

BEFORE THE PLANTER ROLLS

SETTING UP YOUR CORN FOR SUCCESS



As warmer weather is on the rise for much of the western prairies, corn growers are beginning to start planning for the 2027 growing season. In Southern Alberta, Corn acreage has increased significantly in recent years. Whether it's your first season growing corn or your fiftieth, maximizing yield potential begins long before seed is in the ground. Key factors that influence yield potential include seedbed preparation, fertility management, and proper rotation. Achieving the best stand you can

Every operation prepares for planting differently, while some measures may prove more effective than others, there are several key factors that must be addressed before planting to ensure strong emergence and stand establishment.

1. Residue Management

Although corn is the tallest crop grown in the prairies, it is one of the weakest early season competitors. When planting into existing corn stover, heavy cereal residue, or manure applications, it is imperative that the planter is equipped with effective row cleaners. Poor residue management can leave excess plant material in the seed row, resulting in:

- Uneven soil temperatures
- Reduced germination
- Delayed and uneven emergence

Uneven emergence has a direct impact on yield loss. Research suggests that if approximately 17% of your stand experiences 2 growth stages behind the rest of the stand, yield loss can reach 5%. To put it into perspective, that's just 5 plants out of every 32 (assuming a 32,000 plants/acre population) you can expect to see yield loss.



Proper seed-to-soil contact is also essential for rapid and uniform emergence. Excess residue, poor tillage conditions (such as cloddy soil), or planting into wet soil can create poor row closure and compaction, limiting germination and root development.

2. Seed Placement (Depth)

A common guideline for producers is to “plant where the moisture is.” While soil moisture is important, corn performs best within a specific planting depth range. The optimal planting depth is 2”, with acceptable placement between 1.5 and 2.5 inches.

When planting outside of this range you may see:

Too shallow (< 1.5”):

- Nodal Roots too close to the surface
- Increased lodging risk
- Poor plant health later in the season

Too deep (> 2.5”):

- Delayed or no emergence
- Increased risk of plants leafing out below the soil surface.



Understanding your planter setup is critical. Ensuring row cleaners effectively move debris away from the seed row, correct down pressure is used given soil conditions, and that closing wheels properly seal the trench will help ensure consistent seed placement and strong early season establishment.

3. Fertility

Although most nutrient uptake occurs late in the growing season, early season nutrient availability is critical for rapid emergence, strong vigor, and resilience against any forms of stress that may occur.

One of the most overlooked micronutrients is phosphorous (P). Most of its uptake occurs primarily early season, and plays an important role in:

- Cold tolerance
- Root development
- Early plant growth

It is important to note that only 20 – 25% of applied phosphorous (Fertilizer or manure) is typically available in the year of application. Maintaining adequate soil phosphorous levels through long-term buildup is key to avoiding deficiencies.

Phosphorous is a non-mobile nutrient, meaning uptake is primarily through root interception and diffusion.



Balanced fertility is equally important. For example, maintaining an appropriate nitrogen to sulfur ratio helps ensure nitrogen use efficiency is key. A target ratio of 10:1 to 12:1 (N:S) is generally recommended.

Soil pH also plays a significant role in phosphorous availability:

- Acidic soil (≤ 6.5): Iron (Fe) and Aluminum (Al) becomes soluble, and bind with phosphorus, reducing availability.
- Alkaline soil (≥ 7.3): Phosphorus reacts with calcium (Ca) and Magnesium (Mg), forming insoluble compounds.

Corn is also a host crop to mycorrhizal fungi, which help convert soil nutrients into plant-available (inorganic) forms through mineralization.

Maximize your fertility:

Rising fertility costs, driven in part by ongoing conflicts – combined with increased expenses for seed, fuel, and equipment are forcing producers to reevaluate input allocation. Fertility is often the main target for cost reduction; however, reduced application rates frequently result in yield losses that outweigh input savings, which lower net returns.

The absolute foundation of any fertility program is and should be accurate soil testing. Understanding baseline nutrient levels enables precise, crop responsive application methods and avoids both over and under applying nutrients. In a high-cost, volatile pricing environment, maximizing yield does not necessarily equate to maximizing profitability. Instead, profitability is driven by aligning nutrient supply with crop demand, existing soil fertility, and efficient application strategies.

Steps to maximizing profit:

- **4R Nutrient Principles**
 - Use the Right source of nutrients, at the Right rate, apply at the Right time, and Right place
- **Split Nitrogen Applications**
 - Effective for N application, split the applications to coincide with plant demand throughout the season (V6 – Rapid Stem elongation; right before VT – move from vegetative to reproductive growth)
 - Helps to reduce loss from leaching and volatilization
- **Utilize Nitrogen Stabilizers**
 - Utilize urease and or/ nitrification inhibitors, especially with surface applied urea or UAN to protect nitrogen under warm, irrigated, or heavy residue conditions.

4. Crop rotation

Crop rotation can significantly influence nutrient availability and soil biology.

Corn following canola or other brassica crops can be less ideal because brassicas are a non-host crops for mycorrhizal fungi, which can reduce beneficial soil fungal populations.

Without these fungal networks, phosphorous may remain tied up in organic forms that are unavailable for the plant to uptake. In most situations, cereal or legume crops provide a stronger rotational fit for corn. I personally have seen great results with corn that is following a potato crop, often due to higher residual fertility.

Key Takeaways for #Plant2027:

1. Uniform Emergence = Yield Protection

Residue and seedbed management directly impact emergence uniformity—small delays across the stand can result in measurable yield loss.

2. Precision Planting Matters

Target a consistent 2" planting depth and ensure proper planter setup (row cleaners, downforce, closing wheels) for optimal seed-to-soil contact.

3. Early-Season Fertility is Critical

Phosphorus drives early vigor, root development, and cold tolerance—maintain adequate soil levels due to limited annual availability.

4. Focus on Nutrient Use Efficiency (NUE)

Maximize ROI with soil testing, realistic yield targets, 4R stewardship, split N applications (V6–pre-VT), and nitrogen stabilizers.

5. Rotation Impacts Performance

Corn following cereals or legumes benefits from improved soil biology and nutrient cycling compared to brassica rotations.

