

from residual P when fall band locations were offset from year to year [fall band (r)]. No yield reductions were detected when P was placed in the same position during each strip tillage operation [fall band (f)].

Summary

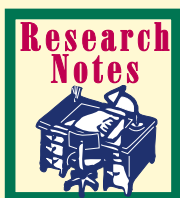
Soil test P level is an important factor for understanding soybean yield responses to residual P from various P placements and tillage practices. Placement is less of a consideration when soil tests are high. However, when soil tests are low, substantial yield increases may be seen from residual P applied either broadcast or in bands the previous year for corn. Reducing banded rates to half the rate recommended

for broadcast applications did not optimize yields and overestimated the efficiency of P banding in this study. **BC**

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TABLE 4. Three-year average soybean yield responses (1998-2000) to residual P from starter and deep band P applied to corn for one-pass and no-till following strip-till practices on sites testing high and low in soil P.

| Tillage for | | P application method | P ₂ O ₅ applied, lb/A | | Grain yield, bu/A | |
|-------------------------|----------|----------------------|---|-------|-------------------|-------|
| Corn | Soybean | | High P | Low P | High P | Low P |
| One-pass | One-pass | None | 0 | 0 | 55.5 | 37.6 |
| | | Starter | 40 | 50 | 55.7 | 47.3 |
| | | Fall band | 40 | 50 | 54.8 | 47.6 |
| Strip-till | No-till | None | 0 | 0 | 53.5 | 38.3 |
| | | Starter | 40 | 50 | 53.2 | 48.8 |
| | | Fall band (f) | 40 | 50 | 54.2 | 48.1 |
| | | Fall band (r) | 40 | 50 | 54.6 | 43.9 |



Iowa: No-Tillage Soybean Response to Banded and Broadcast and Direct and Residual Fertilizer Phosphorus and Potassium Applications

Researchers evaluated the response of soybeans to fertilizer phosphorus (P) or potassium (K) placement and rates, along with residual and direct-placed fertilization, over a two-year period (1995-1996). Studies (two P and two K tests) were conducted on farmer fields with 10-year histories of no-till. In addition, a P experiment was established on one of Iowa State University's research farms. Treatments on farmer fields included two rates of P, 0 and 40 lb P₂O₅/A, or two rates of K, 0 and 55 lb K₂O/A, placement of fertilizer (surface broadcast or subsurface band 2 in. beside and 2 in. below the

seed), and time of fertilizer application. Treatments on the research farms were similar except the P fertilizer rates were 0, 40, 80, and 160 lb P₂O₅/A.

Placement effects were variable for leaf P or K concentration, and grain yields for broadcast P and K were as good as or better than banded applications. Researchers pointed out that there might be an advantage to applying P directly to the soybean crop, at least when soil test levels are optimum or lower. **BC**

Source: Buah, Samuel S.J., Thomas A. Polito, and Randy Killorn. 2000. Agron J. 92: 657-662.