

DEPLOYMENT OF INCONGRUENT TUBER-BEARING SOLANUM SPECIES: INTEGRATED STRATEGIES OF POTENTIAL BREEDING VALUE

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Tuber-bearing *Solanum* species represent a unique source of genes for potato breeding. Access to this valuable germplasm may be hampered by sexual barriers caused by nuclear-cytoplasmic male sterility, incompatibility and (mainly) endosperm. Unique reproductive characteristics of *Solanum* species are the production of 2n gametes and the presence of an endosperm dosage system that regulates success of interploidy/interspecific crosses. These are essential ingredients to design breeding strategies for the deployment of sexually incompatible potato species. This presentation reviews the work we carried out to introgress resistance genes from incongruent *Solanum commersonii*, a diploid species originating from Argentina, into the cultivated potato gene pool. Following a bridge ploidy approach, improved *S. commersonii*-*S. tuberosum* progenies were generated and characterized for traits of interest as well as for cytological and molecular features. Particularly useful was the use of species-specific AFLPs to speed-up the recovery of the cultivated genome. Recently, to improve access to agriculturally significant genes from *S. commersonii* and other species of the same Series, we have initiated an effort using the Diversity Array Technology (DArT) marker platform. Prospects and challenges will be discussed.