rice seedlings were transplanted into each pot and the crop was harvested after 12 weeks. Ten grams of soil samples from each treatment were taken in a 100 ml stoppered bottle and shaken with 25 ml distilled water for 16 h in a mechanical (end-to-end) shaker. The size distribution of aggregates in the soil sample after this treatment was found to be identical[7] to that of the ultrasonic vibration method[8]. After shaking, the suspension was passed through a 250 μ and 50 μ sieve. The aggregates were evaluated after drying them at 105° C.

Table II demonstrates that the water stable aggregates (> 50 μ) have increased by 50–70% due to blue-green algal inoculation, while no improvement in the aggregation status was observed with *Azolla* application. Major cause for aggregate stabilization in soils has been attributed to the cementation action of the polysaccharides released from the root and plant residues[10]. Simple and complex polysaccharides are known to be liberated by blue-green algae[9]. Filamentous blue-green algae as they grow in the soil will exert pressure on the soil particles and thus stabilize the resulting aggregates with the help of the polysaccharides liberated. On the contrary, *Azolla*, applied as a dead organic matter, provides only nitrogen to the crop on mineralization and does not help in improving the status of soil aggregation.

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GENETICS OF HETEROPHYLLY IN *CANAVALIA*

HETEROPHYLLY, the occurrence of more than one type of leaf on the same plant has widespread distribution in angiosperms. A variety of physiological factors has been shown to influence the expression of heterophylly in a number of cases (Allsopp[1]). Two heterophyllus plants were observed in an otherwise normal trifoliately compound leaved F_2 population of *Canavalia ensiformis* D.C. × *C. virosa* W. & A. Heterophyllus segregants also appeared in some of the F_3 families. This paper reports the results of the genetic analysis of heterophylly.

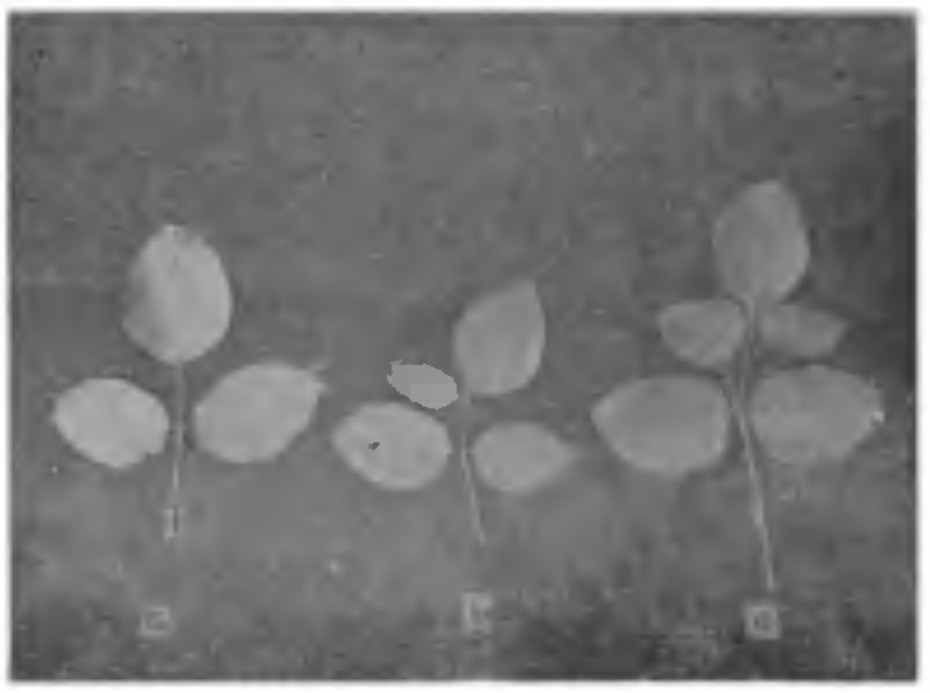

FIG. 1. Leaves of heterophyllus plant, (*a*) normal trifoliate, (*b*) quadrifoliate, (*c*) pentafoliate.

