

**Annual Report of the USDA National Clonal Germplasm Repository (NCGR), Davis, CA
2019**

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INTRODUCTION

The National Clonal Germplasm Repository (NCGR) at Davis, receives, collects, preserves, evaluates, and distributes genetic resources of Mediterranean fruit and nut crops. These irreplaceable resources are maintained on a long-term basis to support domestic and international research efforts on germplasm enhancement, cultivar development, molecular biology, and other related research. The Repository operates in cooperation with the Plant Sciences, the Viticulture & Enology Departments, and Foundation Plant Services (FPS) at the University of California, Davis.

Permanent/Term Federal Staff at NCGR-Davis

John Preece, Research Leader
Malli Aradhya, Geneticist
Bernie Prins, Horticulturist (*Vitis*)
Carolyn DeBuse, Horticulturist (*Prunus*)
Jenny Smith, Biological Science Technician
Jeff Moersfelder, Nursery Manager
Vacant, Field Manager
Salvador Rivas, Biological Science Technician
Mary Parker, Secretary (Program Support Assistant)
Gloria (Patty) Diaz-Britz, Biological Science Technician (term position)

UC Affiliates – Assistant Specialists

Judy Yang
Franklin Lewis

Graduate Students

Dianne Velasco
Emily Johnson

Personnel Changes

Howard Garrison retired. We await permission to recruit

Service

Distributions of NCGR germplasm are primarily winter collected, dormant cuttings or scionwood; although the NCGR also distributes leaves, summer cuttings, pollen, fruit and other plant parts as requested. Almost no seeds are distributed. Because dormant cuttings are primarily distributed, nearly all orders are shipped in late winter/early spring.

Each item shipped is 3-5 cuttings/item (accession) (Fig. 1). Number of orders and items shipped dropped greatly in 2016 because the NCGR discontinued sending material to the general public. This change has been a benefit to the NCGR and those who receive material. With a manageable

number of orders and items, the Repository can work with and better respond to those who require the genetics in the collection for their research.

Most distributions (93.5%) are to domestic customers (Fig. 2) with number of order items similarly proportioned and about 10 items were sent to each customer. Of those domestic orders, 34% were to individuals, with the remainder shipped to federal and state agencies, colleges and universities, nonprofits, and commercial companies (Fig. 3).

From 6/1/17-6/1/18 there were 11 walnut orders shipped totaling 50 items.

Figure 1. Total orders shipped from 2005 – 2018 (NCGR-Davis). There are 3-5 cuttings/item shipped.

