Planting delays were only one headache corn farmers endured the last few years, thanks to spring rains that soaked the Midwest. With the wet soils, farmers also had to contend with major fertility loss.

That has caused many farmers to seriously rethink their fertility plans and look later into the season for solutions.

Fabian Fernandez, soil fertility specialist at the University of Illinois, says major fertility losses resulting from nitrogen leaching and denitrification during wet springs have caused farmers to examine other methods of applying fertilizer in-season to reduce loss and increase yield.

“There is certainly more interest in people splitting their applications and spreading their risk,” says Fernandez.

While a preplant application can be just as effective in drier years, he says, a split application of preplant fertilizer, along with an in-season application such as sidedressing between the V4 and V8 stages, right before the time when the plant’s nitrogen needs start to rapidly increase, is the most secure approach to hedge the risk of nitrogen loss from wet soils.

Peter Scharf, nutrient management specialist at University of Missouri, agrees that farmers are becoming more interested in in-season applications, for more breathing room to apply fertilizer if weather is less than cooperative. Studies show yield increases by delivering N to the plant when it needs it most, he adds.

“If it’s a year where it gets really wet, you’re not going to make full yield unless you have some nitrogen during the season,” he says. While there may be many approaches to quantifying N needs during the growing season, light sensors that measure corn canopy light reflection seem to be the most effective at pinpointing where nitrogen needs to be applied and by how much, Scharf adds.

“That’s one advantage of in-season N. You can use variable rate based on sensors,” he says, adding that preplant fertility programs are limited in that regard. “You can also do diagnostics with hand-held meters, plant tissue tests and aerial imagery. But I think the sensors are a much more logistically practical way to use that concept.”

The best approach for in-season nitrogen application? Scharf says virtually any in-season application is good, with the exception of N solution sprayed on the crop, which will cause leaf burn. He advocates combining sensor technology with any other means of N application. While sidedress anhydrous ammonia is the most resistant to loss, he notes, other N sources can be applied faster.

Ideally, Scarf adds, N would be applied in June to ensure that it’s available in June and July when plants need it most. “If you want to be exact, N availability is critical between when the plant is hip-high and half-way through the grain-fill period, or a couple weeks after tassel,” he says.

While an in-season approach may reduce the risk of N loss due to wet weather, there is no bullet-proof method of maximizing N efficiency, warns Fernandez.

David Mengel, soil fertility and nutrient management specialist at Kansas State University, says farmers have much to consider, including their soil types, before buying new in-season application technology. But what is most important, he says, are the basics: timing and placement.

“The real differences ... are placing the nitrogen below the surface — getting it away from residues, getting away from potential volatilization losses — and applying it closer to the time of utilization,” Mengel says.

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