

**IOWA STATE UNIVERSITY**

**College of Agriculture and Life Sciences  
Muscatine Island Research Farm Association  
Iowa Agriculture and Home Economics Experiment Station  
University Extension**

**Muscatine Island  
Research and Demonstration Farm**

*75<sup>th</sup>*

***Anniversary Celebration***

***June 29, 2010***





1935 ~ 2010

# Muscatine Island

RESEARCH & DEMONSTRATION FARM

This year marks the 75<sup>th</sup> year of a partnership between Iowa State University and the Muscatine Island Research Farm Association that has resulted in the Muscatine Island Research and Demonstration Farm at Fruitland, Iowa. After 75 years, the partnership remains strong and vibrant.

Agriculture changes very rapidly and few agricultural endeavors last 75 years. The Muscatine Island Research Farm is testament to the power of great ideas and a strong partnership. The research farm has served area farmers and growers and the region's horticultural industry in a meaningful way since 1935.

It is remarkable that during the 1920s and 1930s, local agricultural leaders and farmers saw the need and the potential of a partnership with Iowa State's scientists to help them deal with local problems.

The farm is one of the oldest, continuously operating outlying research farms in Iowa. It is a model of local interests and the responsiveness of the state's land-grant university. Dedicated managers, the last two who have served at the farm for a combined 63 years, have provided continuity to the farm's research and extension efforts. The farm's success and impact is due in large part to the leadership of these highly capable individuals during most of its existence.

The cooperation of Iowa State University Agriculture Experiment Station, College of Agriculture and Life Sciences and ISU Extension remains key to providing site-specific research, demonstration and extension programs. This commemorative booklet serves as a historical record of the Muscatine Island Research and Demonstration Farm and a vision that has served the region for 75 years.

Congratulations and thank you to the members of the Muscatine Island Research Farm Association for 75 years of partnering in agricultural research and extension.

Mark Honeyman, coordinator  
Research and Demonstration Farms

Jeffery Iles, chair  
Department of Horticulture

## Muscatine Island Research Farm Association (2001-present)

### Muscatine Island Truck Growers Association (1934-2001)

President	Term
Theodore Drake	1934-1937
Henry Marx	1938-1941
Austin Hoopes	1942-1943
John Graham	1944-1947
John Holliday	1948-1968
George Shoultz	1969
Mernon Peck	1970-1972
Ernest Bartenhagen	1973-1980
Jack Wilson	1981-1986
Donald Wilson	1987
Denis Wilson	1988
Steve Spies	1989-1990
Tom Langan	1991-1994
Ron Shepard	1995-present

Director	Term	Director	Term
Theodore Drake	1934-1937, 1943-1945	Lindley Hoopes	1956-1958
R. T. Hummel	1934-1939	George Shoultz	1959-1981
N. D. Morgan	1934-1939	Mernon Peck	1959-1984
John Bartenhagen	1934-1940	Ernest Bartenhagen	1969-1980
Alfred Bohling	1934-1945	Jack Wilson	1973-1985
Henry Marx	1938-1942	Vince Lawson	1982-present
P. A. Minges	1939-1941	Fred Bartenhagen	1982-1986
Austin Hoopes	1940-1943	Richard Langan	1984-1987
Victor E. Hollar	1942-1944	Denis Wilson	1985-1987
Harold Butcher	1943-1950	Donald Wilson	1986-1987
John Graham	1943-1947	Steve Spies	1987-1993
E. W. Cross	1943-1946	George Schmidt	1987-1988
Fred W. Hoopes	1946-1955	Tom Langan	1988-1994
Lewis Peterson	1946-1983	John Hoopes	1988-2003
Ferdinand Schmarji	1947-1953	Roger Bartenhagen	1989-1993
John Holliday	1948-1968	Rick Bartenhagen	1994-present
Harold Snyder	1951-1972	Keith Bartenhagen	1994-present
John Cross	1954-1958	Ron Shepard	1994-present
		John Kiwala	2004-2009
		Greg Wilson	2010-present

