

Sunshine Prairie Farm

Barry County, Michigan



Case Study

Agricultural pollution prevention is defined as source reduction, reuse, or environmentally sound recycling and other prevention activities, including nonpoint source approaches.

Pollution Prevention Through Whole Farm Planning

Sunshine Prairie Farm, a 1,000-acre operation located in southern Barry County, is a pioneer of agricultural stewardship. The farm is owned and operated by Mr. Tom Guthrie Jr., and his son, Tom Guthrie III. This diversified farm is primarily an alfalfa-grass hay operation, with smaller amounts of corn, soybeans, wheat, spelts, and canola. A vegetable roadside stand compliments the picture. The Guthries also have a petting zoo with a variety of farm animals.

In 1994, the W.K. Kellogg Foundation received a four-year grant for a national project called the Integrated Farming Systems Initiative (IFS). The IFS initiative was aimed at helping farmers develop systems that were more resource-efficient and to aid communities in the development of projects that support sustainable agricultural food and farming systems. The IFS initiative sponsored 18 projects nationwide, including the Michigan Integrated Food and Farming Systems (MIFFS) program, which focused on building state and local leadership to promote integrated farming systems. The MIFFS proposal initially sponsored five projects, including the Stewardship Plan for Water Quality (SPWQ).



The Guthrie Family

The SPWQ project began in 1994 and was based at the Sunshine Prairie Farm.

The SPWQ set three primary goals. The first goal was to develop a water quality plan based on a whole farm perspective, implementing practices such as the utilization of filter strips, building a chemical containment facility, composting, well closure, integrated pest management, conservation tillage, and crop

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rotations. The second goal was to demonstrate practical, real-world processes modeled after Farm*A*Syst and the Ontario Environmental Farm Plan that could be easily transferred to other farmsteads without undue changes. The third goal was to evaluate environmental and economic benefits resulting from altered farm practices of the stewardship plan.

The SPWQ project began with the assembly of a project team. The size and membership of the team changed periodically and included representatives from USDA's Natural Resource Conservation Service (NRCS); the Michigan Departments of Environmental Quality, Agriculture, and Natural Resources; MSU Extension, Kellogg Biological Station; Michigan Farm Bureau; Barry County Conservation District; the Lake Associations; Gloria Hecht, a recycling expert; both of the Guthries; and other concerned persons. The team met at varying intervals during the project.



Project Activities

*Farm*A*Syst:* The team completed a Farm*A*Syst evaluation of the Guthrie farm in the early stages of the project. Farm*A*Syst is a voluntary and confidential farmstead risk assessment tool that helps farmers identify risks

to groundwater and surface water associated with their farmstead practices and conditions. It provides tips on how to reduce risks, how to comply with relevant regulations, and how to set priorities that minimize risks.

Livestock Yard Filter Strip: Drainage from the livestock yard previously went into an area of pasture. To handle contaminated runoff from the livestock yard, the Guthries planted a filter strip. The filter strip was planted with a mixture of grasses and extends from the livestock yard to the pasture. It is estimated that a properly installed and maintained filter strip can remove 60 to 80 percent of wastewater nutrients.

Chemical Containment Facility: With the help of cost-share dollars from the U.S. Farm Service Agency (formally the Agricultural Stabilization and Conservation Service) and a grant from the Michigan Groundwater Stewardship Program, the Guthries built a chemical containment facility to house chemicals. A chemical containment facility helps prevent an agrochemical storage accident by decreasing residential, commercial, and livestock exposure. A proper storage facility is located as far away as possible from water sources and flammable structures, downwind from endangered areas, and in a no flooding zone.

Composting: Composting is a process that converts a variety of by-products, (ie. animal bedding, animal waste, leaves, and other carbon sources) into a more stable form of nutrients for plants utilization. The Guthries use straw and yard waste as their carbon source. Two local lake associations (Crooked Lake and Wall Lake) volunteer to collect and transport the yard

waste. This arrangement continues to produce a carbon source for the Guthrie's composting operation and is considered by the team to be a success. The use of compost as a fertilizer reduces the need for applying raw manure and chemical fertilizers, which could potentially enter ground or surface waters. This also reduces their fertilizer input costs.

