

Cabbage heads were harvested from 50 feet of bed in three harvests as they reached market size.

Midrib nitrate-nitrogen (NO₃-N) levels proved to be a reliable guide to the nitrogen status of this crop when compared with yield (table 1). On the first two sampling dates, plots with significantly lower yield also had significantly lower nitrate-nitrogen levels. In the third sampling, near harvest, some of these differences had diminished.

Cabbage yields increased significantly as the nitrogen was increased to the 90 split and 90 + nitrapyrin rates. At higher rates, there was a trend toward higher yields, but also toward undesirable larger head sizes. At the 45-pound rate, plots with nitrapyrin yielded significantly more than those without nitrapyrin, producing about the same yield and head size as are common in commercial fields. At the 90-pound rate, yields in single-application nitrogen plots with nitrapyrin were significantly higher than in those without it, but not higher than in split-application nitrogen-only plots.

Dry matter production increased significantly, starting 14 days after trans-

planting as nitrogen rates increased to 90 pounds per acre (table 2).

Nitrogen uptake increased significantly with rates up to 90 pounds and showed a trend toward increases at higher application rates (table 3). Uptake of phosphorus, potassium, and, to a lesser extent, calcium and magnesium increased significantly with time and with increases in nitrogen rates up to 90 pounds, then leveled off. The results indicate very rapid absorption of these nutrients during the last part of the growing season.

The common use of triple fertilizer combinations such as 12-12-12 is not validated by this study. Plants take up nitrogen and potassium in roughly equal amounts, and they take up about 80 percent less phosphorus than nitrogen or potassium. Our soil analyses over the years in this region show rising levels of soil phosphorus and a trend toward lower potassium levels. Calcium and magnesium deficiencies are unknown in the area. Both elements are essential for plant growth, however, and significant amounts are taken up with each crop, indicating a need to maintain adequate levels in the soil.

Conclusions

A single application of nitrogen before transplanting proved to be the least effective method of fertilizing cabbage at rates of 90 and 135 pounds per acre. Cabbage yields increased significantly as rates increased from 0 to 90 pounds nitrogen per acre in split applications and 90 pounds nitrogen single application plus nitrapyrin. Adding nitrapyrin to ammonium sulfate bands in single pretransplant applications resulted in significant yield increases over split treatments at 45 pounds of nitrogen and over 90 pounds of nitrogen in a single application.

Absorption of nitrogen, phosphorus, potassium, calcium, and magnesium was significantly increased by nitrogen application to 90 pounds per acre. Approximately two-thirds of the absorption of nutrients and dry weight production occurred during the last part of the growing period.

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Publications of interest

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