

OF POTATOES, BUTTERFLIES, CRANES, PINES AND PRAIRIES



Wisconsin's Whole-Farm Healthy Grown Approach
to On-Farm Conservation



Two-thirds of the land in this country is privately owned — and the majority of that land is used for agriculture. For that reason, ecologists and conservation groups are taking a new look at privately owned lands as starting points for major conservation efforts. “We have to realize that farms do more than simply provide produce — they can provide clean ground water, biological diversity, carbon accumulation, healthy soil and improved natural lands and homes for myriad species,” notes Jeb Barzen, International Crane Foundation Director of Field Ecology. “Farmers have a strong land ethic — but they don’t necessarily have the resources or tools needed to care for the land as much as they, or we, might wish. Conservationists and farmers have great opportunities to collaborate and solve most environmental problems that society faces worldwide, and through collaboration we can implement many conservation activities.”

A FARM IS A SMALL PORTION OF A GREATER WHOLE

One such on-farm conservation effort is the Wisconsin Healthy Grown potato Natural Community Standard — a set of on-farm conservation practices that restore degraded lands, improve biodiversity and restore native ecosystems located on unfarmed portions of land. The Standard is based on The Nature Conservancy’s (TNC) ‘5-S’ system (now known as the Conservation Action Plan) for site conservation and is one component of the whole-farm sustainable agriculture practices of the Healthy Grown farmers.

Explains Barzen, “Healthy Grown represents the future of farming and conservation working together. The growers use a whole-farm approach, addressing biodiversity, water quality, and soil erosion while simultaneously producing our food.”

Healthy Grown farmers work with teams of ecologists from the University of Wisconsin-Madison (UW-Madison)

Established in 1996 through a Wisconsin Eco-Potato partnership between the Wisconsin Potato and Vegetable Growers Association (WPVGA), the World Wildlife Fund and the University of Wisconsin, the Healthy Grown certification program has led to reduced use of crop inputs such as nutrients, pesticides and other additives and the adoption of biologically based pest management systems that do not harm the environment. All Healthy Grown growers, packers and shippers are certified and audited annually by Protected Harvest — an independent oversight organization that ensures strict adherence to sustainable agriculture standards. The International Crane Foundation and the Defenders of Wildlife are also part of the partnership.

and the International Crane Foundation to determine which natural communities can be restored. The parcels of land on the Healthy Grown farms are evaluated in a regional context to take into consideration the interplay between animal and plant species in larger landscapes — after all, grassland birds, insects and mammals depend on far larger landscapes than that of an individual farm.

The natural communities are chosen for ecological restoration based on the following parameters:

- The site fits within local and regional conservation objectives.
- The site contains remnants of native plant communities or is suitable for restoration of native plant communities.
- The landowner has no plans for development or other use of the site.
- Restoration on the site will be economically sustainable.

“What we do as growers matters,” notes Healthy Grown farmer Larry Alsum, president and CEO of Alsum Farms & Produce, Inc. “I’m personally responsible for 1,200 acres of Wisconsin land and I take that very seriously. My farm isn’t simply a collection of parcels — it’s a small part of the global ecosystem. The choices I make as a grower aren’t limited to the invisible boundaries of my farm — they impact adjacent lands and the welfare of larger ecosystems.”

Continues Alsum, “Of our 1,200 acres, 1,000 of those acres are planted and irrigated. That leaves 200 acres — or 16.7% of the land — that isn’t farmed. On most Healthy Grown farms, 15 - 30% of land is not being cultivated and is available for restoring natural communities. Now just think of the environmental impact we could have if every farmer in the U.S. worked to restore that acreage. Those dry corners and unfarmed lands could provide healthy, diverse habitats for animals, improve pollination and nutrient uptake — even effect water uptake. Small steps on private lands could lead to big results for all of us.”