## Farm accomplishments

by Vince Lawson, superintendent, Muscatine Island Research and Demonstration Farm

I'm most proud of accumulating enough equipment and knowledge to grow a wide diversity of crops and efficiently conduct field research experiments. An example would be in 2005 when the farm grew a special soybean variety and harvested the nitrogen-fixing nodules for a researcher on campus. Other notable achievements include:



*lopride watermelon released in 1972.*

1982 to 2007: Compiled 26 annual progress reports containing 271 research reports. I estimate I was the lead investigator and author on 75 percent of projects in the reports.

1982 to present: Make two to four presentations at grower meetings, including Iowa Fruit & Vegetable Growers Conference, Iowa-Illinois Fruit & Vegetable Symposium and the Great Plains Vegetable Growers Conference.

1986: Built a poly-covered greenhouse to start vegetable transplants in the spring to replace hard-to-use cold frames. The greenhouse was a huge improvement and greatly expanded the number and quality of plants we could start.

1999 to present: Contributed three to five variety trial reports each year to Midwest Vegetable Trial Report, a Midwest regional publication published by Purdue University.

2001: Oversaw the reorganization of the growers association, including receiving 501 (c) (3) tax exempt status.

2002: Farm expansion increased acres from 40 to 106; provided a finer-textured, more fertile, sandy soil with room for better crop and research trial rotation to allow the growing of field crops (corn, soybeans, snapbeans) and provide a better base of operations.

2006: Became an All-America Selections (AAS) judge and established the farm as an AAS Vegetable Trial location.

2006: Started research farm newsletter to keep stakeholders informed of farm activities, and established farm website to communicate farm activities to larger audience.

## 2010 Activities and projects

### Crop Production

Field Corn	30 acres
Snap beans	32 acres, double crop
Melons & watermelon	3.5 acres
Soybean	12 acres

### Activities & tours

Annual Meeting

Home Demo Garden

Open House and tour,  
75<sup>th</sup> Farm Anniversary,  
IFVGA summer tour

Melon Club

Exclusive club for farm  
supporters during melon  
season

### Research Project

AAS vegetable trials  
Home Demonstration Garden  
Cherry tree cultivar  
Melon cultivar

Sweet corn cultivar  
Sweet potato cultivar  
Soybean cyst nematode

Wine grape cultivar

Grape nutritional study  
Colorado potato beetle control

Biodegradable mulch

Subsurface drip irrigation

### Description

Comparison trials of new vegetable varieties for home gardens  
Demonstration plantings of flowers and vegetables  
Evaluation of sweet cherry cultivars for growth and performance  
Evaluation of muskmelon and specialty melon cultivars for adaptability, yield and fruit quality  
Evaluation of high-quality, bicolored cultivars for fresh market  
Evaluation of cultivars for commercial and home gardens  
Field performance trial of soybean breeding lines and varieties conducted in soils containing high numbers of SCN, including test of experimental seed treatments.  
Evaluation of 35 wine grape cultivars for growth, grape yield and suitability for wine production  
Study of soil K, Mg & pH interactions affecting grape growth  
Demonstration and evaluation of new insecticides for controlling potato insect pests including the Colorado potato beetle and potato leafhopper  
Comparison of new, starch-based, biodegradable mulches with photodegradable mulches for field and handling characteristics and effect on muskmelon and sweet corn growth  
Demonstration and evaluation of SDI system for growing crops

# A History of the Muscatine Island Research and Demonstration Farm Fruitland, Iowa 1935-2010

By Vince Lawson, farm superintendent  
and Mark Honeyman, research farms coordinator

The area known as the Muscatine Island averages 3 miles wide and about 19 miles long, extending from the city of Muscatine into Louisa County. It is bounded on the east by the Mississippi River and on the west by the Muscatine Slough and the bluffs. Because of drainage and flood control work, this area is no longer actually an island. In its original state, the island was a grass prairie devoid of trees and containing a number of small lakes and ponds.

