“Agriculture is the most healthful, most useful and most noble employment of man.”

—George Washington
MTSU Farm Laboratories comprise the experiential learning arm of the School of Agribusiness and Agriscience (ABAS). The Farm Laboratories include a Dairy Unit, Beef and Swine Unit, Crop Unit, Horticulture Unit, and Milk Processing Unit.

The Milk Processing Unit is a “grass to glass” operation where students feed the cows, milk the cows, pick up and haul the milk, process the milk, and deliver it to campus for other students to consume. Our experiential learning philosophy allows class time on the farm to vaccinate all the livestock including swine, beef cattle, and dairy animals. The Farm Laboratories program principally exists to supplement the training of agricultural students at MTSU by providing hands-on learning opportunities that enhance a complete undergraduate education, thereby better preparing students for successful careers in agriculture and science. The ABAS program seeks to provide workforce-ready graduates.

MTSU Farm Laboratories are active in research involving livestock management, row and forage crop production, dairy production, milk processing and marketing, and horticulture and garden production. Undergraduate students are encouraged to use the Farm Laboratories in their undergraduate research. We think of our students as the future of modern agriculture. Through experiential learning in modern facilities, they have the opportunity to develop an excellent work ethic, attention to detail, knowledge of sanitary and regulatory practices, and systematic approaches to manufacturing milk products, breeding and raising beef cattle and swine, growing feed crops to support other ABAS units, and maintaining a robust garden and apiary.

Experiential Learning and Research Center on Guy James Road is the newest of the Farm Laboratories. With 435 acres of pristine Tennessee rolling-hill farm country, the center includes a $2.7 million state-of-the-art dairy, a registered Angus herd, student gardens that include horticulture hoop houses, and an apiary. The dairy was completed in September 2011 as a part of a $4.4 million farm improvement project.
The Dairy Unit allows students to experience modern dairy production techniques. It includes some 140 cows, replacement heifers, and calves. At any given time about 60–70 cows of the mixed Holstein and Jersey herd are in the milking line. Students participate in every aspect of the day-to-day operation of the dairy including the following:

- Mixing and feeding using a Total Mixed Ration (TMR) system
- Milking the Holstein and Jersey-mix herd
- Feeding and caring for replacement heifers from bottle-feeding through the feeding of hay and grain as they get older
- Participation in breeding decisions and artificial insemination
- Forage harvesting

More Dairy Unit Facts

- All students who go through the ABAS curriculum will have an opportunity to milk at the dairy before they graduate.
- Our state-of-the-art pack barn is a natural composting operation in action. Compost is cleaned out of the pack barn in the spring and used to reduce fertilizer costs on the hay fields and to enhance the students’ work in the gardens.
- About 24 percent of the milk produced at peak time is brought to campus to our Milk Processing Unit. There, it is pasteurized and bagged to be delivered to campus cafeterias.
- The Dairy Unit engages with the community by working with several 4-H, FFA, and collegiate dairy judging teams and by participating in occasional live broadcasting on local news stations.
“Perfection is not attainable, but if we chase perfection, we can catch excellence.”

—Vince Lombardi
The Milk Processing Unit adds to the experiential learning of students interested in dairy science, food service, agritourism, and agribusiness. Students haul the milk from the dairy, lab test it to check for antibiotics, pasteurize and homogenize it, and put it in five-gallon bags for the cafeteria dispensers.

More Milk Processing Unit Facts

- Students who work in the Milk Processing Unit receive specialized training to be milk testers and to become certified in areas such as antibiotic testing and Weighmaster hauling.
- Because the milk industry is the most highly regulated food sector, students must learn about marketing, distribution, and inventory systems.
- The unit annually processes 11,000–12,000 gallons of milk each year. The milk plant serves the campus and provides chocolate milk for local activities.
- MTSU is strategically positioned as the only university in the state with a full-scale milk processing plant.
- In addition to continuous involvement in campus and community events, the Milk Processing Unit is used by state, federal, and commercial training groups for regulatory officials, business professionals, and industry workers.
Beef Unit

- The Beef Unit offers experiential learning for some 300 Animal Science majors. It consists of two farms, the largest covering 140 acres and the other 65 acres.
- The Angus herd is pastured at the Experiential Learning and Research Center on Guy James Road.
- The breeding program at the Beef Unit includes artificial insemination and Angus, Hereford, and Simmental herd sires. Students are encouraged to participate in an artificial insemination (AI) seminar, which allows them to be certified in AI.
- The Beef Unit gives students experience in working cattle through a pens-and-chute system, giving proper vaccinations, feeding and caring for cattle, halter breaking and showing, forage production, and many other aspects of cattle production.
- Faculty members and students use the Beef Unit for research.
Swine Unit

- The Swine Unit is another prime example of experiential learning at MTSU. Students can be part of the entire life cycle of a pig, from breeding to birth to weaning to the move into the nursery, all in one semester.
Crops Unit

The Crops Unit attends to acreage at all MTSU farms. It provides haylage, dry hay, and feed grain to the Dairy, Beef, and Swine Units and maintains all pastures. The ABAS School uses the Crops Unit for research. Classes collect data with hands-on methods, and a new weather station gathers and stores data. Students then analyze this data to determine which crop varieties grow best in drought conditions. They also use the Crops Unit to study the effects of plant population, row width, and weather conditions on plant health.
Unmanned Aircraft Systems Operations

Our Experiential Learning and Research Center exists to support research, instruction, and outreach missions of ABAS. The laboratory uses cutting-edge technologies to enhance teaching and research in traditional agronomy, horticulture, and precision agriculture. Students have the opportunity to gain deep understanding and practical knowledge in agricultural science through

- experiential learning using unmanned aviation systems control and application aspects of agriculture;
- learning about agricultural remote sensing using multispectral and hyperspectral cameras;
- studying climatology and plant and environment interaction; and
- hands-on study in the production and physiology of major field crops, forages, and vegetables in the middle Tennessee region.
Horticulture/Garden Unit

The Horticulture Unit occupies about 25 acres and includes hoop-house gardening, outside and traditional gardening, horticultural and ornamental growing in hoop-house and green-houses, an orchard, and an apiary. Students in horticulture classes spend many hours applying classroom study in practical situations. They grow all the vegetables, fruit, and ornamental plants that are sold in the Student Farmers Market.
We consider our students the real product . . .