Development of super-hybrids by ecotypical cytoplasmic male sterility in *Brassica napus* L.

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In 1986, an ecotypical cytoplasmic male sterile (ECMS) line, which was sterile at higher temperature situation but fertile at low temperature situation, was discovered in the F4 population from the cross between a pol CMS restorer Ken C1 (♀) and a pol CMS maintainer 1141B. A series of studies have proved that the temperature-sensitive genes (Ts) have the same function as the restoring gene (Rf) at the lower temperature situation, which can modify the transcription of orf224/atp6 genes in mitochondria. Up to now, several ECMS lines with double quality such as 195A, 8110A, 206A have been developed by combining traditional breeding methods and modern biotechnologies. By using only the ECMS line 8110A, we have developed several super-hybrid in *Brassica napus*. For example, the hybrid H9905 had an excellent performance in the national trial of the upper region in the Yangtze River, with an erucic acid content 0.29%, glucosinolates content 26μmol/g (meal), and yield 28.08% higher than the check (Zhongyou 821), with a double high quality.