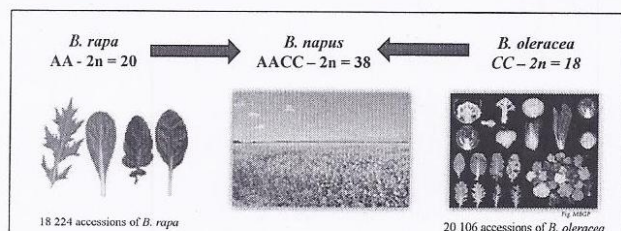


Development of double low-quality DH lines with the *Rfo* gene from semi-resynthesized oilseed rape (*Brassica napus* L.)

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Oilseed rape (*Brassica napus*) is important oilseed crop grown in moist and cool climate throughout the world. However, intensive breeding has led to a comparatively narrow genetic basis of current breeding material. The fact that oilseed rape is a spontaneous allotetraploid hybrid makes it possible to produce artificial crosses between the two parental species *Brassica rapa* and *Brassica oleracea* to resynthesize „new oilseed rape” (*Brassica napus*). RS oilseed rape lines can not be used directly for breeding of new hybrid varieties, because of their bad individual performance.



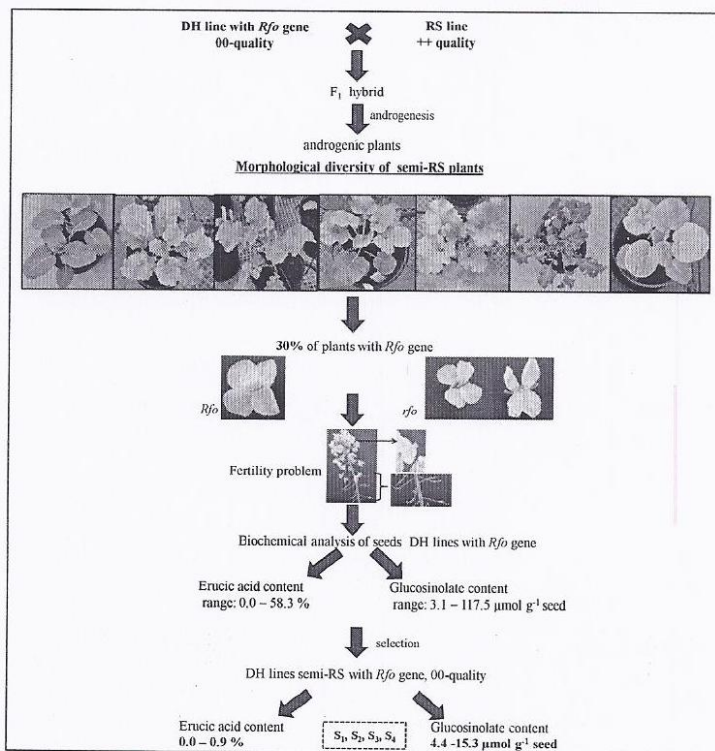
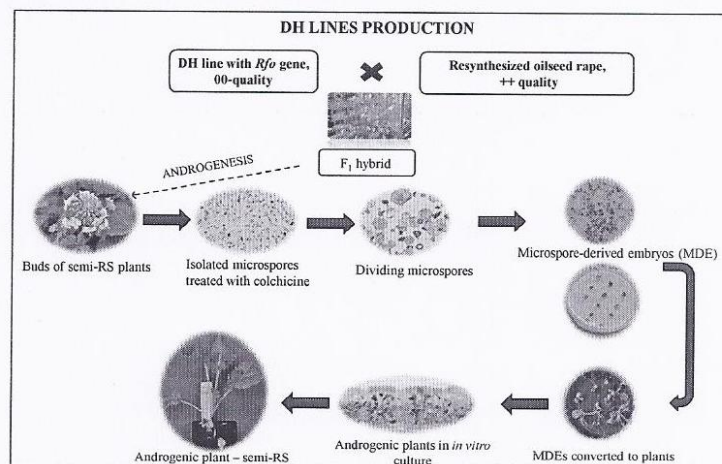
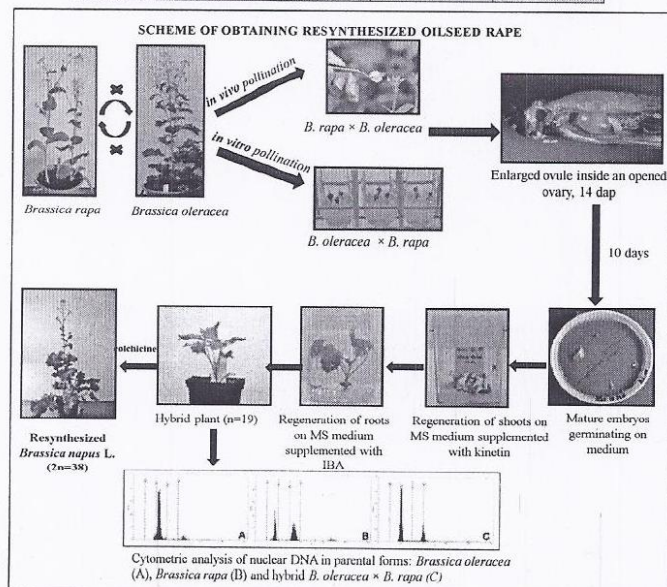
The different forms of the diploid parents *B. oleracea* and *B. rapa* give considerable potential as an unexploited source of genetic variability to be utilized in resynthesis programs.