There are approximately 25,000 tillable acres on the island. Much of the soil is a sandy loam with a low water-holding capacity and subject to wind erosion. This has resulted in the planting of thousands of trees for windbreaks.

According to “Muscatine Melon: A Case Study of a Place-based Food in Iowa” by Susan Futrell and Craig Chase:

The excellent conditions for melons in Muscatine County result from a combination of natural and human factors. Coarse, sandy glacial soil, groundwater that is close to the surface and a warmer, longer growing season than most of the rest of the state are natural features of the region.

The sandy soil is especially suited to fruit and vegetable growing. Almost all parts of the island have good drainage. Aside from the area near Keokuk in Lee County, Muscatine Island has the longest growing season in Iowa. In 1925, Muscatine’s growing season was 20 days longer than the state average of 156 days (Clowes, 1927). This is generally considered to be the most northern region suitable for melon production. In addition, the water table is very close to the surface, making it accessible for irrigation and this was one of the first places in the state to irrigate crops.

For example in 2009, the growing season on the island was 177 days compared to 166 days in Ames and 161 days in northwest Iowa.

## Truck crop industry grows on Muscatine Island

Early settlers in the area undoubtedly grew fruit and vegetables as a source of food. Farmers quickly recognized that the sandy soils on the Muscatine Island would be ideal for growing a number of truck crops for marketing. Thus, the industry got started in the 1870s.

The town of Fruitland was established because of the developing fruit and vegetable industry on Muscatine Island. Because it was inconvenient and expensive to haul produce into Muscatine for shipment, the growers contacted the Rock Island Railroad about establishing a station on the island.



University Archives, Iowa State University Library

## Muscatine farmer helps create Iowa State

*Suel Foster was born in New Hampshire and moved to Iowa in 1836 at the age of 25. He established the 100-acre Fountain Hill Nursery near Muscatine. In 1856, as a writer for the Iowa Farmer and Horticulturist, he took up the subject of schooling for farmers. He insisted that Iowa must have a “Farmers’ College.” In January 1858 the Iowa General Assembly passed an act to establish an Iowa Agricultural College and appropriated \$10,000 for support. Foster was elected the first president of the college’s Board of Trustees, a position he held until 1865. The board selected Story County as the site of the college, which eventually became Iowa State University. Influenced by Foster, the college charter included the requirement that horticulture be taught.*

Another excerpt from “Muscatine Melon: A Case Study of a Place-based Food in Iowa:”

An agreement was reached whereby the growers would pay \$1,000 and provide a building suitable for a store and post office. In 1880, the town of Island was established (and according to one source was originally intended to be named “Melon”). A total of 30 carloads were shipped that year. The name was later changed to Fruitland by the Post Office Department.

From this small beginning the melon and sweet potato business on the island had gradually grown until the shipments from Fruitland amounted to hundreds and hundreds of cars of melons each year. (Richman, 1911) Commercial development of truck farming for a wide variety of vegetables, including melons, didn’t begin to take hold in the Muscatine area until

*A watermelon feed at the Fruitland depot, dated Aug. 26, 1895. The W.H. Hoopes and Sons warehouse is visible in the background.*

Image provided from the collection of the Musser Public Library. All rights reserved.



1874, when William Henry Hoopes, reputed to be the originator of wholesale gardening on Muscatine Island, purchased a tract of land and began producing fruits and vegetables for export outside the state. Before that, all produce in the area was sold locally or raised for home use and there was often more supply than demand. Locals were skeptical about Hoopes’ plans, but over the next several decades production and export grew well.

By 1899, Hoopes and his two sons had 900 acres under cultivation, producing sweet potatoes, melons, cabbage, peas, tomatoes and onions. His well-known Island Garden Farm — “under the highest state of cultivation and [is] well improved with commodious and tasty buildings, groves and hedges” — grew mainly sweet potatoes, but melons, cabbage and tomatoes also were staples. Produce was mainly shipped to Minneapolis/St. Paul, Fargo, Duluth, Helena, Winnipeg, Omaha and Denver. Hoopes is credited with having “made the once despised flats of Muscatine Island to blossom as the rose and spread its fame far and wide throughout the country” (Acme Publishing, 1889).

