THE LEADING EDGE

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A PUBLICATION DEDICATED TO MAXIMIZING YIELD POTENTIAL

Scout Your Fields and Evaluate the Effectiveness of Your Planting Equipment

Scouting fields is a sometimes tedious, but absolutely necessary, task. Inspecting young plants is not only critical for disease and insect control, but examining certain aspects of the field as a whole will shed light on planting equipment performance.

The performance of the planter and its attachments is vital in the preparation of the perfect seedbed. Optimal planter performance results in uniform emergence and maximized yield potential--research indicates that corn yields could increase as much as 15 bushels per acre simply by improving performance. Observing the crop as it emerges and evaluating problem spots will help producers identify specific issues and correct them in time for next season's planting.

Getting Started

The task of scouting should be undertaken with the proper material on-hand. A measuring device and some method of immediately recording your observations are useful when scouting fields for signs of poor equipment performance. A pocketknife can be used to scrap dirt away for a better visual. If scouting for disease, weeds, or insects, a more extensive arsenal, including items such as a sampling frame and magnifying lens, is necessary.

Bean root system

When scouting fields for the purpose of evaluating equipment, look for obvious patterns of damage or abnormal growth confined to row. Damage or growth patterns that run across the row point to environmental factors, while those confined to a row suggest equipment malfunction.

The Importance of Spacing and Density

Evaluating plant spacing is one of the best techniques for

identifying potential equipment problems and therefore ways to improve next season's crop. Getting into fields while plants are still young makes this task much easier. Smaller plants allow measurements to be made more easily.

Calculating the standard deviation is the best way to check consistency of spacing. Measure the distance between 30 consecutive plants. Repeat this process four times at randomly selected points. The standard deviation is a common statistical measure that most spreadsheet programs will calculate.

Checking row spacing

According to agronomy experts, for every one-inch increase in the standard deviation above a threshold of two inches, the yield-loss potential for corn is about 2 ½ bushels an acre.

Some problems that may be observed while measuring standard deviation are missing plants, irregular spacing, and two-plant hills. Each problem indicates planter malfunction and can lead to a loss of yield.

Experts speculate that doubles or triples could weaken a crop's ability to handle stress, and these close neighbors compete for water and nutrients. Skips affect yield slightly more than doubles, and have the most detrimental effect in fields where population is at or slightly below the optimum.

Double-dropped, irregularly-spaced, and skipped seeds are often the result of the planter being operated at a speed that is higher than recommended in the owner's manual. Typically speed for planting should be limited to 4 ½ to 5 miles per hour.

Worn seed meter components, poorly lubricated chains and fittings, and mismatch of seed size to planter plate or disc size can also cause the uneven plant density that negatively affects yields.

Variation in Emergence Equals Trouble for Yields More important to achieving high yields is uniform emergence. A growth stage difference of two leaves or more between adjacent plants will almost always result in the smaller (younger) of the plants being barren or producing nubbins. Ideally, emergence of all plants will occur in a 24-hour period.

Equipment-related emergence issues can be resolved through the

right combination of coulter blades, residue managers, adequately adjusted seed placement equipment, and an effective closing wheel system. Producers should take special care when making down pressure adjustments, as this step is often mishandled.

Uneven emergence may be caused by soil moisture and temperature variability within the seed zone. Poor seed-to-soil contact resulting from cloddy soils and soil crusting can result in variability.

Coulter blade selection has an enormous impact on emergence and root development. The proper coulter blade will ensure ideal seed-to-soil contact and fracture soil crusts directly around the seedling for excellent closure. Through coulter tillage techniques, the capacity of the soil to hold moisture is improved, aiding germination and uniform emergence.

Check rows for excessive and large residue in seed trenches. When properly used, residue managers eliminate planter bounce and hairpinning, two factors can that contribute to problems with seed placement and seed-to-soil contact.

Seeds planted too deep or shallow due to poor planter adjustment will also contribute to emergence problems. If scouting reveals seeds that have swelled but not sprouted, they may have been planted too shallow. Nodal roots developing above ground also point to shallow planting. These roots are exposed to more environmental conditions and have a higher probability of encountering disease and nutrient-deficiency.

Seeds that emerge and are leafing out underground could be the result of too deep a placement. No emergence could also be the result if seeds are planted too deep. As a rule of thumb, corn should be planted about 2 inches deep. This depth will need to be adjusted depending on soil moisture.

If scouting reveals evidence of poor seed-trench closing, poorly adjusted or selected closing wheels could be to blame. If the seed trench is not closed properly, all previous efforts to improve yield are jeopardized. There are a wide variety of closing products currently available on the market to prevent such misfortune. Spiked-closing wheels and drag chains are two popular choices.

Effective closing wheels gently firm the soil around the seed,

leaving loose soil above the seed for ideal seed-to-soil contact, elimination of soil crusting and air pockets, and fast even emergence. Improperly adjusted closing wheels could cause sidewall compaction and uneven stands. Adjust the spring pressure on the closing wheels according to soil type and moisture. Correctly adjusted spring-pressure eliminates air pockets in the seed furrow and covers the seed without creating compaction on top of the seed.

Properly adjusting all equipment and selecting the right tools for the soil conditions, terrain, and task at hand give more control to the producer and result in plants that are equipped to handle adverse environmental conditions. A scouting expedition to check seed density and spacing along with uniform emergence has endless benefits. The trip can reveal problems that can be corrected with relatively inexpensive adjustments to equipment and processes. Awareness and commitment to improvement will result in higher yields from future crops.

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