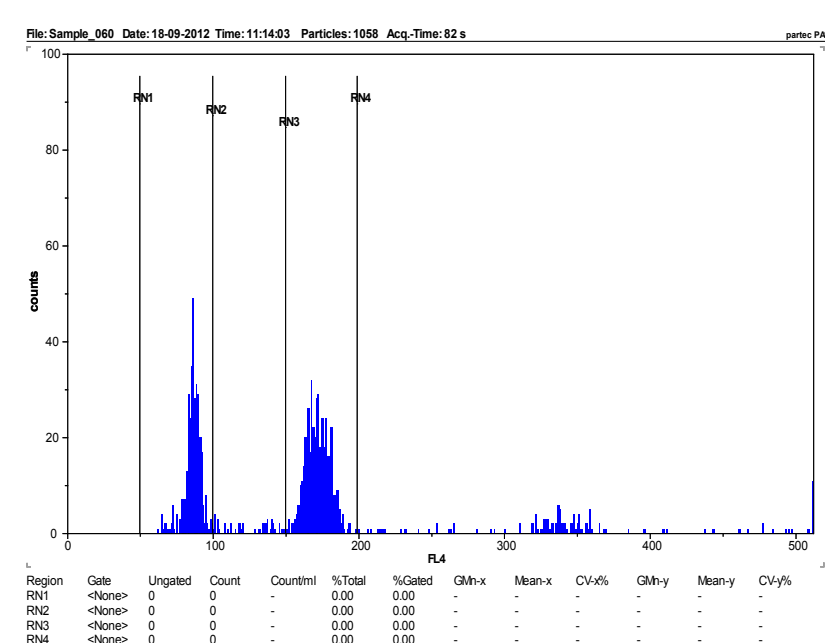


Phenotypic variability of resynthesized oilseed rape (*Brassica napus* L.)

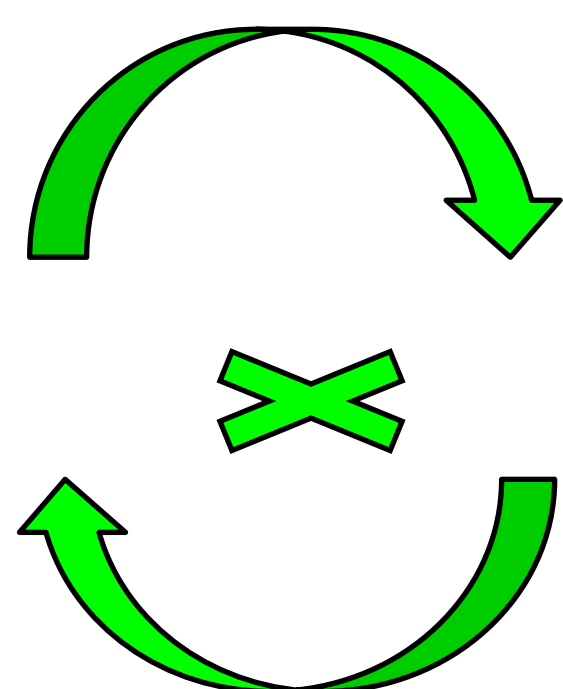
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The level of genetic diversity of oilseed rape is relatively low. It is caused above all by intensive selection of genotypes in terms of two features associated: with improving oil, through eliminating erucic acid and with improving the meal, through the reduction of glucosinolates content. Today, oilseed rape breeders are seeking genetic diversity in their breeding programs. A particularly successful method used to create a novel genetic variety is wide hybridization in a special resynthesis of *B. napus* from ancestral species *B. oleracea* and *B. rapa*. In the present study resynthesized oilseed rape (RS) was obtained as a result of reciprocal crosses between six different *B. rapa* and two different *B. oleracea* using two methods: 1). *in vivo* pollination and then through *in vitro* culture of isolated embryos in the early stage of their development (embryo rescue culture) (Sosnowska et al. 2010) 2). *in vitro* placental pollination and then by further embryo rescue culture (Sosnowska and Cegielska-Taras 2014).