By 1921, production of melons from Muscatine County totaled 750 carloads of watermelon, produced on around 2,000 acres of land; and 100

carloads of muskmelon and cantaloupe, grown on around 500 acres. “The biggest benefit over California melons is that they are vine-ripened close to market.” It took approximately 12 days for the melons to reach the East Coast from the West Coast, whereas it took about six to eight days from Iowa (Iowa State Vegetable Growers Association Annual Report, 1925).

*Baskets of melons are ready for shipment from the Fruitland depot Aug. 16, 1920.*

*Image provided from the collection of the Musser Public Library. All rights reserved.*



Most of the vegetables were marketed in Chicago, St. Louis, Memphis, New Orleans and the Twin Cities. Chicago was a 12-hour run by railroad; St. Louis, Kansas City and New Orleans were on direct rail lines, which offered good transportation facilities to the area growers. The Growers Association also reported for the first time in 1925 that Iowa cantaloupes were shipped to New York in carlots.



*A 1941 bulletin released by Iowa State University.*

The Muscatine truck crop district expanded beyond the island. Important producing and shipping points were located at Conesville, Columbus Junction, Nichols and Wapello. Several canneries were operating in the area and were contracting farmers to grow asparagus, cabbage, sweet corn, horseradish, squash, pumpkin, tomatoes and other crops.

### **Crops change over the years**

The first truck crops to develop large acreages were sweet potatoes, cabbage and watermelons.

Sweet potatoes were first grown on Muscatine Island in 1866 by E. B. Partridge. They were well-suited to the area and produced potatoes of high quality and flavor. The crop grew rapidly in prominence, and by 1939 there were 1,200 acres grown in Muscatine County.

Cabbage was grown for the local trade in the 1880s. In 1892, the H. J. Heinz Co. established a Muscatine branch and built a sauerkraut factory. Other “kraut” factories opened in the area soon after. By the early 1900s, farmers also were shipping cabbage by rail car to out-of-state markets. There were approximately 3,000 acres of cabbage grown in the Muscatine district at this time.

Then disaster struck in the form of “cabbage yellows,” or fusarium wilt of cabbage.

The disease showed up first on the island and quickly spread to other cabbage growing areas in the district. Help was requested from Iowa State College at Ames to save the industry. In 1914, Professor C.L. Fitch, in cooperation with J. W. Rummels of Nichols, started work to select a cabbage yellows-resistant type of Copenhagen Market Cabbage. This work eventually led to the release of the resistant strain, Iacop.



Acres of cabbage and sweet potatoes have declined over the years. This has been largely due to changing market demands and the development of other production areas and cheap transportation. Also, the development of irrigation and improved cultural methods, especially related to fertility and pest control, have made growing of other crops profitable and attractive to Muscatine growers. Watermelons are well-adapted to the warm growing environment and sandy soils



*A commercial watermelon farm on Muscatine Island, 1922.*

that exist around Muscatine. There were an estimated 7,000 acres of this high value crop grown in the area by the early 1900s. Watermelons not shipped to market were often saved and the seed extracted for sale in eastern markets.

The existence of this crop also was threatened by the occurrence of a persistent soil-borne disease. Fusarium wilt of watermelons was first reported around 1913. By 1928, it had reduced the watermelon acreage to 20 percent of normal. This threat to the industry led to the establishment of the Conesville Experiment Station. Largely due to the work accomplished at the station, watermelons are still an important area crop. Although acreage figures are less today, average yields have increased from 5 to 25 tons per acre.

The important vegetables produced around Muscatine include the following:  
*Muskmelon and Watermelon* — The “Muscatine melon” has earned a reputation of high quality and flavor throughout Iowa and the Midwest marketing region.  
*Sweet Corn* — One of the most valuable crops for fresh-market vegetable producers. Irrigated sandy soils are advantageous for producing good quality, early maturing sweet corn.

