Sustainability at the College of Agriculture and Life Sciences

The challenges facing our planet are daunting. The human population is predicted to reach nine billion in 40 years, the climate is changing, water availability and quality is an increasingly important issue worldwide It is also becoming very apparent that we are all interconnected and interdependent, economically and environmentally. Change is needed if we want to meet the needs of the present without compromising the ability of future generations to meet their own needs – the essence of "sustainability"

Climate change models predict "extreme" precipitation events (storms) will happen with increasing frequency, and 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/yr, and constructing a new combined heating and power plant that is dramatically reducing the use of coal and shrinking the university's carbon footprint. On the academic side, the new Cornell 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 the College of Agriculture and Life Sciences, is uniquely positioned to contribute to sustainability at Cornell on a large scale. To that end, we have adopted a "Culture of Sustainability."

The CUAES, with a staff of 55, operates CALS research farms, facilities and greenhouses in and around campus, including several thousand acres of diverse agricultural and forested land. We are committed to creating cultural change based on social, environmental and economic considerations as a model for other universities, communities and organizations regionally and nationally. We are:

- Implementing a series of management practices that reduce energy use and waste materials;
- Implementing forest management practices to intensify the rate at which carbon dioxide is captured, to reduce our carbon footprint;
- Linking together a diverse group to interact and cooperate with a wide array of researchers, educators and individuals leading sustainable initiatives at Cornell and elsewhere;
- Launching an energy conservation pilot project for the college to identify and measure the best methods for encouraging behavioral change;
- Developing the Cornell University Renewable Bioenergy Initiative to utilize 57 waste product streams and crop and forest biomass resources to produce energy in a model platform with regional applicability.

The Culture of Sustainability has three main pillars, all interconnected, to support the building blocks of change: The Human Element (The Sustainability Action Team); Technological Resources (Developing

web-based tool kits for CALS energy conservation); and Renewable Energy (The Cornell University Renewable Bioenergy Initiative).

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

- Sifts through, evaluates, and designs sustainability plans and projects with worker and supervisor input. Monitors and records results;
- Relies on the experience of office, field, greenhouse, and growth chamber workers to identify the real opportunities to improve efficiency and quality of the natural and work environment;
- Creates communication and marketing materials to engage staff and encourage behavioral change, along with change in practices and procedures.

The CALS Conservation Website will be a dynamic, interactive portal created in partnership with faculty researchers from CALS and Carnegie Mellon as part of a research project to encourage individual behavioral change. The website will contain accessible information related to sustainable practices and, uniquely, will include ways to document and measure individual involvement and resulting action. The toolkits will eventually be accessible to the CALS community and university at large. The website will:

- Organize the extensive range of opportunities and action steps individuals can take with immediate feedback on carbon footprint and cost savings, and promote competition among identified groupings;
- Provide a tool to measure the degree of behavioral change and the motivation, i.e. economic, environmental or social (peer-related.) The website will help researchers assess the popularity of particular actions, based on available research and best management practices;
- Maintain streaming data of building energy reduction, environmental benefits, economic benefits and general progress on an individual and group (building) basis.

The Cornell University Renewable Bioenergy Initiative (CURBI), currently in the feasibility study phase, envisions creating a model facility to generate renewable bioenergy from the 57 campus waste streams and other biomass resources to help fuel the campus. CURBI will:

- Maximize the use of available resources from farms, forests, food service and other operations in and around the Cornell campus to generate power and fuels. Materials range from animal bedding and switchgrass to vegetable oil from dining hall deep fryers;
- Utilize multiple cutting-edge technologies under 'one' Cornell roof -- providing a state-of-the-art research, education and outreach platform as well as renewable energy production;
- Offer a unique opportunity for comparison, demonstration, and improved efficiency of renewable energy technologies;
- Utilize "stackable" renewable energy technologies, so that waste product from one system can be utilized by the next, increasing overall efficiency of the system, and make the use of biomass that much more attractive;
- Address current operational, environmental, and economic issues through integrated and collaborative efforts with researchers and educators.

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, the Land Grant University to the world, is making a world of difference.

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