

P-42 (50)**THIRTY THREE HALF-SIB APPLE CLONAL ROOTSTOCKS TOLERANT TO CROWN ROT PRODUCED IN A 14 YEARS PATHO-BREEDING PROGRAM**

Assoc. Prof. Hassan Hajnajari, Cold Temperate Fruit Research center, Hort. Science Research Inst (HSRI). Ag. Res. Edu., Extension Org (AREEO). Karaj Express way. , Mahdasht road. ShahrakeBazroNahal. (Karaj), Iran; hassanhajnajari@yahoo.com (Presenting author)

Domaining challenges of Iranian apple cultivation soils consist in heavy texture, poor organic matter, high alcalinity and so calcium and iron deficiency. In addition, diffused submerged irrigation system and superficial manure distribution predispose the apple trees to crown rot disease. To produce clonal rootstocks the process of parent selection was achieved based on lack of fogliar clorosis, weak vigor and general adaptness to regional pedoclimatic conditions. "Northern Spy" was slected as carrier of resistance gen to *phytophthora cactorum* together with other native three native crab apples during 2004-2007. The obtained 5000 progenies of one year old Half-Sib seedlings were transferred into termostatic green house where afterwards were inoculated by the agent of soil disease pathogen in 2008-2010. The screening resulted in individuation of 99 crown rot tollerant genotypes which were transplanted in the nursery. After a biennial growth outward till 2012, clonal propagation by layering as second screening led to 33 easy rooting promising clonal apple rootstocks in 2013-2014. "Golden Delicious "and "Red Delicious" were grafted on the newly produced of the rooted shoots of each clone through further layering. Slection plot was established in an orchard containing rootstock-scion's combinations besides more gradual dwarfing rootstocks M9, M7, MM111, Support 4 and P22 as thesis in 400 ha. Farm (Karaj), in the winter of 2013. Promising clonal stocks affected differently tree height, rootstock diameter, graft point and trunk diameters, internode length and diameter of annual branches, total branch length, growth habit, number and mean length of root suckers in 2015.

Keywords: pathobreeding, clonal rootstock, crown rot, parent selection, easy rooting.