

New Hampshire ENVIROTHON 2017

Agricultural Soil and Water Conservation Stewardship

Introduction

Agriculture in the United States has been transformed since the early 1900s from production on small family farms to production in large, highly mechanized operations that involve increased chemical use and new technologies. While this transformation has had positive effects on agricultural production rates, there have been some significant costs such as groundwater and surface water contamination, soil degradation, aquifer depletion, and the deprivation of economic and social conditions in rural America. In recent years, there has been a movement in this country and elsewhere toward a more sustainable approach to agriculture.

Sustainable agriculture is an integrated system of plant and animal production that protects natural resources, promotes economic development, and enhances society's quality of life while making healthy food accessible.

An important component of sustainable agriculture is soil and water conservation stewardship. Most farmers realize that it is in their best interest to implement Best Management Practices (BMPs) in order to help preserve natural resources such as soil and water for future generations. Well-designed BMPs can not only help preserve natural resources, but can also improve socioeconomic conditions in farming communities and beyond. The process of selecting BMPs includes a cost-benefit analysis to investigate the effectiveness of conservation practices. For example, a farmer who chooses to plant cover crops on a field to help decrease soil erosion must examine the costs of labor and material to plant cover crops versus potential loss of agricultural productivity due to soil erosion.

New Hampshire (NH) farmers have many resources to help select and implement BMPs such as the state's Conservation District offices and the US Department of Agriculture's Natural Resources Conservation Service offices. In addition, food producers in the state also have a support network that includes the University of

New Hampshire Cooperative Extension, local agricultural and conservation commissions, farmer organizations, industry partners, interest groups, social service and health institutions, and state agencies. When implementing BMPs it is critical that the most appropriate BMP (or group of BMPs) be selected, while following installation and maintenance protocols. This can be a time consuming and costly enterprise for small farmers and can negatively impact farm income. Thus, some of the resources listed above provide both technical support and equitable financial support.

The Challenge

Your team's job is to first research agricultural BMPs that would be appropriate for NH farms. Next, you will have to contact the NH Conservation District office in your county to determine one or more local farms that can be the focus of your study. Once you have established a geographical focus area you should use the *Web Soil Survey* and *Granite View II* to map existing soils and land use. You will then need to establish what BMPs are currently implemented at your focus area by interviewing the farmers responsible for implementation and maintenance of the BMPs. Your team will then recommend other BMPs that could be implemented at this location to improve ecological, economic, and/or social conditions. The recommended BMPs must include a cost-benefit analysis.

Your team's oral presentation should include:

- 1) A description of BMPs appropriate for NH Farms
- 2) A description of the resources (both economic and technical) available to farmers to implement BMPs that describes the organizations providing those resources
- 3) An explanation of your lines of communication with NH Conservation Districts and farmers

- 4) A map of current land use and soils in your study area which includes a description of all symbols on map
- 5) A description of BMPs currently implemented at your study area (including any returns on investment as described by farmers)
- 6) A description of your recommended BMPs which includes an **explicit cost-benefit analysis**
- 7) Any feedback from farmers who have implemented (or are considering implementing) your recommended BMPs

To contact the NH Conservation District office in your county to determine one or more local farms that can be the focus of your study please visit <http://www.nhacd.net/member-districts.html>.

NH ENVIROTHON 2017 Current Issue Challenge Committee

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Resources

New Hampshire Department of Agriculture, Manual of Best Management Practices for Agriculture in New Hampshire

<http://www.agriculture.nh.gov/publications-forms/documents/bmp-manual.pdf>

US Department of Agriculture, Natural Resources Conservation Service, Field Office Technical Guides

https://efotg.sc.egov.usda.gov/efotg_locator.aspx?map=US

New Hampshire Department of Agriculture

<http://agriculture.nh.gov/index.htm>

New Hampshire Association of Conservation Districts

<http://www.nhacd.net/>

The Sustainability Institute at the University of New Hampshire, Farm, Fish, & Food Enterprise Viability in New Hampshire, An Initiative of the New Hampshire Food Alliance 2015

<http://www.nhfoodalliance.com/>

SOILS

Soils Heath from Cornell University

<http://soilhealth.cals.cornell.edu/>

Building Better Soils for Better Crops

<http://www.sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition>

MAPPING SOILS

Web Soil Survey

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

MAPPING LAND USE

Granite View II (University of New Hampshire)

<http://granitviewii.unh.edu/>

WATERSHEDS & AGRICULTURE

United State Department of Agriculture, Natural Resources Conservation Service

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/watersheds/>

SUSTAINABLE AGRICULTURE

Sustainable Agriculture Research & Education

<http://www.sare.org/>

National Sustainable Agriculture Coalition

<http://sustainableagriculture.net/>

Leopold Center for Sustainable Agriculture

<http://www.leopold.iastate.edu/>

Center for Sustaining Agriculture and Natural Resources at Washington State University

<http://csanr.wsu.edu/>

- 1) Students have the option of presenting their solution to the Current Issue Challenge using a PowerPoint presentation.
- 2) If using a PowerPoint presentation, teams must bring their own laptop computer. The NH ENVIROTHON will supply a projector and screen in each presentation room.
- 3) Any embedded videos in the presentation must be produced by the NH ENVIROTHON team making the presentation. In other words, no videos downloaded or streamed from the Web can be used in your presentation. **Videos should be no longer than two minutes.**
- 4) Because a reliable internet cannot be guaranteed, your presentation should not contain any embedded links to web sites or videos.
- 5) All five team members must participate in the presentation. Your team will have exactly 15 minutes to make your presentation, followed by 5 minutes of questions by the judges. Plan and rehearse your presentation accordingly.
- 6) Work on the challenge is restricted to the five team members and two alternates. You may seek additional information from any source, but you are not permitted to get help on your solution to the challenge (your analysis, proposed project, the proposal itself, or any handouts or displays) from parents, teachers, advisors, consultants, professionals or anyone else. You may, and should, get help and guidance in rehearsing your presentation.