Atkinson Summer 2015 Intern, An Evaluation of the Adapt-N Tool for Reducing Environmental Impacts while Improving Crop Yields
Ecosystems - Sustainable Sourcing Initiative

With world attention focused on both the environment and the economy, Environmental Defense Fund is where policymakers and business leaders turn for win-win solutions. This leading green group, founded in 1967, has tripled in size over the past decade by focusing on strong science, uncommon partnerships and market-based approaches.

Are you interested in exploring a career at an internationally-recognized environmental organization? By joining EDF as a summer intern, you too can be part of a vibrant workplace that welcomes diverse perspectives, talents and contributions, where innovation and a focus on results are a way of life. EDF’s Internship Program welcomes intellectually hungry leaders to join us, advance our work, and cultivate the skills and relationships needed for a successful career working for the environment. Alumni of our Internship Program have gone on to important leadership positions, most notably our own President, Fred Krupp. Could you be the next Fred Krupp?

Overall Function

EDF offers internships for students and recent graduates in a variety of programs and departments throughout the organization. Our internships typically run for 10 weeks during the summer. The ultimate goal of our internship program is to provide high-quality experiences (including relevant projects and opportunities for networking) that form the foundation for any individual who is serious about an environmental career.

Position Description

EDF’s Sustainable Sourcing Initiative works to improve the sustainability of the food supply chain, engaging with retailers, suppliers, agricultural service providers and farmers to meet the needs of a growing world for abundant food, clean water and a stable climate. In particular, we support the development and adoption of farm management tools that help farmers reduce the environmental impacts of food production while maintaining or even increasing crop yield. For the past several years, EDF has collaborated with Dr. Harold van Es of Cornell’s Program in Crop and Soil Sciences to further the development, calibration, field testing, and commercialization of Adapt-N, a tool which enables farmers to better match fertilizer applications to crop needs. The tool operationalizes the concept that better balancing nitrogen use and crop nitrogen uptake helps to reduce the nitrogen (N) surplus in crop systems. Theoretically this will reduce off-field losses of nitrogen to air (as nitrous oxide, a powerful greenhouse gas) and water (nitrate leaching and resulting impacts to streams and rivers). EDF has undertaken a preliminary meta-analysis of published literature which shows that nitrous oxide emissions rise exponentially at N surplus values above a threshold region which varies with agro-ecoregion. By helping farmers minimize N surplus, Adapt-N offers the potential for farmers to manage their crops in a way with reduces nitrogen losses while increasing crop yield.

Beta-testing of Adapt-N on farms in New York and Iowa, followed by rapidly expanding farm-scale use of Adapt-N in a growing number of states, has shown the utility of the tool for improving crop yield and improving nutrient use efficiency; the goal of the internship is to test whether use of Adapt-N will also reduce nitrous oxide emissions and nitrate leaching. The intern will work with Dr. van Es and other researchers at Cornell, and with Dr. Eileen McLellan, Senior Scientist on the Sustainable Sourcing Initiative Team, to:

1. further explore the relationship between N surplus and nitrous oxide emissions/nitrate leaching;
2. help build a database of results from field studies that relate fertilizer management to N surplus, nitrous oxide emissions and nitrate leaching;
3. apply the Adapt-N tool to the studies in the database and compare Adapt-N predicted reductions in nitrous oxide and nitrate loss with measured values; and
4. work with Adapt-N tool developers to refine the tool as needed based on this analysis.

We anticipate that the outcome of the work will be a report summarizing the ability of Adapt-N to account for environmental benefits resulting from improved fertilizer management and identifying opportunities for its future development. We also anticipate that the intern will be able to use data and ideas developed during the internship in partial support of an undergraduate or graduate research project; this could be related to further development of the
Adapt-N tool or could connect the internship experience to the work of other Cornell researchers on crop nitrogen budgets and agroecosystems.

The intern should have a basic understanding of chemistry, be comfortable developing and using large databases, and be interested in the application of computer and remote sensing technology to ecosystem management. The intern will work directly with Dr. van Es and the multidisciplinary Adapt-N project team at Cornell and with Dr. McLellan and the Agricultural Sustainability Team at EDF. As a result, the intern will be directly involved in the development of cutting-edge science and its technological applications while learning how science intersects with policy and real-world implementation in the context of the food supply chain. As noted above, we hope that the intern will be interested in pursuing further work on the topic of nitrogen management in agro-ecosystems, and will offer professional development opportunities (e.g. experience in field data collection or ecosystem modeling) to support that future work as best fits the interests of the intern and the needs of the project.

- Location: Washington, D.C.
- Direct Work Supervisor Name: Dr. Eileen McLellan
- Direct Work Supervisor Title: Senior Scientist, Sustainable Sourcing Initiative Team

**Key Responsibilities**

Tasks will include but are not limited to:
- research, analyze and synthesize information on the relationship between N surplus and nitrogen losses in cropping systems;
- evaluate the Adapt-N fertilizer management tool in terms of its ability to 1) reduce nitrogen losses from crops and 2) estimate the associated environmental benefits;
- identify opportunities for improving the Adapt-N tool; and
- provide support to the Sustainable Sourcing Initiative Team’s efforts to improve environmental accounting in the food supply chain.

**Qualifications**

- Undergraduate or graduate student with demonstrated interest in environmental science or agriculture.
- Coursework in environmental science, chemistry, statistics or computer science.
- Experience in developing and analyzing databases.
- Highly proficient in using Excel, GIS or statistical packages.
- Excellent written and oral communication skills.
- Must be well organized, motivated, and detail-oriented.
- Ability to multi-task, prioritize and meet deadlines.
- Ability to work in a team setting and have the ability to work independently when projects are due.
- Demonstrate initiative and problem solving skills.

**Term**

- 10 weeks during the summer.
- The position is full-time (35 hours/week).

**Compensation**

- Compensation is $5,000 for the summer term.

Due to the volume of employment applications and queries received, EDF is unable to respond to each application individually. Applicants will be contacted directly if selected as a candidate.

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