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SEEDLING HANDEDNESS IN TRITICALE AND ITS PARENTS II: YIELD IN RELATION TO HANDEDNESS

N. RAMA SWAMY, BIR BAHADUR and G. NARSAIAH

Department of Botany, Kakatiya University, Warangal 506 009, India.

SEEDLING handedness was first studied in *Secale cereale* and in several cereals¹. This character was subsequently examined in *Bambusa arundinacea*² and in several other Gramineae³. Recently, the seedling handedness and handedness in successive leaves, flag leaves and spikelets have been investigated in *Triticale* and its parents^{4,5}. The morphological and physiological characters in relation to asymmetry have also been studied in these plants⁶. The present study deals with the yield in relation to seedling handedness in *Triticale* and its parents.

Grains of two cultivars of *Triticale* DTS-42-3 and DTS-280-7; three cultivars of *Triticum* NI-5439, Sonalika and Kalyanasona and of *Secale cereale* were sown in petri dishes and the seedlings were sorted out for their handedness. Handedness was detected in the seedling stage, when the first leaf begins to unfold after 4-6 days of sowing. Depending on the folding of the first leaf either in the clockwise or anti-clockwise direction, the seedlings were classified as left- and

right-handers respectively. Seedlings showing absence of folding were classified as neutral. Left- and right-handed seedlings (25) of each of *Triticale*, *Triticum* and neutrals of *Secale cereale* were transplanted in the field in separate rows to observe the yield parameters. Dry weights of spike and grains were determined. The spike length of *Triticale* and its parents was also measured.

As shown in table 1, left-handed plants bore longer spikes in all the cultivars of *Triticale* and *Triticum* with the exception of NI-5439. The left-handed plants of both the cultivars of *Triticale* and Kalyanasona of *Triticum* showed greater spike weight. NI-5439 and Sonalika of *Triticum* showed almost the same spike weight in both the left- and right-handed plants. The dry seed weight was higher in left-handed plants of *Triticale* and *Triticum* with the exception of the cultivar Kalyanasona in which there was no difference. This suggests that the left-handed plants yield more than the right-handed plants. Left- and right-handed seedlings in *S. cereale* constituted only 3% and the rest neutrals⁴. Hence the data on spike length, weight and dry grain weight were not recorded in neutral seedlings.

Rama Swamy and Bahadur⁶ noted more roots, greater chlorophyll content and faster growth rate in left-handed plants of *Triticale* and its parents. The present investigation shows that the left-handed plants are superior to the right-handed ones with respect to spike length, weight and grain weight. Greater pod and seed yield have been noted in the left-handed plants of *Vigna radiata* and *V. mungo*⁷. The right-handed plants of *Cocos nucifera* produced more fruits and larger amount of copra than the left-handed foliar spiralled plants⁸. A higher metabolic activity was also recorded in the former⁹. The right-handed *Cajanus* plants yielded more seeds than the left-handed ones¹⁰. In the light of the present findings and foregoing discussion on differences in grain yield, Kihara's¹¹ statement that "there is a possible relationship between foliar arrangement and yield of crop plants; it is necessary to examine the differences between right- and left-handed strains in their utilisation of solar energy" stands varified. Thus, it is evident that the left-handed plants are superior and give higher yield as compared to the right-handed plants in *Triticale* and its parents.

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Table 1 Comparison of data on spike length (cm), weight (g) and dry grain weight (g) of right- and left-handed plants in Triticale and its parents.

Cultivar	Left-handed			Right-handed		
	Spike length	Spike weight	Grain (500) weight	Spike length	Spike weight	Grain (500) weight
<i>Triticale</i>						
DTS-42-3	7.0 ±0.33	0.78 ±0.04	15.0 ±0.48	5.5 ±0.42	0.47 ±0.04	12.5 ±0.48
DTS-280-7	6.0 ±0.44	0.61 ±0.032	15.0 ±0.43	5.0 ±0.40	0.47 ±0.04	13.0 ±0.35
<i>Triticum</i>						
NI-5439	6.4 ±0.38	0.50 ±0.02	12.5 ±0.32	6.0 ±0.54	0.47 ±0.04	11.0 ±0.40
SONALIKA	6.6 ±0.40	0.57 ±0.03	15.0 ±0.5	5.7 ±0.52	0.52 ±0.05	13.5 ±0.32
KALYANASONA	7.2 ±0.43	0.64 ±0.05	12.5 ±0.34	5.8 ±0.42	0.50 ±0.05	12.5 ±0.52
<i>Secale cereale</i> (Neutrals only)	5.1 ±0.40	0.43 ±0.03	12.5 ±0.83	—	—	—

N.B: Mean of 25 measurements.

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CYTOLOGY OF *FIMBRISTYLIS NARAYANII* FISCHER

B. H. M. NIJALINGAPPA, D. H. TEJAVATHI
and D. LEELA BAI

*Department of Botany, Bangalore University,
Bangalore 560 056, India.*

DURING the course of our cytotaxonomic investigations of South Indian Cyperaceae in general, and of Karnataka in particular, we have come across *Fimbristylis narayanii* Fischer which has not so far been cytologically studied. It is endemic to west coast of peninsular India and belongs to the section *Abildgaardia* of disputed taxonomic position¹⁻⁶. The present paper deals with the karyotype and meiosis in this species.

The material for the present study was collected