USDA Regional Climate Hubs: Northeast Regional Vulnerability Assessment Summary

Climate Vulnerabilities in the Northeast

Regional Description:

The northeastern United States is a diverse region containing the seven most densely populated states in the nation. About 21% of land in these 12 states is farmland (6% of the national total) and 62% is classified as timberland. There are 175,000 farms producing more than $21 billion yearly in agricultural commodities. Animal agriculture is important, particularly dairy and poultry. About half of the field crops and pasture grown in the Northeast are for animal feed. Horticulture and perennial fruits (e.g. apples, pears, blueberries, grapes, cranberries) are a relatively large portion of total plant production. Farms in the Northeast are typically smaller in size, and organic production is higher than in other regions.

Climate Related Hazards and Vulnerabilities:

- **Extreme precipitation** and wet springs are delaying planting and harvesting dates, causing flooding and soil compaction, damaging crop quality, and reducing yields for grain and vegetables.
- **Frosts after early spring** hurt perennial crops (e.g. grapes, apples, cherries). When an extended warm period causes premature leaf-out or bloom, and is followed by hard frost, crop losses can be high.
- **Warmer temperatures** on average cause more heat stress in livestock, and changes to crop growth cycles. Earlier leaf out and flowering, longer growing seasons, and later senescence may result in increases in production for heat tolerant crops and woody perennials but, shorter growing seasons for cool weather crops (e.g. potatoes, lettuce, broccoli, and cabbage). Maple syrup season is coming earlier and is shorter. Weeds, pests and diseases are intensifying as ranges move northward.
- **Ocean temperatures are rising**, changing the range of suitable habitat for many commercially important fish and shellfish species, with consequences for aquaculture in coastal states.

Adaptation and Mitigation Strategies:

- **Promote soil health** using practices that protect soils from erosion (cover cropping and reducing tillage) while improving productivity and resilience to drought or extreme moisture.
- **Protect from extremes** with hoop and high tunnel houses, ventilation systems, riparian buffers, expanded irrigation, and the shifting of production zones away from flood- and frost-prone areas.
- **Decision support tools** provide better information faster to help managers improve practices such as: integrating pest management, shifting planting dates, adjusting feeding management, identifying and selecting better adapted varieties, breeds and cultivars.
- **Increase carbon sequestration and reduce greenhouse gas emission** by retiring organic soils from cultivation and restoring forested wetlands, as well as improving manure management.

Regional Priorities:

- Seek to better understand stakeholders' needs for increasing resilience to climate variability.
- Catalog and develop educational materials on adaptation strategies, and share approaches through adaptation workbooks, decision support tools, and demonstration sites in collaboration with the Northern Forests Sub Hub and other university, state and federal partners.