Yellowish Stalks And Leaves Signs Of Nitrogen Deficiency

Corn Yield Should Have Been 520 Million Bushels Higher

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Dr. Peter Scharf, University of Missouri Extension agronomist and MU professor of plant sciences spoke to Missouri farmers about corn yield loss due to lack of nitrogen during the 2009 growing season. Scharf logged more than 2000 road miles in August surveying the corn-belt and examined aerial photographs of fields in Missouri, Illinois and Indiana. Scharf saw field upon field with telltale signs of nitrogen deficiency; yellowish stalks and leaves.

Scharf explained the yield impact of this year's excessive rainfall in regards to nitrogen. "There were some fields in this area and really all over the Midwest, with substantial nitrogen deficiency. Illinois was probably the hardest hit, due to rain washing the nitrogen away. Down here in southeast Missouri most people side dress so from the time of the side dress application to when the corn needs nitrogen, it is less time and less rain. In a lot of the rest of the state and in Illinois all of the nitrogen was applied pre-plant so the nitrogen is more vulnerable; there is more time for the nitrogen to be lost before the corn needs it. We had a lot of that this year. My estimate is 520 million bushels over the corn-belt, this includes a little bit out of Arkansas and Tennessee but mostly Illinois and Missouri and southern Iowa. We could have made 520 million more bushels of corn this year if we had not run out of nitrogen – we had enough water to do it, we had enough plants out there to do it; we did not have enough nitrogen."

"This is the first time that I have ever said that, in southeast Missouri, we actually lost yield. Normally, in a wet year, you might find a field here or a field over there where they never got the fertilizer on. But I have never seen enough fields to show deficiency to say, 'Okay we actually, as a group, should have done something better in this part of the state. We needed to apply additional N to some of these fields.'"

Scharf explained that growers had options. "Even if growers do not have high clearance machines in the field, aerial applications of nitrogen would have helped. Down here there are quite a few airplanes that are used to putting on 100 pounds of urea, which is 46 pounds of actual N. It is a standard thing that they usually charge six or seven dollars an acre for. It is just not much money when you have got a problem. For the service of flying, that costs hardly more than driving through the field. You can do that no matter whether the ground is soggy or not. There also were plenty of days where growers were spraying beans and they could have used that equipment to put nitrogen on corn. But we are not used to doing that with that equipment at that time of year. There is a lot of equipment out there that has clearance for corn and could hold some nitrogen. A lot of those are sprayers with smaller tanks and you have to fill them up pretty often. That slows you down, but it gets the job done and if you need the N you're still making plenty of money per hour."

Dr. Peter Scharf, University of Missouri Extension Agronomist and MU Professor of Plant Sciences

Photo by Betty Valle Gegg-Naeger

Scharf says spending an extra $30 per acre to apply nitrogen using ground rigs or aerial applicators would have produced up to 35 bushels more per acre. He estimated that on average southeast Missouri fields lost 15 bushels per acre due to N deficiency in 2009, but some fields were worse while others had little or no deficiency. "Additional N will give you a yield bump if you can see deficiency, but probably won't if you can't see it." Δ

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