

**CALIFORNIA ANNUAL REPORT TO THE W-6 TECHNICAL COMMITTEE  
FOR DISTRIBUTION YEAR 2006**

by Dan E. Parfitt

June 21, 2007

412 requests for plant introductions from California users were filled by the Regional Plant Introduction Stations in 2006. Figure 1 shows the usage of germplasm in California from the National Plant Germplasm System expressed by the number of requests for California from 1993 to the present. The number of requesters, 282, was smaller than the number of requests indicates, as some requesters made multiple requests. The request level for this year was about average for recent years and a bit greater than last year. Since 1996, there has been a steady increase in the request number.

Collection of germplasm information: The collection methodology was similar to that used last year. I do not have regional research funds to use for mailing, secretarial funds, etc. Therefore, all requests were sent via e-mail. I did not attempt to query those requesters that did not have e-mail (43). Because the number of requesters without e-mail was so few and prior levels of response have been between 5% and 20%, a regular mailing was not done. About 14 % of the e-mail addresses bounced back (either the addresses were no longer valid or the recipients filters blocked them), a higher level than the 8% in 2006. A total of 50 responses were received (21 % of those sent) for the year 2006. However, some of the responders did not provide information, so only 40 reports (17%) are provided below. A number of additional queries may have been lost in spam filters. This is indirectly suggested by reference to Fig. 2, where years in which queries were primarily done by e-mail show a lower level of response. However, the response level this year was one of best in recent years.

The distributed germplasm was used in a wide variety of applications, from basic research to home

Figure 1. Requests for NPGS Germplasm from California

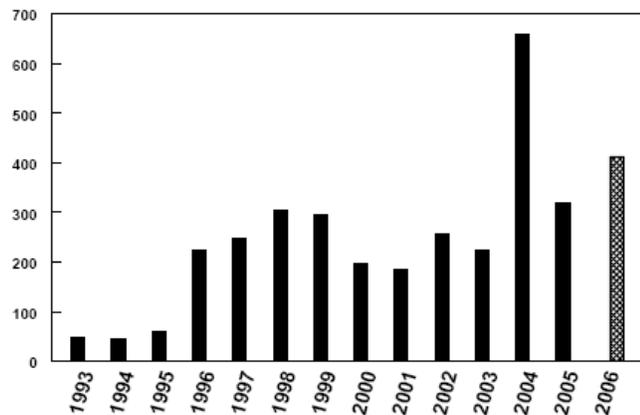
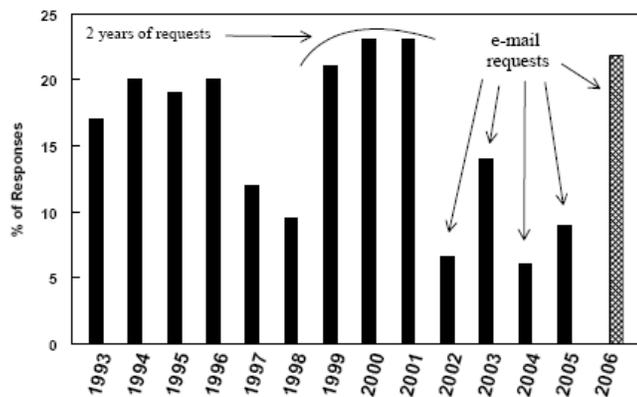


Figure 2: % of Responses



gardening. Quite a few of the respondents were interested in pomegranate, as was the situation two years ago. Much of the use this year appeared to be for commercial breeding or research (University or USDA). A summary of the replies is provided below to show the nature of germplasm use.

The Viticulture Department at UC Davis continues to maintain grape collections for teaching and research. Plant Science fruit and nut germplasm collections continue to be maintained, but there is no formal mechanism for ensuring their continued protection. As noted in last year's report there is no one looking after departmental cherry or apricot collections. Some of the apricot materials have been removed. The Department of Botany and Plant Science at UC Riverside maintains several collections of *Citrus* germplasm for cultivar evaluation and disease related research, as well as collections of avocado, cherimoya, and persimmon. The California Genetic Resource Conservation Program is also located at UC Davis. This unique program, supported by the State of California, supports plant and animal germplasm conservation efforts within California. Information on GRCP may be found at their website at <http://www.grcp.ucdavis.edu/>.