RESYNTHESIS OF BRASSICA NAPUS



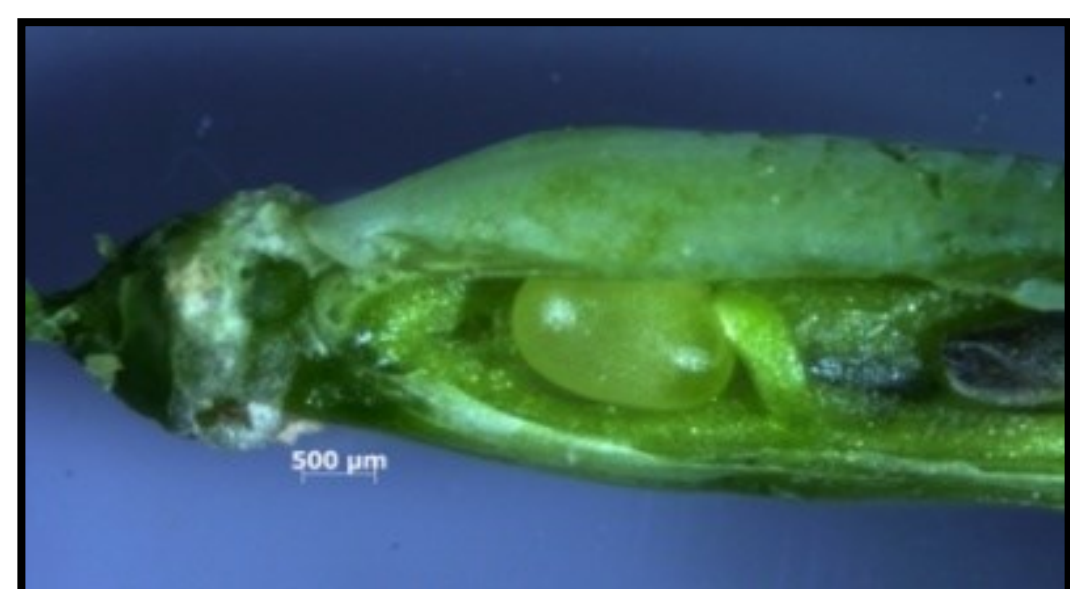
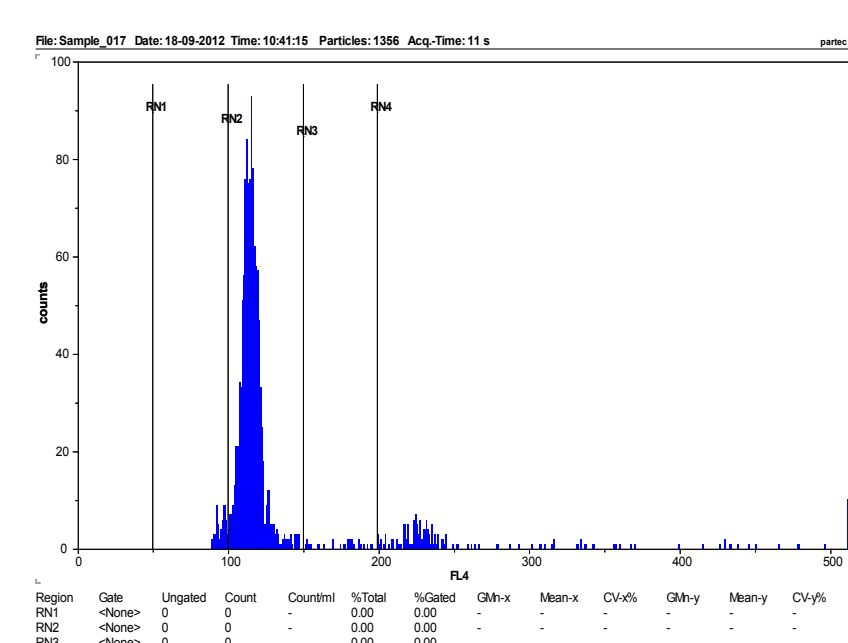
Brassica rapa, AA=20



