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Will changing weather challenge growers?

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Don't start buying orange trees for New England orchards just yet, but scientists say our climate is slowly warming and changes are blowing in the wind for area gardeners and horticulturists.

Seed catalogs are arriving now in the mail. We dream of spring planting as the extreme cold of recent weeks seems to run counter to any fears of global warming.

Experts say the changes are subtle and won't be dramatically apparent. What is becoming most evident, they say, is that temperature swings — witness the recent bone-chilling cold — are causing our already varied New England climate to become more unpredictable.

This means gardeners have to be even more careful about variety selection, according to seed companies.

And while we may not have to worry here in northern New England about whether we can plant bananas just yet, there is a current controversy involving the widely used plant hardiness zone map issued by the Department of Agriculture.

The map is the one commonly reprinted in seed catalogs and used to determine what can be grown where.

Proposed changes will add confusion for gardeners.

The American Horticultural Society, under contract by the government, has revised the zone map to reflect increasing minimum temperatures. But its revisions are now held up for review by the USDA, and some say they may become a victim of anti-global-warming politics.

Meanwhile, a symposium held in Providence, R.I., in October focused on getting ready for the changes ahead.

Attended by growers, Extension agents, academics and others interested in the topic, the message was that climate change is here and it will have implications for the fruit, vegetable and horticulture industries.

"These are long-term trends and there is still a lot of year-to-year variability," said David Wolfe, a horticulture professor at Cornell and a symposium moderator. "But if you believe in thermometers, you have to believe things are warming."

Rising temperatures and changes in atmospheric carbon dioxide levels will affect what crops can be grown and the amount of weed and insect pressures they will face, according to experts.

Potatoes, for instance, are a cool-weather crop that has come under increasing pressure in the southern end of its commercial growing range. Major potato acreage may be pushed farther into

Canada as a result.

So too maple syrup production, which generally is starting and ending earlier in New England. Canada has become a major producer now.

Beans and asparagus crops may become stringier and tougher as temperatures warm. And tomatoes seem to be doing better and surviving longer in our gardens due to the increased growing season.

The invasive weed kudzu steadily is spreading northward and has reached Massachusetts.

"American farmers are already noticing the effects of global warming," said Adam Markham, executive director of Clean Air-Cool Planet, a Portsmouth-based nonprofit organization focusing on solutions to global warming. "In Vermont, the increasing threat of drought has forced farmers to pay for irrigation systems and in New York, warmer winters have led to an improvement in conditions for wine-producing grapes."

The evidence

A report prepared in 2001 at the University of New Hampshire, as part of the national assessment of climate change ordered by Congress, detailed changes in the Northeast's weather the last 100 years.

The "New England Regional Assessment" painted a picture of a gradual warming effect that is having an impact on rainfall, snowfall, lake ice and plant life.

It noted that the region (which included the six New England states and upstate New York) has a varied climate to begin with, depending on closeness to the coast, elevation and other factors. That is becoming even more variable.

Some of the most significant findings included:

q From 1895-1999, the region as a whole has warmed by 0.7 degrees. By state, New Hampshire has warmed 1.8 degrees, while Maine has dropped 0.4 degrees.

q This warming has been most evident in average winter temperatures, which have gone up 3.5 degrees in New Hampshire, but have been unchanged in Maine for reasons still not understood.

q There has been a 3.7 percent increase in regional precipitation, but that is falling in more unpredictable ways. There have been more instances recently, for instance, of droughts, heavy rainfall events and ice storms.

q There has been a 15 percent decrease in snowfall in Maine, New Hampshire and Vermont since 1953, and the snow cover has declined in many parts of the region. In northern New Hampshire, for instance, there are now 14.5 fewer days with snow on the ground.

q The average ice-out on Lake Winnepesaukee is four days earlier now.

While a few degrees of difference may not seem like much, the assessment points out that it can have a profound impact over the long-term. Two models used in the study that forecast the current trend going forward into the next 100 years predict serious changes ahead.

