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NEW TOOLS FOR DOUBLED-HAPLOID PRODUCTION IN DICOTS

BOUTILIER K.*

*) Bioscience, Wageningen University and Research, P.O. Box 16, 6700AA Wageningen, Netherlands

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Doubled-haploid embryo production is a cornerstone technology in plant breeding, where it is used to accelerate the breeding process. Haploid embryos can be induced in vitro from cells of the male or female gametophyte or in vivo in seeds by interspecific crosses or by intraspecific crosses with haploid inducer lines. These haploid embryos can be converted chemically or spontaneously into fully homozygous doubled-haploid plants. Using this approach, homozygous lines can be developed in a single generations versus the four to six generations that are required using classical selfing or backcrossing. For most crops, in vitro culture is the method of choice to generate doubled-haploid plants, but it is limited by widespread species and genotype recalcitrance. In vivo haploid induction through seed is widely and efficiently used in maize and was recently extended to several monocot crops. Until recently, a similar generic and efficient haploid induction system was lacking in dicot crops. In this talk, I will discuss the recent breakthroughs that have been made in in vivo haploid production in dicot seeds using dmp haploid inducer lines.