*Snap beans* — Approximately 15-20 million pounds of snap beans are mechanically harvested each year for canning.

*Potatoes* — Tablestock potatoes have always been produced in the area. In 1968, potatoes were first grown for processing into potato chips. Once it was determined that good quality “chipping” potatoes could be raised on the island, the acreage increased. Today, the majority of the estimated 1,200 potato acres are grown for processing.

Lesser amounts of squash, tomatoes, cucumbers, peppers, asparagus, sweet potatoes and pumpkins also are grown in the area. Because of the sandy soils, irrigation and good management, Muscatine growers enjoy a distinct advantage in vegetable production. They are often first in the market with high quality Iowa-grown produce. The current local foods movement may increase acreages of fruit and vegetables in the area.

## Irrigation

An essential ingredient for quality vegetable production, especially on soils with low water-holding capacity, is irrigation. It also improves the dependability of production of lower value crops, such as field corn. Fortunately, a relatively high water table with large recharge capacity underlies most of the vegetable regions around Muscatine.



*Former farm superintendent Lewis Peterson works on electric powered irrigation equipment at the farm.*

C.B. Vail is credited with installing the first irrigating well on the island in 1893. The benefits of irrigation were readily apparent, and within 30 years few farmers in the area were without one.

The estimated cost of installing a well, pump and power source was \$460 in 1916. The common practice was to find the highest point in the field and drive a 6-inch diameter pipe into the sand to a depth of 35 feet. The lower 10 feet of pipe was perforated for water uptake. A 5-inch centrifugal pump, powered by a tractor or gas engine, created a flow of water varying from 600 to 1,000 gallons per minute. A system of furrows was used to deliver the water to the crop plants.

According to B.S. Pickett, A.T. Erwin, E.S. Haber, H.L. Lantz and H.E. Nichols, ISU horticulturists in “A Century of Iowa Farming 1846-1946” (ISC Press, 1946), the Muscatine Island was the only vegetable producing area in Iowa that routinely uses irrigation. The sandy area has ample water within 16 feet of the surface.



*Well-drilling equipment at the installation of sub-surface irrigation system.*

Eventually, iron pipe replaced some of the furrows, reducing water loss. The first portable overhead sprinkler system in Iowa was used on the Muscatine Island Field Station in the early 1930s.

Today, almost all crops on the island are irrigated by overhead sprinklers on large center pivot systems, although trickle systems also are used. The most innovative approach is sub-surface irrigation being studied at the research farm.



*Irrigation at the farm in the 1940s.*

## Conesville Experiment Farm

The Conesville Experiment Station was established in 1927 to help growers overcome some increasingly damaging disease problems. Due to the increasing severity of truck crop disease problems, a series of grower meetings was held in Muscatine County during 1926 and 1927. Sufficient interest was generated so that the Conesville Experiment Association and the Fruitland Experiment Association were formed.

A delegation of E.C. Corwin, Hal Wolford and J.J. Wilson was sent to Des Moines to seek financial help from the state legislature to help fund experimental investigations. The legislature responded with a special biennial appropriation of \$20,000 made available in 1927.



*The original farm's office.*

The Conesville Experiment Association reached an agreement with the plant pathology section of the Iowa Agricultural Experiment Station at Iowa State College to investigate the truck crop disease problems in the area. The work was placed under the supervision of D.R. Porter, plant pathologist, who was stationed at Conesville during the summer.

The primary purpose of the field laboratory was to develop a disease-resistant watermelon. At the time, fusarium wilt and anthracnose were threatening to ruin the watermelon industry. The continued existence of watermelons as a major hor-

ticulture crop in Muscatine County demonstrates the success of the work done at the Conesville Station. The work initiated by Porter was continued by Wilson and Duke Layton. Plant breeders collected seed from Africa, China, Japan and Yugoslavia and in 1939 introduced Dixie Hybrid, a resistant melon and in time other resistant melons. Many of these have played an important part in the development of today's watermelon varieties.



