

The Whole Farm Planner

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Conservation Security Act Fully Funded in Senate Ag Committee Farm Bill

Harkin conservation bill moves to full Senate floor for vote

By Mike McGrath

The Senate Agriculture Committee approved a farm bill on November 15 that includes a fully funded **Conservation Security Program** to provide stewardship incentives on working lands. The Chairman of the Senate Agriculture Committee, Tom Harkin (D-IA) worked diligently to retain his Conservation Security Act in the 10-year, \$42.7 billion Conservation Title package that also includes increased funding for existing conservation programs.

Coming on the heels of a controversial House farm bill that does not include conservation payments for working lands, the Senate Agriculture Committee worked through October and into early November crafting an agricultural funding package out of several proposals by leading committee members. When the dust settled and the votes were counted, Senator Harkin's groundbreaking Conservation Security Program survived the competitive negotiating process fully intact.

"Green payments have now been approved by at least one committee of Congress for the first time in history," said Ferd Hoefner, Washington representative for the Sustainable Agriculture Coalition. "Needless to say, this is a big win."

The Senate Ag Committee's 10-year Conservation Title also includes \$23.7 billion for the Conservation Reserve Program (CRP), \$10.7 billion for the Environmental Quality Incentives Program (EQIP), and \$1.5 billion for the Wetlands Reserve Program (WRP). The **Conservation Security Program** is written as an entitlement program, which means that funding would be available to every eligible producer with an approved **Conservation Security Plan**.

The committee farm bill now moves to the full Senate for a vote that is expected to take place during the month of December. From the Senate floor, the farm bill would then go to a conference committee of both the Senate and the House, where a final farm bill will be crafted.

MSAWG awards Senator Harkin political tool



John Moreland of Senator Tom Harkin's staff and Loni Kemp, Senior Policy Analyst with the Minnesota Project, proudly display a Conservation Security gavel presented to Senator Harkin in appreciation for the Senator's work on keeping the Conservation Security Act in the Senate Ag Committee farm bill. The presentation was part of the winter meeting of the Midwest Sustainable Agriculture Working Group held in Des Moines, Iowa on November 30 and December 1. Although Senator Harkin was in Washington and could not be present, John Moreland of the Senator's staff was on hand to receive the award from MSAWG representatives. As Chairman of the Senate Agriculture Committee, and chief sponsor of the Conservation Security Act, Senator Harkin has continued to be a champion of conservation and the family farm.

**Seasons Greetings and Happy New Year
from the Whole Farm Planner staff.**

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Present-Day Agriculture in Southern Minnesota: Is it Sustainable?

By: Gyles Randall, Soil Scientist, University of Minnesota, Southern Research Station, Waseca, MN

The makeup of the agricultural enterprise in southern Minnesota has changed greatly in the last 30 years. A dramatic shift from a mixed cropping system of corn, alfalfa, small grains, soybeans, and pastures accompanied by many smaller dairy herds to a simple corn and soybean cropping system with fewer small livestock enterprises has occurred and is of great concern.

According to Minnesota Department of Agriculture Statistics, corn and soybeans occupied 80% of the crop acreage in the 9-county southeastern Minnesota area in 1999 compared to 64% in 1975. In the 6-county area closer to the Mississippi River (Fillmore, Goodhue, Houston, Olmsted, Wabasha, and Winona counties), marked by many steep, highly erosive soils, corn and soybean acreage has risen from 55% in 1975 to 72% in 1999. Soybean acreage in Houston and Wabasha counties has increased from 4,000 and 12,000 acres, respectively, in 1975 to 26,000 and 35,000 acres in 1999. Most of the shift to soybeans has been at the expense of large reductions in alfalfa, pastures, and small grains. Corn and soybean acreage in the 11-county area in south central Minnesota has increased from 87% in 1975 to 96% in 1999 primarily because of increasing soybean acreage.