REGENERATING ECOSYSTEMS WITH FIRE

According to Emily Aker, a graduate student at the Gaylord Nelson Institute for Environmental Studies at the UW-Madison and author of the thesis “Monitoring vegetation response to ecosystem management in agricultural landscapes under an ecolabel scheme,” since the 1840s, Wisconsin has experienced devastating losses to its native ecosystems. Less than .01% of upland prairies, oak savanna and oak-pine barren communities’ original land coverage remains in Wisconsin — and are now classified as globally endangered. Akers notes that this level of degradation is greater than “nearly any other ecosystem in North America.”

“We’re working to reverse this by restoring unfarmed lands on each of the Healthy Grown farms,” explains



Father and son — Larry and Noah Alsum.
“What we do as growers matters,” notes Larry.

Dr. Deana Knuteson, BioIPM Field Coordinator for the Wisconsin Eco-Potato partnership. “Native landscapes were diverse — and that diversity prevented invasive species from taking over. During the past 170 years, agriculture, suppression of fires, drainage of wetlands, the planting of pine plantations and logging have taken their toll. We now have landscapes that are significantly less diverse — plants, insects and animals. Homogenized landscapes are more vulnerable to fungal diseases and more easily overrun by invasive species. Every acre we restore on these farms can have a positive effect on neighboring lands — improving biodiversity, wildlife habitats, pollination, soil fertility, nutrient cycling, water quality and filtration.”

For sites that meet the four Natural Community parameters, a prioritization is determined for restoration management. Sites that have remnant (intact) native vegetation, are large in acreage,

contain rare or endangered species, and/or are in close proximity to larger conservation lands (such as Fish and Wildlife or Department of Natural Resources properties) are given highest priority. The emphasis thus far has been to restore native prairies and wetlands, and help convert wooded areas back to the open oak-pine barren and savanna communities that existed in the early nineteenth-century.

The Alsum Farm, located in Iowa County near Arena, Wisconsin, falls within the Wisconsin Department of Natural Resources' "Western Coulee and Ridges" ecological landscape. Within this landscape occur a number of natural communities that have been identified as being of high conservation importance. Two such natural communities, oak-pine barrens and dry-mesic prairie, occur on the Alsum Farm.

Former collaboration ecologist Ted Anchor surveyed the Alsum Farm property for sites that were suitable for restoration. He identified an oak-pine barrens remnant adjacent to the farmyard and a fallow area west of the farm offices that was suitable for restoration of dry-mesic prairie. Because these two sites did or could support natural communities of high conservation priority, as identified by the Wisconsin DNR, they received a high ranking during Anchor's survey. The oak-pine barrens also contained plant species that are indicators of remnant natural communities or high-quality restorations. These included hairy puccoon (*Lithospermum caroliniense*), silky aster (*Aster sericeus*), June grass (*Koeleria macrantha*), and sand cherry (*Prunus pumila*).

Each year, the collaboration ecologist evaluates the Alsum Natural Community sites to determine management actions that should be taken to maintain or improve the sites' plant diversity and ecosystem functioning. One important conservation management tool used on the Alsum Farm has been prescribed fire. Since the mid-nineteenth century, human populations have fought and restricted fires that are a natural

regenerator for both oak-pine barrens and dry-mesic prairies. These eco-communities consist of plants that are naturally fire-adapted. Fire is a useful tool for reducing the cover of woody vegetation, which historically would have been found at low densities in barrens and prairie communities. Fire also stimulates the growth and seed production of many native grassland plants. Prescribed fires are done on an as-needed basis as determined by the team of UW researchers — burn too often and you can reduce biological abundance, possibly reduce the carbon storage function of the ecosystem and negatively impact butterfly populations, such as that of the Karner Blue butterfly.

THE
ALSUM FARM
FALLS WITHIN THE
WISCONSIN DEPARTMENT
OF NATURAL RESOURCES'
"WESTERN COULEE AND
RIDGES" ECOLOGICAL
LANDSCAPE.

THE TRIUMPH OF DIVERSITY

Over the past century-and-a-half, the decrease in fires has led to an increase in the density of woody species, which has led to an increase in mesic and shade tolerant species. Further, the widespread planting of red and white pines, the introduction of non-native species and the draining of wetlands have led to a decrease in biodiversity. In nature, uniformity is not the ideal — diversity is. When non-native invasive species are introduced to an ecosystem, they aggressively crowd out other plants and decrease diversity. This leads to a chain reaction — impacting the diversity of insects, small animals, then large animals.