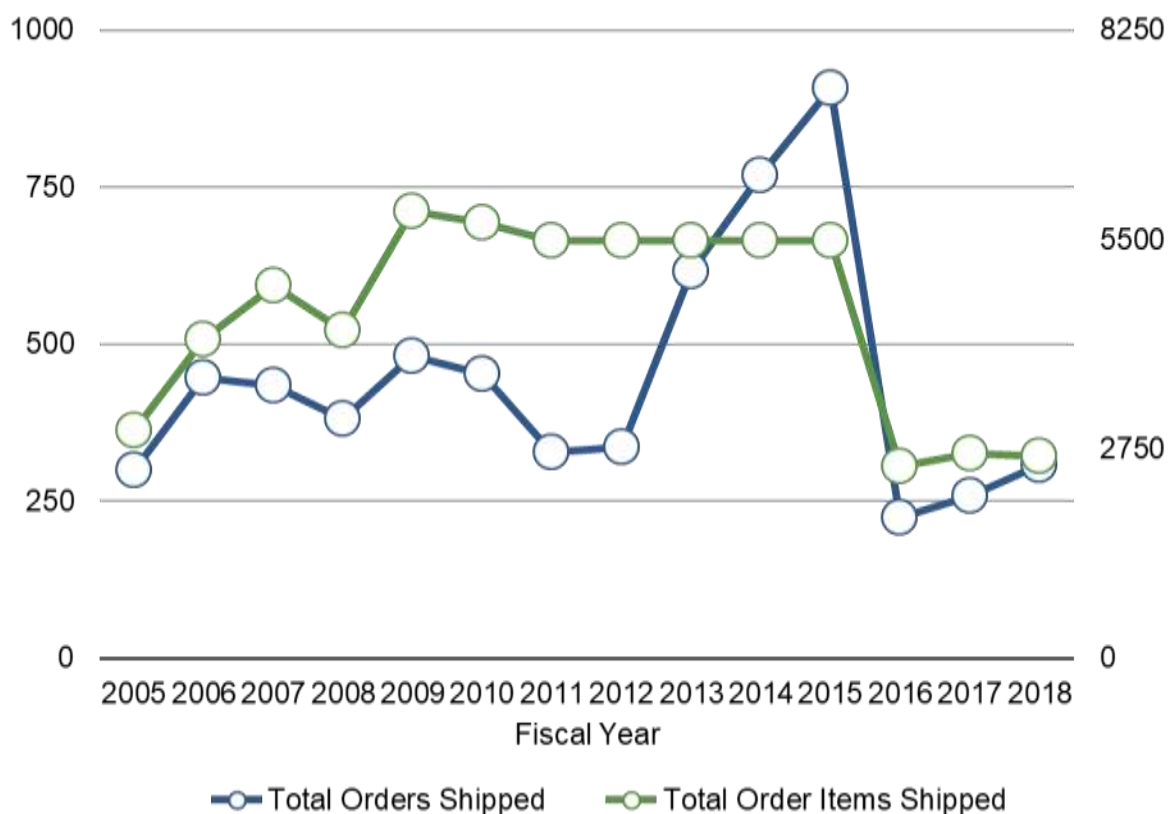


Figure 2. Number of items (cuttings, seed, pollen, etc.) distributed domestically and internationally during 2018.

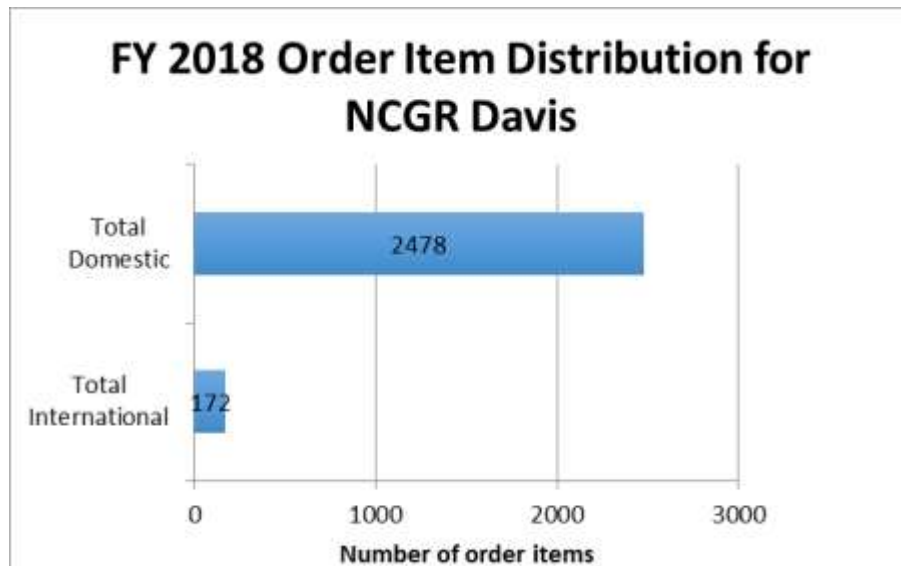
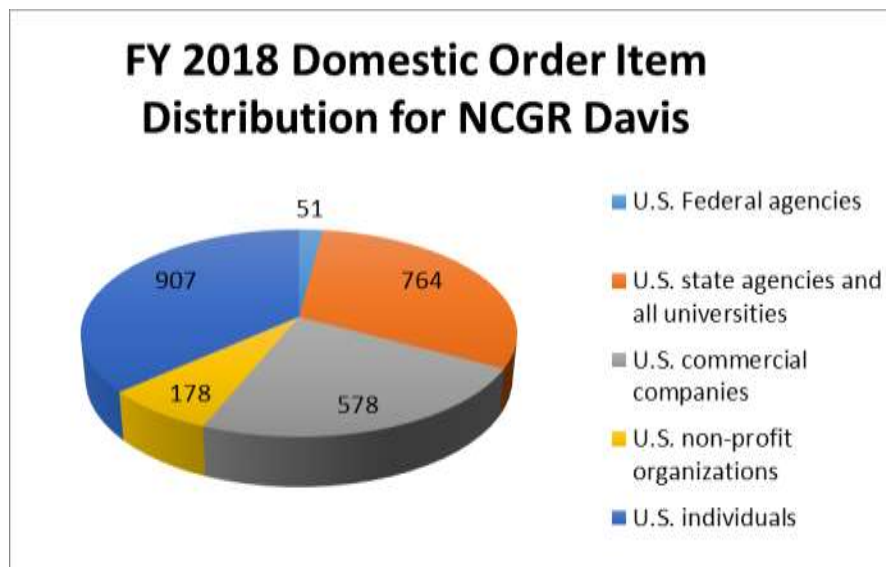


