

cation on long growth-duration rice variety IM 16 showed that time of N application greatly influenced yield (Table 55). While basal application of 50 kg N/ha at 1 day before transplanting did not increase yield, application of 50 kg N/ha at panicle initiation did. It appears that the best recommendation may be 50 kg N/ha basal applied and sidedressed with 50 kg N/ha at panicle initiation.

Table 55. Grain yield of irrigated rice variety IM 16 under different treatments of rate and time of N fertilizer application (Doume, 1980).

Fertilizer rate (kg N/ha)	Time of application ^a	Grain yield (t/ha)
0	-	4.6
50	50 (B)	4.6
100	100 (B)	5.3
50	50 (PI)	5.9
100	50 (B) + 50 (PI)	6.6
100	40 (B) + 30 (30 DT) + 30 (PI)	5.5

^aB = Basal, 1 day before transplanting.

PI = Panicle initiation.

DT = Days after transplanting.

Maize/groundnut intercropping has been extensively utilized by local farmers. A field trial was conducted during the second season to evaluate the potential of this system and investigate the factors affecting yields of crops when they are planted in association. Among the intercropping treatments, the treatment of maize at 40,000 hills/ha seeded at 20 days after the seeding of groundnut at 133,000 hills/ha gave the highest monetary return (Table 56).

In general, however, the yield of both crops is reduced when the crops are planted in association. The amount of yield reduction varies with the seeding time of the affected crop in relation to the seeding time of the associated crop. The yield of maize planted in association with groundnut, for example, was reduced in the following order: maize seeded at 20 days before the seeding of groundnut > maize seeded at the seeding of groundnut

> maize seeded at 20 days after the seeding of groundnut. A similar trend was also observed with groundnut yield, and obviously both crops reacted negatively to late planting and intercrop competition.

Small farms systems research (Atebubu District, Ghana)

The small farms systems research is a component of the USAID sponsored project of Managed Inputs and Delivery of Agricultural Services (MIDAS). The MIDAS project is designed to organize and distribute all the inputs necessary for food crop production by small farmers of Ghana.

The small farms system research is designed to assist the government in establishing an applied multidisciplinary small farms research capacity with the following objectives in mind:

- (1) To obtain a sound knowledge of the existing farming systems, the socioeconomic environment and the positive and negative factors in services.
- (2) To conduct applied research that is relevant to these circumstances and responds to the needs of the small farmers.
- (3) To identify soil and farm management and production practices that eliminate constraints.
- (4) To increase small farmer production and income.

The project was initiated in 1980 with an appraisal of the present food crop farming system practices in the region. For the survey, a group discussion approach was used that was supplemented by the visit to individual farmers and spot harvest checks. The survey covers 7 subdistricts—Atebubu, Amantiri, Abease, Prang, Kwame Danso, Kajaji and Yeyi.

The survey was completed in 1980 and a report titled, "An appraisal of the present farming systems of the Atebubu District of Ghana," was published. During 1980, preparations were also made in selection of a site for establishing the experiment station. Actual field experimentation, however, will be initiated in 1981.

Table 56. Yield of sole and intercropped maize and groundnut and their monetary values. (Bertoua, 1980 second season).

Treatment	Crop and date of seeding (M = Maize; G = Groundnut)	Plant density ($\times 10^3$ hills/ha)	Treatment	Crop Yield Kg/ha		Monetary value (CFAF) ¹		
				Maize	Groundnut	Maize	Groundnut	TOTAL
C ₁	M on 1 August	50	C ₁	3066	-	183,960	-	183,960
C ₂	G on 1 August	200	C ₂	-	2277	-	284,625	284,625
C ₃	M on 1 August, and G on 1 August, and	40	C ₃	2263	1206	135,780	150,750	286,530
C ₄	M on 1 August, and G on 20 August	40	C ₄	2959	539	177,540	67,375	244,915
C ₅	M on 20 August, and G on 1 August	133	C ₅	831	2122	49,860	265,250	314,790
C ₆	M on 10 Sept., and G on 1 August	40	C ₆	-	2245	-	280,625	280,625

¹At 60 CFAF/Kg of maize grain and 125 CFAF/Kg of unshelled groundnut (Retain price of PROVIV-ZAPI, 1980).

²Maize seeded on this date did not germinate.

³Fertilizer rates maize 8°N - 8°P₂O₅; groundnut 2°N - 6°P₂O₅ in Kg/ha.