Crop advisers and others who work with farmers in the U.S. Corn Belt know their clients are independent-minded folks who like doing things their own way. But for the rest of the world, it can be all too easy to lump them together, says Lois Wright Morton, an Iowa State University sociologist. “If you’ve met one corn farmer you’ve met them all, right?” she quips.

Jokes aside, new research led by Morton indicates this definitely isn’t true in one critical area: How Midwest farmers perceive and are responding to the extreme weather brought on by climate change. In a recently published article in the *Journal of Environmental Quality*, she and her colleagues report that farmers in six sub-regions of the Corn Belt are not only experiencing impacts such as flooding differently, but their views of the risks and how they’re adapting diverge, as well.

Again, obvious perhaps to crop consultants and extension personnel, but it’s a message that climate scientists need to hear, Morton says. Climate models typically generalize conditions across entire regions, whereas her study indicates that farmers are responding to local climate signals and patterns. “So there’s this need for what we call ‘downscaled’ climate science,” she says. “Farmers can manage better when they have a lot more local information.”

What’s more, she adds, the human dimensions of climate change need more consideration. Incidents of exceptionally heavy rain- and snowfall have jumped 37% in the last 45 years across the upper Midwest, leading many to ask how agriculture can be made more resilient to the impacts.

“So, if we care about managing productively under a changing climate and [minimizing] the unintended consequences to our soil and water resources, it makes a lot of sense to pay attention to what farmers are doing,” she says. “What are their concerns and how do they deal with them?”

To answer this, Morton and her colleagues surveyed nearly 5,000 farmers across the Upper Midwest in 2011, including wet states such as Illinois and Indiana, and drier areas like southwestern Minnesota and eastern Nebraska. The team also looked at a specific set of “mainstream” or large-scale producers: To be included, farmers must have planted at least 80 ac of corn and grossed at least $100,000 in the year.

Survey participants were asked about their experiences with problems like flooding, erosion, and wet soils; their perceptions of risk and vulnerability; and their use of four adaptive strategies: artificial (tile) drainage, no-tillage, cover crops, and planting to “highly erodible,” or marginal, land.

Their responses were then combined with soils information and climate data spanning two periods: the past 40 years (1971–2011) and the last five (2007–2011). The latter years are significant because they were exceptionally wet across much of the Midwest.

Already Adapting

Overall, the researchers found that Corn Belt farmers are indeed noticing weather and climate shifts, and are already adapting to protect their resources from these changes. Nearly 75% of respondents reported some experience with waterlogged soils, for example, while 25% stated they had problems with significant soil erosion. Most also agreed or strongly agreed that extreme weather events are occurring more frequently.

Survey participants were also asked about their perceptions of risk and vulnerability, and how they were adapting. The most common adaptation was no-tillage, followed by growing cover crops and using artificial drainage. The researchers also found that farmers who had experienced flooding or other extreme weather events were more likely to adapt than those who hadn’t.

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