Figure 3. Number of items distributed to domestic customers during 2018.



The NCGR hosted 3 tasting events at Wolfskill. Multiple tours of the NCGR were provided to domestic and international individuals and groups.

Acquisitions

New Acquisitions

Limited land space makes it difficult to add to the collections. However, typically 150 *Prunus* seedlings clear APHIS quarantine annually. These are received and then planted 1 m apart within rows. During the winter of 2018/2019, there was a storm in Beltsville, MD that blew the top off the greenhouse with our *Prunus* crop wild relative seedlings, making retesting necessary. Therefore, no *Prunus* seedlings were received from APHIS this year. We expect to receive 300 trees next year.

Collection maintenance and propagation

Inadequate labor is a challenge for maintenance of the 14 collections. Grant money is helping to maintain the collections. Beginning this year, the staff has tackled one project each Thursday, and progress is being made.

Snow fencing has been installed on the cold hardy *Actinidia* (kiwifruit) to provide shade for plant establishment. This is working very well.

Woody weed removal and suckering has been done on the kiwifruit, part of the walnuts, the plums and the new apricots were skirted to allow for spraying of herbicides. Through a gift, the new figs were suckered and pruned.

Many of the collections are scheduled for hedging in late June and July. The walnuts are the highest priority, followed by the cherries and the nursery areas to the north and south of the cherries (these contain *Prunus* and *Juglans* wild relatives planted in rows on 1 m centers).

The olives, pomegranates and other collections will be hedged as is affordable.

The outlook remains poor for obtaining additional land from the university. There is land available at the USDA-ARS San Joaquin Valley Agricultural Experiment Station at Parlier, across from the Kearney Ag. Center.

Because of an *Armillaria* infestation in the almonds, it has been necessary to repropagate the almond and persimmon collections. Persimmon has resistance to *Armillaria*. Because of lack of land, the collections must be flipped while they still occupy the land. We have one row of persimmons and 2.5 rows of almonds repropagated and planted in their new locations. This effort will continue until the collection locations have switched.

Evaluation and Research

Grants focused on the collections at the NCGR-Davis: California Pistachio Board, \$ 105,695 (genotyping and phenotyping *P. atlantica* x *P. integerrima* UCB1 rootstock, 2019), \$62,093 (Development of New, Reliable, Vigorous, Clonal Rootstocks, 2019), and \$20,697 (Is pistachio Bushy top syndrome a variant that occurred in tissue culture? 2019, California Almond Board, \$200,000 (breeding disease-resistant almond rootstock, 2019), California Pistachio Board, \$100,000 (breeding pistachio rootstock, 2019).

Publications in 2018-19 (NCGR staff bolded)

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