Use of introgression lines with wild species in the genetic improvement of eggplant

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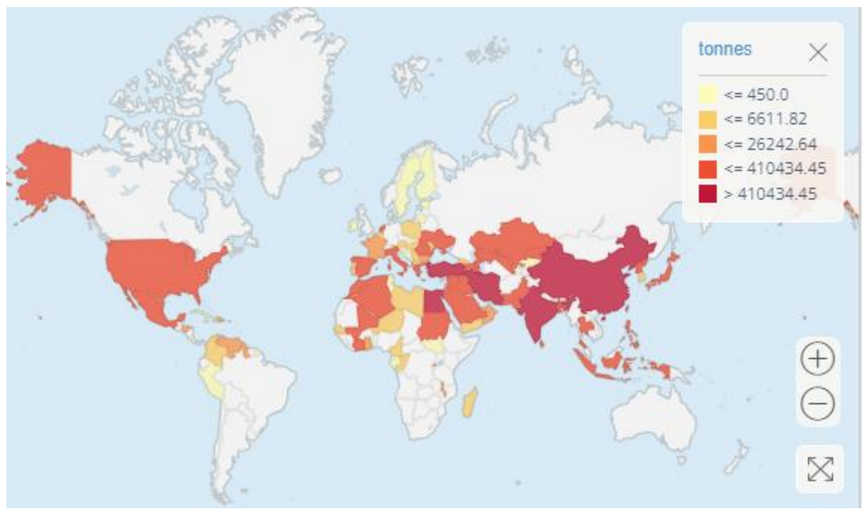
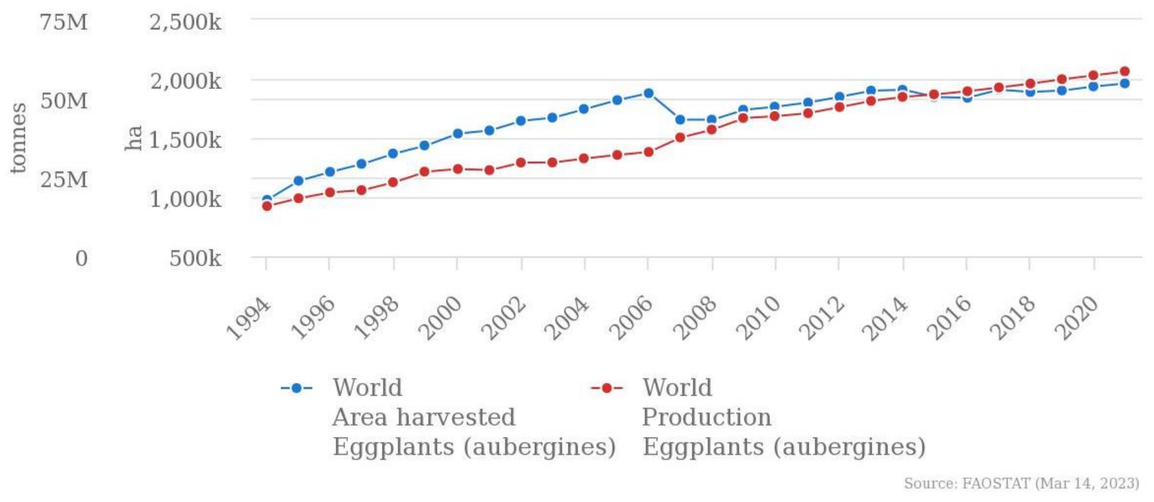
Introduction

Eggplants (Solanum melongena) is one of the most important horticultural crops nationally and worldwide. It is the third most widely grown crop in the Solanaceae, after tomato and potato. It is grown about 1.8 million hectares and with a total production of 58.6 M tons globally in 2021 (FAO 2021). Wild species are highly variable in agronomic and quality characters. For that reason they are brilliant in fighting against abiotic and biotic stresses.

Example of eggplant diversity (Rakha, M. *et al.* 2021).



FAOSTAT 2021. Production quantities of Eggplants by country (1994-2021)



FAOSTAT 2021. Production/Yield quantities of Eggplants in the word (1994-2021)

Objectives

1. Getting introgression lines (ILs)

Crop wild relatives (CWR) are a valuable and largely unexploited genetic resource for breeding. We are developing four new eggplant introgression lines (ILs) using as donor parents CWRs from the primary, Solanum insanum (INS), secondary, S. incanum (INC), and S. dasyphyllum (DAS), and tertiary genepool, S. elaeagnifolium (ELE). Additionally, we are using S. melongena as the other side of donor as commercial specie.

S. insanum

X

S. melongena (MEL5)

S. elaeagnifolium

X

S. melongena (MEL3)

S. dasyphyllum

X

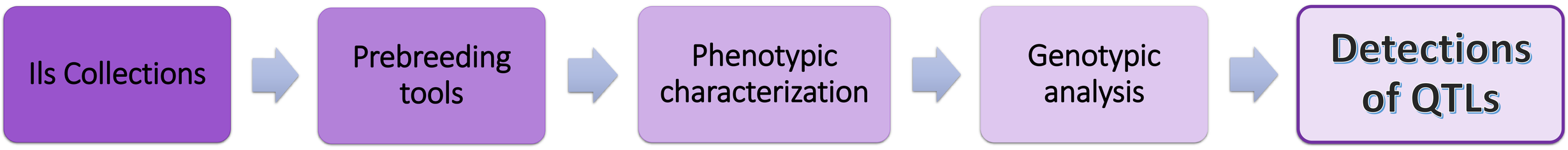
S. melongena (MEL1)

S. incanum (MM557)

X

S. melongena (AN-S-26)

2. Identification of quantitative trait loci (QTL)



References

FAO (2021) FAOSTAT database collections (http://faostat.fao.org/). Food and Agriculture Organization of the United Nations, Rome, Italy. September 2021

Rakha, M., Prohens, J., Taher, D., Wu, T. H., & Solberg, S. Ø. (2021). Eggplant (*Solanum melongena, S. aethiopicum and S. macrocarpon*) breeding. *Advances in Plant Breeding Strategies: Vegetable Crops: Volume 9: Fruits and Young Shoots,* 163-203.