### **Narratives from recipients concerning germplasm observations and the value of NPGS.**

#### **1. Tram Anh:**

#### **papaya**

"I received 1gram papaya seeds. It's name is HCAR, line 237 from Mr. Watterson. I divided it into 2 parts. 1 part was sent to Karina (the Philippines), the other part was sown in Vietnam but the seeds did not germinate Then, I received from Karina HCAR line 356-3. It is vigorous, tolerant to PRSV, rather late (1st harvest about 9.5 months after sowing), fruit setting is medium, fruit is round with pointed end, thick yellow flesh. PRSV tolerance still segregate in plants."

#### **2. Muhammad Arif, UC Davis:**

"I received *Leptochloa fusca* seeds in 2006. This germplasm is being used in salinity experiment. We have not yet got any data or observation on this plant. The information will be submitted whenever we will get any."

#### **3. Richard Aston, Oak Creek Orchard (AZ?)**

#### **pomegranate**

"The USDA/ARS has been very helpful to us, in providing genetic material that we could not get anywhere else. The ARS had a lot of pomegranate germplasm from central Asia that was very helpful in our test program to determine the best variety for our area. The original plant research station in central Asia where these cultivars came from is not accessible now so the ARS was the only source for them. The cultivars that were available commercially in this country just did not adapt well here. Because of the germplasm from Davis ARA we now have several varieties that do well here. Thank You."

#### **4. Barbara Baer, Forestville:**

#### **pomegranate**

She received 7 cuttings. They all rooted. Prepared an article for Fruit Gardener.

#### **5. Terry Berke, Woodland:**

#### **pepper**

"The *Capsicum chinense* material is part of a study I conducted in collaboration with Bob Jarret, USDA PI curator in Griffin, Georgia, we will publish at least 2 articles based on this work. The other materials were screened for geminivirus resistance in Guatemala, nothing of interest was noted."

#### **6. Jos van Boxtel, Davis:**

#### **rice**

"Arcadia Biosciences develops plants that have a beneficial effect on the environment and human

health. On one hand, plants are being prepared to better resist and improve mankind-induced environmental stresses, such as drought stress and salinity stress. On the other hand, plants we develop are able to reduce the negative human impact on the environment, specifically water pollution through inefficient fertilizer use, through improved Nitrogen Use Efficiency.

Through several years of thorough testing in model field crops (canola and Japonica type rice), we have been able to prove the soundness of our technology. One important crop for Asian agriculture, Indica type rice, has recently been included in our efforts to successfully apply our above mentioned goals.

Research work is in the early stages and publications have not yet been produced.”

**7. Laura Brainin-Rodriguez, San Francisco: pomegranates**

“I did get germplasm for two different pomegranates in 2004 (Wonderful and a smaller more purple one, sorry, I am at work and do not have my records) and then three different kinds two years later, in 2006, including Wonderful.

I cut the germplasm in half and put these in potting soil, kept moist and in the first year, but they failed to germinate at all.

The second year the buds swelled, but they failed to root significantly enough to be able to be transplanted.

It was disappointing, but not sure what else I could have done.

**8. Tom Burchell, Oakdale: 2 peaches**

“It looks as if we did not receive any material from the repository this last year. I did not and I checked with John Slaughter at our breeding program and he did not as well. I will let you know in the future if we do receive any wood. Keep sending us your yearly request as a reminder to get the info.”

**9. Julie Burke, Los Angeles: pepper, tomato**

“Hello and thank you for this reminder. I've sent updates in the past but have been considering setting up a site specifically to identify and report trials. Would that be helpful to you and may I ask if you've considered opening a SharePoint site for those who actively trial various varieties?”

**10. Leslie Ceran, Kelseyville: tomato**

“I am a Certified Master Gardener for Lake County, CA through UC Davis. I was unable to grow my 2006 germplasm last year due to irrigation problems. However I am having a very good growing season this year so far, and the 2006 germplasm plants are doing wonderful. I had 100% germination of the seeds given me.

I don't have the PI number handy, but it was tomato seed from Brazil. I am keeping complete records about growing habits and fruit, and will take digital photos, too, if you can use them. There is some question as to fruit color, as the initial official description says the fruit is yellow, but the record later says it's red. So we'll find out, I guess, as soon as the fruit ripens.

