

Topdressing Winter Wheat

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Wheat producers in Missouri are contending with a wet early spring, which has complicated the situation for topdress N applications. Some producers haven't completed their topdressing and are worried about getting it done. Others applied their N and are

worried about the possibility that it has been lost or moved deep into the root zone.

I don't think that either group is in serious trouble at this point.

My opinion is that we are still in the ideal window to apply N in central and north Missouri. I recommend applying topdress N just before the first joint appears on the wheat. In central Missouri, that's still weeks away. The main uptake period is from the time that the second joint appears until flowering. Earlier applications appear to be at risk of loss. In two years of experiments near Columbia, mid-March N application gave 10 bushels more wheat than mid-February applications, and 20 bushels more than mid-January applications.

Once field conditions are right, it won't take long to topdress all remaining fields. If we're unlucky, fields will stay wet and topdressing will be difficult for an extended period.

Once the first joint has appeared, it's time to really step up efforts to get to fields that haven't been topdressed yet. Not to panic, but maybe to move to plan B—airplane, floater, even 4-wheeler. As I read the limited research with applying N after the first joint appears, my interpretation is that it's critical to get the N applied by the time the second joint appears. Further delays are likely to result in yield loss.

Most producers in southern Missouri have probably completed their topdressing. If they have a concern, it's about the possibility of losing their N. This may be a real problem producers in the bootheel who applied N early on sandy soils, but for all other situations I would say that the risk of a problem is low.

Most of the bootheel has received 7 or more inches of from mid-February to mid-March. The rule of thumb is that 'movable' forms of N will move downward six inches for every inch of water that moves through a sandy soil. Does this mean that N applied in mid-February is now $7 \times 6 = 42$ inches deep? Maybe. But mostly not. And if so, it still may not be a problem.

Urea and nitrate are 'movable' forms of N. Ammonium is not. If urea is applied, it converts to ammonium, probably in about two weeks at this time of year. The ammonium then converts to nitrate, which takes another two weeks. So N applied as nitrate (one-fourth of the N in UAN solution, half of the N in ammonium nitrate) may be 42 inches down in sandy soils. Nitrogen applied as urea or ammonium will not be as deep. The urea can move downward as easily as nitrate, but will slow down once it converts to ammonium. Ammonium won't move much, but will start to move again once it converts to nitrate.

In many cases, less rain has moved through the soil than has fallen. At the time of application, the soil was probably not full. Part of the rain goes to 'fill' the soil. Also, intense rainfall may lead to runoff, even in soils that tend toward being sandy.

My experience is that, on sandy soils, wheat will usually put roots down 4 feet or more. Even for N that has moved down 42 inches, the wheat will probably be able to get most of it if it doesn't go too much farther.

In summary, if your wheat isn't topdressed yet, don't worry that you already have a yield drag, but focus on getting N applied by first joint if possible and second joint at the latest.

And if you applied N early on a sandy soil in the bootheel, assess your situation based on the information in this article, the timing of your application, and how much rain you have received since that date. If you get substantially more rain and your wheat has an N-deficient appearance, consider an additional application of 30 to 50 lb N/acre. Δ

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