

Extending the oilseed rape gene pool with resynthesis *Brassica napus* L.

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Brassica crop species have become one of the world wide most important source of vegetable and vegetable oils. The development of plants from *Brassica* ssp. was accomplished by substantial progress in breeding and biotechnology. *Brassica napus* (2n=38, genome AACC) is a natural amphidiploid that originated from several independent spontaneous hybridizations between the diploid species *B. rapa* (2n=20, genome AA) and *B. oleracea* (2n=18, genome CC). Intensive quality breeding combined with the limited geographic range of *B. napus* has led to a narrow genetic basis in this species. In contrast, the both progenitors are highly polymorphic and therefore offer a broad genetic variability that can be exploited for oilseed rape improvement by the use of resynthesis (wide hybridization). Developing resynthetic *Brassica napus* lines has provided important basic germplasm for further improvements of seed yield (namely by effect of heterosis) and seed quality traits as well as disease and pest resistance.

A major problem encountered with the use resynthesized lines (RS) of *B. napus* in hybrid breeding is the quality of seed oil (high levels of erucic acid) and seed meal (high glucosinolate content), which do not comply with double-low quality oilseed rape. Additional breeding treatments are needed before the introduction of resynthesized *B. napus* to practice.

The presentation will reveal the results of research on introduction of resynthesized *Brassica napus* germplasm to actual breeding lines, by creating of semi-RS with double-low quality as well as a genetically distant from current natural oilseed rape.

In this study, resynthesized oilseed rape was obtained through crosses between *B. rapa* ssp. *chinensis* var. *chinensis* (pak choy) and *B. oleracea* ssp. *acephala* var. *sabellica* (curly kale) using the embryo rescue technique. Double-low winter oilseed rape lines having the *Rfo* gene for CMS *ogura* were crossed with two resynthesized oilseed rape lines. Populations of large numbers of doubled haploids, (DH), were developed from F1 hybrids semi-RS (semi-resynthesized oilseed rape) by the use of the microspore *in vitro* culture method. The seeds of the obtained DH lines were analyzed biochemically with regard to the double-low quality (zero erucic acid and low glucosinolate content). Among the populations of the, DH genotypes with 00-quality and with the *Rfo* gene were selected.

The large genetic distance between selected semi-RS DH lines *B. napus* and existing natural lines of winter double-low oilseed rape has been consequence of the introgression of resynthesized germplasm to current winter double-low oils.