I am using these plants in a breeding project long-term, I'm an amateur tomato breeder (saladette and fresh-eating), and short-term I plan on increasing and offering this seed to the public through the Seed Savers Exchange in 2008 under the name of "Brazilian Wonder", and locally through the Master Gardeners program, and on the Internet via my Leslie's Seeds seed website, [www.saladette.com](http://www.saladette.com). The plants are vigorous and performing very well in No. California conditions. Beautiful, distinctive leaves, and the flowers are, too. The plants are fully loaded with baby tomatoes.

**11. Mark Chips, Gilroy:**

**strawberry**

“Yes, I have received in 2006 1 *Fragaria x ananassa*. Over wintered with good success in an unheated greenhouse and is currently field planted for propagation. I had despaired about ever obtaining this cultivar. The Germ plasm repository has been the answer of last resort for many I'm sure and I believe that it is worth almost anything to keep it fully functional. I would make a donation to the cause if I knew where to send the check. Thank you.”

**12. Jorge Dubcovsky, UC Davis:**

**wheat**

“As in previous years we have used several accessions from the National Plant Germplasm System in our genetic studies of flowering and grain nutritional value in wheat and barley (particularly from the National Small Grain Collection). The important contribution of the germplasm from the National Small Grain Collection to our studies is present in the acknowledgment sections in our recent PNAS paper that was selected for the cover of the December 2006 issue and in a 2006 publication in Science (see references below).

We could have not done this important work without the materials provided by the National Small Grain Collection.”

**13. Ken Foster, Woodland:**

**rice**

From 2006: June 30, 2006

“Report on Use of NPGS Accessions in Rice Breeding.

We work on the development of specialty rice varieties. Some are for use as brown rice, some for use as milled rice. The NPGS collection provides a very useful "toolbox" or "pantry" from which to draw resources to try out various ideas that we have. Some of the accessions we have used were totally unknown to us before searching the database. For these there is no other way we could have found them. For types we knew about, the NPGS saved us the 1.5-2 years bringing lines through quarantine would have required.

One important point is that the value of accessions may be dependent on technology available for using them. As I point out below, technology such as DNA markers has allowed us to make much better use of certain accessions and their interesting traits.

1. Mediterranean Rice Types. We have requested and used numerous accessions of Mediterranean type rices, such as Arborio, that are used for making risotto and paella. These have larger kernels than standard US varieties and are longer and/or plumper than standard US varieties. Their requirements for kernel chalkiness and cooking type are also unique. These unique characteristics are not available in standard US varietal types or in breeding programs. Two varieties from this component of our program are in commercial production.

2. "Heirloom" Rices. We apply this term to uncommon rices used as brown rice in natural and organic foods. These types of rices represent small-volume specialty brown rices from around the world. We have used accessions with red pericarp, black pericarp, aromatic grains, very unusual miniature grains, and combinations of the above. For use in the US; they can attract ethnic consumers, but also have application in natural food blends where they provide variety, novelty, and interest. Three varieties from this component of our program are in commercial production.

3. Semidwarfs. We have obtained numerous accessions possessing semi dwarfing genes. Semi dwarfing genes have played a major role in the improvement of rice in the last 30 years. Virtually all

modern US rice varieties, and most around the world, rely on sd1 semi dwarfing. It performs very well. But, there are many other genes controlling plant height of rice via the gibberellin pathway. USDA rice scientists have produced at least 10 productive semi dwarf lines of rice that are not sd1. They may be useful in combination with, or in lieu of sd1. We have obtained these lines through NPGS.

The ability to characterize, test, and utilize these semi dwarf accessions has been greatly enhanced in recent years by the development of DNA markers to follow specific genes. In this way we can separate two progenies that may be the same height but that possess different semi dwarfing genes. We are applying this technique in our program.

4. Disease Resistance. Rice blast is a rice disease of worldwide importance. There are multiple races of the disease and multiple genes for resistance. Screening is arduous and requires skilled pathologists. Also one cannot readily work with blast races that are not present in the local area, for fear of releasing them into the local environment. We have markets for rice varieties with blast resistance, but prior to 2004 had no practical way of working on this objective. Furthermore, incorporating more than one (pyramiding) blast gene into a line was very difficult.

USDA scientists have developed DNA markers for numerous useful blast genes. We have acquired several varieties that have been characterized for their resistance and associated markers. By use of these markers, we can now incorporate blast resistance reliably without dealing with the disease. Of course, the developed lines will have to be ultimately confirmed in blast-infested environments, but much will have been accomplished prior to that final step.

