

Research grows at Waterman Lab

By Susan Wittstock

Each day, when Mark Schmittgen climbs into a big Ford pick-up truck to drive the dirt roads and grassy lanes of the farm he works on, he appreciates what he sees.

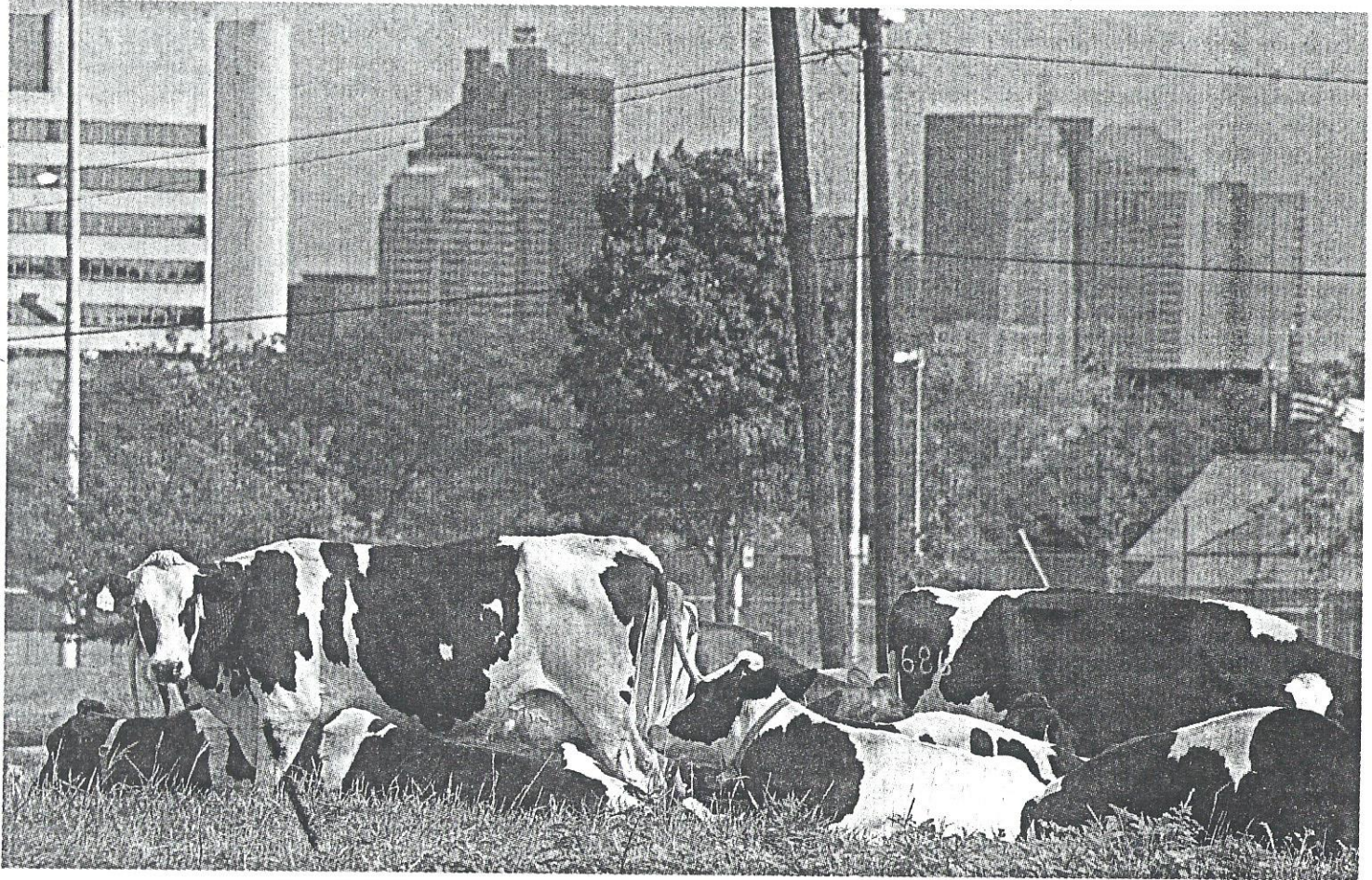
"Working every day is kind of a miracle," he says. "It's amazing to see stuff grow. I've seen it happen for years and years, but every day it's still a miracle."

