



Agronomy Update

Fertilizer and Seed Placement

May 2020



Every spring I get questions

regarding the impact of fertilizer rates and placement on seed. How much room is needed between the seedbed and the fertilizer band? How much seed placed fertilizer can a specific crop tolerate? The problem is that the answers to these questions tend to be a constantly moving target. The answer is usually “it depends” – it depends on the soil texture, the seedbed moisture, the type of fertilizer being discussed as well as the seeding tool being used. Cereals can tolerate more fertilizer than canola or peas; all crops can tolerate more phosphate than nitrogen; 12 inch row spacings can’t tolerate as many pounds of fertilizer per acre in the seed row as 10 inch spacings can - and on it goes.

So once all of these factors have been figured out and a plan arrived at; whether that is all the fertilizer down the boot, splitting a small amount of the blend out and putting it with the seed, or having a separate bin in the cart for a seed applied fertilizer, it’s time to hit the fields and implement that plan.



In the case of a drill that has independent openers like the P556 (formerly the 56' 1870) shown here, this can be a very straight forward. This spring, we decided to put all the fertilizer down in the band. This left the seed is sitting on the shelf created by the seeding tool well above it and to the right, leaving very little opportunity for fertilizer to interfere with the germination and initial establishment of the seedling. Yet the fertilizer is close enough that the young wheat plant will quickly access it.

In other systems where seed and fertilizer are all coming out of a single shank, this can be a little trickier, but in general most people check their seedling depth plus the distance between the seed row and fertilizer band to ensure adequate spacing prior to starting. However, wear on the seeding tool and poor seed bed conditions can sometimes cause unexpected results.



But how many people actually go back and check to see if they have hurt their crop with excess fertilizer? When the difference may be as subtle as a 5% drop in emergence of the crop, or simply inhibiting some root development, we may be doing damage that we don't see or appreciate. Much of our crop's success depends on a fast start, so it might be worth taking a bit of time after crop emergence to check to see if your assumptions on crop safety with your fertility practices are correct.

That starts with doing plant counts after the crop emerges. You likely started seeding with a target plant count in mind – for example, on our Battle River training field we shoot for a target stand of 25 plants/ft² on wheat. In our last wheat crop, counts after emergence showed we hit 24 plants on average. This was close to target, but I still feel we can do better, so I adjusted my seedling mortality rate slightly this year and bumped the target number of seeds per foot to reflect that.

While plant counts are a good way to check on seedling mortality, they can't account for more subtle injury, where the plants emerge, but are not able to thrive. There is a quick and easy way to check for early season issues such as fertilizer burn, wireworm damage or seedling root diseases; that is by digging up some plants and looking at the roots.



I sat in on a Webinar last winter put on by Mike Dolinski from Taurus Industries, and he pointed out that a seedling wheat plant should always have 5 roots emerging from it (as shown above). One way to see if you are getting too close to your N fertilizer band or if your seed placed blend is a little toxic is to dig up some seedlings and look at the roots. The picture above is a volunteer wheat plant that I dug up last week. It has no fertilizer affecting its early seedling development. All 5 roots are accounted for, and you can see by the amount of dirt clinging to the roots that root hair development is normal – this is a healthy wheat seedling.

The picture below (taken by Mike Dolinski) shows the impact of too much seed placed phosphate on a wheat plant. You can easily see that the root development from the seed has been stunted and that the plant is relying heavily on the crown roots for survival.



Similarly, all crop types will show evidence of fertilizer burn on the roots if you take the time to look and know what to look for.

A few minutes with a shovel can answer a lot of questions with regards to seed, seedling mortality and the effects of fertilizer placement, so I would strongly recommend taking that time to see if the way you apply your seed and fertilizer gives your crop a helping hand in the spring or actually gets in the way of a healthy start to the year.

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