5. Physico-chemical characteristics. We have markets for long grain varieties of rice with non-traditional quality. The traits include lower-amylose softer cooked rice, and higher amylose, firm cooked rice resistant to severe processing conditions. These traits represent important specialty markets for long grain rice. The relevant quality traits have been known for some time, but their use has been hampered by necessity of doing chemical tests, laborious cooking tests and requirements for large amounts of grain for doing the cooking tests. This required that several generations of selection would be invested in a breeding line before it could be tested.

USDA scientists have developed DNA markers for the quality traits. By use of these markers, quality evaluations can be carried out much earlier in the breeding cycle, with much less material and labor requirements.

6. Recently released competitive varieties. For some of our milled rice breeding objectives, released varieties from the many US breeding programs are useful. We have obtained numerous long grain accessions and a few medium grain accessions from the southern US and California and have crossed them with our elite lines to look for favorable recombinants.”

**14. Judah Grossman, UC Davis:**

**barley**

“The barley accessions I received from the NPGS are excellent. Very well organized, clearly labeled, and high germination rates. I am currently processing the plants from my experiment (root plasticity in barley) and hope to analyze & write up the results this summer. The NPGS alone made it possible for me to conduct this experiment with such a wide range of barley accessions (wild, old landrace, and modern cultivars).”

**15. Sam Hazen, Scripps Institutue, San Diego**

**Brachypodium**

“I wish to emphasize the importance of the NPGS in establishing Brachypodium distachyon as a model species and a valuable comparative genomic tool for temperate cereals. Of the 51 accessions currently under study in numerous laboratories, records indicate 27 originated from the USDA collection. The DOE-JGI is currently sequencing the entire genome of Brachypodium distachyon and the reference

strain is derived from PI 254867. We will be sure to emphasize the source of the material when the genome sequence paper is published. I have attached an article that you may find useful for your records describing the use of several *Brachypodium* accession from NPGS. Please include me on future mailings. I hope to contribute more information as I collect it.”

**16. Peter van Hest , Oceano:**

**potato**

“...as a private company, does not publish trial results. We do appreciate the availability genetic material to us, and gladly supply you with a summary of the results as it relates to the germplasm received in 2006. During 2006 \_requested and received 53 potato clones and 26 clones from 3 TPS lines from NRSP-6. The material was grown out and evaluated in our breeding program, and six clones were selected and retained for further evaluation in 2007. In addition 4 clones were kept to be used as control varieties in cooking evaluations and 2007 field trials. New clones have been requested for 2007, and having these available is very valuable to our program.”

“May 15, 2007

To Whom It May Concern:

Since the early 2000's ... has received "Irish" potato species (*Solanum tuberosum* L) in both true seed as well as clonal form.

The materials received were grown out to be evaluated for their worth in our breeding program. I am unable to go into details what exactly we look for or what our approaches are. A separate letter has some details on the numbers we receive and their usefulness ....

However, the value of the services provided by the National Germplasm Bank, in this case the US Potato Genebank of Sturgeon Bay, Wisconsin, has become increasingly important. That is mostly due to the fact that during the past 10 years or so the practice of sharing germplasm among public breeding stations has just about disappeared.

In addition, the ability for us to find species of interest within the country makes this method of acquiring new germplasm a very low-risk to the industry, and it will make us find new and exciting cultivars that benefit growers as well as end consumers sooner rather than later.”

**17. Ryan Jacobson, San Diego:**

**various**

“ I received the following germplasm from the National Plant Germplasm System in 2005.

1 *Eriogonum fasciculatum*, 2 *Hibiscus sabdariffa*

The *Eriogonum fasciculatum* was to be used as a host for *Cuscuta* spp. (Dodder). It served its purpose well, being a natural host for dodder. The dodder was being used as a method of transmitting a phytoplasma to induce free-branching in poinsettia seedlings.

At the completion or termination (if it is not completed) of the experiment, the remaining *Eriogonum fasciculatum* plants will be planted out as landscape shrubs. They will be planted in inland San Diego county and grown on little to no supplemental water as part of a residential xeriscaping project.

The *Hibiscus sabdariffa* was to be used for production of the calyces for home use. 5 seeds of each variety (Kalasin Green Stem and Thai Red) were planted. 90% of the seeds germinated. The plants

were grown on in gallon pots and then one of the Thai Red plants was cut and the cuttings propagated in sand with intermittent mist.

