Sidedressing Corn

- Sidedressing is used to provide corn with nitrogen (N) closer to when it is needed by the plant.
- Growers should be aware of sidedress management options and injury concerns as they sidedress N during the spring.
- Depending on environmental conditions and climate, different N sidedressing applications may be used to improve N availability to corn during peak growth stages.

Timing of Sidedressing

If no N was applied before or at planting, then sidedress applications should be made early (by V3) to meet the needs of developing seedlings. At the V3 growth stage, seedlings have used up nutrients stored in the seed and are increasingly dependent on soil supplied nutrients. The nodal root system is developing at V3 and will soon surpass the seminal roots as the primary root system. When supplementing previous N applications, sidedressing can be done through the V8 stage. Adequate N from V5 through V8 is critical as the plant will determine the number of potential ears and ear girth. Additionally, N uptake is greatest from V8 through silking, depending on weather conditions (Figure 1).

To help extend N availability to corn, split applications of sidedressed N may be used, especially in warm, wet climates. A split application method reduces the likelihood of considerable N loss before crop uptake. A small portion of N can be applied after the corn plant emerges, reducing the potential for early season N loss. The majority of N should be applied just before rapid vegetative growth begins. For split sidedressing applications of N, Mississippi State University recommends applying no more than 1/3 of the total N at crop emergence and then applying the remaining amount of N 30 days later with corn at or beyond the V6 growth stage for the second application.

Sources of Nitrogen

Urea-ammonium nitrate (UAN) and anhydrous ammonia are good nitrogen fertilizers to use when sidedressing corn.

Urea-Ammonium Nitrate. UAN liquid solutions, such as 28% or 32% N, can be applied as a band on the surface with drops, even on fairly large corn, or by injection. When applying N, especially as UAN or other sources containing urea, remember that it needs help getting into the soil profile or volatilization is possible. Incorporation of UAN is generally done by rainfall or light tillage, depending on the situation. Up to 30% of urea could be lost due to volatilization if no rainfall occurs within 2 weeks and temperatures are warm. The most effective way to apply UAN to the soil is by injection.

Anhydrous Ammonia. Anhydrous ammonia applications should be made in moist soil and only if excess root pruning will not occur. Sidedressing ammonia can begin immediately after planting. Injection between either every row or every other row is an option.

Benefits vs. Risks

Sidedressing is agronomically more efficient and can help reduce input costs. If over 50% of the N applied is through sidedressing, rates can be 10% less than pre-plant rates.

Based on early indications of yield potential, N rates can be adjusted with sidedress applications. If the corn stand is good, and biotech traits and fungicides are being used to protect yield potential, N rates can be increased. Conversely, when poor stands occur, N rates can be reduced.

Some of the issues associated with sidedressing are that additional labor is needed and adverse weather conditions can delay applications. If N sidedress applications are delayed, the crop may be deficient of N for an extended period of time and yield potential can be dramatically reduced. Crop injury is also a concern with sidedress applications. Broadcasting solution UAN has the potential to cause foliar plant burning, leaf loss, and reduced early growth.
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(Figure 2). Because of leaf burning, it is recommended not to exceed 90 lbs of N/acre when corn is at V3 to V4 stage, and 60 lbs N/acre at the V7 stage. UAN solution should also not be applied to foliage if plants are larger than V7. Hot, dry weather may also increase leaf burn and reduce plant growth.

Care must also be taken to avoid injury from sidedressing with anhydrous ammonia. Vapor damage to the corn leaves can occur if ammonia escapes from applicator knives that are close to or above the soil surface. Additionally, wet soil conditions or damaged equipment may cause improper sealing of the knife track, which can cause ammonia to escape. When soil is drier, it is easier to seal the knife slot and ammonia is less likely to escape. If only a portion of the corn leaves are damaged, corn plants will usually grow out of the damage. When using anhydrous ammonia, it is recommended to sidedress early to avoid root pruning by the applicator knives. Corn roots may reach the row middle at an early growth stage.

Please consult your area agronomist if you have questions about sidedressing corn.

Figure 2. Corn leaf damage from broadcast UAN at 100 lb N/acre. Photo courtesy of John E. Sawyer, Agronomy Extension, Iowa State University.

Figure 3. Corn roots damaged (right) from anhydrous ammonia. Photo courtesy of John E. Sawyer, Agronomy Extension, Iowa State University.

Sources


Web resources verified 3/21/16. 140315070131

For additional agronomic information, please contact your local seed representative. Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. All other trademarks are the property of their respective owners. ©2016 Monsanto Company. 140315070131 032116MG