in vivo/in vitro pollination



Brassica oleracea, CC=18



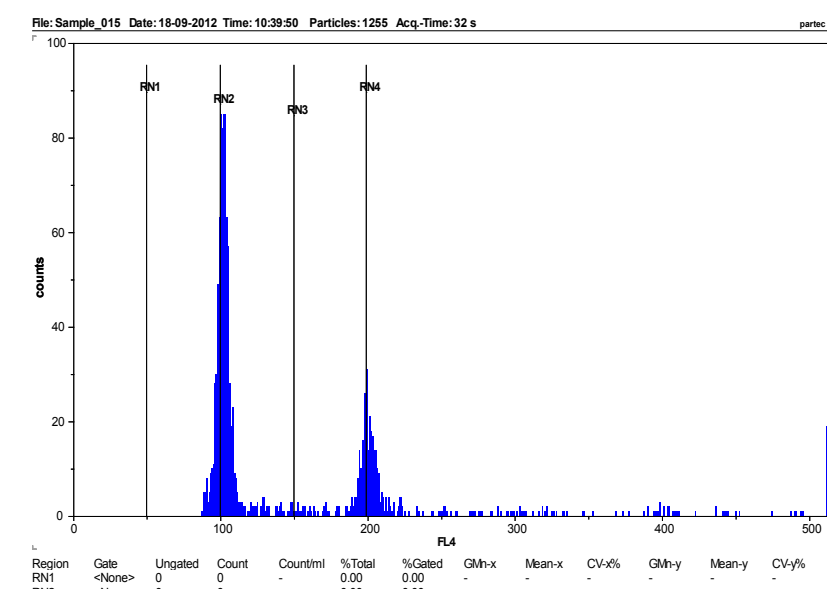
Enlarged ovule inside an opened ovary



In vitro culture of embryos



Hybrid plant (n=19)



