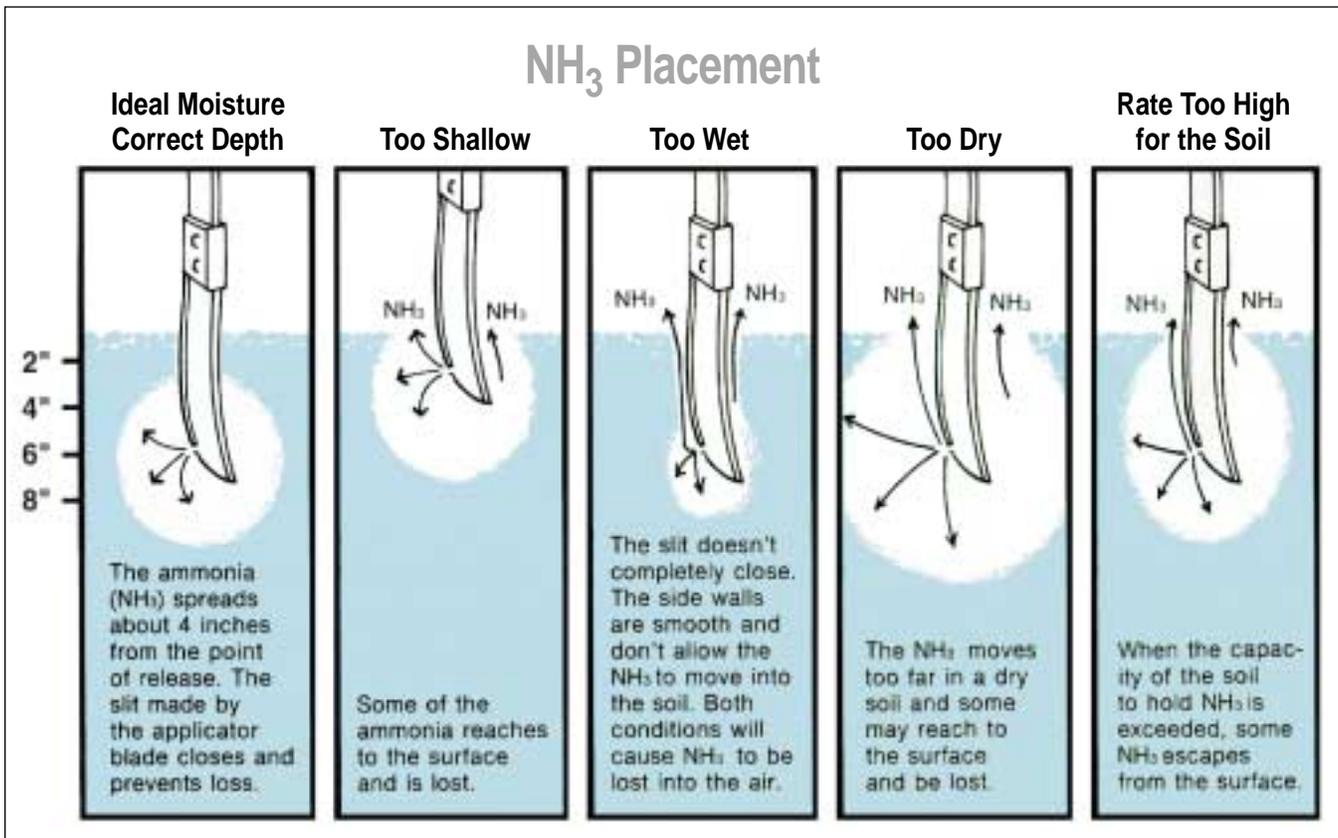




**Figure 6.24.** Anhydrous ammonia has been a popular source of nitrogen for corn since equipment for applying it was developed in the 1940s. Use of modern equipment minimizes the potential for accidents as the operator does not need to transfer the material from a nurse tank to a field applicator tank.



**Figure 6.25.** Distribution of anhydrous ammonia (white areas) when released in different kinds of soil, at various depths, and under several soil moisture conditions.



**Figure 6.26.** The white cloud seen behind the knife is water droplets that form as ammonia lowers the temperature.

3. The *pH* of the soil — acid soils hold more than neutral or alkaline soils.

4. The *spacing* of the applicator knives — when the applicator knives are 15 inches apart, the safe rate is twice as high as with 30-inch spacings because the  $\text{NH}_3$  contacts twice as much soil.

5. *Depth* of application, since this influences the total amount of soil above the point of release.

On silt loam or finer textured soils, ammonia will move approximately 4 inches from the point of injection. On coarser textured soils such as sands, ammonia may move 5 to 6 inches from the point of injection. If the depth of application is shallower than the distance of movement, some ammonia may move slowly to the soil surface and escape as a gas over a period of several days.

Seedlings can be damaged if proper precautions are not taken when applying nitrogen materials that contain free ammonia. This is most likely to be a problem when ammonia is injected into soils that are so wet that the knife slot does not close properly, or the slot may open as the soil dries rapidly. Damage can also result from applying nitrogen material to excessively dry soils, because the ammonia moves large distances before being absorbed. Finally, damage to seedlings can be caused by using a shallower application than suggested. Generally, if planting is delayed 3 to 5 days after application there will be little, if any, seedling damage. Exceptions to this have been observed, usually when soils continue to dry after planting. And, while extremely rare, damage from fall-applied ammonia to corn planted the next spring has been observed.

A strong desiccant, ammonia harms living tissue by removing water from it. It is important to insure that it does

not come in contact with seeds or seedlings as it may cause reduction in germination or reduced root growth. To avoid this potential problem, separate the ammonia and seed by either time or distance. If applied 8 to 10 days prior to planting, virtually all of the ammonia will be converted to ammonium and so should not cause a problem with seedling germination or growth.

Both research and farmer experience have shown that ammonia may be applied with a field cultivator or disk harrow on silt loam or finer textured soils ( figure 6.27). To insure success from this system, the ammonia needs to be injected at least 4 inches below the soil surface, planting should be delayed for at least 3 (preferably 5) days, and



**Figure 6.27.** Application of anhydrous ammonia with a tillage tool saves both time and fuel. This system works well on land which is at the correct moisture for tillage operations.