WINFIELD UNITED

Use Caution with Spring Anhydrous Ammonia

With the lack of nitrogen that was applied last fall, and considering the sporadic weather spring typically presents, it is apparent that there will be a stacking up of various field operations this spring. There will be a lot of pressure to get anhydrous ammonia applications and planting operations going as soon as conditions are favorable. When these operations are crunched into a short period of time, there is a greater risk of corn seed and seedling injury from ammonia (Fig. 1). Typical symptoms of anhydrous ammonia injury to corn seed or seedlings include brown tipped roots, pruned roots, dead plants, yellow to purple plants, plants with rolled/wilted leaves which resemble droughty conditions, or seed that germinated and died. One way to avoid ammonia damage is to broadcast urea or UAN solutions; however, many growers still elect to go ahead with the anhydrous ammonia applications.

So how soon after an anhydrous ammonia application can corn be safely planted? There is not an exact answer to this question, and there are a number of interacting factors which may affect the potential for seed or seedling injury, including:

- Time between anhydrous ammonia application and planting
- Anhydrous ammonia application depth
- Soil texture
- Soil moisture
- Direction of nitrogen application compared to corn rows
- Nitrogen rate
- Distance between knives

Figure 1: Root burn/injury due to anhydrous application.

Generally, it is recommended that growers wait one week after applying ammonia to plant their corn. However, if soil moisture conditions are good, the application depth is 7-9" deep (see Fig. 2), and the anhydrous is applied at an angle to the corn rows, corn can be planted 3-5 days after an ammonia application with a minimal potential for injury. Under adverse conditions (dry soils, shallow application depths, high rates, etc.) injury has been observed when ammonia was applied up to 2 weeks prior to planting and even with fall applications in a few situations. The effect of nitrogen rate, application depth, and time between ammonia applications and planting operations is shown in Table 1. The safety zone between the ammonia placement and the seed will vary with soil texture, cloddiness, soil moisture, and nitrogen rate. **Depth of application and time delay in planting is crucial in providing a safety zone between the ammonia dispersion area and the seed.**

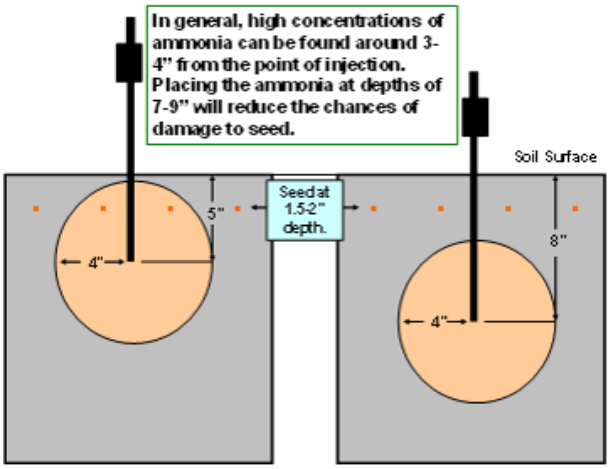

Figure 2: A typical ammonia dispersion zone and how application depth can result in this zone interfering with seed germination and/or seedling growth.

Table 1: Effect of application depth, time of planting, and ammonia toxicity on corn stands.

Depth of Application (inches)	Days Delay in Planting after Anhydrous Ammonia Application					
	0	7	14	0	7	14
	200 lbs N/Acre			400 lbs N/Acre		
	---------- Plant Population (% of Normal) ----------					
4	60	96	100	35	60	90
7	100	100	100	80	100	100
10	100	100	100	100	100	100
(University of Illinois)						

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