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FURTHER INFORMATION ON PLANT POPULATION STUDIES FOR MIXED MAIZE-BEAN CROP

Homero Aidar and Clibas Vieira
Universidade Federal de Vicosa
36.570 - Vicosa, Minas Gerais, Brazil

In the last BIC Annual Report (No. 19:14) two experiments on the association of maize populations (20, 40, and 60 thousand per hectare) with different bean population densities were briefly described. In this note, some of the most important data from one of the experiments will be presented.

The maize populations were combined with each of the following bean populations: 0, 100, 200, 300 and 400 thousand per hectare. The maize was planted in the "rainy" season and the beans in the "dry" season, when the maize plants were starting to dry. The spaces between rows of maize were used for the legume. The bean variety 'Ricobaio 1014', an indeterminate, small guide plant type, was used in the experiment.

Yields of beans and maize are shown in Table 1. The maize yield was not affected by the beans and increased with the increase of its population. Bean yield was higher with the lowest maize population and was not affected by its own densities. Although the beans were sowed when the maize was beginning to dry, the latter exerted strong competition, perhaps principally by shading the beans. In monoculture with 200 - 250 thousand plants per hectare, 'Ricobaio 1014' normally yields from 1200 to 2000 kg/ha.

As beans do not affect maize yield, any bean production is a gain in total productivity. Presently, farmers are receiving Cr\$150 (approximately US\$0.125) per kilogram of corn and from Cr\$5.00 to Cr\$10.00 (US\$0.42 - US\$0.83) per kilogram of beans, depending on its commercial type. These prices show how the association of maize with beans is economically advantageous for the small farmers, who usually have a limited plot of land and work it partially by hand. Maize is always planted, even when the price is low, because it is one of the basic foods for the farmer

and his livestock.

Table 1. Mean yields (kg/ha) of beans and maize associated in the "dry" season (*)

Maize plants per hectare	Bean plants (1,000/ha)				
	0	100	200	300	400
		<u>Bean Yields</u>			
20,000	-	723 a	853 a	748 a	799 a
40,000	-	458 b	521 b	520 b	365 b
60,000	-	483 b	464 b	431 b	431 b
		<u>Maize yields</u>			
20,000	5,206 a	4,864 a	5,105 a	4,761 a	5,130 a
40,000	6,204 b	5,595 b	6,015 b	5,877 b	6,191 b
60,000	6,693 c	6,798 c	7,156 c	6,212 b	6,206 b

(*) For each crop, means followed by the same letter are not significantly ($P < 0.05$) different (Tukey's test).

FURTHER INFORMATION ON THE MIXTURE OF MAIZE WITH BEAN VARIETIES HAVING DIFFERENT GROWTH HABITS

Fernando C. Santa-Cecilia and Clibas Vieira
Universidade Federal de Vicosa
36.570 - Vicosa, Minas Gerais, Brazil

In the last BIC Annual Report (No. 19:68-69), a study, underway at Vicosa, on the effect of maize plant density on the yield of bean varieties having different growth habits, was briefly described. In this note, some of the most important data will be presented.

The study involves two experiments. In the first, bean varieties were planted with each of the following maize populations: 20, 40 and 60 thousand plants per hectare, both crops planted at the same time in the same rows, and in the "rainy" season. Sixty thousand bean plants per hectare were used of each of the following varieties: Manteigão Fosco II (determinate growth habit), 'Rico 23' (indeterminate, small guide), 'Ricopardo 896' (indeterminate, long guide), and 'Preto 1379' (climbing).

Yields of both crops are shown in Table 1. Maize yields were greater at the higher populations and were not affected significantly by the bean varieties. Bean yields were very low for three reasons: (a) corn competition; (b) low bean population; and (c) a drought period that occurred during the pod-filling stage. Three bean varieties produced significantly more at the lowest maize population. However, 'Manteigão Fosco II', a determinate variety, was not affected significantly by the maize densities.