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Short Communication

CYTOGENETICS OF BC_1 AND BC_2 DERIVATIVES OF A CROSS BETWEEN *TRITICUM AESTIVUM* L. AND *AEGILOPS OVATA* L.

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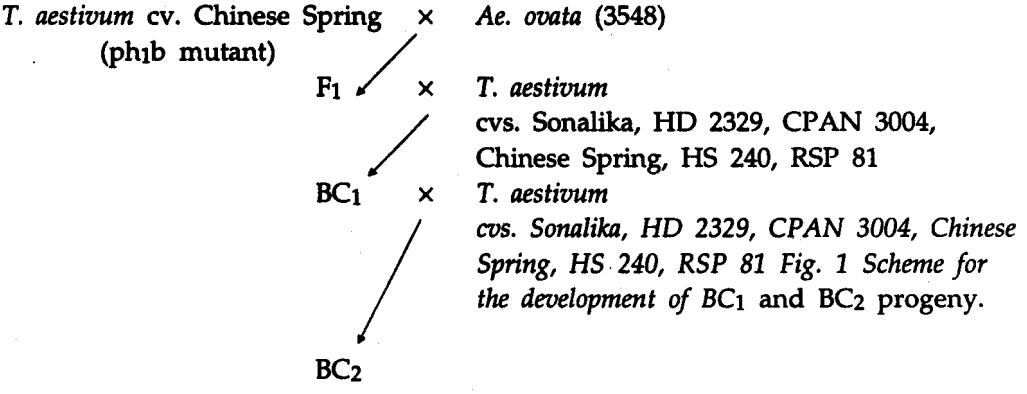
Aegilops ovata L. (2n=4x=28), UUMM) is a potential donor of genes for high protein content [1] and high salt tolerance [2], therefore, holds great promise for the genetic improvement of common wheat (*Triticum aestivum* L.) In order to incorporate useful traits of *Ae. ovata* into the cultivated wheat, interspecific F_1 and BC_1 progeny between *T. aestivum* and *Ae. ovata* were produced [3]. The backcross-1 progeny were backcrossed to a set of wheat cultivars to obtain BC_2 progeny as per scheme shown below:



cvs. Sonalika, HD 2329, CPAN 3004, Chinese Spring, HS 240, RSP 81 Fig. 1 Scheme for the development of BC_1 and BC_2 progeny.

The present communication reports the cytogenetics of BC-1 and BC-2 derivatives of the original F_1 hybrids with the wheat cultivar Sonalika. Meiotic chromosome analysis at diakinesis/metaphase-1 (MI) stage was conducted on BC_1 and BC_2 progeny by a simple acetocarmine (2.0%) squash technique.

The lone BC_1 plant showed 36 chromosomes at MI thereby suggesting that some of the hypoploid gametes having ABD and UM chromosmes were functional and produced zygote when fertilized with male gamete having 21 chromosomes. The mean chromosome association in the BC_1 plant was 14.2 II + 0.4 III + 0.1 IV + 6.0 I per pollen mother cell.

The BC_1 plant when backcrossed to Sonalika produced a sufficient number of shrivelled seeds which upon germination produced only four BC_2 plants. The chromosome number in these four plants varied from 39 to 40 which indicates reduced fertile female gametes with 18 and 19 chromosomes were able to contribute in BC_2 zygote formation. The mean chromosome associations for the four BC_2 pants BC_2-1, BC_2-2, BC_2-3 and BC_2-4 were 18 II + 4 I, 19 II + 2 I, 18 II + 3 I and 18 II + 4 I, respectively.

Gene transfers from the alien species are accomplished either through rare recombinational events or through radiation-induced translocations. Alternatively, gene transfers from the alien chromosomes into the genome of cultivated species have successfully been achieved through the production of monosomic alien addition lines [4-7].

Results of the present study suggest that out of the 19 chromosomes of the female gametes which made their contribution to the formation of BC_2-1 and BC_2-4 hybrids, atleast one chromosome in each gamete belonged to *Ae. ovata* (UUMM) genome. This opens up the possibility of constructing monosomic alien addition lines (MAALs) for transferring desirable traits from *Ae. ovata* into *T. aestivum*.

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