stone unit above Habur Formation is regarded here as integral part of Paleocene transgression in Jaisalmer basin. The definition of Sanu Formation as proposed by Das Gupta[2] is emended here to include basal transgressive sandstones, Fuller's earth, marl, chalk, chalky limestone and coralline limestone interbedding.

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CROSSABILITY BETWEEN TRITICALE × WHEAT AND REVERSION PATTERNS IN EARLY SEGREGATING GENERATIONS

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TRITICALE (× Tritosecale wittmack) a cereal crop owns the distinction of being the creation of the plant breeders rather than natural processes of evolution. It is an intergeneric hybrid between wheat (*Triticum* species) and rye (*Secale cereale*) and may be used as food, feed and forage. The present day triticales have many draw backs. In the present study investigation was conducted to find out the extent of crossing between triticale × wheat and reversion of early segregating generations to the parental types.

Four hexaploid ($2n = 42$) triticale strains namely, UPT 72142, UPT 75233, UPT 78267 and PR 673 were crossed during *rabi* 1980–81 with the bread wheat (*Triticum aestivum* L.) varieties HD 2009 and UP 262. Triticale was used as female parent while wheat was used as male parent. The total number of seeds set and total number of florets pollinated were counted and the extent of crossability was calculated as follows:

$$\text{Crossability}\,(\%) = \frac{\text{Number of seeds set}}{\text{Number of florets pollinated}} \times 100$$

$B_1(F_1 \times \text{Triticale})$, $B_2(F_1 \times \text{wheat})$ and F_2 generations were raised during *rabi* 1982–83, to study the reversion to the parental types. On the basis of the morphological features, plants were classified as having resemblance to either of the parent in each cross.

The crossability between triticale (female parent) and wheat (male parent) varied from 1.6% to 18.2% with an average crossability of 8.16% (table 1). Cross UPT 75233 × HD 2009 exhibited the highest crossability of 18.2% while the lowest crossability of 1.6% was observed in the cross PR 673 × UP 262. The seed setting in different crosses was thus influenced by genotypes of the parents.

Studies on the genetical control of crossability between hexaploid wheat and rye have shown the existence of the two recessive genes Kr_1 and Kr_2, controlling the high crossability[1]. The dominant Kr_1 reduced crossability to a greater degree than did Kr_2. These genes have been located on chromosome 5B and 5A respectively, of the wheat genome[2]. The dominant alleles of the gene manifest the inhibition of pollen tube growth both in style and near the wall and prevent

Table 1 *Crossability between triticale × bread wheat varieties*

Triticale (female parent)	Wheat (male parent)	No of spikes pollinated	No. of florets pollinated	No of seeds set	Crossability percentage
UPT 72142	HD 2009	25	20 × 25 = 500	68	13 60
	UP 262	25	20 × 25 = 500	56	11 20
UPT 75233	HD 2009	25	18 × 25 = 450	82	18 20
	UP 262	25	18 × 25 = 450	30	6 67
UPT 78267	HD 2009	25	18 × 25 = 450	25	5 56
	UP 262	25	18 × 25 = 450	20	4 45
PR 673	HD 2009	25	25 × 25 = 625	25	4 00
	UP 262	25	25 × 25 = 625	10	1 60
Average		25	506 25	39 5	8 16

Table 2 *Percentage of reversion to parental phenotype in early segregating generations of triticale × bread wheat crosses*

Cross	Generation	No. of plants observed	Triticale type (%)	Intermediate type (%)	Wheat type (%)
UPT 72142 × UP 262	F_2	40	33	23	45
	B_1	25	52	20	28
	B_2	25	60	8	32
UPT 72142 × HD 2009	F_2	40	45	18	38
	B_1	25	60	28	12
	B_2	25	36	8	56
UPT 75233 × HD 2009	F_2	40	25	40	35
	B_1	25	56	32	12
	B_2	25	28	20	33
UPT 78267 × UP 262	F_2	40	50	13	38
	B_1	25	72	20	8
	B_2	25	76	12	12
PR 673 × UP 262	F_2	40	33	18	25
	B_1	25	32	20	48
	B_2	25	28	32	40

fertilization[3]. The primary hexaploid triticale swhich have a genomic constitution AABBRR are likely to carry these genes since, they are located on A and B genomes only and rye genotype has no influence on crossability[4]. It shows that the genotype of the female parent is important in controlling the crossability.

The percentage of reversion to the parental types is given in table 2. Plants in the segregating generations were classified into triticale, wheat and intermediate types. Those with compact spike and prominent awns were classfied as triticale, type plants with lax spike and comparatively short awns were classified as wheat type. Other plants with mixed morphological features of wheat and triticale were classified as intermediate type. Useful transgressive segregants were observed in all the generations.

It is suggested that the desirable segregants of triticale and intermediate type in the F_2 generation of triticale × wheat crosses may be further mated *inter se* in order to enlarge the genetic variability.

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INVOLVEMENT OF CALCIUM IN NITROGEN FIXATION BY *NOSTOC LINCKIA*

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CULTURES of *Nostoc linckia* rapidly and significantly but not completely, lost their ability to reduce acetylene when incubated with 2 mM of ethyleneglycol-bis- (B-aminoethyl ether)-N,N,N′-tetra-acetic acid (EGTA) in light. The alga resumed diazotrophy when supplied with 4 mM of calcium chloride. It is suggested that EGTA might deplete the calcium ions from the cyanobacterial cells, and thereby destroy a calcium-dependent process by which nitrogenase is protected from inactivation by oxygen.

Cyanobacterial nitrogen fixation is carried out by unicellular, filamentous heterocystous and filamentous non-heterocystous forms[1,2]. Diazotrophic mechanism requires a strong reductant and ATP for the production of ammonia. Heterocystous cyanobacteria have developed an exchange system between hetero-