colchicine

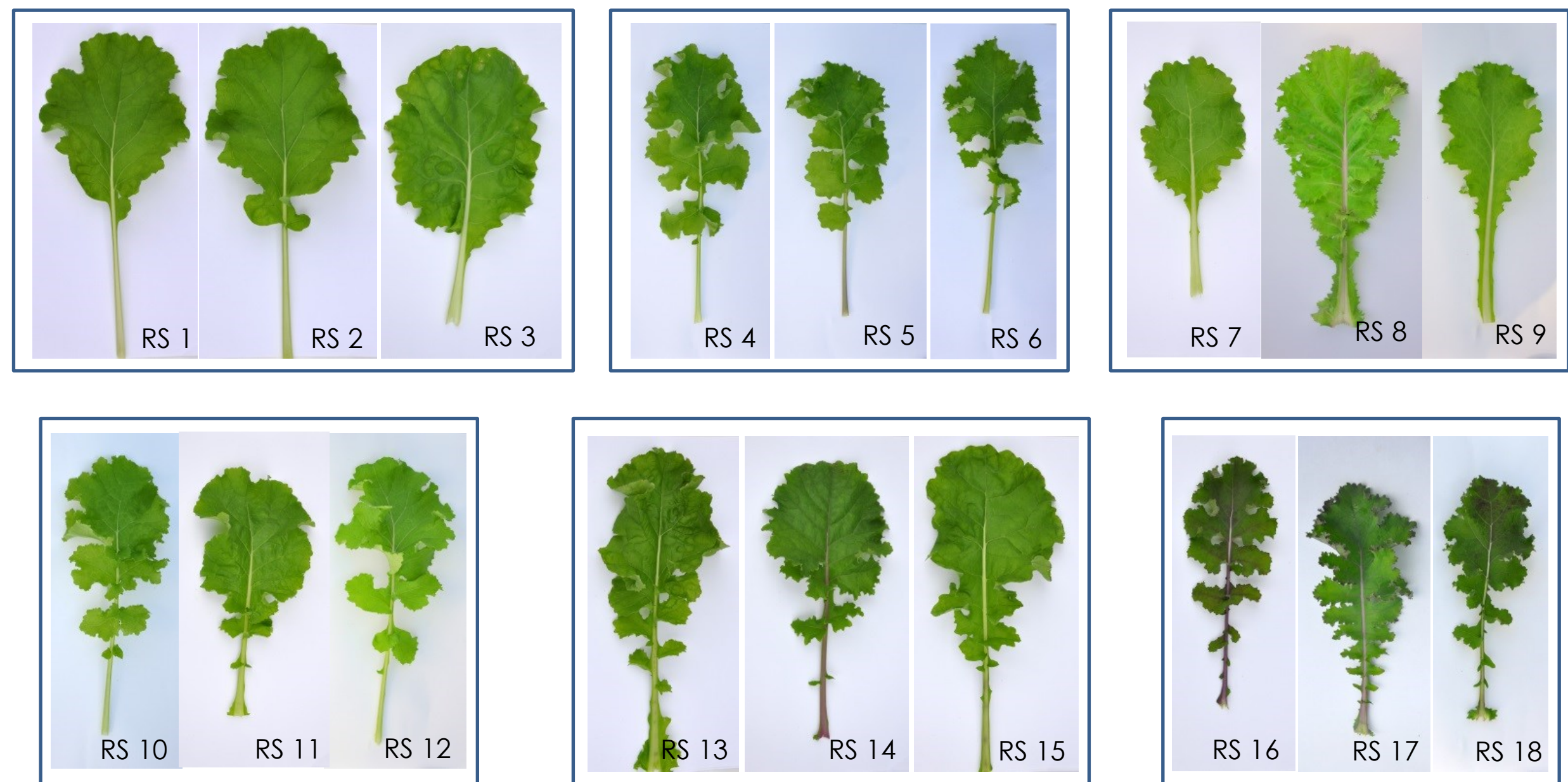


Resynthesized *Brassica napus* L. (2n=38)

PHENOTYPIC EVALUATION OF RESYNTHESIZED BRASSICA NAPUS

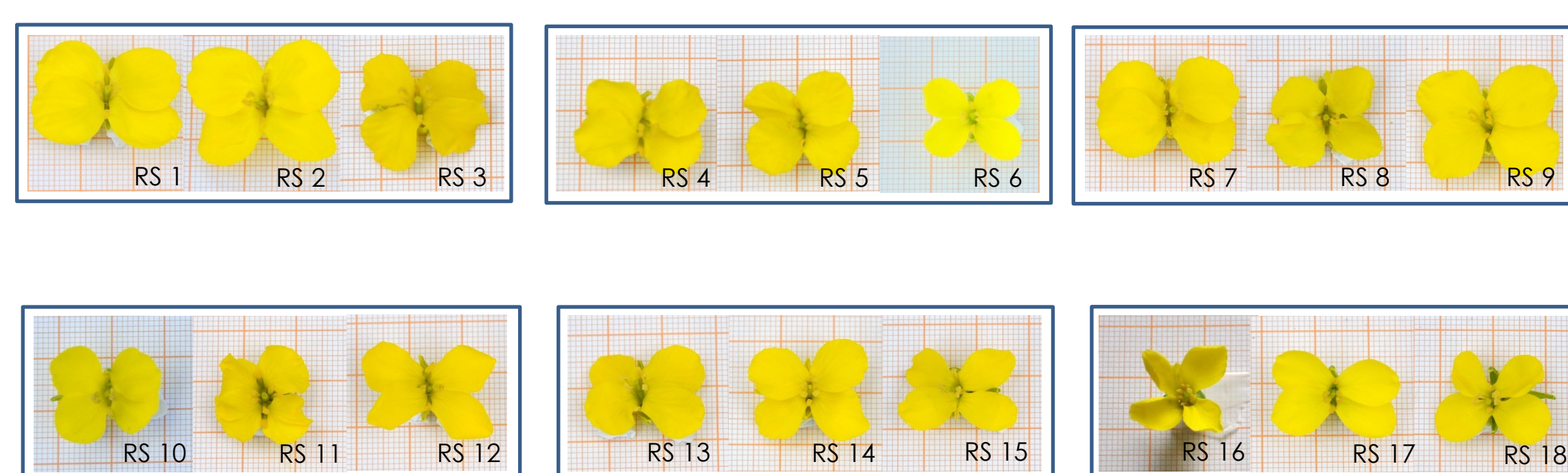
The resynthesized plants were evaluated based on their morphological characters: leaves (A), flowers (B) and pollen fertility (C). A range of variation in morphological traits and pollen fertility were observed in studied RS plants of each cross combination.

