Fact Sheet #34 Agriculture & Climate Change

Agriculture and Climate Change

Climate change is a complex issue that will affect agriculture across the globe in many ways. In the Northeast United States the average temperature has risen 1.8°F during the last century and is expected to rise at least that much, likely more, over the next 100 years. Average temperatures and the severity and frequency of extreme weather events are increasing. These changes will certainly affect agriculture and the changes in various environmental factors will interact in complex ways.

What we expect to see in New England:

Increase in average temperature, especially in the winter. Less severe winters will allow new and different plant pests and pathogens to overwinter, migrate earlier, or produce more lifecycles in a season. This will require farmers to use new pesticides and more applications. Productivity and growth of livestock decreases under heat stress and they become more susceptible to disease and parasites. New and different parasites may overwinter and become more difficult to control, especially in ruminants.

Increased precipitation and humidity encourage fungal growth. Common fungal diseases that are expected to worsen include late blight (tomatoes and potatoes) and Stewart's Wilt (corn). Livestock producers may deal with more mud, runoff, and soil erosion on their farms, especially during the winter and spring, causing hoof problems and water contamination. Increased carbon dioxide levels in the air can have a stimulating effect, especially on weed growth. Weeds are more likely to respond with increased growth than crop plants because weeds are more genetically diverse and adaptable. Weeds will also be better at adapting to warmer temperatures and changes in precipitation.

Agriculture's Effects on Climate Change

Agriculture itself effects climate change in many positive and negative ways. A few key factors are:

- Carbon is stored in soils. Carbon can be released into the atmosphere by excessive tilling.
- Farmers can also facilitate the storage of carbon in the soil by using reduced- or no-till practices, planting cover crops, and applying compost.
- Conserving energy helps reduce costs on the farm and greenhouse gas emissions. Many farms are investing in renewable energy systems, for which MDAR offers a grant assistance.

The increase of severe weather events (in frequency, intensity, and lengths) will certainly cause stress for farmers, crops, and livestock. More flooding, drought, wind, heat, and other severe conditions can hit farmers very hard, especially those who have limited resources to invest in re-building the farm, or who are counting on the income from a crop.

Soil nitrogen is one of the most important nutrients for plant growth, but when excess is applied in the form of synthetic fertilizer, it can be released into the atmosphere as nitrous oxide, a very powerful greenhouse gas. Timing fertilizer applications with plant needs and using compost can reduce these harmful emissions.

To learn more about climate change and agriculture in the northeast visit:

- Environmental Protection Agency's site on climate change's impact on the food supply
- University of Vermont's Center for Sustainable Agriculture

Farm Aid operates a Hotline (1-800-FARMAID; farmhelp@farmaid.org) and offers crisis support and resources for farmers facing environmental disasters.

CISA has an emergency interest-free loan fund for farmers in Western Mass that becomes available after severe weather events.

Agricultural Adaption to Climate Change

The good news is that farmers are adaptable and will be able to respond to climate change by adjusting practices. Unfortunately many of the adaptations that may be needed are expensive or may even cause the nature of the farm to change. Some we will certainly see include:

- Changing planting and harvesting dates
- Changing varieties grown or crop/species altogether
- Increasing irrigation or implementing drainage systems
- Increasing use of pesticides and fertilizers
- Increasing the intensity of weed management