To control exotic or native invasive species which are aggressive and cannot be managed with prescribed fire alone, eco-friendly herbicides are spot applied to targeted species. On the Alsum Farm spotted knapweed (*Centaurea biebersteinii*), an exotic invasive perennial with prolific seed production, is one such target. Herbicide is used to control this species so that it does not spread to the detriment of native species' diversity on the site. To open up the remnant Natural Communities, shrubs or trees which are not considered native to the oak-pine barrens natural community are cut



Oak-pine barrens — one of the Natural Communities currently being restored on the Alsum farm.

and the stumps herbicided, which augments the effects of prescribed fire. To boost native plant diversity and recreate the plant community that was typical of dry-mesic prairie in the nineteenth century, seed or seedlings are planted in the prairie restoration community. Seed is collected from local remnants or purchased from suppliers that sell local-genotype seed — that is, seed adapted to the particular climate and soils where the restoration occurs.

Since management began in 2003 in the oak-pine barrens and in 2005 in the dry-mesic prairie restoration, the coverage of woody species in the Alsum Farm oak-pine barrens has declined, coverage of aggressive invasive species such as spotted knapweed has declined in the prairie restoration, and new native species are being discovered in the natural communities each year.

ANIMALS AND VEGETABLES

Plant restoration practices are inseparable from wildlife preservation. “Sixty-three percent of all animal taxa in Midwestern agricultural landscapes are dependent on land vegetated by remnant or natural vegetation communities,” notes Akers. Thus, the participation of organizations such as Defenders of Wildlife, the World Wildlife Fund and the International Crane Foundation are critical to the Healthy Grown Natural Community initiatives.

“Defenders of Wildlife has been involved in the Healthy Grown collaboration for over five years and will remain a future partner as the restoration of critical ecosystems and biodiversity conservation expands on Healthy Grown farms,” states Dr. Frank Casey, Director, Conservation Economics Program, Defenders of Wildlife. “In the face of population growth in rural areas and as the impacts of climate change on biodiversity emerge, the forward-looking, pro-active conservation efforts of Healthy Grown producers will be critical to species abundance and survival. The Healthy Grown experience serves as a model for incorporating biodiversity conservation into current efforts to define indicators for sustainable agricultural production.”

Alsum notes, “By removing invasive species, removing deadwood, spurring growth and diversity with fire, we’re providing more diverse habitats for more diverse animal populations — Sandhill cranes, butterflies, insects, pheasants, woodchucks, birds, deer, raccoon, fox.”

Does the improvement of remnant habitats lead to greater threats to the potato crops? “In theory, yes,” explains Alsum, “but we haven’t seen a greater loss to our crops. Yes, cranes feed off our crops, but in working with different wildlife organizations we’ve learned to recognize that we need to coexist with wildlife. There are ways to make it work together.” One of those ways includes the planting of trap crops on the ends of the potato fields — crops that lure insects away from the harvest crop.



Oak-pine barren restoration in process on the Alsum farm.

A FIELD DOES NOT EXIST IN ISOLATION

Just as Alsum notes that his farm does not exist in isolation, so he notes that how he farms cannot be isolated from the effects it has on the natural communities within his farm. Every Healthy Grown farmer must adhere to strict third-party audits to ensure they are utilizing specified environmentally-friendly means of targeting insects. Utilizing Integrated Pest Management techniques and working directly with UW researchers, Alsum utilizes professional crop scouts to identify potential diseases and invasive insects. “We don’t believe in blanket approaches — a “whole field” approach. Instead, we target very specific problem areas and apply very limited applications of eco-friendly pest controls, fungicides, nutrients or herbicides.”

