Prairie du Sac Research Farm

The U.S. Dairy Forage Research Center Farm is located about 30 miles northwest of Madison on gently sloping acres bordering the Wisconsin River near Prairie du Sac, WI. The 2,006-acre, 350-cow dairy farm is an integral part of the research effort.

Main entrance sign welcomes visitors to the farm.

Aerial view of the farm along the Wisconsin River.

UW Connection

The farm operates jointly with the University of Wisconsin–Madison College of Agricultural and Life Sciences, Agricultural Research Stations. The UW owns the dairy herd and uses revenues from the farm to offset operating costs and to pay the state employees who work at the farm. The dairy herd and research facility are also available to UW-Madison agricultural scientists.

Crops, Plots and Research

Most of the 2,006 acres at the farm produce feed for the dairy herd. In turn, the fields are fertilized by manure from the cattle in a natural cycle. Regular farm fields are also used to study cropping systems and manure management. Smaller research plots are used for grazing research, as plant nurseries, and to grow small amounts of forage needed for digestion and nutrition research.

Crops grown on the farm include corn for grain and silage, alfalfa for silage and hay, soybeans, and winter wheat. There are also about 20 acres of improved pasture for Managed Intensive Grazing research, and several acres of unimproved pasture used to graze heifers for about 6 months each year. In addition, about 450 acres consists of woodlands, roads and buildings.

Heifers graze on 20 acres of research pasture.

An improved variety of red clover grows in a plant nursery.

The Herd and Research

There are about 350 lactating cows on the farm. Livestock housing includes both tie-stall and free-stall barns which serve different research needs and represent facilities being used in the industry. Cows are milked twice a day in a double-8 herringbone parlor with automatic take-offs and individual milk weights. The rolling herd average (a measure of milk production) is more than 27,000 pounds of milk per cow per year – or 3,214 gallons – which is well above the national average of 21,700 pounds or 2,583 gallons per cow per year.

Cows in free-stall barns are fed from a TMR (total mixed ration) wagon. In the tie-stall barns, several small TMR carts are used to mix and deliver research diets to selected cows.

The farm raises all of its replacement heifers. Newborn calves are housed in individual calf hutches and moved to group hutches at eight weeks. At four-five months of age, heifers are moved to a free-stall barn where they remain until confirmed pregnant. Pregnant heifers are pastured in the summer and kept on a bedded pack in the winter.

The herd is used for various nutrition and digestion studies designed to better understand how dairy cattle utilize forages and other feedstuffs. Yearling heifers are used for grazing research. The herd has several cows that have been surgically cannulated with an opening that allows researchers to remove partially digested feed from the cow's rumen. The cows are perfectly content with this procedure.

Cows on research diets are fed in the tie-stall barns.

Calves are raised in hutches, the healthiest way to house newborn calves.

Studying Environmental Impacts

Much of the research at the U.S. Dairy Forage Research Center is designed to help improve the economic *and* environmental sustainability of dairy forage farm systems – which often go hand in hand. Special facilities have been built at the farm to assist with environmental research.

1. Part of a tie-stall barn was converted into 4 air emissions chambers for up to 16 cows. Researchers are able to qualify and quantify all emissions and compare how they vary with changes in feed, bedding, or stage of lactation.

2. Engineered barnyards enable researchers to collect and compare air emissions, runoff and leachate from 3 different barnyard surfaces in an effort to find the best management options for reducing environmental impacts of outside cattle holding areas.

Engineered barnyards allow researchers to compare runoff and leaching from three different common barnyard surfaces.

Air emission chambers are designed to collect all gases coming from the cows.

3. Hillsides have been equipped with runoff collection devices to allow researchers to compare the amount of runoff under various cropping, grazing, or manure management systems.

Unique Heritage

Efforts to establish a USDA dairy forage research facility date back to the late 1950s. But it wasn't until the 1970s when planning began for this facility and Congress appropriated the funds. Construction of the farm facilities began in 1980; this same year the first animals were brought to the farm.

The land on which this farm is located has a rich and unique history. First inhabited by Native Americans, European settlers began turning it into farmland in the 1830s. Then, at the dawn of the U.S. entry into World War II, the Department of Defense confiscated the land from 80 farm families in order to build a munitions factory. Known as the Badger Army Ordnance and later the Badger Army Ammunition Plant (BAAP), the facility manufactured gun and rocket powder during World War II, the Korean War, and the Vietnam War. It was put on standby status in 1976.

