

FINAL PROJECT REPORT

Project Title: Genotype work for pear

PI: Kate Evans
Organization: WSU-TFREC
Telephone: 509 663 8181 x245
Email: kate_evans@wsu.edu
Address: 1100 N. Western Ave
City: Wenatchee
State/Zip: WA 98801

Co-PI(2): Amit Dhingra
Organization: WSU
Telephone: 509 335 3625
Email: adhingra@wsu.edu
Address: Johnson 46
City: Pullman
State/Zip: WA 99164

Cooperators: Richard Bell (USDA-ARS, Kearneysville, WV); Todd Einhorn (OSU); Rachel Elkins (UCD); Stefano Musacchi (WSU); Sara Serra (WSU); Feli Fernández (EMR, UK); Joan Bonany (IRTA, Spain); François Laurens & Marie-Hélène Simard (INRA, France)

Total Project Funding: Year 1: \$25,000

Budget History:

Item	Year 1:
Miscellaneous ¹	\$25,000
Total	\$25,000

¹To import accessions into U.S. and clear quarantine.

OBJECTIVES

- To import new pear rootstocks and pear rootstock selections into the U.S. through the Clean Plant Center for testing.

This project was extended at no additional cost for an extra year due to problems experienced in moving the imported germplasm through quarantine.

SIGNIFICANT FINDINGS

- New potential pear rootstock germplasm was imported into the US from the University of Bologna, Italy.

RESULTS & DISCUSSION

Initial delays in this project were primarily due to the complex issues surrounding the importation of germplasm into the US through quarantine and the negotiation of Material Transfer Agreements (MTA).

Several different international sources of possible new germplasm were identified (EMR UK, INRA France, IRTA Spain and the University of Bologna Italy) and MTAs were drafted and submitted. MTAs were approved by EMR and the University of Bologna but so far no signed MTA from France or Italy has been achieved.

With the appointment of Dr. Stefano Musacchi to WSU and, therefore, the potential for complications with further collaboration with the University of Bologna program, the decision was taken to focus on the Musacchi germplasm within this project. Dr. Musacchi identified eight selections that he considered would have the most value for the PNW as new rootstocks. The population structure analysis (Dhingra PR13-109) was also taken into account to by Dr. Musacchi when selecting the germplasm to ensure a diverse set.

This germplasm has been imported into the US by two different routes, to better ensure its success through the quarantine process. Propagating wood was sent directly to APHIS Beltsville in January 2015 where it will go through the routine testing required for all imported wood (which can take an indefinite amount of time). In addition, further wood was sent to the Clean Plant Center, Prosser in January 2015 where testing will be expedited thus allowing the preliminary release of wood in less than two years if no problems are detected.

The germplasm accessed is described in Table 1.

The contacts with other programs and access to other germplasm are being exploited by the population structure analysis in the Dhingra lab.

Table 1: Pear accessions imported from University of Bologna, Italy.

	cross	Features	nursery at UNIBO grafted with
P2	US309 × Nijisseiki	expanded habit, medium vigor, short internodes, early bloom, many fruit	
P5	Abbé Fétel × California	up-right habit , vigorous, abundant bloom	Abbé Fétel Anjou Lucy Sweet
P6	Passa Crassana × Decana del Comizio	small and compact tree, no fruit	Abbé Fétel Anjou
P7	Passa Crassana × Decana del Comizio	medium vigor, low bloom, some big fruit	
P8	Passa Crassana × Decana del Comizio	small and compact trees, abundant bloom, some fruit	Abbé Fétel Anjou Lucy Sweet
P9	Abbé Fétel × California	expanded habit; but low vigor	
P14	Abbé Fétel × sel.79504074	expanded habit, very compact and small tree, high bloom, medium-big fruit size, green leaf	
P16	Abbé Fétel × sel.79504074	medium low vigor, basitone habit with close shoots, short internodes, abundant bloom, big fruit	

EXECUTIVE SUMMARY

Eight new possible pear rootstock accessions have been imported into the US and are currently in quarantine. The selections were chosen as the most promising by Dr. Stefano Musacchi from the University of Bologna breeding program that he managed prior to his move to WSU.

Once through the quarantine process, we expect that these rootstocks will be established in tissue culture and micropropagated to provide replicate stocks for a full rootstock trial with one or more standard scions. All these rootstocks have previously proved to be suitable for micropropagation; unfortunately we were not able to access this tissue for importation. This is, however, beyond the scope of this project.

Relationships will be maintained with the other breeding programs mentioned with a view to possibly importing more accessions in the future.