The shift to greater soybean acreage in southern Minnesota has been accompanied by: (1) fewer and larger farm operations, (2) fewer livestock farms, (3) more pest problems, i.e., soybean cyst nematode, white mold disease, soybean aphid, and weed population shifts, (4) increased iron chlorosis pressure in south central and western Minnesota, (5) price challenges, and (6) increased soil erosion. In my travels throughout south central and southeastern Minnesota, I have never seen as much erosion as in the last few years. Yes, we've had some intense rainfall events, but we've also converted the landscape to a crop production system that is extremely susceptible to soil erosion. In my 30 years as a University of Minnesota soil scientist at Waseca, I've never heard so much concern registered over the tremendous amount of erosion as in the last two years - - from urban people as well as farmers.

The concerns and observations outlined above lead me to ask the question *"Is the corn-soybean crop production system as we know it today sustainable?"* I question whether present day agriculture in southern Minnesota is sustainable from economic, environmental, ecological, and sociological perspectives. If it is not sustainable, how can U.S. farm policy create a more sustainable agricultural system in this part of the Corn Belt? The following discussion will address sustainability.

Economics is a primary determinant as to whether an agricultural production system is sustainable - - to the producer, the agricultural infrastructure, and the surrounding community. Global competition, primarily from Argentina, Brazil, and China will put extreme pressure on the U.S. corn and soybean market. Visitors to Brazil indicate that there are upwards of 200 million acres of relatively flat land outside of the Amazon River Basin available to be cleared for crop

production. This is more than the total acreage of corn and soybeans in the U.S. (about 140 million acres). Low prices for corn and soybeans have prevailed the last two years. Federal assistance in the way of loan deficiency payments (LDPs) has been the primary source of profit for most corn and soybean producers. Some have said that without them we would have witnessed the largest bankruptcy ever in American agriculture. Unfortunately, LDPs have stimulated all-out field edge to field edge production because the farmer is rewarded based on the number of bushels produced. Although economically good for the producer, this government policy has come at the expense of soil and water resource stewardship and has created severe long-term consequences. (More on that later.) Additionally, farmers are always looking for higher yielding hybrids and varieties. Higher yielding genetic material has been delivered consistently over time by private industry and land grant Universities through sophisticated research with emphasis on biotechnology and molecular approaches in recent years.

Thus, the current agricultural research system is designed primarily to produce greater yields, which can easily lead to over-production in relationship to demand, and consequently, poorer prices. Coupled with global competition and the likelihood of the American taxpayer questioning government payments (LDPs) to produce products they perceive as not terribly essential to food purchased in grocery stores and restaurants, the economic picture of corn and soybean production as we presently know it becomes rather bleak.

Environmental factors have become more prominent in recent years when determining the sustainability of crop production systems. Soil erosion is a key environmental factor. Soybeans have been recognized for years as a crop that is highly susceptible to soil erosion losses. These losses are due to: (1) little crop growth and hence little soil surface protection from intense rainfall prior to mid-July in Minnesota, especially when planted in 15" or wider rows, (2) small amounts of evapotranspiration (water usage) prior to mid-July, which leads to greater runoff of spring rainfall, (3) small amounts of plant residue remaining on the soil surface after harvest, giving inadequate protection from water erosion late in the fall and in the spring before establishment of the next crop, and (4) the erosivity of soils is increased by soybeans due to their effect on soil tilth and structure.

Conservation tillage practices have been adopted throughout southern Minnesota in the last 30 years with the purpose of leaving plant residue on the soil to reduce soil erosion. However, little residue coverage exists with soybeans, and erosion has become excessive, especially in southeastern Minnesota. The impact of raindrops on bare soil dislodges soil particles resulting in silt and clay-sized particles being carried away in runoff to streams and rivers. Gullies are often formed in the erosion process - - some so large that they need to be avoided by harvest equipment and/or filled in by tillage equipment before they can be crossed.

Alfalfa, pastures, and other grass perennial cropping systems

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such as those planted in the Conservation Reserve Program (CRP) protect against soil erosion in various ways. First, the vegetation intercepts rainfall and its energy preventing the raindrop from directly hitting the soil surface and dislodging soil particles. Second, these crops transpire more water in the spring than do corn or soybeans, thereby creating additional room for storage of rainfall in the soil. Third, the very fibrous root system holds the soil particles in place. These factors substantially buffer the landscape against the rapid runoff of water and soil erosion compared to row crops (soybeans and corn) especially in the spring. As a result, flooding and high peak flows are minimized in landscapes occupied by these perennial crops compared to row crops. I would argue that much of the flash flooding in southeastern and south central Minnesota in recent years has been the result of the shift to more soybeans at the expense of alfalfa, grass pastures, and other grass cropping systems.