One forecasts a 6-degree increase in annual minimum temperatures by 2090. The other forecasts a 10-degree increase.

Consider that Boston's 30-year average annual temperature is 51.3 degrees. A 6-degree increase would give Boston the same average annual temperature as Richmond, Va.'s 57.7 degrees. A 10-degree increase would match Atlanta's current average of 61.3 degrees.

The implications are huge.

"We're in a current warming trend and there really isn't a debate about this," said Barrett Rock, a professor of natural resources at the University of New Hampshire and one of the report's authors.

He points out that 2003 just replaced 1998 as having the hottest mean global temperature on record since mankind began keeping track. While year-to-year the warming is modest, the impacts are significant, he said.

Rock pooh-poohs those who say the trend is just another climatic swing that will reverse itself, explaining, "I don't see any evidence that this is a naturally occurring cycle."

Gardeners to do?

What is a gardener to make of all this?

Rochester calls itself the Lilac City, and the shrub's colorful blooms are a traditional harbinger of spring in the community, as they are throughout the Northeast.

Pieter Meulenbroek has worked with lilacs in the area for more than 30 years as owner of Studley Flower Gardens in Rochester. He is not surprised that records of lilac bloom dates going back 40 years were cited as evidence of climate change at the Providence symposium.

"It is indeed true. We used to use the lilac (sprigs) for Memorial Day grave decorations. But the last 10-12 years they are usually bloomed out by that time," Meulenbroek said.

He cautioned that warming is a gradual trend, and most gardeners won't see any dramatic changes in what they can plant. He doesn't advise going outside the area's usual planting recommendations, cautioning that "nature can be finicky."

Catherine Neal, an Extension professor at UNH, said northward creep of zone hardiness is a reality, but that most of this part of New Hampshire and Maine will still have cold spells that stress marginal plants.

Under the existing map, this area is in what's now referred to as hardiness Zones 4 and 5.

These allow for plants that can survive temperatures as low as minus 10 and minus 20 degrees respectively.

Under the controversial changes proposed to the map, coastal New Hampshire and southwestern Maine would move to a zone where average annual minimum temperatures are listed as zero to minus 10 degrees, or about where coastal Massachusetts now is listed.

"I think we'll go through periods where people will plant things they maybe haven't before. But

then we're still going to have these cold spells," Neal cautioned.

Experts say we can expect slightly earlier springs and longer growing seasons. This should bode well for garden species such as melons and tomatoes. We also should be able to successfully grow shrubs such as evergreen azaleas in sunny spots.

But plant survival still will remain site-specific, in areas called micro-climates. Flowering dogwoods and rhododendrons, for instance, can survive in the Seacoast now but do not do well farther inland.

The increasing weather fluctuations could also do more damage. Warmer springs could fool us into planting earlier, only to be hit by a frost.

At Cameron's Home and Garden Center in Farmington they guarantee the shrubs and trees they sell for a year. Any change in recommended hardiness zones would be greeted with caution, said Michelle Smith, garden center manager.

Cameron's is close to the line between current hardiness Zone 5, and Zone 4 to the north. Smith said she always questions customers about their location before advising them because many plants will survive in Farmington, for instance, but may not in the Lakes Region, which generally has colder minimum temperatures and lakeside winds.

While she is skeptical about any major changes in local climate, she does think our weather has gotten more unpredictable. She advises that gardeners should ask their nursery about hardiness before buying something, and use mulch generously to aid winter survival.

"With plants there are so many variables," she said.

At Johnny's Selected Seeds in Winslow, Maine, the catalogs have gone out nationwide and soon the orders will be coming in from gardeners for vegetable and flower seeds.

Spokesperson Flannery Higgins said the firm has noticed over the years that the weather has gotten more erratic. Johnny's and other suppliers are trying to offer tougher, more widely adaptive varieties to help growers cope.

Look for hardiness when choosing seed, Higgins advised.

"There is no such thing as a normal growing season anymore," she said, pointing to the unusually wet August last year in New England and now this recent cold spell. "It's just become more unpredictable."