## Muscatine Island Research and Demonstration Farm

Although the Conesville work was of crucial importance to the growers, there also was a need for investigation into improving cultural practices if the growers were to stay competitive. With this request in mind, Niven Morgan of the Iowa State College Extension Service's horticulture section came to Muscatine Island in 1930 to conduct field research during the growing season. His efforts generated enough interest that by 1934 several meetings were held by the growers for the purpose of putting this experimental work on a permanent basis.



*Farm field tour, 1964.*

An organization known as the Muscatine Island Truck Crops Cooperative Association (changed to Muscatine Island Truck Growers Association in 1954 and to the Muscatine Island Research Farm Association in 2001) was formed. The first board of directors was Theodore Drake, president; John Bartenhagen, vice president; Alfred Bohling, secretary; and R. R. Hummel, treasurer.

The stated purpose of the organization was to further the interest of truck growers by fostering experimental and extension work relative to the industry. It would also make new and useful information available to its members.

To achieve these goals, the association entered into a memorandum of understanding with Iowa State College in 1935. The purpose was to undertake a cooperative study and demonstration of methods best suited to improving agricultural conditions on sand lands. The work was to be conducted at the Muscatine Island Field Station, now known as the Muscatine Island Research and Demonstration Farm.

The memorandum of understanding called for the growers association to supply the land, facilities and funds necessary to run the field station. The college would

supply qualified personnel to manage the station and conduct research, contribute funds for research support when available and help disseminate information.

There was some difficulty in finding a location for the field station. Luckily, the Chicago, Rock Island and Pacific Railroad agreed to lease a 61-acre tract of land adjoining Fruitland. The original lease was dated Jan. 3, 1935 and required a \$12-a-year rental fee.

Once these agreements were finalized, the college and the growers association went to work to improve the site. A large number of trees and shrubs were planted for windbreaks, a new foundation was installed under an existing building and the fields were surveyed and mapped.



*Lewis Peterson*

## **Farm managers**

N.D. Morgan, who started working in the area in 1930, was the first superintendent. He resigned in 1939 to take a position with the American Potash Institute in Louisiana.

Phillip Minges assumed the superintendent job until 1941, when he joined the extension service at the University of California.

Victor Hollar was in charge of the field station from 1941 to 1944 while he worked toward a master's degree. He left to take a position with the Burpee Seed Co. After gaining experience in the seed business, he formed Hollar Seed Co., which specialized in cucurbit seeds.

Kim Roberts acted as superintendent in 1945, followed by Lewis Peterson in 1946. Peterson obtained his bachelor's degree in horticulture from Iowa State in 1937. Peterson was the first superintendent to be at the station on a full-time basis. Previous managers worked at Fruitland only during the growing season and were stationed at Ames the rest of the year.

Vincent Lawson became superintendent in 1982 after receiving a master's degree in horticulture at Iowa State. He continues to manage the research farm and perform extension work. Peterson and Lawson have a combined 63 years of managing the research farm.



*Vince Lawson*

## **Farmland and improvements**

Because the land for the field station was being rented, few permanent improvements were made after the 1930s. In 1967, a 32 ft. by 62 ft. machine shed was erected by the association. The building is used for equipment storage.

In 1980, the Chicago, Rock Island and Pacific Railroad declared bankruptcy and began to sell off its assets. This included the land rented for the research farm. The association, responsible for providing land for the research farm, decided to purchase the property. After lengthy negotiations, an agreement was reached in December 1982 and title to the land was obtained for 40 acres. An additional 66 acres was purchased by the association in 2002.

In 1984, the Iowa Legislature appropriated funds to the Agricultural Experiment Station to be used for research related to horticultural food crops. The farm received \$50,000 to erect a 36 ft. by 72 ft. building and purchase needed equipment. Construction started in the winter of 1984. The building provides an office, restroom, laboratory, walk-in cooler and shop facilities.

