

Table 34. Effect of plant residue management and fertilizer application on main season grain yield of maize variety TZPB grown on Alfisol (Oxic Paleustalf), Ikenne, 1980.

Fertilizer treatment	1978		1979		1980	
	M*	B**	M	B	M	B
	kg/ha					
Control	4228	3706	2864	2675	2841	3055
PK	5069	4830	4493	4386	4341	4080
NK	4939	4812	3016	3385	3243	3601
NP	5205	4720	4360	4526	5378	4857
NPK	5327	5275	4454	4448	5289	4936
NPK Mg Zn	5838	5824	4316	4509	4968	4724
Mean	5101	4861	3852	3988	4343	4208
LSD (5%) (I)***	835		612		567	
(II)	822		536		802	
(III)	738		764		1263	

*M = Plant residue applied as mulch.

**B = Plant residue burnt before each cropping.

***LSD (I) = Between plant residue management means.

LSD (II) = Between fertilizer treatments within residue management.

LSD (III) = Between any two fertilizer treatments with different residue management.

maize production. Most of the fertilizer trials carried out in the tropics have dealt with conventional tillage. Studies were, therefore, carried out on an Alfisol (Alagba series, Oxic Paleustalf) at Ikenne and on an Entisol (Apomu series, Psammentic Usthorthent) at Ogbomosh, Nigeria, to determine the N requirements for maize production under conventional and no tillage. At both locations, maize yields from the control plots without N application were higher with conventional tillage than no tillage, this was also observed during the first cropping year in 1979 (Fig. 24). However, maize yields with N application, particularly at high N rates, were higher with no tillage than conventional tillage.

Planted fallow as an alternative N source

Use of *Leucaena* prunings. In looking at low cost alternatives to N sources, experiments were carried out using *Leucaena leucocephala* top prunings. *Leucaena* not only can serve as a potential N source but also can supply fuel wood. In a trial carried out on an Apomu soil series at IITA, the effects of rate and placement methods of the *Leucaena* top prunings were compared to urea. *Leucaena* top prunings were banded or broadcasted once at maize planting, while urea was banded twice, one-third N at maize planting and two-thirds N at 4 weeks after planting. Figure 25 shows that banding the *Leucaena* top prunings at 25 cm widths was most effective, and banding at rates of 5t or 10t was, respectively, 52 and 67 percent as effective as urea. Though the prunings can be used as an N source, application at planting time only was apparently not too effective.

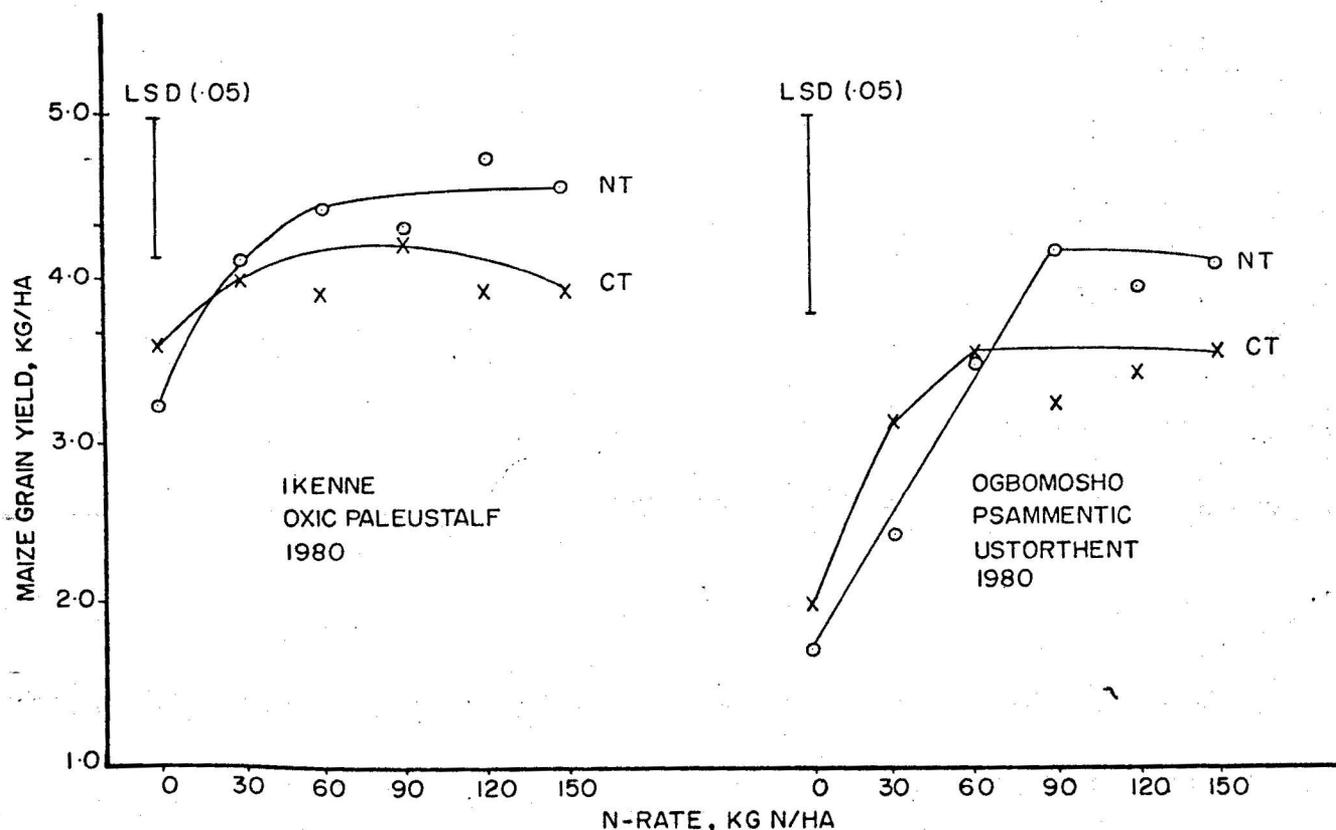


Fig. 24. Effect of tillage and N rates on maize grain yield.