A newer water conservation/utilization effort on Alsum Farms involves the use of a dam/dike process. Potatoes are hilled with long trenches between the rows. The result — rain runs away from the plants into the trenches and down the row. Alsum is using a hilling machine to form a dam/dike in the field that helps retain water in the trenches where the roots of the plants have better access to it. Because numerous dams/dikes are made along the trenches, Alsum is effectively creating little pockets in each trench that prevents the water from running down the row — it also serves as an effective “rain barrel.” The practice also contributes to less erosion and better nutrient uptake by the plants — because the water isn’t running down the rows.

FUTURE

While restoration of the natural communities is a long-term undertaking, the benefits to previously declining plant and animal populations can be measured soon after management begins. By considering the larger landscape within which the Alsum Farm exists, the Healthy Grown program is ensuring that growers’ restoration actions have a conservation impact beyond the boundaries of their farms. Current research efforts are underway on Alsum Farms to better understand how non-crop lands enhance natural pest predation, groundwater recharge and erosion protection.

“It’s not one continuous success story,” notes Alsum. “We’re always learning and that means sometimes

The benefits to previously declining plant and animal populations can be measured soon after management begins.

the things we try simply don’t work out. But that’s all part of the Healthy Grown process. Challenges are just opportunities to learn more. Hopefully our challenges and successes can serve as an example to other agricultural communities around the world.”

ABOUT WISCONSIN HEALTHY GROWN POTATOES

The Wisconsin Eco-Potato Partnership helps potato growers reduce the use of crop protection inputs — such as nutrients, pesticides and other additives — by adopting integrated pest management (IPM) alternatives — biologically based pest management systems that do not harm the environment. The partnership works to reduce contamination of water, conserve natural ecosystems, and increase productivity through IPM and crop rotation. The International Crane Foundation and the Defenders of Wildlife are also part of the partnership.

The Wisconsin Eco-Potato Partnership received the prestigious USDA Secretary's Honor Awards for Maintaining and Enhancing the Nation's Natural Resources and Environment in 2003, the World Wildlife Fund Gift to the Earth Award, the international IPM Award of Achievement in 2005, and the International Crane Foundation Good Egg Award for Excellence in 2006.

As a result of the Eco-Potato Partnership, WPVGA has developed the eco-brand, Healthy Grown® potatoes. Healthy Grown® potatoes are not genetically modified produce; are grown according to stringent environmentally friendly growing standards; and are available in russets, reds, yellow flesh and round white varieties.

HEALTHY GROWN® GROWERS:

- Maintain diverse and productive natural and agricultural ecosystems in tandem with one another through ongoing conservation efforts.
- Are certified and audited by Protected Harvest, an independent oversight organization that ensures strict adherence to sustainable agriculture standards.
- Must annually pass field-by-field certification with a farm audit and pesticide, fertility, and bio IPM record requirements for each field.
- Document all aspects of their growing and sustainability practices.
- Work solely with packers and shippers certified by Protected Harvest, to ensure the Healthy Grown potatoes that are certified in the field are the ones packaged and sold to customers.



ABOUT ALSUM FARMS & PRODUCE, INC.

Located in the Lower Wisconsin River Valley of Friesland, WI, Alsum Farms & Produce, Inc. is a leading grower/repacker of potatoes and onions and a full line fruit and vegetable distributor. Alsum Farms & Produce, Inc. is a certified Healthy Grown grower with an eco-friendly approach to farming. We utilize Integrated Pest Management and soil conservation practices, minimize tillage, optimize irrigation methods and are eco-conservationists who restore biodiversity to our unfarmed lands. We provide high quality Russets, Red, White, Golden and Purple potatoes to customers year round.



ABOUT WISCONSIN POTATO AND VEGETABLE GROWERS ASSOCIATION (WPVGA)

Established in 1948, the WPVGA is headquartered in Antigo, Wisconsin. WPVGA provides grower education, government support, environmentally sound research and consumer education for 150 grower organizations across the state. WPVGA is responsible for expanding the Wisconsin potato markets through advertising, promotion and research. WPVGA also supports the Wisconsin Healthy Grown® initiative — reduced crop protection inputs, integrated pest management, sustainable farming practices overseen by Protected Harvest, an independent oversight organization. www.wisconsinpotatoes.com.

