

Testing Resistance to Chestnut Blight of Hybrid Chestnuts

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Abstract

Castanea sativa Mill. is an ecologically and economically important species in Europe, not only as a forest tree, but also as a fruit tree. It is dramatically threatened by ink disease caused by *Phytophthora* spp., introduced during the nineteenth century. To limit its impact, *C. mollissima* and *C. crenata*, which proved to be tolerant species, were imported from China and Japan to Europe at the beginning of the twentieth century, together with the agent of chestnut blight (*Cryphonectria parasitica*) which is now spreading throughout Europe. A clonal selection has resulted in the use of a few inter-specific hybrids as rootstocks tolerant to ink disease, and onto which fruit cultivars are grafted, as fruit cultivars for the fruit quality and as forest clones selected for growth characteristics. New chestnut forest plantations are clonal in Spain, but not yet in France. However, with the threat of increasing loss due to ink disease and chestnut blight, hybrid clones are seen as a promise by some foresters. Our aim was to test the resistance to chestnut blight of hybrid chestnuts which are used as rootstocks or grafted varieties for fruit production, or inter-specific full sib families used for building chestnut maps. Field testing revealed significant differences among genotypes: some fruit cultivars being less susceptible than the large majority, in agreement with field observations. With excised stem assays, a large phenotypic variation within the F1 progeny was observed.

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