

# Will Global Climate Change Affect Minnesota Gardeners?

World-wide, our last decade was the warmest on record. Winter snow cover in the Northern Hemisphere decreased. In 1850, 150 glaciers filled Glacier National Park; today, there are only 25. In central Minnesota, winter lake ice is disappearing a week sooner. Since 1970, Minnesota's growing or frost-free season has increased two full weeks. The U.S. Department of Agriculture has even reclassified the hardiness zone for the Twin Cities from Zone 4a (minimum winter temperatures: -25 to -30 F.) to Zone 4b (minimum winter temperatures: -20 to -25 F). Our birds and new bird species are returning sooner from the south. Spring flowers are putting on an earlier display. Maples are now invading northern Minnesota pine forests, an area where they were never found before. Something is happening!

**"We are in the unfortunate situation of being the first generation of gardeners, ever, who cannot rely on historical weather records to tell us what our climate is, or what to expect in the future."** –David W. Wolfe, Cornell professor of Horticulture.

Climate scientists, observing the data, state that the world climate is definitely changing. The world-wide trend is toward higher temperatures. Increases in human-generated gases such as carbon dioxide, methane, water vapor, and nitrous oxide seem to be driving this trend. People can sometimes confuse weather with climate. A single very cold stretch in one place does not disprove climate science, nor does a single very hot stretch prove global warming. Weather is but a single snapshot of what is happening. Climate is more like a movie, recording weather events and trends over days, months, years, decades, and even centuries. It does amaze me that we do trust doctors who use scientific research to fix our hearts and cure our cancers, but some of us are still skeptical about the conclusions made by climate scientists.

How will these climate changes affect our gardening future? Let's look at some of the anticipated difficulties first. More and longer droughts (alternating with episodes of excessive rain) are expected in coming years. These dry and then very wet conditions could weaken our plants and make them more prone to fungal and mildew diseases. Drier conditions might encourage gardeners to use plants that can handle reduced amounts of water. I am not talking about cactus display gardens, pebble lawns, or sand pits. Some beautiful natives and Mediterranean plants can tolerate less water and adapt well in our gardens. We may see fewer or smaller lawns in the future, or use grass varieties that are more drought and heat resistant. Other water-conserving ideas include increasing the moisture holding ability of garden soils by incorporating large amounts of organic compost. Drip irrigation systems are one of the most effective ways of delivering water to our plants and we can use water from rain barrels as an additional water source.

We will most likely have more problems with insects. More cases of Lyme disease have already been noted as the deer tick's range increases northward. Insect pests will hatch or will migrate from southern climates earlier in the season and some new pests from the southern states may take up year-long residence. Lack of very cold winters will enable larger numbers of pests to survive. The longer growing season will enable more generations of insect pests to reproduce, especially mosquitos. To make things worse, many of our pesticides are less effective in warmer weather. It will be even more important to practice Integrated Pest Management in our gardens; the term refers to using our heads, tolerating a bit more of pest damage, and using the least toxic control methods at the most effective times.

Weeds like dandelion and lamb's quarters will produce more seed in a single season. Invasive plants like burdock, buckthorn, and purple loosestrife may become more vigorous due to the warmer climate and increased carbon dioxide levels in the atmosphere. Poison Ivy will grow better and will become more toxic. The allergy season now is three weeks longer than twenty years ago, and more ragweed pollen is being produced. We may see more varieties of weeds; kudzu is already in southern Illinois and Pennsylvania and is moving north.

The good news is that we may be able to grow some perennial plants that, up to now, have only been marginally hardy here. Perhaps we can grow more than a few extra-hardy peach varieties in our orchards. Maybe we can grow more of the beautiful Lavender varieties and expect them to survive the winter. There are varieties of Agastache, Chrysanthemum, Coreopsis, Gaura, Geraniums, Hellebores, Sedges, and Rudbeckia that are hardiness-rated as Zone 5 (minimum temperatures between -10 and -20 F) that I would love to grow, as well as Japanese maples. Someday, my long-season 'Brandywine' tomatoes may have more red and ripe fruit than green at the end of the season.

Yes, I think that we can try planting some more of the Zone 5 plants and more of them will survive, but I would continue to heavily mulch all of our plants in late fall. If, as in some years, we receive little snow cover, frost will penetrate deep into the ground and roots not protected by a heavy organic mulch will tend to freeze. Newly planted and unprotected perennials will suffer heaving out of the ground as the winter weather alternately warms and freezes. With warmer winters and with some very unusual record warm snaps, our perennials will open flowers and leaves prematurely. Frost is still a danger and these awakening plants will need to be protected.

Climate change will offer us problems as well as positive possibilities. Yes, the future in our gardens is unpredictable and challenging, but we will adapt...After all, we are gardeners!

Happy Gardening, Joe Baltrukonis