

# BETWEEN THE ROWS<sup>®</sup>

## Spring Anhydrous Applications and Corn Planting

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Although spring anhydrous applications reduce the risk of N loss compared to fall applications, they can impose a greater risk to corn emergence. When spring breaks and field conditions improve, many customers ask how soon can I plant following an anhydrous application? Unfortunately, there is no magic number of days to wait in order to avoid injury; time will help, but won't prevent injury.

### Why corn injury occurs

When anhydrous ammonia is injected into the soil and the knife track is properly sealed, it diffuses within the first 24 hours into a 5 to 6-inch cylindrical zone of concentrated ammonia around the point of injection. This zone usually extends farther in sandy or dry soils increasing the potential of injury if corn comes in contact with it. Injury occurs because ammonia is a desiccant and rapidly dehydrates (burns) corn roots. Over time ammonia is converted into a safe, plant available nitrate form.



Anhydrous burn

Roots that are injured appear burnt, typically at the tips. Above ground symptoms include uneven emergence and short, pale plants. Injury is often more noticeable in dry weather because of increased exposure potential to ammonia and injured roots are slow to recover and limit water uptake.

### Proximity of ammonia band to seed

One way to avoid corn injury from anhydrous is to ensure the plants are planted away from the injection zone. GPS guidance systems can be used to offset planter rows 4-6 inches or more from ammonia injection tracks. It is important that the soil is not excessively wet when applying anhydrous to avoid compacting future corn rows. Planting can occur the same day as anhydrous application using this method.

Another popular method is to apply anhydrous at an angle to corn planting. If injury occurs, it only affects a few plants vs. every plant down the row. Injured plants located over the anhydrous track will often appear paler green and shorter compared to plants in between the anhydrous tracks.

Anhydrous should be injected to 7-8 inches deep to minimize potential injury. It's still not recommended to plant directly down the anhydrous track even at this depth, as corn roots will eventually reach the concentrated ammonia and risk injury.

Wet soils at application may smear the sides of the knife track causing the ammonia band to move up the injection furrow and become highly concentrated near seed placement.

If large dirt clods are formed after application, ammonia will seep through the open-air voids and move closer to seed placement.



### Nitrogen rate

Lower N rates minimize risk of injury. An experiment conducted by the University of Illinois showed less injury from 100 N lbs/A vs. 200 N lbs/A at various anhydrous application depths. Splitting N application timings between pre-plant and side-dress is one way to lower anhydrous rates applied before planting.

### Follow these guidelines to reduce crop injury risk from spring anhydrous ammonia applications:

- Don't plant directly over ammonia injection tracks. Use GPS guidance to offset planter rows or apply at an angle to future corn rows.
- Inject anhydrous at a depth greater than 6 inches and make sure the knife slot is sealing properly.
- Lower pre-plant N rates by planning a post emergence side-dress application.
- Don't apply in wet soils, and ensure the knife slot closes and doesn't smear.
- Wait as long as possible before planting to allow for ammonia conversion to a safer form.
- Consider switching to an alternate source of N, such as UAN solutions or urea.

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