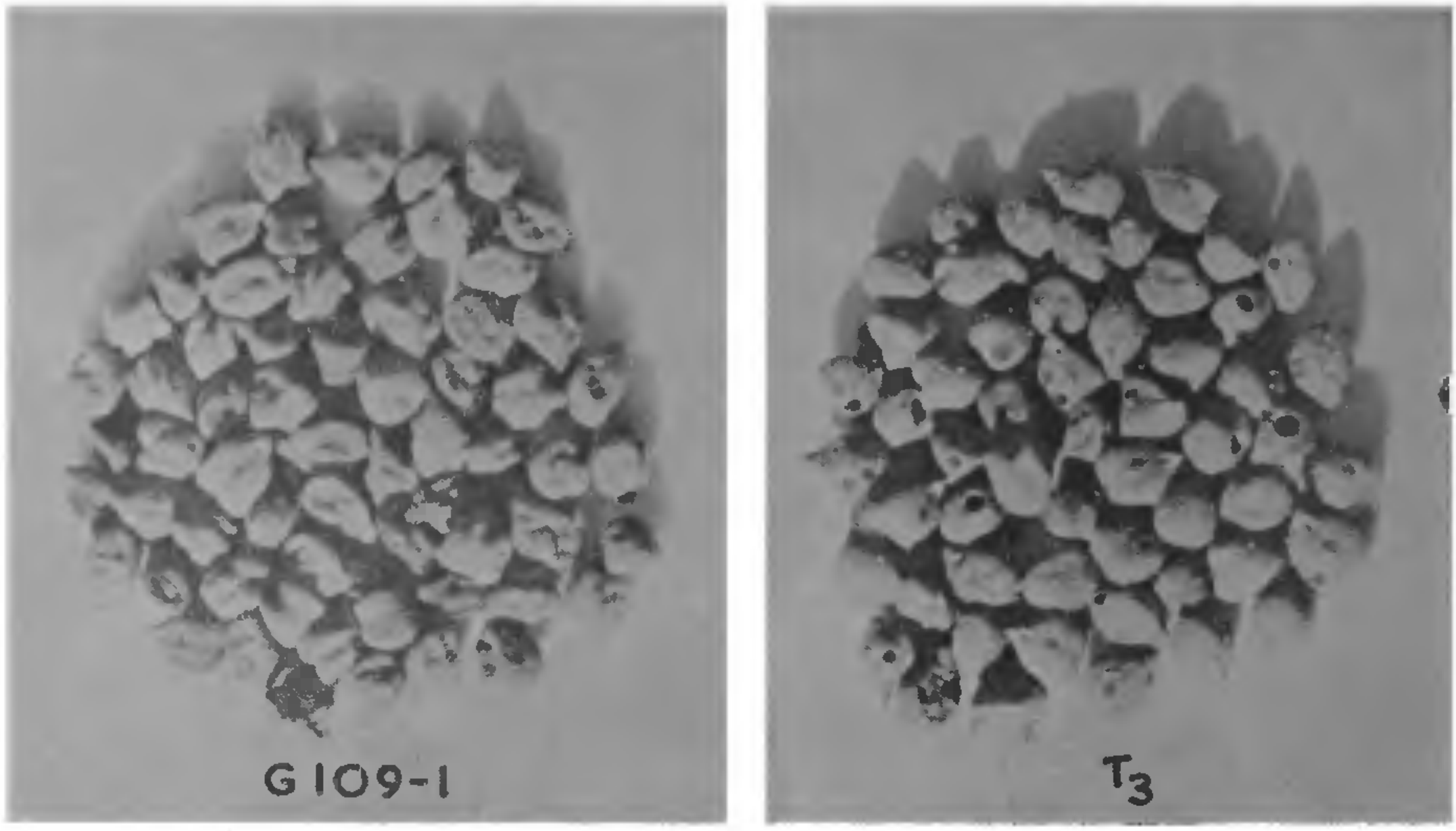


FIG. 1. Photograph showing G 109–1 seeds along with seeds of Bengal gram $T_3$, a susceptible variety.

have also been taken up at the Indian Agricultural Research Institute, New Delhi, for crossing this bruchid-resistant strain of Bengal gram with high-yielding types with a view to evolving a suitable variety possessing the desired characters namely the bruchid resistance and the high yield.

Thanks are due to Dr. M. S. Swaminathan, Director, Indian Agricultural Research Institute, and Dr. S. Pradhan, Head of the Division of Entomology, I.A.R.I., New Delhi, for their valuable suggestions and keen interest in these investigations.

Division of Entomology, Indian Agri. Res. Institute, New Delhi, *January* 1, 1970.

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## A NOTE ON HETEROSIS IN GREEN GRAM (*PHASEOLUS AUREUS* ROXB.)

THERE is abundance of literature on hybrid vigour in many of the cross as well as the self-fertilised crops,[1,2] but in green gram which is self-fertilised, available information is very scanty. Hence the present study was undertaken.