The mother plants were then transferred to 3 gallon pots and grown in partial shade. The plants of both varieties attained heights between 6 and 10 feet, but growth was sparse due to low light levels. The plants did not flower until late 2005-early 2006, which I believe was due to exposure to light at night. Flowering was very sparse and the plants were discarded in January or February of 2006. I plan to repeat the experiment.

Thank you for the germplasm.

**18. Samuel and Eva Jason, Pacific Palisades: pomegranates**

“We received 30 pomegranate whips in December- January 2006. We have been able to propagate 19 of them, including 8 varieties. We were unable to grow two varieties.

The plants are presently still in pots, and doing very well. A few have flower, but the flowers have fallen off. We have no set plans to plant them in the ground. We live about a 7/8ths of a mile from the

Pacific Ocean at an altitude of about 245 feet.

We, is myself and my daughter Eva, who is 11 years old and an avid gardener.

We have given away one specimen to a friend who lives in Berkeley, California., but the squirrels ate it up.

We are beginning a program of distributing (setting up adoption) of one of each of the plants that we have triplicate of. We are interviewing friends to see who will take care of the plants and have some basic gardening skills. We plan to distribute 4 plants, but hope to keep information about the plants even if they are adopted.

We attempted to graft a whip from our HAKU BOTAN (DPUN0007) to our own pomegranate tree that we planted in the backyard about 10 years ago, but due to inexperience the graft did not take.

We especially want to commend Jeff Moersfelder of Davis. He was essential in helping us obtain the exemplars, providing us with growing tips, and most of all hosting a visit to your site.

I was able to take off a few hours last summer and drove up to Davis and was able to walk through the fields of pomegranate trees and see the various plants. I was able to see the great work of the station, and meet some of the dedicated scientists. I am hopeful to take my daughter to visit this summer, so she can get some first hand experience seeing this national treasure trove of the diversity of living plants. She is very interested in science and this is a great opportunity to see real science and scientists at work.

Whenever people come to our house, we take them on a tour of our mini-orchard of bio-diversity. We explain to them about the work done at Davis and how we were able to obtain these plants.

Of course, Eva and I are anxiously awaiting our first harvest of juice from these trees, but we have the patience to wait. We also hope to obtain a few more whips of the species recommended by Jeff.

We thank you for giving us the opportunity to provide you with this feedback. If you have any questions, or would like photos please drop us a line.

**19. Maria Jenderek, USDA-ARS Parlier (now Ft. Collins): Parthenium argentatum**

“The *O. humifusa* was sent to Parlier for maintenance and possible incorporation as a Parlier priority taxon (if the species is able to grow there).”

**20. Richard Jeske, Willits:**

Mr. Jeske sends these comments:

5/20/2007

Dear Sir,

I am writing in support of the services that are available from the Germplasm Repositories.

I am interested in growing table grapes. After I exhausted all of the commercial outlets for purchasing table grapes I found out that I could get cuttings from the Germplasm Repositories. I have utilized this wonderful service for the past few years. I even had a tour of the grapes at Wolfskill last year, which I found to be very valuable.

I live in Willits, which is in Mendocino County in California. There is a growing movement towards economic localization that is very strong in our area. I am growing as many kinds of grapes that I can fit on my little piece of property and assessing which ones do well here. I now have about 160 varieties, I would guess that about half of those came from Davis or Geneva. Besides sharing my findings amongst friends and local fruit enthusiasts, I've written articles for North American Fruit Explorers (NAFEX) and the California Rare Fruit Growers Association.

Maintaining a diverse gene pool of food plants is extremely important. I sincerely hope that you will be able to continue your wonderful service at current levels or more in the future.

Please feel free to contact me if I can be of any further assistance.

Richard Jeske  
PO Box 1015  
Willits, CA 95490  
Easthill@saber.net

**21. Shachar Karniel, Edison CA:**

**Vitis sp.**

"I think that there is a mistake, as for the best of my knowledge, I never got these materials as describe below. In case you positively sure about my name on the list, please send more details.

For any further assistance don't hesitate to contact me.

Best regards" (*Mr. Karniel received cuttings of 10 Vitis species.*)

**22. Mark Massoudi, San Juan Bautista:**

" Thanks for your email. Ag Biotech is a plant molecular testing laboratory. We do not use the PI's for any breeding purposes. We only use their extracted DNA for their known genetic traits such as disease resistance and such."

