



Fig. 25. Effect of N and Leucaena rates and application methods (A and B Leucaena tops banded at, respectively, 25 and 50 cm width and C Leucaena tops broadcasted) on maize grain yield on Apomu soil series (Psammentic Usthorthent).

In-situ mulch from cover crops and fertilizer levels on maize yield. In-situ mulch from cover crop residue has been found to be a feasible method of establishing mulch for effective no tillage or mulch-conventional tillage production. Using *Mucuna utilis* as the cover crop, the effect of fertilizer and preemergence herbicide on maize yield in mulch-conventional tillage was evaluated. The design was a split plot in which main plots were (a) no herbicide and (b) a basal application of 60 kg N/ha, 60 kg P/ha and 60 kg K/ha with a side dressing of 30 kg N/ha at 4 weeks after planting; (ii) a basal application of 60 kg P/ha with a side dressing of 30 kg N/ha; (iii) a side dressing of 30 kg N/ha only and (iv) no fertilizer. The cover crop was killed with 2.0 kg glyphosate/ha a.i. Side dressing alone and no fertilizer were found to produce significantly lower yields than a full application of basal with a side dressing and a basal application of P with a side dressing (Table 35). The preemergence herbicide had no significant effect on yield. The results indicate that some fertilizer is needed in mulch-conventional tillage with in-situ mulch from a leguminous cover crop. A preemergence herbicide is not necessary as weed suppression by the mulch is an effective weed control (Table 36).

Nutrient requirement of crops on Alfisols

N and K responses of cassava. The N and K response study of cassava conducted on an Alagba series (Oxic Paleustalf) was initiated in 1978 at Ikenne. The 1979-1980 cropping season results are shown in Table 37. On this plot, which is in the second cycle of continuous cropping, the fresh tuber yields of both varieties, TMS 30555 and TMS 30572, showed a significant response to K ap-

plication at the rate of 60 kg K/ha. N application only slightly increased tuber yield. TMS 30572 also gave higher tuber yield than TMS 30555 at this particular location. There is no difference in the percentage dry matter yield between the 2 varieties.

Differential P response of cowpea and soybean varieties. Investigations were carried out at Ikenne in the humid region of Nigeria to determine differences in the internal and external P requirements of 4 cowpea vari-

Table 35. Effect of fertilizer and preemergence herbicide on maize grain yield (IITA, 1980).

Treatment	kg/ha
Full basal & side dressing with Primextra	3333 a*
Basal P only and side dressing with Primextra	2970 a b
No fertilizer and No Primextra	2727 b c
Side dressing alone—No Primextra	2545 b c
Full basal & side dressing without Primextra	2303 c
Basal P only & side dressing without Primextra	2182 c d
No Fertilizer and with Primextra	1727 d
Side Dressing alone with Primextra	1091 e

*Means having common letters are not significantly different at 5% level according to Duncan's Test.

Table 36. Effect of fertilizer and preemergence herbicide on weed weight at maize harvest (IITA, 1980).

Treatment	kg/ha
No fertilizer with Primextra	1803 a*
Side dressing alone with Primextra	1741 a
Basal P only and side dressing with Primextra	1437 a
Full basal & side dressing—No Primextra	1144 a
Basal P only and side dressing alone—No Primextra	1112 a
Side dressing alone—No Primextra	1061 a
No fertilizer and without Primextra	1032 a
Full basal & side dressing with Primextra	877 a

*Means having common letters are not significantly different at 5% level according to Duncan's Test.

Table 37. Effect of N and P application on tuber yield of cassava cultivars TMS 30555 and TMS 30572 on an Alfisol (Oxic Paleustalf), Ikenne, 1980.

Fertilizer Treatment	kg/ha	Tuber yield t/ha			
		TMS 30555		TMS 30572	
N	K	Fresh	Dry	Fresh	Dry
0	0	19.52	8.42	19.50	8.02
0	120	21.48	9.42	23.85	9.51
60	120	23.29	9.39	21.14	9.07
120	120	21.35	9.60	25.42	9.95
120	0	18.29	8.47	21.83	9.79
120	60	21.56	9.78	26.92	11.68
Mean		20.92	9.18	23.11	9.67

LSD (5%) Variety means fresh tuber 3.08; dry tuber 1.85. Between fertilizer treatments within variety: fresh tuber 3.09; dry tuber 2.11. Between fertilizer treatments among variety: fresh tuber 4.37; dry tuber 3.74