Economist: Climate change could reshape crop agriculture

December 7 2010, by Steve Leer

Midwest farmers could get a permanent dose of southern-style weather if future climate change projections are accurate, says a Purdue University agricultural economist.

Agricultural producers throughout the Corn Belt would face warmer average temperatures and precipitation extremes, likely leading farmers to shift to more climate-appropriate crops or management strategies, said Otto Doering.

One scenario predicts Indiana's climate by the year 2100 would be like that of Virginia in the winter and Oklahoma in the summer, said Doering, who also is the director of the Purdue Climate Change Research Center. Winter temperatures in Virginia average in the mid- to upper 40s, and Oklahoma summer days regularly top 90 degrees.

Doering will address climate issues during a talk at the Indiana Certified Crop Adviser Conference on Dec. 14-15 at the Indianapolis Marriott East. Doering is scheduled to speak twice the first day on the topic "Climate Change and Climate Change Policy - What Do They Mean to Crop Agriculture?"

Climate is slowly changing, but progress on federal "cap-and-trade" legislation to curb greenhouse gas emissions that contribute to that change is at a standstill, Doering said. As the climate shifts, farmers will be confronted with major meteorological challenges, he said.

"Rainfall variability with a smaller number of storms over the growing season and more intense storms are things we'll have to watch out for," Doering said. "If this develops - as I believe it will - it will affect us all.

"Then there's temperature. One area of concern is warmer winters. That might mean pests wouldn't be wiped out as much like on those days in January where it's below zero and the cold permeates the ground. Another important concern with temperature as it relates to corn is pollination. What we'd like to have is a situation where it may be hot in the daytime but there's a drop in nighttime temperatures, which facilitates pollination."

Even with climate changes, Indiana and the upper Midwest would continue to be the nation's best corn-growing region and might actually need to increase production, Doering said. Climate projections suggest states on the western end of the Corn Belt that rely on irrigation to boost productivity might drop corn production altogether if permanent drier conditions prevail.

"The sandhills of Nebraska, parts of the Texas panhandle and central and western Kansas are areas where corn production is, in a sense, on the fringe," he said. "In those places farmers are probably going to move to dry land sorghum, dry land wheat and other sorts of crops."

One possible benefit from warmer annual temperatures is the prospect of more farmers growing soybeans and winter wheat in the same crop year. "Double cropping," as it is known, is practiced in Indiana mostly in southern counties because temperatures warm earlier in the spring and remain warm later into the fall.

"I think we'll see more of the soybean-wheat double crop moving northward in Indiana, to the point where in 30 or 40 years we may see this kind of opportunity very viable for central Indiana," Doering said.

Climate change could affect crop agriculture in other ways, Doering said, including:

* Seed varieties. To produce high-yielding crops in more challenging weather conditions, farmers might have to choose varieties with better resistance traits and different maturity dates. Planting schedules also might have to be adjusted.

* Soil erosion. Much progress has been made in stemming soil loss brought on by the combination of farming practices under moderate rainfall and temperatures. If conditions change, it could reverse those gains and reduce soil organic matter.

* Biofuels. Depending on the size and scope of future climate change, government policy on renewable fuels might need to be revisited. That could translate into changes in the federal subsidy for biofuels and the overall production of biomass for those fuels, at a time when food production might face more challenges.

More information: www.indianacca.org/Conference

Provided by Purdue University

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