

BEAN SIEVING A POSSIBLE METHOD OF CONTROLLING THE COMMON BEAN WEEVIL  
ACANTHOSCELIDES OBTECTUS.

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Introduction:

The common bean Phaseolus vulgaris L. is widely grown in the East African region, chiefly by subsistence farmers. In Uganda production was estimated at 376,000 MT in 1989.

In storage the two bruchids Zabrotes subfasciatus (Boh) and Acanthoscelides obtectus (Say) are the most important pests: In East Africa loss levels have been estimated at 30 - 73% (Karel and Khamala 1978). In Uganda these have been estimated at 3 and 8% for 3 and 6 months storage respectively. (Silim 1990).

Both species have been recorded in East Africa, but the predominant species at the farm level, particularly in the cooler regions, is thought to be A. obtectus (Giga et al unpublished, Silim 1990).

Methods of bruchid control so far known include use of chemicals, (often unavailable or unaffordable by many subsistence farmers in Africa). Use of oils and bean tumbling have also been mentioned (Quentin et al 1991), these methods have largely remained unused either due to the costs or labour involved. A simple but reliable alternate method was therefore investigated that takes advantage of the biology of the pest.

**Materials and Methods.**

The effect of sequential sieving of beans on A. obtectus damage was investigated using wooden trays (60 x 50 cm) with wire mesh of 0.5 x 0.5 cm.

Naturally infested K 20 bean variety was bulked and divided into 32 lots of 2 kgs. Treatment lots were 16, and 16 lots reserved as controls. Treatment consisted of sieving the beans every fifth day over a 50 day period. After the sieving treatment the bean lots were divided into four batches each of four replicates. Each batch received 0, 50, 100 and 150 days of post-treatment storage respectively before damage levels were determined. The controls were not sieved, but given storage durations inclusive of the 50 days and the four respective storage levels. Percentage bean damage were then compared.

**Results and discussions**

The results (table 1) indicate that sequential sieving of beans is an effective method of A. obtectus control. The method exploits the fact that the eggs are laid loosely amongst the seeds by the pest (Singh 1990) and can therefore be sieved out. The sieving interval was to prevent first instar larvae hatching and was determined from the 5 - 8 days incubation periods of eggs (Howe and Currie 1964, Olubayo 1980 and Silim unpublished). Termination of the sieving regime was determined with the consideration that it takes 22.5 - 48 days (depending on temperature) for the pest to emerge from the beans.

Table 1. The effect of sieving of beans on A.obtectus damage.

Post treatment storage periods (days)	0	50 %	100 bean	150 damage
Percentage bean damage.Sieved	0.00 d	0.02 c	0.02 c	0.05 c
Non sieved	0.02 c	0.40 c	7.67 b	60.40 a

% mean followed by a common letter are not different at  $P=0.05$  (Duncan's Multiple Range Test).

The results demonstrate that the sieving regime used can give total control of the bruchids, and therefore if adapted, bean damage can be greatly reduced. The method would be ideal for subsistence farmers in the region where similar trays are used for grain drying and cleaning. The method would also be effective for storage pests meeting similar criteria.

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