A



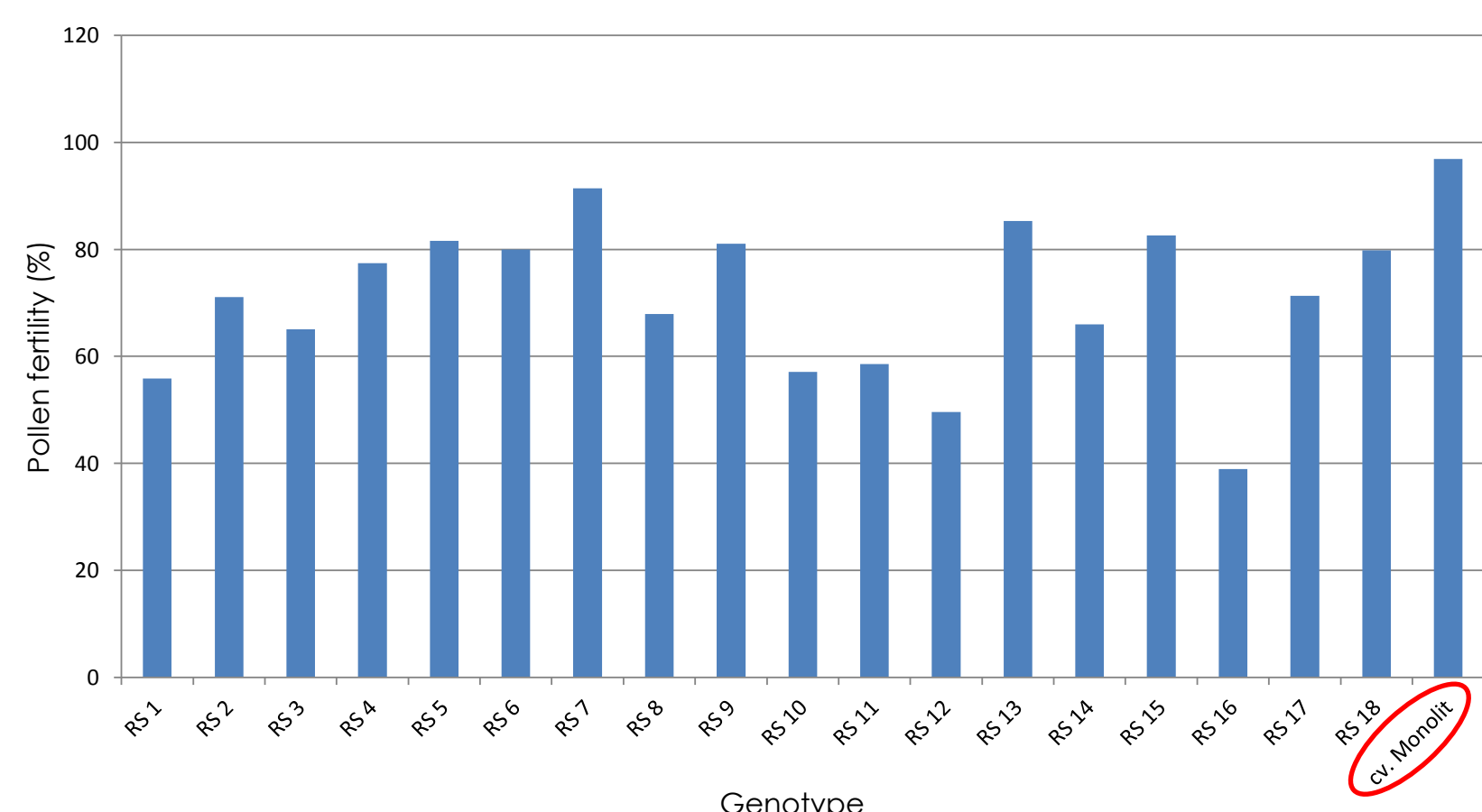
Morphological variation in RS plants leaves: *B. rapa* 1 × *B. oleracea* 1 - RS 1, RS 2, RS 3; *B. rapa* 3 × *B. oleracea* 1 - RS 4, RS 5, RS 6; *B. rapa* 2 × *B. oleracea* 2 - RS 7, RS 8, *B. oleracea* 2 × *B. rapa* 2 - RS 9; *B. oleracea* 2 × *B. rapa* 4 - RS 10, RS 11, RS 12; *B. oleracea* 2 × *B. rapa* 5 - RS 13, RS 14, RS 15; *B. rapa* 6 × *B. oleracea* 2 - RS 16, RS 17, *B. oleracea* 2 × *B. rapa* 6 - RS 18.