## Research at Muscatine Island

The farm has served Iowa and neighboring and southern states as a research site and demonstration area publishing annual research and production reports. Research activities conducted at the research farm include:

*Weather summaries.* Rainfall amounts, temperatures and weather patterns are reported for each growing season, along with comments on how crops were affected. An automated weather station was installed in 1997. It automatically sends data to a publicly accessible web site.



*Muskmelon harvest, 2008.*

*Variety evaluations and breeding trials.* New varieties and selected breeding lines of important vegetable crops are evaluated each year. The breeding program at the research farm resulted in the introduction of the following varieties: Iopride watermelon, Iopride potato and Muscatine Jersey sweet potato. New crops and their potential for the area also have been evaluated. The farm staff is active in managing the research vineyard at the ISU Southeast Research Farm, near Crawfordsville in Washington County, where grape varieties are evaluated.

*Soil fertility.* Many trials have been conducted to evaluate different types of fertilizers, as well as methods of application. These studies have looked at the interactions between fertilization and other cultural practices. These have included crop rotation, different varieties, plant spacing, irrigation and mulching. Fertilizer recommendations for the important vegetables grown in the Muscatine area, as well as similar areas, have been based on these research data.



*Sub-surface irrigation being installed in 2007 for research.*

**Irrigation.** The use of irrigation on vegetable crops grown on sandy soils has expanded greatly since 1935. This expansion was made possible by the improvements in irrigation equipment. Many studies were conducted to determine the effects of rate and timing of water application and the influence of other cultural treatments on crop productivity. In addition to work with irrigation to increase soil moisture, studies were made on controlling air and soil temperature, frost preven-



*Center pivot irrigation system used at the farm.*

tion and the application of fertilizers, herbicides and fungicides through the irrigation system. The farm utilizes overhead center pivot, moveable aluminum pipe, surface and subsurface drip irrigation systems for growing crops and conducting research trials.

**Disease, insect and weed control.** Solving many vegetable pest control problems involved cooperation with the entomology and plant pathology departments over the years. Major areas of research have included product evaluations and control strategies. Improved pest control recommendations have resulted from these trials.



*Muskmelon is transplanted with a plastic sheeting cover between rows of rye to protect them from wind-blown sand.*

**Transplanting, mulching and plant covers.** Various types of plant covers, soil mulches and transplanting techniques have been explored to determine their effect on early and total yield of crops. These studies have demonstrated that the use of transplants and mulching can profitably increase yields of muskmelons.



*Corn and soybean research plots at the farm.*



*Growth regulators.* Various growth-regulating chemicals were tested to determine their possible use. Areas of investigation have included early ripening of tomato and muskmelon fruit, increased female flowering of cucumbers and muskmelon, retardants to prevent skinning of early harvested potatoes and vine dwarfing of muskmelon plants. Ethephon, one chemical that was tested, is commonly used to promote uniform ripening of machine-harvested tomatoes.



*Ag specialist Joe Hannan harvesting sugar beets in a 2008 research trial farm.*

*Agronomic and biomass crops.* In recent years work at the farm has included irrigation, management and pest control of agronomic crops such as field corn and soybeans. For example, work on managing the soybean cyst nematode is underway. Also, as the bioenergy era has arrived, the farm is evaluating sugar beets as a new energy crop for ethanol production.

*Miscellaneous trials.* Various other experiments and demonstrations were initiated to improve cultural techniques. These trials included growing tomatoes in wire cages; minimum tillage for planting tomatoes; anti-transpirants to increase tomato plant stands and potato yields; clipping of tomato, cucumber and muskmelon plants; topping of sweet corn to hasten maturity; soil conditioners to improve water and plant nutrient-holding capacity; and the use of tensiometers to determine soil moisture content. An annual demonstration home garden and All-America Selection trials are popular with gardeners.



*Ornamental corn demonstration.*