Coupled with the shift to the corn-soybean rotation has been the growth in farm size. This has been accompanied by larger machinery to service the expanded acreage in a timely manner. Unfortunately, soil conservation practices such as grassed waterways, narrow contour strips, terraces, etc. are viewed too often as not being compatible with larger machinery. Consequently, the soil conservation practices are either removed from the landscape, or they are managed in a manner that does not protect against soil erosion. My observations in southeastern and south central Minnesota indicate that grassed waterways are being utilized very poorly in the prevention of soil erosion. For some reason I do not understand, these practices, particularly grassed waterways and terraces, seem to be much better utilized and even part of the culture of many northern Iowa farmers.

Rampant erosion and periodic flash flooding occurring in southern Minnesota doesn't lead to sustainable agriculture. The darker colored, most productive surface soils are being eroded away, exposing the less fertile and productive subsoils. The best soils are being deposited in flood plains and rivers, causing serious off-site siltation problems and economic consequences. Meanwhile, crop production in portions of the landscape will undoubtedly suffer and economic vitality will decline.

Nitrate-nitrogen loss from cropping systems to ground and surface waters is also an environmental indicator of sustainability. Nitrate is a form of nitrogen that is very mobile in the soil. Rainfall in excess of evapotranspiration can leach nitrate through the soil profile and into groundwater aquifers in southeastern Minnesota and into subsurface tile drainage in much of south central Minnesota.

Nitrates in the subsurface drainage from highly productive corn and soybean acreage in the Corn Belt are delivered to the Mississippi River and then deposited in the Gulf of Mexico where they are suspected as being the primary factor causing the oxygen-limiting conditions (hypoxia) in the Gulf of Mexico. The corn and soybean cropping system has been shown to be a very leaky system with respect to nitrates. University of Minnesota studies at Lamberton found nitrate-N losses in tile drainage water from corn and soybean row crop systems to be 30 to 50 times greater than from perennial alfalfa and CRP grass/alfalfa systems. This was due to both more water per acre being drained from the row crops and

higher concentrations of nitrate-N in that water compared to the perennial crops. Thus, row crops affect both the quality and the quantity of water leaving the landscape in subsurface tile drainage. In summary, the sustainability of the corn-soybean rotation from an environmental perspective is questioned because of a) greater soil erosion, b) greater and more flashy loss of runoff water (surface and subsurface) compared to cropping systems containing alfalfa and grass perennials, and c) greater loss of nitrate-N to ground and surface waters.

Ecological factors also need to be considered when evaluating sustainability. Plant diversity on the landscape is an indicator that ecologists look to with favor. Increased plant diversity generally means improved habitat to support a wider variety of insects, birds, and animals. Greater numbers and diversity of "wildlife" is generally considered highly favorable in a rural ecosystem and presents an aesthetically pleasing quality, which is gaining appreciable value in American society. The corn-soybean rotation cropping system as currently practiced provides very little opportunity for animal and plant diversity on the landscape.

Transportation of the raw product, i.e., corn and soybeans, down the Mississippi River to New Orleans for overseas shipment also presents an ecological challenge. To economically and efficiently transport corn and soybeans to the Gulf on barges, the lock and dam system on the Mississippi River needs to be reconstructed. Arguments being made daily by the agricultural community claim the Mississippi River needs to be upgraded to accommodate the barge traffic needed for grain shipment. On the other hand, other segments of our society are saying "NO" to these attempts. The Army Corps of Engineers found this to be true this last year as their attempts to reconstruct portions of the River transportation system were denied by the judicial branch. My guess is that corn and soybean agriculture will not win in this ecological debate.

Sociological impacts are also seen as side effects of present day, corn and soybean agriculture. As farms get larger to support profitability in corn and soybean production systems, we see fewer farms and farm families. Rural populations decrease and with that, we see a decline of the rural community. Student numbers in schools and church membership are shrinking. Consolidation and merging are necessary and are becoming the norm. Main streets are becoming deserted as the number of businesses decline. Few local rural youth remain in the rural community after high school graduation. Producers often bypass the local community as inputs needed for the corn-soybean rotation are purchased at larger regional outlets, where prices are cheaper due to large volume purchases. As more production contracts are developed between the agribusiness sector and the farmer, the farmer will gradually assume the role of the "custom operator" or "indentured servant" and he/she will not have the management freedoms previously enjoyed. These trends likely will continue regardless of the cropping system being grown, but the corn-soybean rotation has speeded the process.