B

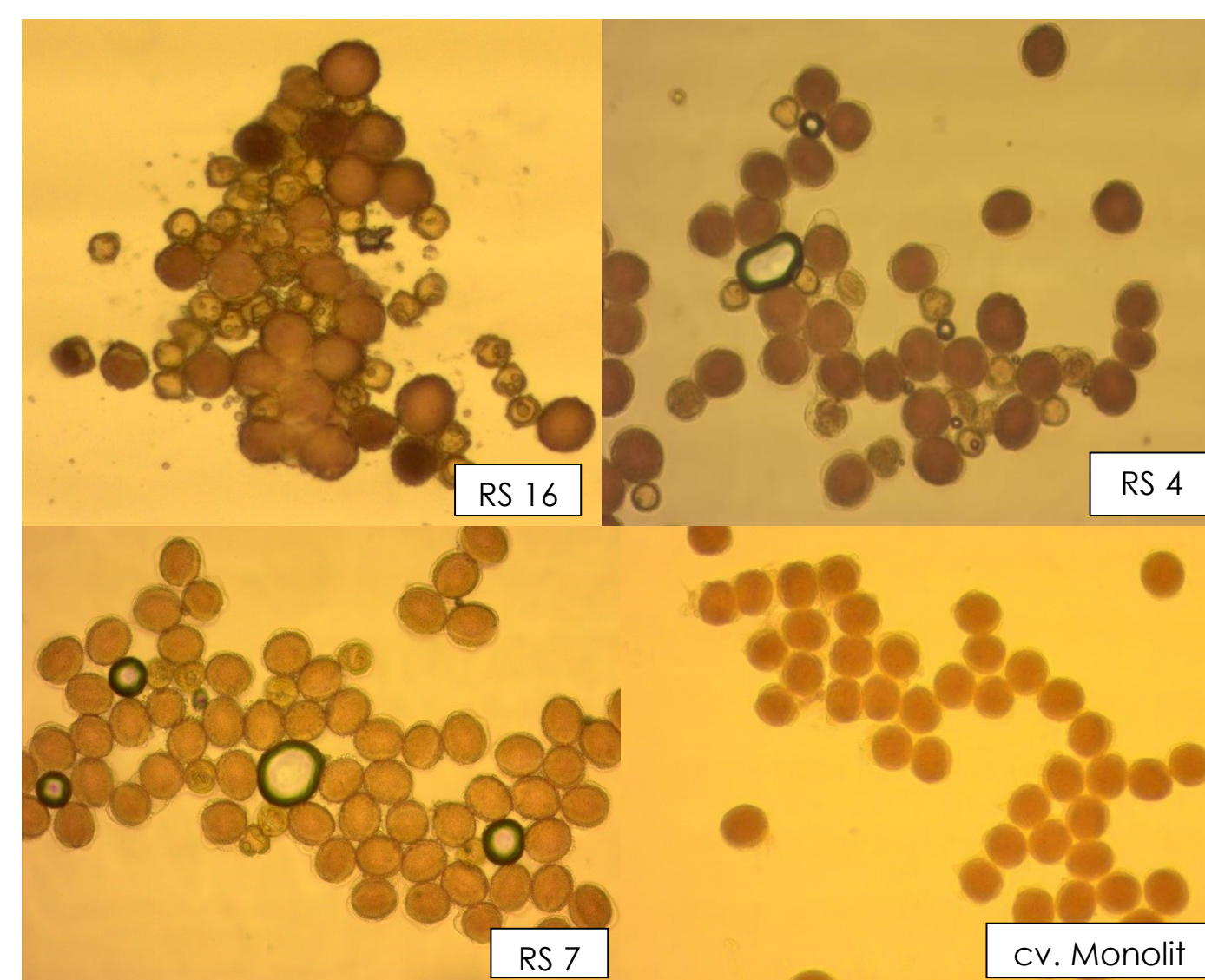


Morphological variation in RS plants flowers: *B. rapa* 1 × *B. oleracea* 1 - RS 1, RS 2, RS 3; *B. rapa* 3 × *B. oleracea* 1 - RS 4, RS 5, RS 6; *B. rapa* 2 × *B. oleracea* 2 - RS 7, RS 8, *B. oleracea* 2 × *B. rapa* 2 - RS 9; *B. oleracea* 2 × *B. rapa* 4 - RS 10, RS 11, RS 12; *B. oleracea* 2 × *B. rapa* 5 - RS 13, RS 14, RS 15; *B. rapa* 6 × *B. oleracea* 2 - RS 16, RS 17, *B. oleracea* 2 × *B. rapa* 6 - RS 18.

C



Pollen fertility of resynthesized *B. napus* in compared to natural oilseed rape (cv. Monolit).



Viable and non-viable pollen grains of selected resynthesized lines.

Large diversity existing among the RS lines can be a valuable source of new germoplasm for oilseed rape breeding and further genetic studies.