



POSTER PRESENTATIONS

POSTER PRESENTATION 25

TITLE: STUDY OF REPRODUCTIVE BARRIERS BETWEEN CULTIVATED TOMATO *SOLANUM LYCOPERSICUM*, STRESS-RESISTANT TOMATO *SOLANUM CHILENSE* AND THEIR HYBRIDS

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Abstract: The domestication of tomato (*Solanum lycopersicum*) and its introduction to Europe have decreased its genetic variability, resulting in a genetic bottleneck. Wild tomato species from the *Lycopersicon* clade are a great source of resistance genes to increase genetic diversity and improve important agronomic traits such as stress tolerance. A promising species for this purpose is *Solanum chilense*, a wild tomato found primarily in the Atacama salt desert. However, the use of this species is hindered by reproductive barriers, both inter- and intraspecific. Intraspecific barriers manifest as gametophytic self-incompatibility, whereas *Solanum chilense* is a self-incompatible species while *Solanum lycopersicum* is self-compatible. This mechanism is getting increasingly understood in other *Solanaceous* species but is relatively unexplored in wild tomatoes specifically. Interspecific barriers manifest as unilateral incompatibility, where self-incompatible species cannot breed with self-compatible species. This barrier remains largely misunderstood. In this study, we investigated the reproductive barriers between *Solanum chilense*, *Solanum lycopersicum*, and their

hybrids. We characterized these barriers by analyzing pollen tube growth, fruit set, and seed set for crosses between *Solanum chilense*, *Solanum lycopersicum*, and their hybrids. We also examined expression of genes potentially involved in reproductive barriers in the tomato clade. We found several genes potentially involved in reproductive barriers in *Solanum chilense*. These findings provide insights into the genetic and molecular basis of reproductive barriers in tomatoes, paving the way for future use of wild tomato species like *Solanum chilense* for crop improvement.