Embryo rescue of early ripening Prunus spp.

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Embryo rescue is an important tool for breeders to increase the efficiency of the breeding especially in the case of early ripening Prunus spp.

Steps: 1.) determination of the ripening time suitable for embryo culture, 2.) collecting the fruit, 3.) removing the fruit flesh, 4.) disinfection of the seed, 5.) removing the endocarp, 6.) removing the seed-coat – flaming, 7.) inoculation into MS or WPM based culture medium, 8.) stratification of the seeds under sterile conditions at 4°C, 9.) germination in a culture room under 16/8 photoperiod, 2000 lux light intensity, at 22°C.  

Embryo culture was combined with micropropagation to shorten the evaluation period.

Results of the embryo rescue

About 30 -40 \% of the hybrid sweet and sour cherry seeds - depending on the combination – developed into healthy plants. About 80 \% of the apricot embryonic axis isolated 60 – 80 days after full bloom, developed shoots suitable for introduction into a multiplication procedure for a breeding program.

The germination results of the embryos rescued from open-pollinated peach “Honeyblush” embryos: 35 \% of the embryos exhibited some growth by developing into complete plants (12\%), sprouting epicotyls (8\%) or roots (2\%) or the cotyledons opened (8\%) or developed to a small extent (5\%).

Growth response (percentages) of rescued peach embryos on eight tissue culture media. (1)=Embyros showing no growth and/or with bacterial growth in medium surrounding the embryo; (2)=normal plants with roots and leaves; (3)=epicotyl development; (4)=root germination; (5)=cotyledons that expanded and unfolded; (6)=cotyledons expanding unevenly; (7)= necrotic radicles; (8)=fungal contamination; and (9)=embryos damaged during handling.

Acclimatization in growth chamber under high relative humidity in the greenhouse  
- Labeling each plant is very important  
- Regular plant protection against fungal infection is necessary