**23. Eric Mercure, Bakersfield**

**pomegranate**

"... I do want to say that the service that NCGR provides for budwood acquisition has been excellent. I usually order more than the standard amount given out, and I can usually receive that amount. In addition, I get it in very good condition, it arrives at the time that they say it will arrive, and the budwood sticks are of uniform high quality in that all budwood sticks appear to be able to root equally well.

However, relating my poor rooting of cuttings with poor cultural conditions of the germplasm was a wrong and inexcusable attack since I hadn't found out if NCGR employees also had poor rooting problems, which they did not. For example, for DPUN109, Jeff Moersfelder's cuttings had a 73% take, while I had a 35% take, from cuttings taken from the same plants grown at the same location. Apparently, the appearance of trees with more yellow leaves and/or more defoliation in October 2006 vs what I saw in October 2005 had no relation with rootability of cuttings. More likely, as I acknowledged to Ed, is that their rooting propagation beds and conditions are far better than what I have been using down in Bakersfield. I believe this is true based on the propagation areas I saw at the repository. ..."

**24. Jeff Mills, Woodland:**

**pomegranate**

"The Punica material I received from NPGS is currently rooting. It will be several years before it flowers or fruits. I will make observations and provide feedback in future years"

**25. Beiquan Mou, USDA-ARS Salinas:**

**spinach**

"We used the spinach germplasm from USDA to screen for resistance to leafminers (*Liriomyza langei*) and leafspot disease (*Stemphylium botryosum*). We have found sources of resistance from the germplasm collection and are summarizing the results in manuscripts. We also used the germplasm in our spinach breeding work, and have released two leafminer-resistant breeding lines (03-04-9 and 03-04-63) that have been distributed to seed companies in the US and Europe. A article "Leafminer-resistant spinach germplasm 03-04-9" will be published in HortScience soon (in press)."

**26. Mike Nadel, Los Angeles:**

**pepper, maize**

"The capsicum accessions were replacements for accessions we had evaluated in the past, but wished to look at again. These were lines in which we no longer had viable seed in our storage facility.

We are screening the maize lines for a new maize breeding program which we started late last year. The first nursery was severely damaged by unusually cold weather at our facility in Mexico. Therefore, we don't have much useful data as yet."

**27. Phil Naumann :**

**Prunus, Vasconella**

"I received *Prunus serotina*-capulin and *Vasconella goudotiana* for 2006. The *Prunus serotina* grafts did not survive, at some point the grafts were broken off by birds or rodents. I'm happy to reply about the *Vasconella goudotiana*. With the very cold frost that we had, and temps down to 25F for a few days, this *Vasconella* species had 100% survival; compared to the other *Vasconella*. I used mini-drippers for frost protection and nothing died with the protection. What died, was from root rot from the use of the water, for frost protection. I will be using *Vasconella goudotiana* for rootstock to graft tropical papaya (Waimanalo,ect.) to survive our cold wet winters. Sincerely, Phil Naumann P.S. For us farmers trying something new, thanks for access to your germplasm.

**28. Dan Parfitt, UC Davis:**

**Opuntia, lychee**

The *Opuntia* was rooted and is growing slowly. The lychee/longan germplasm was received as leaves from the NPGS Hilo site in 2005. This material was used for DNA isolation. A phylogenetic analysis was conducted using SSRs and ISSRs. The results have been analyzed and are being prepared for publication.

**29. Jon Reich, Woodland:**

**grasses**

“The attached file was sent to Melanie Newman and LeAnn Chalkley at the SE Regional Plant Introduction Station for the Rhodesgrass accessions we received. The Rhodesgrass (*Chloris Guyana*) accessions we evaluated in 2005 were phenotypically quite diverse, whereas the teff (*Eragrostis teff*) accessions were much more uniform phenotypically with the greatest variation being for flowering date. We consider these materials to be quite useful in our program to develop cultivars in new crops/species. Time will tell to what extent they contribute materially to the commercialization of a new cultivar.” (No file).

**30. Clive Richardson, Santa Barbara: marigold**

“The *Tagetes* seed we received was sown and grown out to see if any of these older varieties had any traits that would be useful in our Hybrid Marigold breeding program.”

