PLANT POPULATION STUDIES FOR MIXED MAIZE-BEAN CROP

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In a survey made last year in the Zona da Mata, State of Minas Gerais, it was found that most commercial fields had populations of 20 to 47 thousand maize plants per hectare associated with 12 to 75 thousand bean plants in the "rainy" season (first bean planting) and 120 to 400 thousand bean plants in the "dry" season (second bean planting).

This traditional farming method is quite common among small farmers, but we have much to learn about it. Because of this, the Federal University of Vicosa started studies on the association of maize with beans. In this note, some information will be given on the plant population aspect.

Two experiments were begun in Vicosa, Minas Gerais, using the bean variety 'Ricobaio 1014', an indeterminate, small guide plant type. In the first experiment, three maize populations (20, 40, and 60 thousand per hectare) were combined with each of the following bean populations: 0, 40, 80, 120, and 160 thousand per hectare. Both crops were planted at the same time, in the same rows, in the "rainy" season.

In the second experiment, the same maize populations, planted in the "rainy" season, will be combined with different bean populations (0, 100, 200, 300, and 400 thousand per hectare) planted in the "dry" season. In this case, the free spaces between rows of maize will be used for the bean crop.

The beans planted in the first experiment were harvested. Their yields increased significantly ($P < 0.01$) with the decrease of the maize population and with the increase of bean plant density (Table 1). Yields were lowered by the corn competition. In monoculture with 200-250 thousand plants per hectare, 'Ricobaio 1014' normally yields from 1300 to 2000 kg/ha.

Table 1. Yields (kg/ha) of beans planted with maize in the same rows.

Maize plants per hectare	Bean plants (1000/ha) 40	80	120	160
20,000	468	718	775	768
40,000	381	413	663	616
60,000	245	379	323	581

In February beans will be planted among maize plants in the second experiment. In May both crops will be harvested, and we shall be able to determine the effects of maize on the first and second bean plantings and vice-versa.