

Number of spikes was found to have maximum genetic advance together with high heritability of 92%, indicating that the high heritability could be attributed to additive gene effects. (Panse³). Weight of 1,000 green berries and the length of spike have high heritability, but low genetic advance suggesting that the high heritability could be attributed to non-additive (dominance and epistasis) gene effects. (Panse³). Therefore selection for the number of spikes will be quite effective.

Table III gives the inter-correlations between the characters taking the phenotypic and genotypic values. The number of spikes and the yield are highly correlated as can be seen from the genotypic correlation coefficient of 0.93. The length of the spike had high influence on the number of berries per spike. The length of the internodes exhibited a negative influence on the number of spikes and a positive influence on the number of berries per spike. The spike length, the number of berries per spike and the length of the internodes of the bearing shoot had positive influence on the weight of 1,000 green berries.

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CYTOMORPHOLOGICAL STUDY OF THE AMPHIDIPLOIDS DERIVED FROM THE HYBRIDS OF THE CROSSES BETWEEN *SOLANUM MELONGENA* L. AND *SOLANUM INTEGRIFOLIUM* POIR.

THE present note deals with the Cytomorphological study of the amphidiploids obtained from the hybrids of the crosses between the cultivated varieties of *solanum melongena* L., namely, Pusa Purple Long (PPL), Nurki Baigan (NB), Giant of Banaras (GB) and Hungary: 290469 (HRY) and *Solanum integrifolium* Poir.

The varieties of *S. melongena* used in the present study are distinguishable from each other mainly on the basis of fruit character. In PPL, the fruits are solitary as well as in clusters, long, cylindrical and shiny purple. In GB, the fruits are solitary, large, round and light green. In NB, the fruits are in clusters, small, oval and purple while in HRY, they are solitary, large, oblong and light purple. Three kinds of flowers were recognised in these varieties: Long styled flowers (the style protruded above the anther tips), medium styled flowers (the length of style was equal to that of the anthers) and the short styled flowers (the style was very small or rudimentary). The variety NB and *S. integrifolium* possessed only long styled and medium styled flowers. Only long styled and medium styled flowers set fruit whereas the short styled flowers did not set fruit either on self-pollination or cross-pollination. Therefore, in hybridization attention was concentrated on long styled and medium styled flowers.

In each cross combination, 100 flowers were pollinated. In *S. integrifolium* × NB, 60.0% of the flowers set fruit and 62.5% of the hybrid seed germinated; in *S. integrifolium* × GB, 25.0% of the flowers set fruit and 75.0% of the hybrid seed germinated, and in each of the crosses, *S. integrifolium* × HRY and PPL × *S. integrifolium*, 60.0% of the flowers set fruit but in the former germination percentage of the hybrid seed was 47.2 while in the latter it was 65.0. The reciprocal hybrids of each cross were alike in morphological and cytological characters.

Meiosis was normal in all the varieties of *S. melongena* and *S. integrifolium* with 12 bivalents at metaphase I. The F₁ hybrids ($n = 12$) of the crosses were tall, erect, vigorous in growth, profusely branched and spiny bearing small, seedless fruits in clusters of 2-9. The Pollen fertility of the hybrids varied from 19.4-34.0%. Several pollen mother cells (80.0-86.0%) of the hybrids showed as many as 12 bivalents at metaphase I. A few cells showed occasional univalents. Multivalents were completely absent. At anaphase I, a low percentage of cells (3.8-4.5%) showed 2-4 dividing or non-dividing laggards. Chromatin bridges with or without fragments were recorded in 4.0-8.0% of the cells, but they were not recorded in pollen mother cells of the hybrids of the cross *S. integrifolium* × HRY.

The chromosome number of the F₁ hybrids ($n = 12$) was doubled by colchicine treatment and a study of the flower buds of induced tetraploid branches ($n = 24$) revealed full restoration of pollen fertility, ranging from 73.5-88.0%, and fruit-set with several viable seeds. A number of pollen mother cells showed 24 bivalents at diakinesis and metaphase I,

but a detailed study of meiosis was not undertaken as an adequate number of flower buds was not available. Meiosis was studied in detail in flower buds of plants of C_2 generation. The mean chromosome pairing at metaphase I in the synthesized tetraploids of the crosses *S. integrifolium* × NB, *S. integrifolium* × GB, HRY × *S. integrifolium* and PPL × *S. integrifolium* was 22.62 II + 1.27 I + 0.14 III + 0.27 IV, 22.85 II + 1.32 I + 0.11 III + 0.16 IV, 22.77 II + 1.46 I + 0.16 III + 0.13 IV and 22.74 II + 1.43 I + 0.09 III + 0.20 IV respectively.

The high percentage of pollen sterility and the occurrence of as many as 12 bivalents at metaphase I in several pollen mother cells of the diploid hybrids of the crosses indicate that in spite of gross similarity of the chromosomes of the two species, there are some important genic or small structural differences thereby substantiating the lack of a significant genomic relationship between *S. integrifolium* and the cultivated varieties of eggplant. The production of amphidiploids from the sterile diploid hybrids with high pollen fertility and fruit-set with several viable seeds indicates that the sterility of the F_1 hybrids is chromosomal. The cryptic structural hybridity could have also played an important role in hybrid sterility and genetic distinctiveness of *S. integrifolium* and *S. melongena*.

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A NEW LEAFSPOT DISEASE OF BUCK WHEAT IN INDIA

BUCK WHEAT, *Fagopyrum sagittatum* Gilib (f. polygonaceae) is grown primarily for the grain which is used for human consumption and this crop was suffering from a disease during the year 1978-79 at Agricultural College, Dharwad, Karnataka.