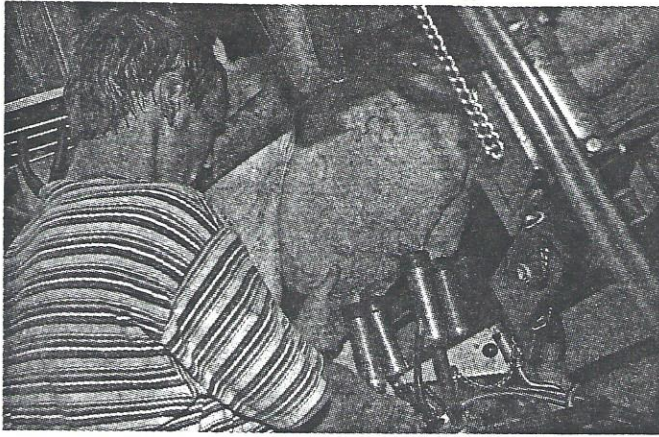
As manager of horticulture services for the Waterman Agricultural and Natural Resources Laboratory, Schmittgen has witnessed the miracle for seven years. The lab he helps to manage is 280 acres of crops, turf grass, woodlands and dairy cows, all being used to help grow the research that land-grant institutions like Ohio State pride themselves on.

With the sky for a roof, the farm is probably the most visible laboratory on the Columbus campus. It occupies the corner of Kenny Road and Lane Avenue, stretching north to Ackerman Road and west to North Star Road.

The farmland is an anomaly for Ohio State's urban campus. "It's weird farming in the city, but we're doing it," Schmittgen says. The suburban houses on the edge of the property, the city skyline visible from the orchard and the corn fields, and the buzz of all those cars speeding by are not typical sights and sounds for a farm. But then, the Waterman lab is not a typical farm.

Operated by the College of Food, Agricultural, and Environmental Sciences, the facility includes the acreage used for horticulture research, a dairy farm that supports 265 cows, 23 acres used for the Ohio Turfgrass Foundation Teaching and Research Facility, and 26 acres of woodlot. It's part classroom, part research facility, part visitors center.





Clockwise: Holstein cows in a Lane Avenue field lounge in the shadow of Columbus' skyline; Andy Spring milks a dairy cow in the dairy barn; and Mark Schmittgen picks apples in the Waterman orchard. Below: Detail of container collecting milk during milking.

Photos by Jo McCulty

Dairy farm

A few days later, Andy Spring, manager of the dairy farm, let a visitor observe the afternoon milking chores in the "milk parlor." The long, narrow room, inside a dairy barn, is split into two levels. Ten cows were crowded together in a row behind a railing on the upper level, providing easier access for Spring and a student assistant, Jason Scharb, to attach the milking apparatus to the cows' udders.

"We do this twice a day, every day, at least since I've been here for the last 20 years," Spring said. On this afternoon, they milked 95 cows.

Spring, in cut-off jean shorts and a T-shirt, is a study in motion efficiency — "If I didn't move quick, I'd never get home," he said. He quickly hopped up to herd the somewhat reluctant cows down the line, swatting at them to take their positions. When they were lined up properly, he rubbed each cow's udder with disinfectant.

His next task entered into the high-tech phase of the milking. The actual milking is a mechanized process, with individual microprocessor units for collecting and measuring the milk attached to the railing. Four suctions are placed on the cow's udder. The milk swishes down into a clear container attached to the bottom wall, where it is weighed. In summer, each cow provides about six gallons of milk; in winter, 10 gallons.



The suction automatically pops off when the milking is finished. The milk travels down and through pipes the length of the room, through a wall, and into the next room. The milk is pumped up through a filter into a pre-cooler, where water lowers the temperature before the milk empties into a large chilling tank which holds 23,000 pounds. The milk is sold to a dairy in Newark, which sends a truck out twice a week to empty the tank.

The farm has black and white Holsteins and caramel brown Jerseys, each with a bright yellow tag attached to her ear and a numeral written in orange on her back haunches. "The Jerseys are the little princesses. They act like they need special attention," Spring said.

The cows are fed on corn silage, grown on the premises and stored in two big silos, and combined with other grains. They are fed and milked according to their age. On average, each cow consumes 80 pounds of food a day. Each year, Holsteins produce 23,800 pounds of milk and Jerseys produce 15,900 pounds.

Even Spring, who has been a dairy farmer for decades and holds a bachelor's degree in animal science, is impressed by the cows' statistics. "It is unbelievable. I'm in awe of it," he says.

All of the cows are artificially inseminated. They are calved on average four times, usually beginning when they are two years old, Spring said. The cows that graze at the intersections of Kenny with Lane and Ackerman are pregnant heifers, due to calve in the fall to coincide with the return of students to campus.

As a research farm, much data is collected on each cow's activities. "Faculty use our records as models and analyze the data," Spring said.