Based on the arguments and observations presented in the above discussion, the present-day corn and soybean production system with little livestock in the enterprise does not appear to be sustainable. Substantial changes in federal farm policy, cropping systems, and usage of crops produced on the farm will need to occur in order to sustain a healthy environment and rural community.

Working Landscapes Conference Begins New Dialogue

By Michele Miller, University of Wisconsin,
Center for Integrated Agricultural Systems

More than 200 participants at a Midwest conference on working landscapes this November began a new dialogue between land use planners and land use managers from agricultural, urban and forestry perspectives. This dynamic mix of perspectives yielded critical insight into how we can better communicate the importance of rural lands, particularly to urban audiences. Rural lands are more than simply a place to produce food and lumber – they produce environmental, social and economic benefits that are only minimally considered by planners, policy makers, and developers. Poorly planned suburban landscapes detract from rural amenities, while poorly managed rural lands diminish suburban quality of life.

Conference participants grappled with ways to measure the environmental and other benefits accruing from sound rural land management practices. Land planners require this kind of information to inform stakeholders who then are empowered to make rational land use decisions. Land managers require this information to compare and select management strategies that allow them to reach their personal and societal goals. There were a host of model projects that operated at any number of scales – from the farm, watershed, state, multi-state, and national scales. The dizzying array of models indicated there was need to assess what has been done and carefully choose where future resources should be invested to explore measurement strategies.

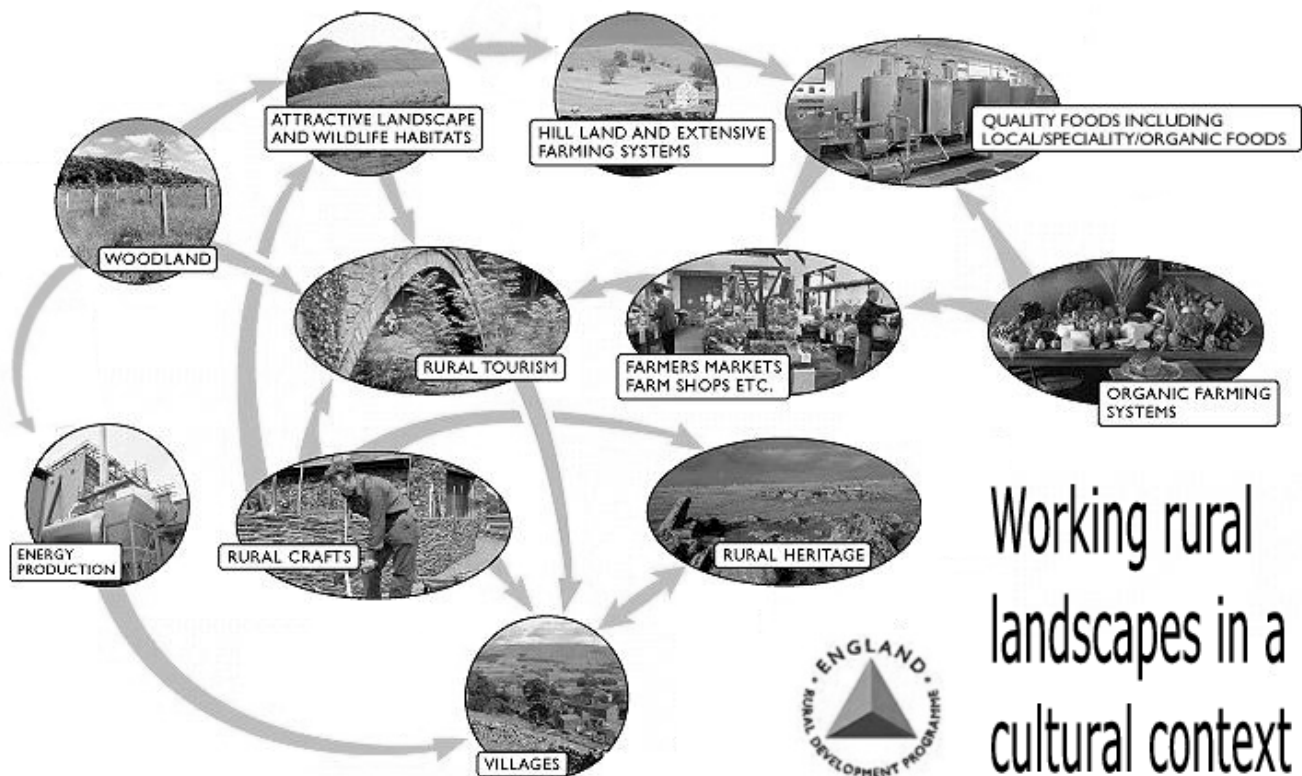
While we have made progress communicating some of the