**31. Adib Rowhani, UC Davis - Foundation Plant Materials: Vitis**

“I have been using the material listed in your e-mail in 2006. I am in the process of developing real time RT-PCR for the detection of number of viruses in grapevine, and in order to develop a more reliable test that could detect different isolates of a virus from different parts of the world I needed to have access to the material and I found that the material in the germplasm collection are useful sources and we could find number of different viruses in them. I very much appreciate the curator and other crew members of the facility to giving me the permit to access these material.”

**32. Raymond Sheehy: barley, tree fruits**

“The following *Hordeum* seeds were planted and used in a barley breeding program.

The repository system in my opinion is extremely valuable to researchers, breeders and others now and will be increasingly useful in the future. - The following germplasm was obtained for five of the Northern California Chapters of the California Rare Fruit Growers annual scion exchanges where we provide the public with the opportunity to obtain scions and teach them to graft.” (fig, pomegranate, mulberry, grape, persimmon).

**33. Anna Sherwood, UC Davis: Lolium species**

“The material the Jasieniuk Lab received from the National Germplasm System has been used as part of our study to qualify the diversity within the genus *Lolium*. We are using the material to both visualize morphological characters that distinguish the different species of *Lolium*, and to measure the genetic distance between and within species of *Lolium*. While our study will require more extensive sampling, having access to the *Lolium* stored in the NGS expedited our study. We have been able to conduct preliminary work on *Lolium*, and gain a greater understanding of patterns of diversity within and between the different species of *Lolium*. Using molecular markers, we were unable to differentiate between *L. multiflorum* and *L. rigidum*. Since *L. multiflorum* and *L. rigidum* freely cross, and we know now that there our molecular data does not support dividing these groups, we have altered our perception of these species designations. This information was helpful for our current field season. Without access to these materials, we would be fruitlessly attempting to separate our current field samples into *L. multiflorum* and *L. rigidum*. In addition, these preliminary data have provided us with new ideas to research.”

**34. Michael Striem, Bakersfield: Vitis**

Dr. Striem notes: “The material received has been, and still is used for research and breeding.

Thank you for your dedicated service.” He also noted that accession DVIT0358 ‘Black Kishmish’ was not black or seedless (as per description?). This is probably misidentified.

**35. Diana Swisher, Scotts Valley:**

“The American Herbal Pharmacopoeia (A.P.) has used the NPGS germplasm for Identification purposes using macroscopy, microscopy, qualitative and quantitative analysis for the development of the A.P. medicinal botanical monographs setting quality control, analytical standards and therapeutic reporting for the medicinal herbal industry. Health practitioners, herbal product manufacturers, and herbal medicine regulatory agencies from all over the world including the FDA, use the A.P. monographs definitive data. The A.P. monographs are the most comprehensive work in the English language. Not only are the germplasm used for monograph research, but also specifically for Microscopy, Macroscopy and Analytical Methods Atlas and Texts that are being developed by the A.P.

The A.P. receives NPGS germplasm promptly, in excellent condition, and with organized, professional paper work. Being a non-profit 501 ©) (3) organization the A.P. deeply appreciates the NPGS ability to send material gratis which would otherwise be cost prohibitive via private sources. We are very thankful for NPGS. “

**36. Ryutaro Tao, Kyoto University, Japan**

**Prunus sp.**

“One of our graduate students, Tomoya Esumi, received below listed germplasm last year. We utilized the sample for the study on the evolution of self- incompatibility in Prunus.

We have isolated the genomic DNA from the lyophilized leaves and used the DNA to survey S haplotype diversity studies by the S-RNase-gene-specific PCR primer set for Prunus. We are currently analyzing the data and doing further investigation and therefore, we have yet to publish the data anywhere.

I hope this information is satisfactory to your proposing funds to the government.”

**37. Jon Verdick**

**fig**

“Most of the varieties received in 2006 were successfully rooted. Some are already in ground, and most of the others will be planted out soon. There is not a lot to report, as of yet, but many will probably fruit this season. My goal was to grow these plants up, and fruit them, so that there can be a fuller record of them, including pictures and observations of taste, etc. All pictures and information currently available are posted at <http://figs4fun.com> and their availability for use by NPGS/USDA/U C Davis has been communicated to Mr. Ed Stover.

I am anticipating the fruiting of most of these varieties this season, and the subsequent incorporation of photos and observations later this season.

I certainly appreciate the opportunity to investigate and study these many varieties, and expect to add some things to the USDA collection at the beginning of next season, as well.”