From six to 16 students are employed by the dairy farm at any one time. Spring and John Lemmermen, herd manager, work full-time year round, supervising student workers, servicing and maintaining equipment, setting up for research projects. "Ask any farmer — there's always a million little things to do," he said.

The dairy farm is a popular tour site. By April, 6,000 elementary school students had visited this year, often observing the milking through a glass window in a classroom next door to the milking parlor.

Open house

Visitors will be welcome to come and explore the grounds, take tours and visit informational booths for the Horticulture and Crop Science Field Day held from 4 to 8 p.m. Aug. 10. For more information, call 292-7234 or 292-2001.

Schmittgen will be at the open house, helping to describe to visitors what goes on the other 364 days of the year. He enjoys the educational aspects of his job — finding ways to use the farm as a teaching tool for the public and for Ohio State's students.

His sense of humor helps him to enjoy the job. "We really have a good time here," he said. "We don't take ourselves too seriously, but we do take pride in quality research."

Horticulture

Schmittgen, who holds two degrees from Ohio State — a master's in forestry and a bachelor's in botany — recently led a tour of the property, showing off the plots of land dedicated to experiments involving everything from pumpkins to wild flowers and sweet corn to honey bees.

His office, located inside a barn that sits not far from Lane Avenue, has few amenities, including running water. Restroom facilities consist of a green port-o-john sitting in the driveway. He's looking forward to a soon-to-be built office building, with running water and private office space.

To commence the tour, Schmittgen, dressed in his daily uniform of baseball cap, work boots and blue jeans with a pair of work gloves sticking out of a back pocket, pointed his truck at the nearest field and pulled onto a strip of grass which runs through the crops. As he drove, he explained the various studies being conducted. Researchers from a number of University departments make use of the property, including horticulture and crop science, plant pathology, agricultural engineering, entomology, animal science, natural resources and plant biology.

At the corner of Lane and Kenny, a soggy square of land attracted attention from motorists in June when it was flooded by Tara Vantoai, an adjunct associate professor for the USDA-Agricultural Research Service, for a study on the resilience of certain strains of corn and soybean as the water levels were increased. Schmittgen said the study could be useful for Ohio farmers, many of whom typically have wet spots in their fields.

In a field of tomatoes, visible from Kenny Road, short rods with tiny little flags in bright colors were poked into the soil at scattered intervals, indicating the different sprays of fungicide being used, Schmittgen said. Richard Riedel, professor of plant pathology, is conducting the tests to find plant protectants to control tomato diseases.

Several of the fields near Kenny Road are rotational, meaning one year they might support corn, and the next year beans. "The corn works wonderfully to bribe people to do something for us," Schmittgen said, smiling.

The farm boasts a fruit orchard, with pesticide studies being conducted on apple and peach trees. Elsewhere on the property, ash, silver maples, dogwoods and other species of trees planted in plastic pots grow in rows, mimicking a commercial nursery. Throughout the grounds, all manner of farming methods and products are studied: Elderberries are examined for cancer preventative capabilities; alfalfa is studied to determine disease resistance; water culverts are designed to study drainage strategies; sloping fields of corn are analyzed for water run-off pat-



terns; and the woodlot provides an outdoor laboratory for studying wildlife. Nothing avoids the critical research eye: rhododendron, daisies, sassafras, honey bees, black walnut trees.

While roaming on the farm, it's easy to forget the city is so near. Ohio State's crisp white signs on buildings were often the only indication that the landscape was part of an institution and not the back 40 of someone's family farm.

The fields were quiet, but an occasional car or truck was parked by the edges of fields, with a researcher or student working nearby in solitude — hoeing, examining, measuring.

Deep into the acreage of the farm, a sun-burned Celeste Welty, associate professor of entomology, was standing in a pumpkin patch, hoe in hand. Welty is studying cucumber beetles, which can cause serious damage to crops through transmission of bacterial wilt. Welty has been conducting experiments at the Waterman facility for 10 years.

She said it's very convenient to have the fields located on campus. "For a lot of the work we do, we need to check the plants often, more than once a week. It makes sense to have the students spend more time in the plants than driving to them," Welty said.

Schmittgen pulled his truck over to chat with Welty on the progress of her experiments, and they exchanged information about a hornet's nest on the property that needed attention.

Much of Schmittgen's time is taken up addressing the many small projects that add up on a big farm. "Our job really is to carry out the research directed to us, within limits. We monitor the planting and keep up the equipment, buildings and grounds," Schmittgen said. He has a full-time assistant year-round and two full-time laborers and three full-time students in the summer. He also finds time to give tours to public school students.