environmental benefits of rural working landscapes, we have had less success communicating their cultural importance. Our European colleagues have more experience here and can assist us in articulating the cultural importance of traditional rural landscapes. For example, the British government takes a systematic approach to support the web of cultural elements that constitute rural England (see diagram). Identifying the elements and how they relate to one another helps policy makers target resources to strengthen individual elements and enhance their relationships to one another. Land planners tend to focus on physical attributes rather than social attributes associated with the landscape, and therefore miss opportunities to inform the policy sphere of development options, such as farmland protection through assuring access to state pension and health care programs for farm families.

Conference participants learned that most of the environmental and cultural landscape attributes that we value as midwestern people are located along rivers, lakes and wetlands. Thoughtful preservation and careful, limited development near waterways will go a long way toward protecting what we value most about our culture and our environment. Human-made corridors, such as transportation lines, power lines, and septic lines, radiate out from urban centers or string rural communities together. Development occurs along these pathways, often regardless of how they fragment natural areas that offer wildlife habitat or how they disrupt waterways. These linear corridors facilitate resource draws from rural areas into the cities, but can drain the life from rural areas at the same time.

For example, eastern Wisconsin and Chicago could benefit

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Conservation Security Act Could Benefit U.S. Organic Farmers

By Mike McGrath

According to Luanne Lohr, holder of a University of Minnesota School of Agriculture Endowed Chair in Agricultural Systems, organic farmers in the United States could become more competitive with European Union (EU) organic farmers if the Conservation Security Act were to become law in the new farm bill.

European organic farmers benefit from “Agri-Environmental” payments made to farmers by their respective countries for farming in a manner that reduces chemical use, that increases implementation and education of organic farming methods, and that protects the environment.

The Agri-Environmental Program of the European Union is a “Green Box” policy, a policy allowed under World Trade Organization (WTO) rules that is not trade-distorting and therefore not subject to spending limits. The program has served as a catalyst to boost the numbers of small organic farms in Europe, giving those producers a strong competitive edge over U.S. organic farmers in a European organic market that has grown to \$5.3 billion, and an expected international market of over \$100 billion by 2010.

The Conservation Security Act could serve as a counterbalance to the EU’s Agri-Environmental Program, not only providing organic farmers with conservation incentive payments to implement and manage conservation practices on their farms, but providing an annual payment incentive for producers to transition to organic production.

Ms. Lohr's research may be viewed at <http://agecon.lib.umn.edu/> on the internet.

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from a new high voltage power line running from Duluth to Wausau, but the rural people who must live with this power line get no benefit from it at all. Negative relationships between urban and rural communities need to be brought back to balance. Examples can be found where policy makers create a better balance between urban and rural. For instance, New York City paid farmers in its drinking watershed to protect water quality and in turn saved money from scrapping plans to build a new water filtration system. This is a model for the kind of urban – rural partnerships required to better balance resource use. Making sure that urban governments consider the consequences of their actions on rural landscapes and actively support vibrant rural communities needs to be a high-priority in our regional planning process and our agricultural and forest management policies.

