O

f course we all know starters are
used to enhance crop growth and
development of crops with the
end result of producing a higher yield return
per unit area. But there are benefits other
than yield that accrue from the use of
starters.
The purpose of this article will be to
illustrate some of these benefits by citing
field research and conclude with several
important tips on the use of starter
fertilizers and hybrid selection.

Value added

Earlier maturity. Important in the
Southeast is earlier maturity of corn when
grain sorghum or soybeans are to be
planted as the second crop in late
summer. Planting a week to ten days
earlier on the second crop results in much
better growing conditions.

Reduced moisture. Figure 1 shows that
starter placement is helpful in decreasing
grain moisture for earlier harvest.
Placement of ammonium polyphosphate
near the seed, in addition to the normal
fertilization program, resulted in quicker
drydown and higher yields. The earlier
maturity may have allowed the corn to
mature before stalk rot cut off movement
of photosynthates into the ear. The result
was higher yields, especially where starter
was placed 2 by 2 or on the surface.

Speeded growth. Starters speed plant
growth early in the season, especially
when row-applied. Silking and tasseling
occur 7 to 10 days earlier. Time in the
vegetative stage of growth is reduced,
resulting in lower ear and plant heights in
most cases (Figure 2).

Interaction. In many cases a starter will
consist of only NP combinations, but no-
till corn has responded to applications of
NP + K when used in the row as a surface-
applied fertilizer (Figure 3). As we know,
acreage of minimum and no-till crops has
expanded dramatically since 1977. This
has resulted in higher yields by reducing
sand blasting and erosion and made for more
timely planting of a second row crop.

Versatile. Any form of fertilizer may be
used as a starter and may contain nutrients such as N, P, K, S, Mg, B, Zn, Cu.

Managing tips

Soil test. If P or K levels are high in the soil, response of starter applications may be low. If you don't soil test, you may needlessly waste valuable dollars fertilizing when you could put them elsewhere. Table 1 shows the importance of soil testing before applying starters.

Source of fertilizer used for starter does not appear to make much difference. All NP sources reduced plant and ear height as compared to control. However, ammonium polyphosphate appeared to reduce ear height slightly more than other NP sources.

Micronutrients are often yield limiting factors in the Coastal Plain. Growers might include them in starters when soil tests show a shortage of two or more pounds of these secondary elements. The results, however, are often a mixed bag. For example, if ammonium polyphosphate is used, sulfate forms of micronutrients cannot be used unless a separate tank and pumping unit are used. This is because they'll react and clog nozzles. To compensate, chelates are often used in the same tank at a rate of a half pound or less of actual nutrient. Figure 4 shows some yield advantage in using micronutrients.

Hybrids. Studies have shown that a hybrid failing to respond to NP starters under field conditions produces a larger root system than one that consistently responds. If response under field conditions is due to only one element (N or P) because the other is supplied in adequate amount from the soil, then it is not known whether each hybrid responds in the same manner to the other element. Best practice is to be careful when selecting hybrids if using starters.

Cautions. When applying starters, several cautionary rules should be observed:

1. Do not use high rates of N or K directly over the seed since they may be leached around the seed and reduce germination

2. Avoid fertilizer in contact with the seed as it may reduce stand

3. Applying either 2 by 2 or surface banding is safer.

---

Table 1. Probability of a profitable response to row-applied phosphorus or potassium, Minnesota.

<table>
<thead>
<tr>
<th>Soil test</th>
<th>% response to level-P or K</th>
<th>P or K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>95 - 100</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>65 - 95</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>30 - 65</td>
<td></td>
</tr>
<tr>
<td>Very High</td>
<td>10 - 30</td>
<td></td>
</tr>
</tbody>
</table>

---

Dr. Wright is professor of agronomy, University of Florida.

---

Figure 3. Effect of adding K to an NP starter on corn yield.

---

Figure 4. Effect of using micronutrients in starters on no-till corn yield.