment to help ensure that local communities share in the benefits of the new bioenergy economy;**
- **Ensure that local, regional and national food needs will be met prior to shifting crop acreage into bioenergy feedstocks. And,**
- **Ensure that any new bioenergy project being proposed for export provides greater net economic benefits to the communities most impacted when weighed against equivalent investments in alternative projects that emphasize meeting local, regional or national energy demand.**

DEVELOPING SUSTAINABLE CROP PRODUCTION STANDARDS

The Institute for Agriculture and Trade Policy will soon initiate a public process for reviewing proposed sustainability crop production standards for growing biomass feedstocks. This process will be carried out through a democratic, transparent process according to the “Code of Good Practices for Social and Environmental Standard Setting” established by the International Social and Environmental Accreditation and Labeling Alliance (ISEAL Alliance). Once completed, such a process would help verify that biomass crops used for energy production meet minimum sustainability criteria, and thereby harness consumer demand to move bioenergy markets in a more sustainable direction. A key challenge to developing sustainability standards, however, is ensuring that affected communities be afforded a meaningful say in the development and implementation of such standards. Additionally, effective sustainability standards must facilitate the informed consent of affected communities with regard to acceptance of proposed biomass feedstocks, bioenergy production facilities and any associated infrastructure.