We recognize that whole farm planning gives farmers a means to manage the many systems that support their individual “whole” farm to accomplish environmental, social and economic goals articulated by the family. The next step is to take this kind of process to the landscape level – involving rural, suburban, and urban constituents in envisioning specific

Payment Formula for Conservation Security Act

By Loni Kemp

One issue of great interest regarding the proposed Conservation Security Act is the payment formula. How much money will each farm actually receive? While the maximum payment for each of the three tiers has been known for some time, earlier bill drafts listed only general payment criteria.

After some Senators pressed for more specificity, a new payment formula was included in the bill passed by the Senate Agriculture Committee.

In brief, annual contract payments will be based on three factors:

1. A **base payment** for each acre covered in the conservation plan. The base payment is calculated as a percentage (6%, 11% and 20%, respectively, for Tiers I, II and III) of the average county rental rate or another county average rate determined by USDA for the specific land use for the 2001 crop year;
2. Payment for **costs**, figured as the average county costs of the conservation practices. Payment will cover 100 percent of new management practices, 100 percent of maintenance of new and existing management practices, 75% of new land-based structural practices, and 100% of maintenance of existing land-based structural practices. 1 and 2 factors added together may not exceed 75% of the maximum annual payment.
3. An **environmental bonus** amount, as determined by the Secretary of Agriculture. The bonus will reward conservation plans that exceed minimum requirements, exceed local conservation priorities, address national priority concerns as determined by the Secretary, are part of a conservation research project, include record keeping and monitoring, are part of a watershed project involving at least 75% of farms, or are implemented by a beginning farmer or rancher.

Maximum annual payments stayed the same at \$20,000 for Tier I, \$35,000 for Tier II, and \$50,000 for Tier III. To read the conservation title of the farm bill going to the Senate floor, link to <http://fb-net.org/FB/2002/S1731Cons.htm>.

landscapes, assessing resources to achieve these visions, planning for future development, and monitoring progress toward shared goals. Translating the holistic farm planning approach to managing a much larger whole – that of the regional landscape – presents challenges and opportunities that conference participants just barely began to comprehend.

This was one gathering of many intended to address working landscapes issues. You can find information on up-coming events that continue this dialogue, conference notes and proceedings at the conference website www.workinglandscapes.org

Profile—The Conservation Security Program in the Field: Providing Stewardship Incentives on a Family Dairy Farm

—by Mike McGrath

The Family Farm

The Taylor Family has a legacy. Theirs is a proud heritage of farming on hilly ground that has passed through four generations.

Ed Taylor's grandfather came to the Root River Valley to work for the Civilian Conservation Corps (CCC) to develop conservation practices on a landscape that had been ravaged by bad farming practices. The CCC camp in which he lived was built upon a stretch of land that lies between the South Branch of the Root River and a spring-fed trout stream known as Duschee Creek.

When his work with the CCC was done, he bought the farm the camp was built on and the Taylor farming legacy was born. Three generations later, Ed and his wife Verna assist their daughter Chris and her husband Pat Troendle in operating the 200-cow dairy farm. Chris's brother also works full time on the farm with the family.

The Taylor farm, Duschee Creek Dairy, is comprised of 600 acres of hilly cropland, steep wooded bluffs and creek bottom in Southeastern Minnesota's bluff country. The karst geology of the landscape, and the fact that the farmstead straddles an important trout stream, requires the Taylors and the Troendles to practice conservation farming.

"We are literally between a rock and a hard spot," explains Pat Troendle as he points to the steep bluff behind the milking barn and the clear Duschee Creek that flows right through the farmstead.

Just a few hundred yards upstream from the farm is one of Minnesota's largest fish hatcheries, operated by the Department of Natural Resources (DNR). The Lanesboro hatchery produces stock not only for the local streams but also for the lakes of northern Minnesota. Most of the Taylor's crop fields drain into the narrow valley where the hatchery lies.

Just a few hundred yards down stream from the farmyard, Duschee Creek empties into the South Branch of the Root River, a river considered to be one of the best trout streams in the State of Minnesota. Just past that confluence is the tourist town of Lanesboro.

Always in full view of the DNR, the urban tourists, and the angling sportsman, the Taylors and the Troendles know that their farm is in a very sensitive location. But this farm family has nothing to hide. Conservation farming has always been ingrained in both the Taylor and the Troendle families.

Before Pat Troendle married into the Taylor family, he farmed in neighboring Houston County on a landscape not unlike the Taylor farm. He grew up farming with contour strips, crop rotations, and careful management.

