

stem cuttings did not succeed at all, whichever hormone was used and in whatever concentration.

Sri Sathya Sai Arts and P. S. RAO.\*

Science College,  
Whitefield, Bangalore,  
and

Forest Research Laboratory, R. A. SRIMATHI.  
Bangalore,

December 14, 1976.

\* Formerly Head of the Forest Research Laboratory, Bangalore.

1. Mahalstade, J. P. and Haler, E. S., *Plant Propagation*, John Wiley and Sons, New York, 1959.

### INHERITANCE OF PIGMENTATION OF COWPEA

INHERITANCE studies in cowpea were first reported by Spillman<sup>1</sup> in 1911 who investigated the hilum colour. Saunders<sup>2-4</sup> investigated on genetics of seed coat, flower, plant and pod colours, mutations and linkages

were recorded on individual F<sub>2</sub> plants for pigmentation. Chi-square analysis was done to study the mode of inheritance. Russian Giant is completely devoid of pigmentation on any part of the plant as a result the plant was light green in colour, while Chinese Red is characterised by the presence of purple pigmentation on different parts, viz., nodal region of the main stem where the secondary branches arise, base of the tertiary branches, base of the peduncle and at the base of the stalk of trifoliate leaves. The F<sub>1</sub> was resembling Chinese Red indicating purple pigmentation as dominant over green.

The mode of segregation for purple and green pigmentations can be seen clearly in Table I, where F<sub>2</sub> segregated into two phenotypic classes— (i) purple and (2) light green. The computed value for chi-square was not significant for 15:1 ratio which indicated that two independently segregating non-allelic duplicate dominant genes are operating in the inheritance of this trait. Thus genes P<sub>1</sub> and P<sub>2</sub> either singly or in combination influence purple pigmentation without cumulative effect and absence of these two genes

TABLE I  
*Inheritance of Pigmentation in Cowpea*

Sl. No.	Phenotypic classes	Observed	Expected	O - E	(O - E) <sup>2</sup> /E	D.f.	$\Sigma \frac{(O - E)^2}{E}$	P
1.	Purple	1343.00	1350.90	-7.90	0.0462	1	0.7461	0.30-0.50
2.	Light green	98.00	90.6	+7.94	0.6999			

and suggested probable linkage of black seed to one or more genes for early maturity. The identification of such linkages between qualitative and quantitative characters in crop plants definitely assumes new lines of research both from practical and theoretical points of view.

Although some preliminary information is available on different patterns of pigmentation on vegetative parts as reported by various workers<sup>5-7</sup>, the genetics of this character are not well understood. From the available literature, it appears that there is no information on the inheritance of scattered purple pigmentation on various plant parts in comparison to non-purple pigmentation.

Two varieties of cowpea, viz., Russian Giant (non-pigmented and Chinese Red (pigmented) were crossed during 1975 rabi and F<sub>1</sub> along with parents were studied during 1976 summer season. Seeds of parents, i.e., Chinese Red, Russian Giant and their F<sub>1</sub> and F<sub>2</sub> generation material were grown in the botanical garden of Agricultural College, Dharwar, Karnataka State, during *Kharif* season of 1976. Observations

results in non-purple pigmentation, i.e., green. This appears to be the first report on the duplicate nature of inheritance of this trait.

Dept. of Agricultural Botany,  
College of Agriculture,  
Dharwar 580 005, Karnataka,  
February 14, 1977.

R. VENUGOPAL.  
J. V. GOUD.

1. Spillman, W. J., *Am. Na.*, 1911, 45, 513.
2. Saunders, A. R., *S. Afric. J. Agri. Sci.*, 1959, 2, 285.
3. —, *Ibid.*, 1960 a, 3, 141.
4. —, *Ibid.*, 1960 b, 3, 327.
5. Anonymous, *Pulse Crops of India*, 1st Ed., ICAR Publications, New Delhi, 1970, p. 201.
6. Krishnaswamy, N., Nambiar, K. K. and Mariakulandai, A., *Madras agric. J.*, 1947, 32 (7 and 8), 145.
7. Rachie, K. O. and Rawal, K. N., *Tech. Bull., IITA, Nigeria*, 1976, 5, 4.