

## ABSTRACT

The presence of triploid individuals, whether hybrids arising from crosses of diploid and tetraploid plants, or spontaneously generated triploid hybrids diploid populations, is increasingly important in plant populations. However, the possible evolutionary role of the triploid hybrids is closely connected to the frequency of their occurrence, to their relative fitness (compared to parental cytotype) and fertility.

As a model plant I choosed *Tripleurospermum inodorum*, in which a relatively frequent occurrence of triploid hybrids was documented in mixed populations of tetraploids and diploids. This annual plant achieves really quick its reproductive maturity and is easily cultivated, making it an ideal model for cultivation and pollinating experiments. Compared to parental cytotypes, the triploid hybrids of *T. inodorum* take approximately the same (mostly mediated) fitness values. In vitro conditions were cultivated to measure of germination rates. Germination rate of triploid seeds was comparable to diploid parental cytotype. In the subsequent comparative cultivation, nearly 150 plant individuals (2x, 3x, 4x, and aneuploid cytotype) in the greenhouse showed that the triploids had intermedial values of their parental cytotypes or close to one of the parents. Thus, the vitality of the triploid plants is not limited by the odd chromosome count.

Manipulated pollination of 66 individuals of six different ploidy levels (in total 470 inflorescences) confirmed triploid hybrid *T. inodorum* to be a fertile. Triploids produce a large proportion of aneuploid offspring, but produce also less amount of the diploid and tetraploid offspring, which may at least theoretically contribute to the two-way gene flow between parental cytotypes. Additionally, the aneuploid progeny produced by them are also vital and fertile, so they are able to generate both triploid and aneuploid, as well as a significant percentage of tetraploid individuals.

There is a probability, that triploid *T. inodorum* actively participate in microevolution processes in mixed population, both by tetraploid production (the triploid bridge hypothesis) and by mediating the gene flow between di- and tetraploids.

**Key word:** triploid, triploid bridge, triploid block, gene flow, minority cytotype exclusion, *Tripleurospermum inodorum*, scentless mayweed