In the late 1970s when the USDA was looking for a site for this research farm, it chose the BAAP location because it could obtain a special permit through the U.S. Department of Defense to farm about 1,500 acres of the undeveloped areas in the 7,354-acre BAAP site; no privately owned land needed to be purchased.

The BAAP remained on standby status until 1997 when the U.S. Army determined that it was no longer needed to meet the nation's defense needs. Thus began a long process to determine how the land would be transferred to new owners. Local citizens developed a "Badger Reuse Plan" which called for the land to be divided between the U.S. Dairy Forage Research Center (which already had been farming part of the land for decades); the Wisconsin Department of Natural Resources (which manages the adjacent Devil's Lake State Park and is creating the Sauk Prairie Recreation Area with its share of the land); and the Ho-Chunk Nation (which has ancestral and cultural ties to the land).

In September of 2004, the USDFRC received custody of 1,943 acres "inside the fence" to add to the 63 acres it already owned "outside the fence." The Wisconsin DNR has been granted a portion of its land and is developing a master plan for the new property; and the Ho-Chunk Nation is in negotiations with the Bureau of Indian Affairs to gain custody of its designated share of the former BAAP.

The farm is inside the former Badger Army Ammunition Plant. All buildings have since been demolished.

Part of the original herd in 1980, with all calves being the embryo transfer offspring from the same cow.

Contributing to the Community

The U.S. Dairy Forage Research Center strives to be a good neighbor in the Sauk Prairie area. The farm is open for tours with 500 to 1,500 visitors each year, including many local school groups, from preschools to high schools. The farm hosts special events like the Sauk County Dairy Breakfast in 2004, and the North American Manure Tech Expo in 2001, 2003, 2007 and 2012.

Since 2010 the farm has sponsored its *Scientist for a Day* program – a day-long, hands-on experience – for up to 50 local high school students and their teachers. In 2012 it started the *Sauk Prairie Community Rain Garden* project with local Scout troops. And each year it hosts the Sauk County Institute of Leadership for its seminar on agriculture and natural resources.

The U.S. Dairy Forage Research Center has been active in the Badger Reuse Plan process since the beginning. It has organized and/or participated in many projects and programs related to the restoration of the land at Badger and also collaborative research efforts regarding the interface of agriculture and conservation. And it honors the "Shared Values" of the Badger Reuse Plan as appropriate within the scope of its research mission.

In addition, the farm contributes to the community by employing 29 people (most of them Sauk County residents); and it brings approximately $3 million to the Sauk Prairie area through employee salaries, hiring local farmers for custom field work, and the purchase of supplies and professional services.

High school students/teacher at *Scientist for a Day*.

Planting the *Sauk Prairie Community Rain Garden*.

Contact Information

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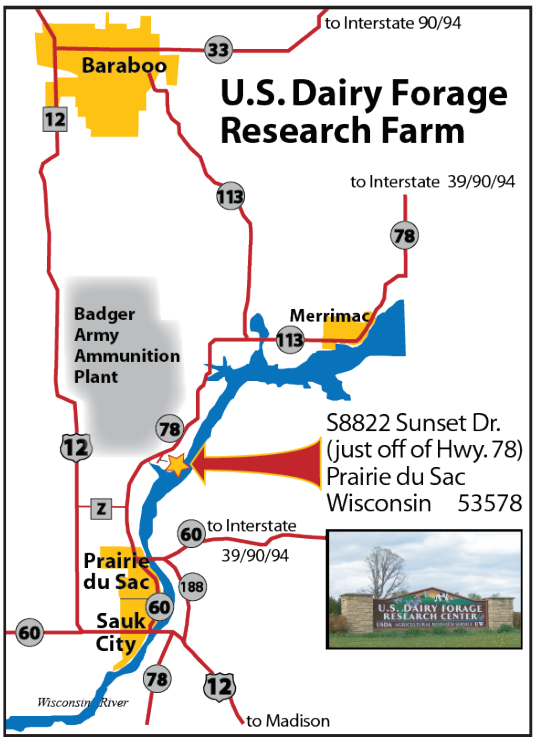
Map to the Prairie du Sac Farm

(GPS and internet-based maps are often inaccurate.)



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