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Department of Agronomy

Soil Science News & Views



Vol. 7 No. 3 March 1986

TIMING N-P-K FERTILIZER TO BURLEY TOBACCO

J.L. Sims

Recent changes in the Federal tobacco program (causing reduced income to growers) coupled with high fertilizer and other production costs have stimulated interest in fertilization practices that increase efficiency of tobacco production. Practices that increase yields and/or quality of cured leaf without increasing production costs should result in increased profit. Research conducted by Agronomists at the University of Kentucky indicates increased yield is possible through proper timing of fertilizer applications, split applications, and in some cases by banding applications.

Nitrogen - Currently most nitrogen fertilizer is applied broadcast within 4 weeks of transplanting with some sidedressed 4 to 5 weeks after transplanting. Since Kentucky usually has large rainfall amounts during April and May, applying the broadcast nitrogen as near to transplanting (10 days to 2 weeks before) as possible will significantly lessen the chances for losses of applied nitrogen. Apply the nitrogen after plowing and disc into the surface soil. Do not apply nitrogen in the fall in Kentucky.

With regard to timing applications across the growing season, research has shown that all or a major portion of the total application of nitrogen should be made early (prior to 25 days after transplanting) for highest yields. When all or a significant portion of the application was made at 50 days, yields were reduced. In some experiments applications split between two dates resulted in increased yield. Efficiencies in nitrogen use, decreased manganese toxicity and increased early growth and yield may be obtained by banding all the nitrogen (sidedress) after transplanting. These bands should be applied 10 to 12 inches to the side of the row in either one or two bands, and at depths of 4 to 5 inches. The nitrogen should be banded all at 0 to 10 days after transplanting or in two applications, half at 0 to 10 days and half at 4 or 5 weeks after transplanting.

Phosphorous and Potassium - Most phosphorous and potassium fertilizers for tobacco are broadcast pre-transplant in the spring with some potassium being side-dressed after

transplanting. Unlike nitrogen, these nutrients can be fall applied successfully since losses of both from the soil over winter are small. Generally, fields are drier in the fall than spring and often fertilizer dealers offer price incentives for purchases made in the fall. Tobacco responds equally well from fall and spring applications on most soils. On soils known to fix either nutrient in forms unavailable to plants, apply the fertilizer(s) near planting in the spring.

The most optimum time to apply potassium fertilizers within the growing season has been little studied. Data for a recent study shown in Table 1 provide some insights on this question. The study was conducted in one year (1982) on a soil testing low in potassium and one year (1984) when soil test levels of potassium were high to determine the effect of time of band application of N-P-K fertilizer on yield and value of burley tobacco. The fertilizer was applied either broadcast preplant or in bands 12 inches from the row at various times after transplanting. Mixed fertilizer (200 lbs N; 100 lbs P₂O₅; 300 lbs K₂O) was used. The data show that the band application at 7 days was somewhat better than the broadcast application. More importantly, when the band application was delayed beyond 7 days, yield and value decreased markedly. The decreases were greater in 1982 than 1984, probably due to lower level of soil potassium at the 1982 site.

Table 1. Effect of time of band application of N-P-K fertilizer on cured leaf yield and value of burley tobacco.

Leaf Characteristics	Broadcast 10 days before transplanting	Time of band application (Days after transplanting)				
		7	17	27	37	47
Yield, lbs/acre	3225	3301	3128	2994	2869	2780
Price, \$/cwt	185	186	183	182	179	180
Value, \$/acre	5966	6140	5724	5449	5136	5004

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