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Short Communication

INHERITANCE OF SOME QUALITATIVE CHARACTERS IN THE CROSS WR 9 × U 6 OF *ELEUSINE CORACANA* G.

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Anthocyanin pigmentation has attracted the attention of Geneticists and Breeders in all crop plants. In finger millets this character has been used as a marker in identification of true hybrids following contact method of hybridization.

In finger millet white grain types possess better nutritional qualities viz. high protein, low fibre and low tannins than brown grained type. However, white grain types are poor in yield. The knowledge on the inheritance of plant pigmentation and grain colour is likely to aid in planning for breeding of blast resistant high yielding varieties possessing white grains.

U 6 a resistant variety possessing brown grains was crossed to WR 9, a white grained variety with low yield and susceptible to blast, by adopting contact method of hybridization. Seed from green pigmented plants of WR 9 variety were collected and nursery was raised to identify true F_1 plants showing purple pigmentation. F_2 seeds from the selfed F_1 plants were collected at maturity. The F_2 seeds were raised in four plots of size 2 m × 3 m. Observations were recorded on plant pigmentation and grain colour on ninetynine random plants. At maturity all the 99 randon plants were harvested for raising F_3 families. The F_3's were sown on plant to row basis and the observation on pigmentation and grain colour was recorded.

The expected values corresponding to the oberved values for plant pigmentation and grain colour were calculated based on proposed genetic ratio. The deviation from excepted values were subjected to chi-squqre test, which was further confirmed in F_3 generation.

Plant pigmentation and grain colour of plants in F_1, F_2 and F_3 generations of finger millet cross WR 9 × U 6 are presented in Table 1.

Table 1. Segregation pattern in F_2 and F_3 generations for plant pigmentation and grain colour in finger millet cross WR 9 x U 6

Character	WR 9	U 6	F_1	F_2			F_3 families				
				purple 15:1	green	X^2	dom. non seg.	Seg. 15:1	Seg. 3:1	rec. nonseg	X^2
Plant pigment	Gr	Pr	Pr	89	10	2.49	41	27	21	10	3.25
Grain colour	Wh	Br	Br	89	10	2.49	41	27	21	10	3.25

Gr = green; Pr = purple; Wh = white and Br = brown

All plants of female parent WR 9 had no pigmantation, while U 6 was purple pigmented. The F_1 was purple pigmented suggesting the dominance of purple over green. In F_2 out of 99 plants, 89 were purple and 10 were green. This showed a good fit to 15:1 indicating operation of a pair of duplicate genes. This was further confirmed by raising F_3 families in which out of 99 families, 41 families bred true for dominance (purple), 27 families segregated in 15 purple: 1 green; 21 families segregated 3 purple : 1 green and 10 families bred true for green character (recessive).

Similar segregation pattern was observed for grain character also. Brown grains were observed in F_1 plants suggesting the dominance of brown grain over white. In F_2, out of 99 plants 89 were brown grained and 10 white grained showing a good fit to the digenic segregation ratio of 15: 1 with X^2 value of 2.49. Out of 99 F_3, 41 families bred true for dominant character; 27 segregated into 15 brown : 1 white; 21 families segregated into 3 brown: 1 white; 10 families bred true for white grained character.

These results revealed that purple pigmentation and brown grained characters are dominant over green plant colour and white grained characters, respectively and both the characters are independently controlled by two pairs of duplicate dominant genes, the presence of either or both the genes results in purple plant colour and similarly brown grained character in finger millet. Earlier report [1] has indicated dominant monogenic control of purple colour in contrast to the present finding where two dominant duplicate genes control the character. There are no reports so far on the inheritance of grain colour in finger millet.

REFERENCE

1. R. L. Ravikumar and Seetharam. 1990. Inheritance of plant pigmentation in finger millet. Crop Improv., 17(2): 141-143.