Coleoptile length in dwarf wheat isolines: Gibberellic acid effects as a seed treatment. (C01-pfahler102937-Oral)

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Abstract:

Dominant genetic dwarfing in wheat (Triticum aestivum L.) is associated with many desirable agronomic traits but the short coleoptile length (CL) associated with dwarfing can result in unacceptable stands especially when the seeds are planted deeply to compensate for low soil moisture conditions. Since gibberellic acid (GA) in the germination medium increases CL in some dwarf isolines, the GA effect applied as a seed treatment was compared to GA application in the germination medium. Seeds from four homozygous and homogeneous isolines (normal or T-0 =Rht-B1a/Rht-D1a, semidwarf-1 or SD-1 =Rht-B1b/Rht-D1a, semidwarf-2 or SD-2 = Rht-B1a/Rht-D1b, dwarf or D-12 = Rht-B1b/Rht-D1b) of 'Marfed' were submerged either in water or a 2.6 mM GA solution for 4 d at 2C. A portion of the seeds from both treatments were germinated in the same solution. The remaining seeds of both treatments were dried for 2 d at 37C and germinated in water.The germination process involved growth pouches at 20C in the dark with the CL measured after 14 d. In T-0, GA applied as a seed treatment was found to be about 50% as effective as application in the germination medium. D-12 showed no response to GA applied by either method. The response of SD-1 and SD-2 was intermediate. Additional seed treatment studies with higher GA concentrations and other growth regulators should be conducted especially with T-0 and SD-1 to assess the practical potential of using seed treatment.

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