Current Production Plan

Duschee Creek Dairy is comprised of 600 acres. Of that, 465 acres are tillable and divided into 116 different fields. The owners keep detailed planting records on each field, documenting cropping histories, planting and harvesting dates,

and chemical and manure application.

The Duschee Creek Dairy rotation consists of two years of corn, followed by a new seeding of oats/alfalfa. The alfalfa is then harvested for 2 to 3 years before it is plowed under to allow the rotation to begin again with corn.

Of the 465 acres of tillable ground, at least 200 acres are always in corn. About 150 acres of the corn is harvested for silage and the remaining 50 acres is harvested for grain. All of the corn is fed to the cattle.

The remaining tillable ground on the farm is kept in hay and grass and small grains. The farm requires about 160 acres of alfalfa each year for the production cows, and an additional 20 acres of brome and rye grass hay is harvested for the dry cows. The remaining tillable land is comprised of new alfalfa seeding.

The remaining acreage on Duschee Creek Dairy is a mix of pasture, sparsely wooded pasture, and woodland. The heifers and dry cows are pastured.

Current Conservation Practices

Manure management

Similar to other dairies, the Duschee Creek Dairy keeps its milking cows in loafing sheds and feeding areas adjacent to the milking parlor. This requires a large liquid manure storage lagoon that must be emptied several times each year.

To accommodate a mid-summer draining of the lagoon, and to provide an extra crop rotation between plantings of alfalfa, the farm adds a rotation of peas and barley in some of the steeper fields.

At the end of an alfalfa rotation the field is killed off with Round-up herbicide in the fall and tilled. In the spring, peas and barley are seeded into the field and then harvested around July 1. This allows for a mid-summer manure application from the lagoon that is immediately incorporated into the ground. The field is then reseeded to alfalfa on August 1, and a 2 to 3 year alfalfa rotation begins again.

Crop rotations and contour planting

Most of the crops grown at Duschee Creek Dairy are planted in strips on contour. Each strip is considered a separate field for record keeping. Soil testing is conducted about every 3 to 4 years.

The waterways on the farm are in grass, though narrow and in need of repair, and older diversion dams are in place to retain runoff and reduce erosion. Because the Duschee Creek operation relies heavily on alfalfa for baling and silage, the rotations are scheduled to maximize production of this resource-conserving crop.

The fields in the flats near the creek and the farmstead are kept in continuous corn because the soils are wetter. In order

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to inject manure in these fields the operation maintains a 15-foot buffer between the tilled ground and the stream.

Through a cost-share program with the DNR, new fences were constructed along the stream banks to keep grazing cattle out of the important trout waterway.

Implementing a Conservation Security Plan

The Taylor-Troendle dairy farm serves as a great model for implementation of a Conservation Security Plan should stewardship incentives become part of the next Farm Bill. The following outline indicates the conservation practices from each tier that the farm is already implementing that would be eligible for enrollment in a Conservation Security Plan.

Conservation practices that could be added under a Conservation Security Plan to enhance the resources of the operation and improve water quality are bulleted and noted in bold italics.

Tier I: Basic conservation activities: Annual payments up to \$20,000.

1. **Soil Conservation and Nutrient management**—Duschee Creek Dairy currently performs soil testing every 3 to 4 years where practical and affordable. A pea/barley/alfalfa rotation is utilized on some fields to allow for incorporation of manure three times per year, thereby reducing the amount of liquid manure that must be stored.

- *Soil testing could be conducted on a more regular basis on all fields to maximize nutrient management and soil health.*

2. **Grazing, pasture, and rangeland management**—This operation currently grazes heifers and dry cows on the creek bottoms and upland pastures. Animals are rotated through larger fields.

- *The operation could develop a rotational grazing system that utilizes smaller paddock areas with electric fencing for the heifers and dry cows.*

3. **Fish and wildlife protection and enhancement**—The Duschee Creek Dairy operation currently maintains a 15-foot buffer between the stream and the tillable land so that manure can be injected into the field. The bottom pastures that front the creek have been fenced to prevent the cattle from grazing the critical trout habitat.

