EFFECTS OF DISTANCE OF BEAN ROWS FROM MAIZE ROWS ON YIELD OF BOTH CROPS GROWN IN ASSOCIATION.

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INTRODUCTION.

Throughout eastern and southern Africa, beans are second in importance among food crops only to maize, and maize is generally grown in association with beans by smallholders.Both crops may be planted in the same row or the bean may be sown at varying distances from the maize row. Maize is usually fertilized but the bean crop is left unfertilized. The objective of the trial reported here was to evaluate the effect of sowing beans at varying distances from maize rows on the yield of both crops, when only maize was fertilized.

MATERIALS AND METHODS.

Field trials were conducted at Lambo and at Selian from 1988 to 1991. The details of the sites and the bean cultivars Lyamungu 85 (LY.85) and Masai Red (M.Red) used were as described in Mmbaga and Edje (1992) in the current issue of BIC. The inter- and intra-row spacings for maize in monoculture or in association were 90 and 50 cm, respectively, with two plants per hill.Beans in monoculture were sown at inter- and intra-row spacings of 50 and 20 cm, respectively, with two plants per stand. The bean plant population was kept constant in all treatments. Both crops were sown simultaneously. The maize crop received 90 kg/ha of nitrogen in a split dose plus 26 kg/ha of phosphorus in one application. The bean crop was left unfertilized. The distances of the bean rows from the maize rows are indicated in Table 1.

Table 1. Arrangement of bean and maize rows

Treatment No.	Treatment
1	Beans and maize same row
2	Bean rows 15 cm from maize rows
3	Bean rows 30 cm from maize rows
4	Bean rows 45 cm from maize rows
5	Bean rows 45 cm from maize row and both crops also in the same row as in treatment 1 above

Ten farmers participated in the evaluation of the treatments in the trial at each site. Preferences were ranked and quantified using a coin system (Grisley and Edje, in press).

RESULTS AND DISCUSSION

The most preferred treatment was Treatment 4 which received 159 out of 500 coins. Reasons given for preference included ease of weeding and harvesting. Treatment 2 was the least preferred (33 coins) because the bean row was considered too close to the maize row, so making weeding difficult due to the size of the blade of the hoe. Treatments 5,3 and 1 received 112, 101 and 95 coins respectively.

Analysis of bean yield data showed that there was no significant difference between the two locations. However,differences between the two bean genotypes and the genotype x location interactions were significant. Treatments 1 and 5 out-yielded the other treatments (Fig.1).The maize yields in these two treatments were also the lowest (Fig.2). In terms of productivity, as determined by land equivalent ratio (L.E.R.), the L.E.R. values for treatments 1, 4 and 5 were 1.42, 1.37 and 1.51 respectively. This indicates that farmers' preferences for planting arrangement may not be based on crop productivity alone, but upon a complex of factors including yield.

REFERENCES:

Grisley, W. and Edje O.T. The "counter method" of preference elicitation; an introduction and comparison with other elicitation methods (in press).

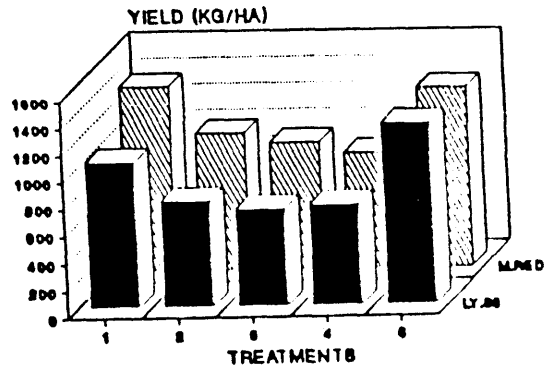

FIG. 1 BEAN YIELD

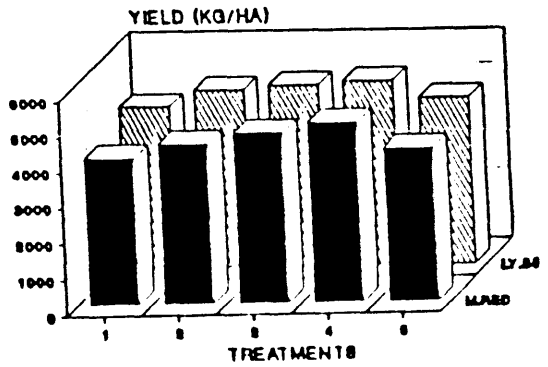

FIG. 2 MAIZE YIELD