BAG TREATMENT TO CONTROL PESTS OF HOODED SORGHUM

Head hooding with paper bags to prevent cross-pollination is an essential feature of sorghum breeding work. Conditions within these bags (Fig. 1) are ideal for the development of insects such as *Heliothis armigera* (Hubn.), *Cryptoblabes* sp. and *Aphis maidis* Fitch, and damage by these pests can be a limiting factor in the seed produced for plant-breeding purposes.

Fig. 1.
Hooded Sorghum Heads.

Control trials using paper bags fully or partially impregnated with an insecticide by thorough wetting and then drying were carried out at the Biloela Regional Experiment Station during 1955, 1956 and 1958. The bags, made of brown Kraft paper double crown 37, were prepared during the week prior to hooding. Immediately after harvesting, infestation ratings of 0–5 (severe) were recorded for species on each head in trials where pest numbers were high. For the later trials a similar rating range for fungi was used and samples for germination testing were taken.

1955 TRIAL.

A 5 x 4 randomised block layout was used with 20 heads per plot. The bags were fully immersed in the insecticide dips, and were placed on the heads on Apr. 6. Harvesting was on May 9. The results are given in Table 1.

Table 1.

RESULTS OF 1955 TRIAL.

Bag Impregnation Treatment.	Infestation (Mean Rating).	
	Cryptoblabes sp.	*A. maidis.*
DDT emulsion 1·0%	0·23	1·89
Aldrin emulsifiable preparation 0·5%	0	0
BHC dispersible powder 0·5% plus wetting agent	0	0
Check	2·10	0·85

Fungi (*Fusarium* spp. and *Rhinotrichum* sp.) were prevalent in all heads, particularly those in treated bags.

1956 AND 1958 TRIALS.

A 7 x 3 randomised block design was used with a plot size of 20 heads. As the 1955 trial was infested by fungi, half-impregnated bags were included as treatments. When the top half of a bag is impregnated, the treated portion is in contact with the lower parts of the sorghum head. Hooding and harvesting respectively were carried out on Mar. 20 and May 1, 1956, and on Apr. 15 and May 14, 1958. As the 1958 trial was only lightly infested by insect pests, mean numbers of pests per plot were recorded.

Sub-samples from all treatments were tested for germination. Insecticide treatments of bags and the presence of fungi did not influence germination: all tests were above 70 per cent. Other results are given in Table 2.

CONCLUSIONS.

These results, which are in general similar to those reported by Dahms, Sieglinger and Guthrie (1955), demonstrate that the use of bags dipped either completely or partially in 0·5 per cent. aldrin gives satisfactory control of *Heliothis armigera, Cryptoblabes* sp. and *Aphis maidis* infesting hooded sorghum heads. Completely impregnated BHC bags may be used as a substitute. DDT-treated bags do not control *A. maidis.*

Table 2.

RESULTS OF 1956 AND 1958 TRIALS.

Bag Impregnation Treatment.	1956 Trial.				1958 Trial.		
	Infestion (Mean Rating).				Infestation.		
					Mean Number Per Plot.		Mean Rating.
	H. armigera.	*Cryptoblabes* sp.	*A. maidis.*	Fungi.	*H. armigera.*	*Cryptoblabes* sp.	Fungi.
Complete bag. BHC dispersible powder 0·5% plus wetting agent	0·13	0	0	1·23	0·67	0	2·23
Top half of bag. BHC dispersible powder 0·5% plus wetting agent	0·63	0·03	0	1·33	1·00	0·33	1·92
Bottom half of bag. BHC dispersible powder 0·5% plus wetting agent	0·60	0	0·03	1·18	0	0	2·40
Complete bag. Aldrin emulsifiable preparation 0·5%	0·18	0·05	0·03	1·13	0	0·33	2·43
Top half of bag. Aldrin emulsifiable preparation 0·5%	0·20	0	0·07	1·40	0	0·33	1·87
Bottom half of bag. Aldrin emulsifiable preparation 0·5% ..	0·08	0·03	0·15	1·28	0·33	0	1·75
Check	0·57	0·23	1·20	1·25	4·33	9·00	1·80
Necessary difference for significance 5%	0·39						

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