The characteristic symptoms were leaf spots, which were circular, oval to oblong in shape and variable in size (Fig. 1). Each spot had a greyish centre and brownish margin. Blighting and withering of the central portion was seen in a severe infection. The fungus was isolated and pathogenicity was proved.

Fungal colony black, conidiophores were arising singly or in small groups, simple or branched, straight or henuous, sometimes geniculate measured 48 μ m long; 3-5 μ m thick with one or several conidial scars. Conidia long, obclavata with short conical or cylindrical beak, golden brown, verruculose, with 8 or less transverse and several longitudinal or oblique septa, average

length 21-60 μ m; breadth 8-19 μ m; break pale, 2-6 μ m thick. The fungus was identified as *Alternaria alternata* (Fr.) Keissler. It is a new record on buck wheat in India. Zimmer¹ had reported *A. alternata* on buck wheat from Manitoba, but it is new to India.

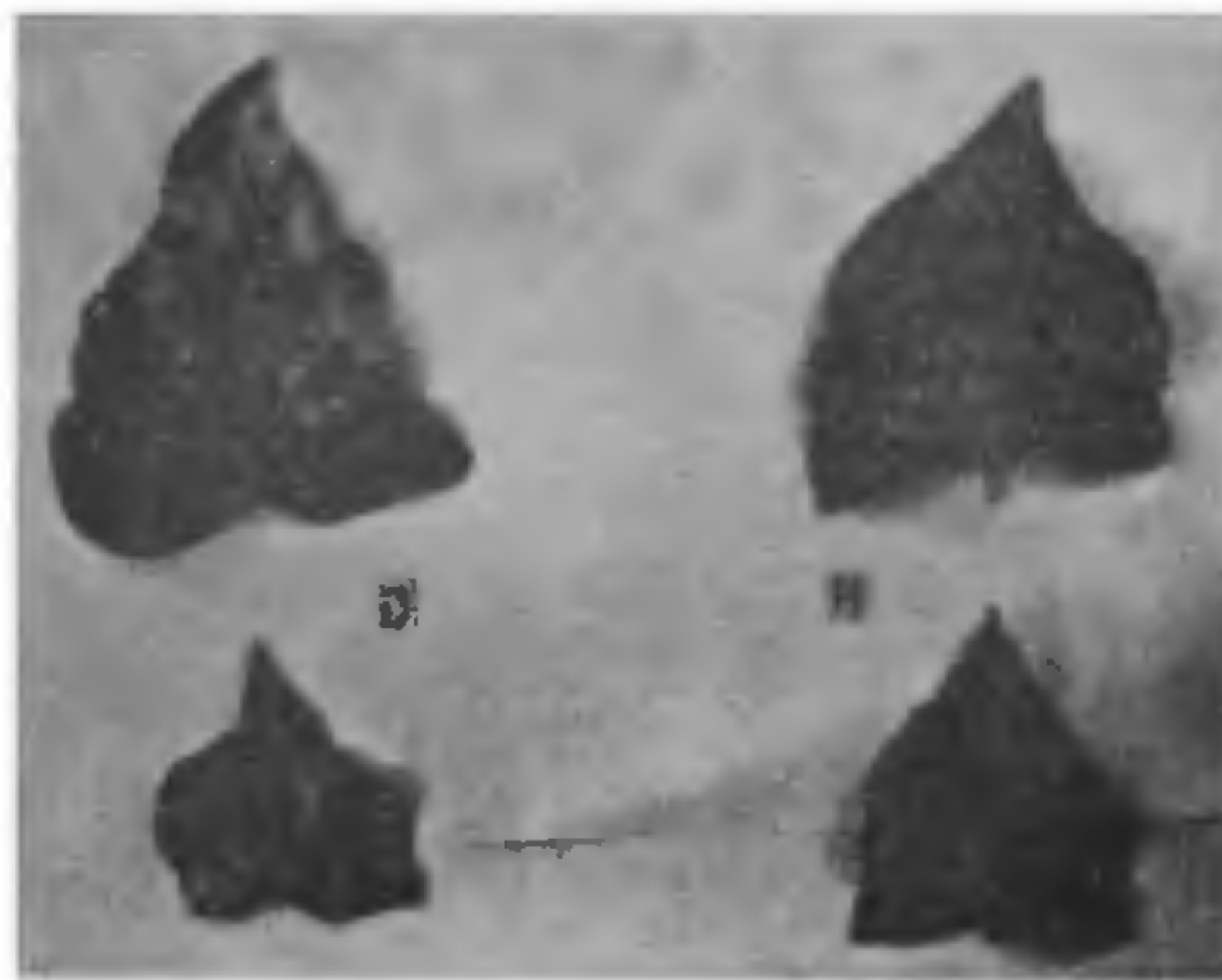


FIG. 1. Symptoms due to *Alternaria alternata* on buck wheat. D = Diseased; H = Healthy leaf.

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ON CYTTAROPHYLLOPSIS CORDISFORA HEIM

HEIM¹ described a scotiaceous fungus *Cyttarophyllopsis cordispora* from Bihar, India, growing in fields with sparse vegetation, after abundant rains. In the construction of fruit body, it closely resembles the genera *Galeropsis* Velen. and *Cyttarophyllum* (Heim) Singer, but differs from them in spore morphology. A similar fungus was collected after heavy rains at Madras during August, 1976. A detailed study of the present collection of *Cyttarophyllopsis* has revealed certain important features which have not been mentioned by Heim¹, and these have bearing on its relationship with other agaricoid members. A description of the fungus based on the present collection is given below. Colour terminology used is that of *Methuen Handbook of Colour*².

Pileus not expanding at maturity but remaining as a sub-ovoid, subglobose structure, up to 1 cm in height, enclosing the stipe very closely, with a prominent marginal veil at the point of attachment with the stipe.