
EFFECT OF ARTIFICIAL DEFOLIATION ON THE YIELD OF A BEAN
CULTIVAR

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There are in Brazil several leaf-feeding pests that attack the common bean crop, such as the beetles Diabrotica speciosa, Cerotoma unicolornis and Lagria villosa; the slug, and many others. They can be controlled by appropriate pesticides, but the farmers have no information about when the pesticide should be used in relation either to the foliar area destroyed or the growth stage of the bean plants.

Leaf removal can be used to simulate the pest attack. In a previous report (BIC Annual Report 21:15-18, 1976) we described an experiment in which two bush type beans were artificially defoliated 20, 30, and 40 days after seedling emergence. With 33% defoliation the yield was not affected, but 66% defoliation, when the beans were at the flowering stage, caused yield decrease.

This report describes a similar experiment, but with the black bean 'S-182-N'. This cultivar has an indeterminate growth habit, erect main stem and limited guide development (plant type II, according to CIAT classification). Under Viçosa condition, it takes approximately 40 days to flower and 85 days to mature.

A factorial with five growth stages x three levels of defoliation was employed, the treatments being distributed in a randomized complete-block experiment with four replications. Row spacing was 50 cm with 10 seeds per meter of row. The experiment was repeated twice: under water stress, which resulted in low yield, and with good water supply.

The defoliations were carried out 20, 30, 40, 50, and 60 days after the seedling emergence. The degrees of defoliation were 0, 33, and 66%, which were obtained by cutting with scissors 0, 1, and 2 leaflets of each leaf of each entire plant, respectively.

Average results are on the Table. Both trials show that 66% defoliation is very detrimental to the yield when made during the flowering and pod-formation stage, principally under water stress condition. With one exception (33%-20 in the first trial), no significant difference was found between the yields of the check and the 33% defoliation treatments. No explanation was found for that exception, since normally

Table. Effect of defoliation on the yield of the bean cv.
'S-182-N'

Defoliation %	Growth stage	1st trial		2nd trial	
		kg/ha	%	kg/ha	%
0 (check)		762	100	1742	100
33	20	574*	75	1523	87
	30	656	86	1793	103
	40	656	86	1490	85
	50	624	82	1619	93
	60	638	84	1640	94
66	20	593	78	1527	88
	30	524**	69	1512	87
	40	417**	55	1096**	63
	50	504**	66	1417*	81
	60	618	81	1345**	77

* and **, significantly different from the check at the 5% and 1% level, respectively.

young bean plants recover quite well from defoliation damage. In both trials, the worst treatment was 66% at 40 days, i.e., severe defoliation when the plants begin to flower.