

Molecular-genetic analysis of DNA plasmotype of rye-wheat secalotriticum amphidiploids (RRAABB, $2n = 42$)

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In order to achieve a balanced expression of the original species genomes and enhancement of the rye genomes expression in triticale, we carried out research on the creation of a new type of triticale with rye-type cytoplasm – hexaploid secalotriticum (RRAABB, $2n = 42$), by hybridization of tetraploid rye (RRRR, $2n = 28$) with hexaploid triticale (AABBRR, $2n = 42$) and a single backcross of rye-triticale F_1 hybrids (pentaploids) on the initial triticale. Restriction analysis of species-specific DNA sequences of chloroplasts (*ndhH* locus) and mitochondria (8S/5S-repeat) showed that for rye-type cytoplasm (S-cytype) the absence of restriction was detected by the *MspI* endonuclease recognition site (fragment of 750 bp) and the presence of restriction by the recognition site of the endonuclease *Sall* (restriction fragments of about 250 bp in length); for wheat (T-cytype) – restriction with the *MspI* endonuclease (restriction fragments 500 and 250 bp long) and the lack of restriction with the *Sall* endonuclease (500 bp fragment). It has been established that rye-triticale F_1 hybrids (pentaploids, RRABR, $5x = 35$), rye-wheat amphiploids F_1BC_1 ($5-7x = 35-49$) and hexaploid amphidiploids of secalotriticum F_{1-15} had a stable inheritance of DNA markers of rye cytoplasmic organelles. However, in contrast to original rye cultivars, the analysis of restriction results of the mitochondrial DNA *tMet-18S/5S* region by the *Sall* endonuclease detected the presence of restriction fragments for about 250 bp in length, which is characteristic for rye, and a 500-bp non-restriction fragment. The presence of this fragment may indicate a partial transfer of the paternal cytoplasm (two-parent inheritance of mitochondria) during the hybridization of rye with triticale. In support of this, a comparative analysis of sequencing the mitochondrial DNA locus *tMet-18S/5S* of the secalotriticum lines as well as the initial rye and triticale cultivars will be carried out.