



cleanwisconsin

Seeds of Challenge

A survey of how extreme weather impacts Wisconsin's agriculture



Introduction

Science tells us that climate change will increase the frequency and intensity of extreme weather like droughts, storms, and floods; over the last few years, events like these have given us a taste of what we can expect in the future in Wisconsin. For example, the 2012 drought lowered crop yields and drove up the cost of grain, causing farmers in Wisconsin to spend \$800 million more on inputs like feed, seeds and pesticides than the previous year.¹ Then in 2013, excessive moisture and rain resulted in \$61.9 million in assistance payments from the U.S. Department of Agriculture (USDA) to Wisconsin farmers, \$52 million more than the year before.²

As the nation debates how to act on climate change, we felt it was time for a closer look at how these changes will affect Wisconsin's cornerstone industry. To that end, Clean Wisconsin undertook a survey of farmers listed in the *2013 Farm Fresh Atlas*. We received 60 responses from a wide variety of farms across Wisconsin, from orchards near Bayfield to dairy and beef cattle farms in Jefferson.

Weather is unpredictable, and farmers are accustomed to adapting and finding solutions, but this survey shows that climate change is going to make adapting even more difficult. Preparing for a future with more extreme events means farmers will need to adopt measures that have a high input costs, like installing irrigation systems to combat drought and building structures for storing feed and protecting livestock.

>>What follows begins to paint the picture of what climate change may mean for Wisconsin's iconic agriculture industry.

[Snapshot]

2012 drought: \$800M
more spent by Wisconsin farmers on feed, seed and pesticides over prior year

2013 rains: \$61.9M
in assistance payments to Wisconsin farmers from the USDA, which is \$52 million more than 2012

“Every weather event seems to be more extreme.”

—Owner, 70-acre CSA farm in Northwestern Wisconsin

How increased precipitation & flooding has impacted...

[Vegetables]

- » Farmers report delayed field work and planting, new plantings being washed away, and complete crop loss in some cases.
- » Floods have reportedly cost farmers \$300,000 to \$1,000,000 over the last few years.
- » Increased moisture means enhanced conditions for crop diseases.

[Livestock]

- » Destruction to pasture is a commonly cited concern.

“The wet spring and dry summer of 2013 cost me \$30,000-\$40,000 from not being able to sell my feed.”

—Owner, 500-acre dairy farm, Western Wisconsin

SOURCES

1. 2013 Wisconsin Agricultural Statistics" NASS, USDA http://www.nass.usda.gov/Statistics_by_State/Wisconsin/Publications/Annual_Statistical_Bulletin/bulletin2013_web.pdf pg 16
2. "Cause of Loss Historical Data Files" Risk Management Agency, USDA <http://www.rma.usda.gov/data/cause.html>

How the 2012 drought impacted...

[Vegetables]	» Vegetable growers reported lower yields, increased labor costs and costs of water, and complete crop loss in some instances.
[Fruit]	» The prolonged drought killed trees that took a decade to establish.
[Livestock]	» Dairy farmers reported lower forage yields and decreased milk production and reproduction. » Time and again, the cost of buying feed was cited as a major issue with the drought. Some had to buy feed for the first time, while some paid more for the feed they would have bought anyway. Feed was reported to cost farms anywhere from \$90,000 to \$250,000 more in 2012. » The secondary impacts of high feed costs were many: <ul style="list-style-type: none">• Several farmers reported having to sell off their stock, which will continue to impact their bottom line for years to come.• One farmer had to drastically raise the prices on his meat as feed prices were so high. » Re-establishing warm season pastures lost during the drought could take several years. » Egg production was also down by 15% to 20% according to some estimates.
[Nursery & Greenhouse Stock]	» The quality of plants were down and the cost to grow plants increased, due to increase energy and water usage. » One grower noted that sales went down 25%, as consumers were reluctant to buy because of reduced quality and the need to water the plants.
[Maple Syrup]	» The heat resulted in lower maple syrup production the following year.

How 2013's heat impacted...

[Vegetables]	» Many reported lower yields and lower quality products due to burned and stunted crops. » Many also noted the strain on the farmers themselves.
[Livestock]	» Common reported impacts are: <ul style="list-style-type: none">• Increased susceptibility to disease• Trouble calving• Added costs for drugs and vet bills• Low forage yield » One farmer noted that when a cow's reproductive cycle is hit with a hot spell, it can take years for her to recover. The hot spell of 2013 led this farmer to sell off cows that should have calved again. » Hot days also meant a disruption in the pasture rotation in order to provide shade for the animals. » One farmer noted that a few days of heat are manageable, but too many may require investment in shelter.

Other climate-related changes farmers have noticed over time

[Vegetables]	» Extreme weather has damaged one CSA's relationship with its subscribers, as urban populations often don't understand how extreme weather can be very localized.
[Fruit]	» Commercial fruit farming relies on predictable weather trends to stay in business, and the variability of seasons is offering new challenges: <ul style="list-style-type: none">• It is more difficult to know when to plant.• Late frosts are killing off bees, which are necessary for pollination.• Early frosts are freezing fruit still on the trees. » In Northern Wisconsin, summers have grown significantly drier. Growers now need to install irrigation systems and high-capacity wells, which lead to increased energy costs and an impact on local groundwater resources. » One farmer noted an increase in the median air temperatures during the growing season, which allows the air to hold more moisture. When dewpoints set up earlier in the evening, berry crops are more susceptible to post-harvest fruit rots. » Spotted winger drosophila is a potential long-term threat. One farmer predicted that Wisconsin may not have fall raspberries in the future.
[Livestock]	» One farmer reports that he now needs to rely on one crop of hay for livestock for the season, as growing conditions have prevented him from getting a second cutting. » Fluctuating temperatures are an issue for livestock. Freezing temperatures are easier on the animals than upper 30 degrees.
[Nursery & Greenhouse Stock]	» The variability of the weather is directly related to an increase in production costs. Sudden weather changes in early spring make it dangerous to remove plants from the greenhouse, where water and energy are needed to keep plants alive.

[What else our farmers said]

“My grandfather bought our farm in 1943, and my wife and I now run it. The drought in 2012 cut our production by half. We need to do something now when it comes to global warming so we don't see even more of these extreme weather events in the future. That's going to mean speaking up against the power players who want to keep the status quo.”

—Mark and Petra Zinniker, who raise livestock at Zinniker Family Farm, Elkhorn

“The drought of 2012 cost me \$250,000 in extra hay costs.”

—200-acre dairy farm, Southeastern Wis.

“Heavy rains in 2007 and 2008 cost us over a million dollars in vegetables”

—120-acre vegetable farm, Western Wis.

“A warm winter and early spring, combined with a late freeze, cost us 90% of our fruit — a six-figure loss.”

—Apple orchard northwest of Milwaukee

“We've lost \$300,000-\$400,000 the last couple years because of flooding.”

—50-acre vegetable farm, Western Wis.

CREDITS:

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