Indian J. Genet., **59**(1): 117-118 (1999)

Short Communication

INHERITANCE OF FLOWER COLOUR IN GRASSPEA

P. K. DAS AND S. KUNDAGRAMI

Department of Genetics and Plant Breeding,
Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, 741 252

(Received: December 16, 1998; accepted: January 31, 1999)

Grasspea (*Lathyrus sativus* L.) is an important winter grain legume. Four major flower colours viz. Blue, red, pink and white are commonly observed in this crop. The present study was undertaken to investigate the inheritance pattern of blue, pink and white flowers.

The material consisted of three genotypes of distinctly different geographic origin. Of them Nirmal, commonly cultivated in West Bengal produced blue flowers, while Exotic bold, a syrian genotype produced white flowers and P-28 of IARI, New Delhi recorded only pink flowers. They were crossed (emasculated flowers pollinated at 7-9 a.m.) and their F_1 and F_2 progenies were raised at Kalyani farm at Bidhan Chandra Krishi Viswavidyalaya. Observations of flower colour in F_1 and pattern of segregation in F_2 were recorded. Chi-square test was done to test the goodness of fit for the assumed segregation ratio.

Table 1. Segregation of flower colours in F_2 and their chi-square tests on assumed ratios

Cross	F_1	F_2 segregation			χ^2	P
		Class	Observed	Expected		
Nirmal × Exotic Bold	Blue	Blue	107	93.94	4.43	0.10-0.20
(Blue) (White)		Pink	28	31.31		
		White	32	41.75	(9:3:4)*	
Nirmal × P-28	Blue	Blue	104	103.5	.0055	0.90-0.95
(Blue) (Pink)		Pink	80	80.5	(9:7)*	
P-28 × Exotic Bold	Blue	Blue	96	102.75	2.01	0.30-0.50
(Pink) (White)		Pink	32	25.68		
		White	9	8.57	(12:3:1)*	

*Suggested ratio

In all the three crosses (Blue × White, Blue × Pink, and Pink × White) the colour of flower in F_1 was blue. In F_2 generation Blue × White cross produced three different flower classes, while Blue × Pink recorded only two classes. On the other hand, three flower classes were observed for the Pink × White cross (Table 1). These observations indicated a complex nature of flower colour inheritance, where more than one gene was involved with the epistatic interaction [1,2]. To test this possibility Chi-square tests were computed with assumed segregation ratios (Table 1). From the calculated X^2, it was observed that F_2 segregation of Blue × White and Blue × Pink as well as Pink × White crosses followed the modified dihybrid ratio of 9:3:4, 9:7 and 12:3:1 respectively, meaning that they expressed either recessive epistasis/supplementary gene action, complementary gene action and dominant epistasis respectively. The present observations of F_2 segregation in Blue × White cross confirmed the observation of Niral *et. al.* [2] who also observed 9:7 complementary gene interaction. It is thus confirmed that Blue, Pink and White flower of grasspea displayed a digenic inheritance with different epistatic interactions.

ACKNOWLEDGEMENT

Financial assistance obtained from B.C.K.V., West Bengal by the second author is gratefully acknowledged.

REFERENCE

1. V. Kumari, R. B. Mehra, D. B. Raju and K. Himabindu. 1993. Genetic basis of flower colour production in grasspea. *Lathyrus Lalthyrism* News letter., **5(1)**: 10.
2. V. Niral, R. B. Mehra and D. S. Mathur. 1991. Pigmentation and pattern alleles in grasspea (*Lathyrus sativus* L.). Indian Society of Genetics & Plant Breeding Golden Jubilee Celeberations: Symposium on Grain Legumes, I. A. R. I., New Delhi. Proceedings: 208-211.
3. R. B. Mehra, D. B. Raju and K. Himabindu. 1995. Breeding work on *Lathyrus sativus* L. at IARI, New Delhi. *Lathyrus sativus* and human Lathyrism : Progress and prospects (Yusuf H.K.M., Lambein F., Eds.) 127-130.