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Factors influencing somatic embryogenesis and regeneration ability in somatic tissue culture of spring and winter rye

Keywords rye, somatic embryogenesis, embryo, inflorescence, leaf segment,

Abstract

Rye is an important crop in Northern and Eastern Europe. However, the application of various biotechnologies in rye breeding has been limited duo to its recalcitrant in ti
to improve somatic tissue effi ciency, key factors affecting somatic embryogenesis and reproducible green plant regeneration of rye (Secale cereale L.) were evaluated an
study, a total 27 rye genotypes including 10 spring and 17 winter genotypes were involved in the investigation. Genotype, culture medium, sugar, gel agent and auxin infl u
embryogenesis of immature embryo signifi cantly. One-two weeks cold pretreatment of young embryo enhanced somatic embryogenesis and green plant regeneration. In
embryos, infl orescences and leaf segments of the seedlings, explants signifi cantly infl uenced the culture effi ciency. Highest embryogenic callus yield resulted from rye im
explant compared to young infl orescence and leaf segment of seedling. Developmental stage of embryo played an important role in somatic embryogenesis. Late spherica
(embryo size 0.5–1mm in length) was optimal developmental stage of immature embryo for culture. Morphogenetic potential of embryogenic callus decreased with an inc
subcultures, and this ability could be maintained in vitro for a maximum of 8 months of culturing.

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[Full text] (PDF 93 kt)

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