

The doubling of the nuclear genome is considered to be one of the main ways in which new sympatric plant species can arise. Polyploidy is also generally a significant source of new evolutionarily advantageous abilities. However, it is not always that way, polyploids with an odd number of chromosome sets have often limited viability and fertility. In cytotype mixed populations of diploids and tetraploids, or in diploid populations alone with the contribution of high rate of unreduced gametes formation may produce triploid hybrids. In some cases, their vitality is even comparable with parental cytotypes but they produce only a small number of offsprings and in addition of different ploidy levels. Although it has been recently thought that they have no evolutionary significance, now based on many experimental works it is known with confidence that they can significantly participate in the new polyploid formation. If triploids occur in the population with sufficient frequency, they may play a role in stabilizing of the common coexistence of diploid and tetraploid cytotypes. Triploid hybrids may despite their limited fertility contribute to the bi-directional gene flow between their parents, and thus overcome the barrier of their different ploidy levels.

A suitable model to study the role which can the triploid hybrids play in natural mixed populations of diploids and tetraploids is *Tripleurospermum inodorum* (*Asteraceae*). It is a very resistant annual herb, abundant in suitable habitats throughout the northern hemisphere. In significant part of the species area, there may occur together two chromosome strains, diploid and tetraploid.