Resynthesized oilseed rape (*Brassica napus*) is potentially of great interest for hybrid breeding, since heterosis effect has been reported to be higher in crosses of genetically distant materials.

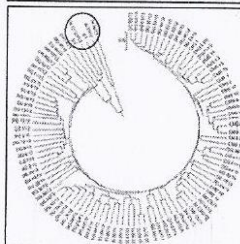
The main objective of this study has been to obtain semi-RS DH lines of winter oilseed rape: (1) with restorer (*Rfo*) gene for CMS - *Ogura*, (2) seeds of 00-quality and (3) genetically distant from current gene pool of *B. napus*.

The efficiency of reciprocal crosses of several *B. rapa* and *B. oleracea*

| Crossing | Number of pollinated pistils/ovaries | Number of enlarged ovules | Number of embryos |
|--|--------------------------------------|---------------------------|-------------------|
| Turnip rape cv. Kova × Curly kale cv. Halbhoher Grüner | 107 | 115 | 7 |
| Turnip rape cv. Skye × Curly kale cv. Halbhoher Grüner | 122 | 75 | 3 |
| Curly kale cv. Vitessa × Turnip rape cv. Kova | 70 | 19 | 3 |
| Curly kale cv. Vitessa × Turnip rape cv. Skye | 48 | 15 | 5 |
| Curly kale cv. Vitessa × Turnip rape cv. Credit | 64 | 19 | 2 |
| Curly kale cv. Vitessa × Turnip rape cv. Ludowy | 151 | 59 | 5 |
| Curly kale cv. Vitessa × Turnip rape cv. Premium | 87 | 67 | 9 |
| Turnip rape cv. Salut × Curly kale cv. Kapral | 50 | 10 | 1 |
| Chinese cabbage cv. Kilakin × Curly kale cv. Vitessa | 160 | 241 | 2 |
| Curly kale cv. Vitessa × Chinese cabbage cv. Kilakin | 192 | 144 | 1 |
| Brussels cv. Crispus × Chinese cabbage cv. Kilakin | 124 | 141 | 4 |
| Total | 1175 | 905 | 42 |



Dendrogram of the relationship among 101 natural breeding lines and semi-RS lines S₁, S₂ of oilseed rape using 344 AFLP markers (10 primer combinations).



AFLP markers used in the evaluation of RS lines and semi-RS lines have reveal their large genetic distance in relation to existing breeding material.

The use of a different biotechnological methods allows to obtain 00-quality semi-resynthesized lines which enrich the current gene pool for oilseed rape hybrid breeding.

ABBREVIATIONS: CMS *ogura* - cytoplasmic male sterility *Ogura*, *Rfo* gene - restorer fertility *ogura* gene, DH - doubled haploid, RS line - resynthesized line, semi-RS - semi-resynthesized line, high (+) or zero (0) erucic acid content, high (+) or low (0) glucosinolates content