

Cultivar mixtures to improve yield stability in winter oilseed rape

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Abstract

Winter oilseed rape (*Brassica napus* L.) yield is very variable, both in space and time. Besides genotype and environment effects, it was established that genotype X environment (GE) interactions could account for up to 1/4 of an average rape seed yield, with cultivars showing different responses to various environments. An experimentation was carried out to test the hypothesis that cultivar mixtures might decrease the GE interaction effects and therefore improve yield and performance stability in oilseed rape. In a varietal testing network, 5 varieties (2 open pollinated, 2 varietal associations and 1 restored hybrid) grown in pure stands and 4 different, 1 to 1, varietal mixtures were compared in 22 environments (location - year combinations). Yield, grain moisture, oil content and disease incidence at harvest (*Sclerotinia sclerotiorum* and *Leptosphaeria maculans*) were recorded. Statistical analysis of main factors and GE interactions were performed with the Intera software. Generally, seed rape yield and yield related parameters of varietal mixtures were similar to the average performance of the same varieties grown in pure stands. In a few cases, varietal mixtures outperformed the best variety in the mixture and improved the stability of particular parameters (seed yield and *Phoma* incidence). This happened when two conditions were met:

a) Average cultivar performance of the mixture components was similar, when grown in pure stands. b) Cultivars in the mixture showed contrasting response to environments. It is concluded, that both, yield performance and stability can be improved with varietal mixtures, if those conditions are met.

Key words: Oilseed rape, yield, stability, genotype x environment interaction, cultivar mixture