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CHROMOSOME PAIRING BEHAVIOUR IN NEWLY SYNTHESIZED TETRAPLOID ALFALFA

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Polyploydy, alfalfa, chromosome pairing, sexual polyploidization

Polyploidization is an increase in genome number and occurs in nature as the consequence of the union of gametes with the somatic chromosome number 2n (sexual polyploidization), or as the consequence of somatic genome duplications (somatic polyploidization). A duplication of a species' chromosomes results in the formation of a polyploid with polysomic inheritance, while the union of the genomes of different species results in the formation of a polyploid with disomic inheritance. Some polyploids have both modes of inheritance and are termed segmental allopolyploids.

We are studying three tetraploid plants from bilateral sexual polyploidization (BSP) obtained by crossing a diploid *Medicago sativa* subsp. *falcata* plant that produces 2n eggs (PGF9) with a 2x *Medicago sativa*. subsp. *coerulea* x *falcata* plant that produces 2n pollen (12P). Each of these BSP plants was crossed as female with a plant from the tetraploid cultivated variety *Classe,* and 50 progeny plants were obtained per cross. Cultivated alfalfa has tetrasomic inheritance; however, the newly tetraploidized BSP plants used in this work derive from a cross between morphologically and genetically different diploid parents and therefore it is possible that differences in chromosome structure lead to preferential pairing between two of the homologous chromosomes from the same parent. To investigate chromosome pairing behavior of the tetraploidized BSP plants segregation of polymorphic SSR markers are emploied. One marker per chromosome was selected from the published resources based on their usefulness in identifying suitable polymorphisms among the parents and progeny plants. The observed SSR segregation patterns will be compared with those expected in case of disomic (preferential pairing) or tetrasomic (random pairing) inheritance.