- *The tillable creek-front land could be permanently converted to grass and fenced for rotational grazing to reduce soil erosion during small stream flooding.*

4. **Contour farming, strip cropping, and cover cropping**—Contour farming and strip cropping are all standard practices to maximize soil management and erosion control on the hilly, highly erodible soils of Duschee Creek dairy. The use of cover cropping is also maximized through production plan that emphasizes an alfalfa and pea/barley rotation.

- *Following corn chopping in early September, the operators could plant “green manure” cover crops that could be incorporated into the soil at spring cultivation, producing valuable tilth benefits and reducing chemical*

fertilizers.

5. **Record-keeping, monitoring and evaluation**—The Taylor/Troendle operation already keeps very detailed records of crop histories, manure applications and chemical input on all fields. The current farm plan manages the farmed fields in 116 different units that serve to maximize production and produce valuable tools for monitoring and evaluation.

Tier II: Land Use Adjustments: Annual payments up to \$35,000.

1. **Resource-conserving crop rotations**—The current rotation consists of 2 years of corn, followed by a year of new alfalfa seeding with an oats nurse crop that is harvested as hay, then 2 to 3 years of harvesting alfalfa.

Additionally, the operation incorporates a pea/barley planting on about 40 acres of steeper, more erodible ground each year, allowing for the elimination of the two-year corn crop and a quick return to resource-conserving alfalfa.

- *Duschee Creek Dairy could incorporate other nitrogen fixing forage crops and small grains with feed value into the production plan.*

2. **Partial field conservation practices, grass waterways**—The farm currently has grass waterways and diversion dams that are older and need some repair.

- *This operation could rebuild the grass waterways and repair the diversion dams to current conservation standards.*

3. **Fish and wildlife habitat protection and restoration; Native grassland restoration**—Through a cooperative effort with the DNR, and to protect valuable fish habitat and water quality, the operation has already fenced the pastures where they front on Duschee Creek so that the cattle cannot graze in the stream.

- *Ed Taylor would like to retire some of the marginal soils and plant more food plots and trees for wildlife. Food plots for native whitetail deer and turkeys are currently left in some the fields to support wildlife habitat.*
- *Other areas of marginal soils could be planted in mixed hardwoods and conifers to establish new woodlands.*
- *Additionally, marginal soil areas where long-term erosion has reduced topsoil could be planted in native prairie grasses and wildflowers. These plantings would enhance soil conservation, reduce erosion and runoff, and develop wildlife habitat.*

4. **Agro-forestry practices, wildlife corridors, field borders**—The Duschee Creek Dairy contains 60 acres of steeper woodlands that separate the upland tillable fields from the creek valley below where the fish hatchery and the farmstead and milking parlor are located. Dry cows and heifers graze this wooded area.

- *The farm’s steep woodland could be managed for forestry practices, culling out undesirable trees and replenishing red oak, white oak, walnut, and butternut. These enhanced wildlife corridors would provide mast for future generations of wildlife. This conservation practice would provide for the long-term sustainability*

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of the existing, wooded slopes that serve as a buffer between the cropland and the Duschee Creek valley below, absorbing and utilizing agricultural runoff from the fields above.

Tier III: Address all priority resources of concern of the total agriculture operation: Annual conservation payment of up to \$50,000.

The priority resource concerns of the Duschee Creek basin and the Root River basin are soil conservation and water quality. Other resource concerns for this location include woodland management and oak restoration, as well as wildlife habitat protection.

A **Conservation Security Plan** that included all of the **Tier I and Tier II** practices listed above would integrate a nearly full complement of conservation practices to address the priority resource concerns of the sensitive watershed basin where the farm is located.

Other options for the **Tier III** level of conservation could include any of the following:

- *Develop an alternative manure-management program utilizing a methane digester power generation system to support on-farm energy needs.*
- *Install and operate a wind turbine energy system to serve on-farm needs.*
- *Relocate milking barns to upland location to allow for a rotational grazing system to be developed adjacent to the milking parlor.*
- *Develop alternative niche markets for on-farm production of value-added dairy products such as butter, cheese, and cream products.*

Stewardship incentive payments for this dairy operation would not only provide incentives for the development and maintenance of conservation practices, it would also increase the profitability of this agricultural operation and thus increase the quality of life associated with this farm.