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The Effect of Drought on Secondary Dormancy Induction on Different Seed Canola Varieties (*Brassica napus* L.) under Absence of Light

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Abstract

Prolonged imbibition under conditions of water stress or light deficiency can lead to the induction of secondary dormancy in rape seeds. During imbibition in darkness, seeds develop light sensitivity. The percentage of seeds not germinating in the dark depends on various factors prevailing during and after the stress treatment, as well as on the intrinsic susceptibility of the seeds to these factors. In order to evaluate effects of drought and darkness on secondary seed dormancy of canola, an experiment was conducted with 3 replications in a completely randomised factorial design. Treatments were including 7 varieties of canola (Hyola60; Hyola308; Hyola330; Hyola401; Hyola420; Sarigol and AA1) and 3 drought levels (control, -1.5 MP and dry seed). In order to drought induction, samples were placed in 20°C two weeks, after treating by PEG6000 and then the samples were kept in soil (4 cm depth) for 4 months, to darkness induction. Results indicate significant differences between the 7 varieties at different level drought ($p > 0.01$). The most and the least dormant seed percent were observed in Hyola60 (44%) and Hyola420 (22%) respectively. At different drought levels, germination percent of all varieties decreased significantly, except Hyola60. Otherwise, dormant seed percent in dry seed treatment were more than the seeds treated with -1.5 Mp droughts. In general, in addition to genotype, environmental conditions affect on secondary dormancy potential of seeds. As volunteer rape decreases crop yield, it is necessary widespread researches carried out on ecological and management aspects of this plant.

Keywords: Canola darkness effect, secondary dormancy, volunteer rape seed