https://doi.org/10.29321/MAJ.10.A02425

Madras agric J. 71 (1): January 1984

METROGLYPH AND INDEX SCORE ANALYSIS OF MORPHOLOGICAL VARIATION IN *Triticale*

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Metroglyph analysis was made to study the morphological variation in 32 varieties of Triticale. These varieties fall in 5 separate groups of which two are very much distinct from each other while the remaining three groups exhibited intermediate characters. Though the variability in the germplasm was of intermediate type, the diverse groups showed greater variability among themselves.

Triticale is a substitute crop of wheat and is extensively grown in hilly areas as well as plains. Several varieties have been evolved at different centres in India and also in other countries of the world. Consequently large variability is present in the available germplasm with respect to yield and yield-contributing traits. The literature available shows that no effort has been made so far to classify the germplasm. The present study is an attempt to classify a collection of 32 varieties into morphological complex. Such an information would be of interest to breeders for further breeding work in this crop.

MATERIAL AND METHODS

The material used in the present study consisted of 32 varieties of Triticale collected from various research centres of Uttar Pradesh, Madhya Pradesh, Punjab and Delhi. These varieties were grown in randomized block design with three replications. The experiment was conducted at Agricultural Research Farm of R.B.S. College, Bichpuri, Agra, during the *rabi* season of 1977-78. The observations were recorded on 5 competitive plants in each replication for grain yield and its components. Metroglyph and index score analysis was carried out according to the method suggested by Anderson (1957).

RESULTS AND DISCUSSION

The result of the analysis are presented in Fig. 1 The X and Y axises of each circle represent yield per plant and plant height respectively. These two characters are most important in this crop and hence were used in coding the glyph. The rest of the five characters have been shown by the rays at different positions on the glyph and range by the length of the rays.

An examination of scatter diagram reveals that five groups could be distinguished on the basis of morpho-

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logical variations recorded in this crop. The first group was represented by only one short straw and low yielding variety. The second group consisted of seven strains which were characterized by the short straw and high yield. The third group included eight strains. All these varieties were of medium height with low yield. The fourth group consisted of six varieties having height more than 110 cm and low yield potential. The last group included the rest of the varieties which were high yielding attaining the average height of more than 105 cm.

Out of these five classified groups groups I and V are very distinct as is evident from their distant positions in the frequency diagram (Fig. 1 right hand corner). Groups I, II, and III exhibited comparativeiy less difference within themselves. It shows clearly that most of the varieties in groups I, II and III fall in index values of 6 to 8 whereas those in group V fall in index values of 9 to 13. Groups II, III and IV are classified as intermediate types.

The frequency diagram (Fig. 1 right hand corner) shows the index score values of all the characters which range from 6 to 13. Maximum frequency occurred around the score 11 followed by the 9 and 8. The studies conducted by Chandrappa *et al.* (1977) have also revealed the existence of large variability in this crop. Many of this characters offer valuable criteria for systematic catalogueing of germplasm to analyse the complex variation existing in this crop.

Ramanujam and Kumar (1964), Bhargava *et al.* (1966), Mukherjee *et al.* (1971) and Venkatarao *et al.* (1973) have used this method for distinguishing different morphological complexes observed in various crops.

Authors are highly thankful to Dr. Roshan Singh, Principal, Late Dr. S.P. Singh, and Dr S N. Chaturvedi Head Department of Botany. R. B. S. College, Agra for providing necessary facilities and encouragement.

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Table 1 Index Values of Triticale varieties

Characters	Range of Mean	Score 1		Score 2		Score 3	
		Value less than	Sign	Value From – To	Sign	valuemore than	Sign
Plant height	86.86-122.83	97.90	—	97.90-103.75	—	103.75	—
Number of effec ve tillers per plant	3.26- 4.93	3.85	0	3.85- 4.28	1 0	4.28	1 0
Spike length	8.00- 13 96	9.35	0	9.35- 10.75	0	10.75	0
Spike lets per main spike	19.90- 32.43	24.25	0	24.25- 29.00	0	29.00	0
Number of grains per main spike	29.10- 75.26	50.95	0	50.95- 55.90	0	55.90	0
Grain yield per plant	3.09- 10 41	7.25	—	7.25- 9.00	—	9.00	—
100-grain weight	2.86- 4.96	3.55	0	3.55- 4.25	0 1	4.25	0 1