The $F_1$ hybrids of an intervarietal cross between Nayagarh 2-4 ($P_1$) as female parent and Kopergaon ($P_2$) as the male parent were studied during *Kharif* 1969 for heterosis and detailed observations on characters like (1) plant height, (2) number of primary branches, (3) leaf size, (4) total number of pods per plant, (5) pod size, (6) number of seeds per pod, (7) 100 seed weight, and (8) plant yield were recorded. The mean value of each character of $P_1$, $P_2$, mid-parent, $F_1$ and the percentage increase of $F_1$ over each parent are presented in Table I.

It is encouraging to note from Table I that out of 8 characters taken for study, hybrid vigour is observed in 6 of them. As regards the other two characters, namely, pod size and 100 seed weight, though hybrid vigour is not manifest over the superior parent $P_2$, yet they maintain their superiority over mid-parent and

TABLE I

*Showing mean of different characters under study and increase per cent of $F_1$ over parents*

| | Characters | | $P_1$ | $P_2$ | Mid-parent | $F_1$ | Percentage of increase of $F_1$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Over mid-parent | Over $P_1$ | Over $P_2$ |
| 1. | Plant height in cm. | .. | 53·33 | 50·66 | 51·96 | 56·33 | 9·10 | 5·62 | 11·32 |
| 2. | Number of primary branches | .. | 4·33 | 2·00 | 3·16 | 4·66 | 47·46 | 7·62 | 133·00 |
| 3. | Leaf size in cm. | .. | 79·20 | 166·83 | 123·01 | 178·05 | 44·74 | 124·93 | 6·72 |
| 4. | Total number of pods per plant | .. | 42·33 | 22·33 | 32·33 | 49·66 | 53·60 | 17·31 | 122·39 |
| 5. | Pod size (Length × Girth) cm. | .. | 5·19 | 10·10 | 7·64 | 9·43 | 23·42 | 81·69 | .. |
| 6. | Number of seeds per pod | .. | 10·66 | 9·60 | 10·13 | 11·66 | 15·10 | 9·38 | 21·45 |
| 7. | 100 seed weight in grams | .. | 2·226 | 5·300 | 3·763 | 3·835 | 1·91 | 72·28 | .. |
| 8. | Yield per plant in grams | .. | 7·560 | 9·990 | 8·775 | 15·746 | 79·44 | 108·28 | 57·58 |

$P_1$. Further it is interesting to note that the grain yield of $F_1$ hybrid exhibits a remarkable increase of 79·44%, 108·28% and 57·88% over the mid-parent, $P_1$ and $P_2$ respectively.

The authors are grateful to the Director of Agriculture and Food Production, Orissa, Bhubaneswar, for facilities and encouragement.

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## SERODIAGNOSTIC METHOD FOR DETECTING MOSAIC INFECTED CASSAVA PLANTS IN FIELD

MOSAIC disease of cassava (*Manihot utilissima* Pohl.) is posing a serious threat to the cultivation of the crop in the Southern states of the country, especially Kerala. The disease is characterised by severe mosaic symptoms with malformation and distortion of the leaflets due to stresses set up by the unequal enlargement of adjacent areas. The typical picture is a leaf reduced in size, misshapen and twisted, with bright yellow areas separated by near normally green.[4] Methods of transmission and host range of the virus have been worked out by Storey and Nichols.[5,6]

Considering that the disease is transmitted in nature through the agency of white flies (*Bemisia* sp.) it is important to trace the diseased plants in the field and rogue them out before it spreads to other plants in the cassava plantation. Therefore, a rapid serological method was developed to identify the diseased plants in the fields.

The virus could be purified from the infected leaves of cassava using phosphate buffer for extraction followed by two cycles of high speed and low speed ultra-centrifugations (Beckman Model L) in the following way. 100 g. of leaf material was macerated in a Waring blender and sap extracted with two volumes of 0·1 M phosphate buffer (pH 7·0) *plus* carbon tetrachloride at the rate of 25 ml. for 200 ml. of extract. The solution was then shaken well in volumetric flask and allowed to stand for 10 minutes to remove plant proteins. It was then filtered through muslin cloth and the filtrate centrifuged for 25 minutes at 10,000 r.p.m. The pellet was discarded and the supernatant liquid was again centrifuged at 30,000 r.p.m. for 120 minutes in Spinco R 40 Rotor. The supernatant liquid was discarded and the pellet was suspended in 0·01% ammonium acetate (pH 7·0) and centrifuged at 8,000 r.p.m. for 30 minutes. This time the pellet was discarded and the supernatant liquid was again centrifuged at 40,000 r.p.m. for 120 minutes. The supernatant liquid was discarded and the pellet was resuspended in 0·01% ammonium acetate and filtered through Whatman No. 1 filter-paper. The filtrate containing purified virus was collected and preserved at 5° C. All stages of purification were carried out at 24–27° C.

1 ml. of the purified virus was then injected in the marginal vein of an albino rabbit twice