

Midsummer rainfall key to higher yields

By TOM J. BECHMAN

THE premise sounds simple: Rain in June and July is key to corn yields. The more rain you get, the more yield you harvest, to a point. Too much rain subtracts yield, and 2008 is a shining example of this in flood-ravaged areas of the Corn Belt.

What's not so obvious is exactly how much rain makes top corn yields. Likewise, it's not as clear how a string of good weather years impact the trend yield curve.

Scott Irwin and Darrel Good, University of Illinois ag economists, plus former graduate student Mike Tannura, theorized that good weather in the past decade explains the accelerated rate of increase in trend yield. Their results make a compelling case, worth a closer look in the future.

They developed computerized regression equations to separate weather from other factors, basing models on results compiled by Louis Thompson at Iowa State University in the mid-1960s through the mid-'80s.

The Illinois pair studied weather and yields in Indiana, Illinois and Iowa. Trends may vary somewhat, but the basic premise should hold anywhere.

When corn needs water

Based on yield data from 1960 through 2007, they concluded that the ideal amount of rain for top yields in Indiana and Illinois is 4 to 5 inches in June and about 5 to 6 inches in July. Rainfall appears more critical in Iowa in July.

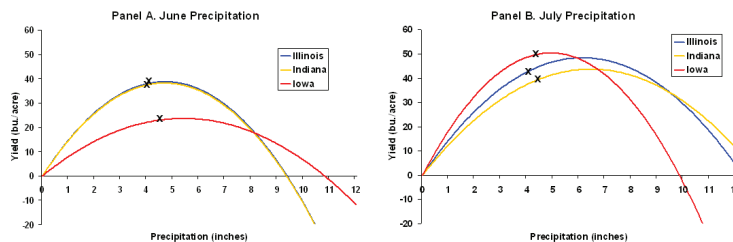
The same calculations show that too much rain harms yields. That's around 10 to 11 inches in June and/or 10 to 12 inches in July. Some areas received nearly 20 inches in June in '08. Obviously, that's negative. Yet state average precipitation totals for the three states for June '08 are closer to 6 to 7 inches. Graphs are figured from state perspectives, not what happens in localized areas.

"The magnitude of precipitation in June and July is definitely one of the factors that affects corn yields, along with temperatures during July and August, and technology," Irwin says. "Analysis of our models shows that unfavorable weather reduced yields by much more than favorable weather increased yields. For example, 2 inches higher than average July precipitation in Illinois increased corn yields 6 bushels per acre. But 2 inches less than normal rainfall reduced yields 16 bushels per acre."

Jim Newman, longtime ag climatologist at Purdue University, now retired, attempted to prove the "rain makes grain" theory by studying the direction of USDA crop estimates during the season. He studied patterns from the mid-'60s to mid-'80s. Newman found a tendency for USDA projections to increase from the first to final estimate in years with cool, wet summers; and decrease in years with hot, dry summers.

He believed USDA underestimated corn performance in favorable weather years, and vice versa. The trend wavered in the '90s, but still holds fairly well as long as similar conditions exist everywhere.

Effect of precipitation on crop yields, 1960-2007



Note: The "x" represents average totals for each state.

SOURCE: SCOTT IRWIN, DARREL GOOD, UNIVERSITY OF ILLINOIS AG ECONOMICS



You can never have

too much performance.