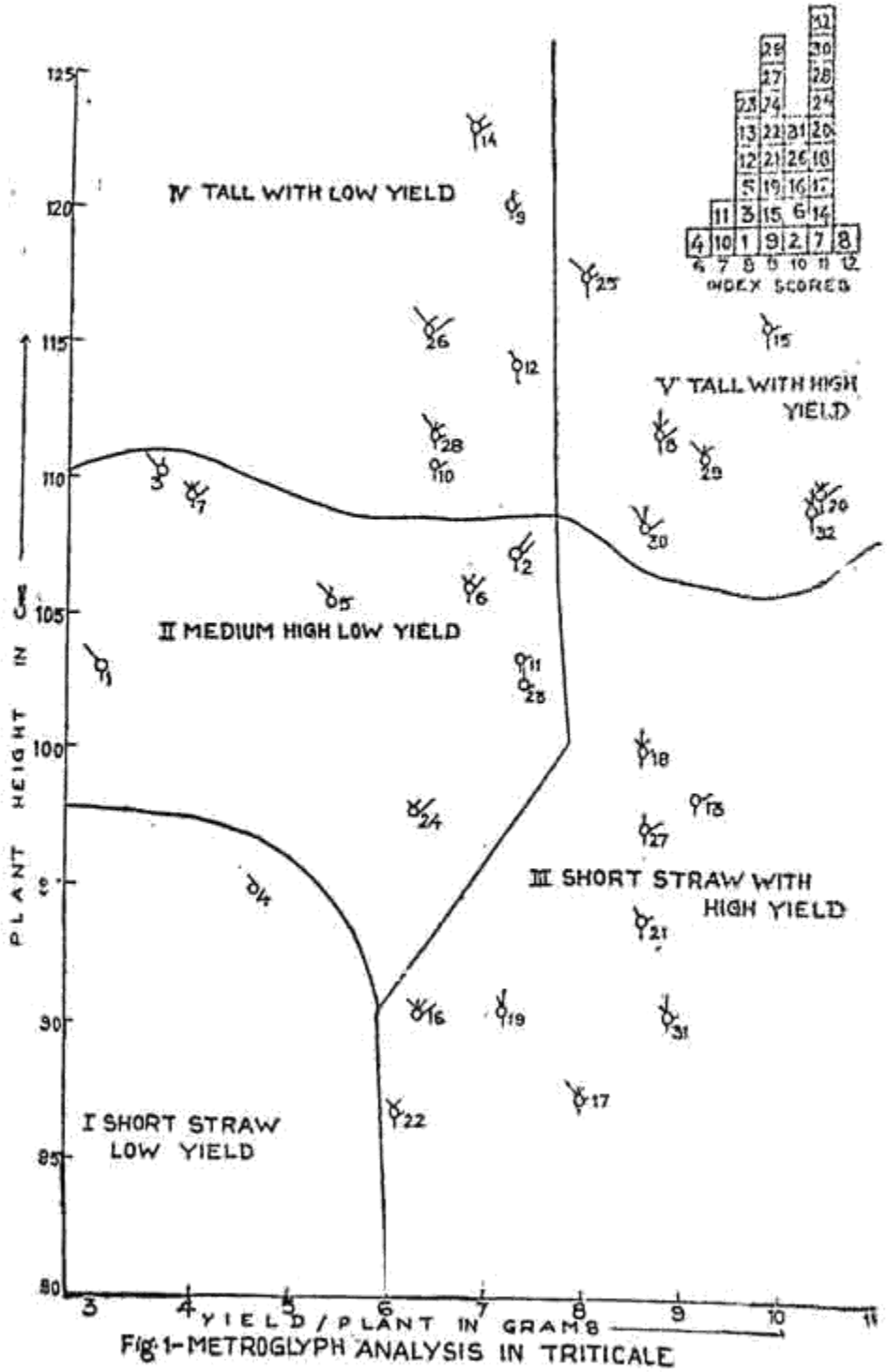

Fig 1- METROGLYPH ANALYSIS IN TRITICALE