Well Closure: With the help of Farm*A*Syst and the Ontario Environmental Farm Plan, the Guthrie's identified an abandoned well on the farm that was a risk to groundwater quality. Abandoned wells are a risk to groundwater quality because they can provide a direct path from the land surface to groundwater. If abandoned wells are not sealed properly, pesticides, fertilizers, and other contaminants can easily enter a groundwater supply. Sealed wells eliminate the risk of a person falling into an unsealed abandoned well.

The abandoned well on the Guthrie property was a two-inch well of uncertain age, approximately 50-feet deep, and previously used for animal watering. A local well drilling company closed the well. This activity shows how technical assistance and a minimal amount of cost-share (less than \$500) can encourage environmental stewardship while serving as a model to others.

Integrated Pest Management: The Ontario Environmental Farm Plan identified pest scouting as a low-cost, pollution prevention (P2) practice that the Guthries could implement to increase efficiency of pesticide use while reducing costs and risks to water resources. The SPWQ project funded pest scout training for Tom Guthrie III that he continues to use on the farm. Pest scouting is a process by which a

person physically combs a field and collects information on the types of pests in that area. Accurate and timely scouting identifies possible pest problems before they reach thresholds causing economic losses. This allows for timely treatment of the identified pest.

Conservation Tillage: Methods such as no-till and residue management are utilized on the Guthrie farm to address water quality, soil erosion, the enhancement of soil quality and structure. No-till is a tillage method that causes minimal disturbance of soil residue at planting time. Residue management results from reduced tillage practices that leave residue in the top two-four inches of the soil. This allows for greater water intake and less wind erosion. These two methods are incorporated into all Guthrie farm plantings.

Crop Rotation: Rotation of crops is a practice that disrupts the infestation patterns of disease and pests, while allowing for the most efficient use of soil nutrients.

Education: The SPWQ sponsored a number of educational farm tours to demonstrate pollution prevention and whole-farm planning techniques. Nationwide IFS organizations, state and federal legislators, government officials, and hundreds of elementary students participated in the tours. Natural Resources Conservation Service (NRCS) and MSU-Extension utilized the project as a teaching tool to aid in the education of their service providers.

Stewardship Plan for Water Quality (SPWQ)

Project Goals

- 1. To develop and implement a model stewardship plan to protect water quality and other natural resources.*
- 2. Design the plan with a cross-representative team of collaborators.*
- 3. Evaluate the economic impact of altering farm practices according to the plan.*
- 4. Involve, educate, and partner with local communities to address water quality concerns of both agricultural and nonagricultural residents.*

A second educational achievement was the development of a SPWQ process “cookbook.” This “cookbook” outlines the process for developing a stewardship plan that can be used by the public, as well as private and nonprofit organizations.

Stewardship Plan: Another educational achievement was the development of a farm conservation plan. Using the NRCS planning process as a model, the Guthries tailored a conservation component to meet the needs of their farm. Integration of the plan with technical assistance resulted in reduced environmental risk and enhanced farm management.

A whole farm planning approach taught the Guthrie family how to modify their farming practices to gain environmental and economic benefits. The adoption and continuation of source reduction and pollution prevention techniques, along with educating others, makes Sunshine Prairie Farm an ongoing model for sustainable agriculture.

This publication was developed in partnership with Michigan Integrated Food & Farming Systems (MIFFS) and the Michigan Department of Environmental Quality (MDEQ) to promote the Pollution Prevention Strategy and Implementation Plan for Michigan Agriculture.



For additional information, please contact Tom Guthrie at the MIFFS office, 517-432-0712, or e-mail at miffs@pilot.msu.edu. For further information on the Pollution Prevention Strategy and Implementation Plan, contact the Environmental Assistance Division at 800-662-9278.