



Sustainability at the Cornell University Agricultural Experiment Station

The challenges facing our planet are daunting. The human population is predicted to surpass nine billion by 2050; the climate is changing and worldwide water availability and quality are of increasing concern. It is becoming apparent that each of us is interconnected and interdependent, economically and environmentally. Change is vital if we want to meet the needs of the present without compromising the ability of future generations to meet their own needs. This is the essence of “sustainability.”

Climate change models predict “extreme” precipitation events (storms) will happen with increasing frequency. Some parts of the country will continue to have adequate water while other areas will experience severe droughts. By 2070, New York could have a climate similar to Georgia’s today. With these changes come enormous challenges but also opportunities. How is Cornell University responding?

University President David Skorton has committed Cornell to carbon neutrality and Cornell has invested extensively in improving campus-wide sustainability, including adopting sustainable standards for new buildings, implementing lake source cooling that saves 25 million Kwh/year, and constructing a new combined heating and power plant that eliminates the on-site use of coal and shrinks the university’s carbon footprint. President Skorton has appointed the President’s Sustainable Campus Committee to advance all aspects of sustainability, while 10 specialized Focus Teams generate ideas and implement actions. On the academic side, the Atkinson Center for a Sustainable Future promotes new and synergistic collaborations and leverages Cornell’s resources. There are a multitude of research, teaching and outreach programs focused on sustainability in the College of Agriculture and Life Sciences (CALS) and across the campus.

The Cornell University Agricultural Experiment Station (CUAES), which supports the research, teaching and outreach mission of CALS, is uniquely positioned to contribute to sustainability at Cornell on a large scale. To that end, we have adopted a “Culture of Sustainability.”

The Station’s staff of 55 operates CALS research farms and plant growth facilities in and around campus, including several thousand acres of agricultural and forested land. We are committed to creating cultural change based on social, environmental and economic considerations and serving as a model for other agricultural experiment stations, universities, and organizations regionally and nationally. We:

- Implement a host of management practices that reduce energy use, carbon emissions and waste materials.
- Implement sustainable forest management practices and reforest marginal land to help reduce Cornell’s carbon footprint.
- Develop and implement agricultural practices to improve long-term soil fertility and reduce erosion, nutrient-leaching and the need for synthetic fertilizers and pesticides.
- Motivate and educate diverse groups about sustainability—middle school students, Cornell students, staff and private and public organizations.
- Conducted a successful energy conservation project in CALS’ buildings to determine the best methods for fostering behavioral change. Pledged savings totaled \$232,313 and a 2,035,087 pound reduction of carbon emissions.

Stewardship requires our collective commitment to seek out, develop and refine ideas, and purposely act to bring about positive change.

The Sustainability Action Team (SAT) empowers staff at all levels through a consistent and visible commitment to facilitate sustainable practices, large and small. The 12-member SAT:

- Relies on the hands-on experience of office, field, greenhouse, and growth chamber staff to identify real opportunities to improve efficiency and quality of the work place and our many operations.
- Evaluates, designs and implements sustainability plans and projects with staff and supervisor input. Monitors and records results.
- Creates communication and marketing materials to engage staff, students and researchers and encourage behavioral and procedural change.
- Recent improvements in sustainability include: closing an underutilized farm lab during the winter, saving \$6,000/year; planting a windbreak to reduce building heating needs by 20%, developing a sustainable turf management plan to reduce the labor and fuel spent mowing nearly 100 acres by 30%; supplying Cornell Dining with 15,000 pounds of produce annually; repurposing over 1000 tons of stream bed material and asphalt millings for farm road repairs; and, coordinating efforts to recycle agricultural plastics at all facilities.

Greenhouse and Growth Chamber Retrofits reduce energy consumption by more than 30% while simultaneously improving the growing environment:

- Upgrade 76 greenhouse chambers with new automated control systems that respond to outside conditions by proactively modulating lighting, heating and cooling.
- Retrofit hundreds of inefficient greenhouses lights with high efficient, low-watt lamps that provide more uniform light and save energy.
- Upgrade growth chambers with computerized control systems and highly efficient lights that use less electricity while increasing light output by 14%. Annual energy savings: over \$100,000.
- Design new high efficient growth chambers that meet research needs while drastically reducing energy and Cornell's carbon footprint.

Renewable Bioenergy Initiatives complete the cycle from biomass research to conscious utilization:

- Support research at our operations on warm- and cool-season grass varieties as energy crops in the Northeast.
- Install a research pellet mill to produce and evaluate high quality grass bioenergy pellets on site.
- Heat shops and offices at a research farm with a pellet boiler, saving fossil fuel and cash.
- Demonstrate opportunities for heating with renewable bioenergy at popular farm field days.

The Composting Facility transforms over 5000 tons of solid waste annually to high quality compost:

- Collect and compost solid waste from 57 waste streams around the Cornell campus that would otherwise be landfilled.
- Enhancing hundreds of acres of Cornell farms, fields and orchards with nutrient-rich compost.
- Lead tours and demonstrations at the EPA award-winning compost facility to inspire individuals and organizations from around the state to explore composting in their own communities.

The response to these initiatives from both the public and private sectors has been enthusiastic. The opportunities for research, teaching, and outreach are unlimited, as are the opportunities to build new partnerships. It is the right thing to do, at the right time. Cornell University—making a world of difference.

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