Heterophyllus plants observed in this study had normal trifoliate, quadrifoliate and pentafoliate leaves (Fig. 1) on the same branch with more frequency of trifoliate leaves. There was no definite sequence of production of the three types of leaves and this behaviour was similar in all the branches of the plants. *Canavalia ensiformis*, *C. virosa* and their F_1 had normal trifoliate leaves. Selfed seeds of F_1 were used to grow F_2 population and selfed seeds of randomly selected 51 normal trifoliate leaved F_2 plants were sown to raise F_3 families. The F_2 population was examined for heterophylly at full maturity of crop and inheritance was worked out. Validity of F_2 results were confirmed by studying F_3 generation. Goodness-of-fit of the observed to the expected number of F_2 and F_3 normal and heterophyllus plants was tested by the chi-square method.

Normal trifoliate leaved species *C. ensiformis* and *C. virosa* when crossed 'produced F_1 with all normal trifoliate leaves. The F_2 population, segregated into 190 normal leaved and 2 heterophyllus plants. This segregation was in agreement with 63 : 1 ratio as calculated X^2 of 0·338 gave P value between 0·50 and 0·70 (Table I). Different types of behaviours observed in 51 F_3 families raised from selfed seeds of randomly selected F_2 plants were consistent with that of the expected trihybrid ratio of 37 : 6 : 12 : 8 : 1

(Table II). Since the data obtained in F_2 and F_3 generations fit the expected ratios, it is concluded the heterophylly character is determined by three recessive-duplicate genes ($ht_1ht_2ht_3$). This is the first record of inheritance of heterophylly.

TABLE I

Segregation of heterophylly character in the F_2 generation

Character	Ratio	Segregation in F_2		X^2	P
		Normal plants	Hetero-phyllus plants		
Hetero-phylly	63 : 1	Obs. 190	2		
		Exp. 189	3	0·338	0·50–0·70

TABLE II

Behaviour of F_2 families

Behaviour	Observed	Expected 37 : 6 : 12 : 8 : 1	X^2
1. True breeding for normal leaves	33	29·48	0·42
2. Segregation in the ratios of 3 normal : 1 heterophyllus	6	4·78	0·31
3. Segregation in the ratio of 15 : 1	10	9·56	0·02
4. Segregation in the ratio of 63 : 1	2	6·38	3·01
5. True breeding for heterophylly	0	0·80	0·80

Total $X^2 = 4·55$. P between 0·30–0·50.

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A NEW LEAF SPOT DISEASE OF PARTHENIUM

Parthenium hysterophorus L. is a noxious weed[1], occupying vast areas of cultivated land in Andhra Pradesh. A widespread leaf spot disease was observed on this weed during the winter season of 1978 near Guntur, Andhra Pradesh.

The parasitic fungus was isolated on Czapek-Dox Agar medium from several infected regions. The pathogenecity was confirmed by spraying the healthy plants with the spore suspension, prepared in sterilized distilled water from one week old cultures. The inoculated plants were kept under humid Chamber for 3–4 days. Typical symptoms appeared after 5–6 days of inoculation. Reisolations yielded the original fungus.

The disease manifests as dark brown necrotic lesions with a yellow halo. The spots appear on the lamina and also along the margins of the leaves. The lesions gradually increase in size and spread over most of the leaf area.

Mycelium brownish black, setae of the acervulus dark brown and multiseptate, conidia hyaline, curved with pointed ends and measure 16–26 × 3–4 μ. The causal organism described here was identified and confirmed as *Colletotrichum capsici* (Syd.) *Butler* and *Bisby* (IMI 223607). Cross inoculations on some local varieties of chillies showed no disease symptoms even after several days of iocnulation. This appears to be the first report of the fungus on this host. Work on the biological control of parthenium using this pathogen and some other fungal pathogens is in progress.

Thanks are due to Dr. Mordue, CMI, for confirming the identity of the fungus and to Dr. Johnston, Director, CMI for forwarding the report. Appreciation is due to the head of the Department of Chemistry, for his help. One of us (A. P. RAO) is thankful to UGC, New Delhi, for providing financial assistance.

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COMPLETE RED CURRANT (*RIBES RUBRUM* L.) PLANTS FROM ADVENTIVE EMBRYOS INDUCED *IN VITRO*

FERTILIZED ovules of a red currant cultivar *F. Hosszú-fürtü* cultured on Miller[1] medium gave rise to polyembryony[4]. A few of the embryoids developed into rudimentary plantlets, but for four consecutive years, we could not raise complete vital plants.

In 1975 an efficient procedure had been worked out, by means of which several vital plants were