**38. Erik Wilkins**

**lettuce**

“We expect to commence study of these lines in late2007 or 2008. As a private seed company we are

unable to release information that can be traced via publication. As PVP or utility patents are issued that may reflect use of these genetic sources we will be happy to report these to the NPGS for the W-6 research summary.

**39. Irene Wibawa, USDA-ARS Albany**

**Chenopodium sp.**

“We received *Chenopodium fremontii* in good condition. I was able to grow them, but with low germination rate just from direct sow in the greenhouse in July. We tested these plants as part of our host-range testing for potential biological control agents for *Salsola*. Our quarantine greenhouse experiment results (unpublished) indicate that our biological control agent are unable to reproduce on this species. Without these seeds, we would not be able to ensure the safety and efficacy of these potential agents. If more information is needed, please let me know. “

**40. Xingping Zhang, Woodland**

**watermelon**

“Our goal was to look for resistances to mites, leaf miner, powdery mildew and potyvirus from the Watermelon PIs. We did not find resistance to mites, leaf miner nor potyvirus in our test in CA but we found good resistance to powdery mildew (in CA) and maybe resistance to *Tospovirus* (WSMV) in Thailand. The resistance to PM and the *Tospovirus* is being further evaluated and confirmed.”

**Publications:**

Yan, L., D. Fu, C. Li, A. Blechl, G. Tranquilli, M. Bonafede, A. Sanchez, M. Valarik, and J. Dubcovsky. 2006. The wheat and barley vernalization gene *VRN3* is an orthologue of *FT*. *Proc. Natl. Acad. Sci. U.S.A.* 103: 19581-19586.

Uauy C., A. Distelfeld, T. Fahima, A. Blechl, J. Dubcovsky. 2006. A NAC gene regulating senescence improves grain protein, zinc and iron content in wheat. *Science* 314:1298-1300.

John P. Vogel, David F. Garvin, Oymon M. Leong & Daniel M. Hayden. 2006. *Agrobacterium*-mediated transformation and inbred line development in the model grass *Brachypodium distachyon*. *Plant Cell, Tissue and Organ Culture* DOI 10.1007/s11240-005-9023-9.

Parfitt, Dan.E., Joseph Maranto C. Kallsen, 2006. Female pistachio tree named ‘Golden Hills’. United States Plant Patent US PP 17,158. Oct. 17, 2006.

## **Appendix 1: Report from the California Genetic Resources Conservation Program**

2006 Report: The University of California Genetic Resources Conservation Program (GRCP), with office on the Davis campus, continued to support plant germplasm collections and activities. A systemwide budget reduction in the 2003-04 fiscal year was continued in the current year, again limiting the GRCP small grants program in aid of imperiled California genetic resources collections. Twenty-four awards were made in the 2005-06 fiscal year and eight of these involved plant germplasm. Of these eight, five were on the Davis campus, one was on the Riverside campus, one was on the Santa Barbara campus, and one was with the Santa Barbara Botanical Garden.

GRCP continues to manage a small USDA fund for research in support of the germplasm holdings of the National Clonal Repository for Fruit and Nut Crops at Davis. In this fiscal year four awards, averaging \$9,875, were made for four projects beginning June 1, 2006 on the Repository crops almond, grape, olive, and pistachio,

GRCP serves as managing office for a National Science Foundation-funded plant genomics research project involving a consortium of researchers (eight investigators at the University of California, three at other universities, and two at the USDA-ARS-WRRC in Albany CA. It is a three-year project and is in its final year. Its objective is the determination of the extent of haplotype variation in hexaploid wheat for production of single nucleotide polymorphisms for use as markers. As part of its management office activity for this project, GRCP organized a 2006 undergraduate student internship program, recruiting to date 10 interns from around the country who will work for varying periods in seven of the consortium labs.

GRCP continues to seek support for the maintenance and distribution of genomic resources for agricultural crops. Unfortunately, a GRCP proposal to the USDA National Research Initiative's Plant Genome Program that would have supported a UC Davis Genomic Resources Service Repository, with an initial focus on wheat, beans, conifers, and rice, was not funded. The project's novel feature was that it would have included the provision of screening for users of genomic resources of large genome species, a much more efficient and cost-effective strategy to make these resources more widely available than the usual practice of replicating and distributing the resources themselves.

2007 Report: The University of California Genetic Resources Conservation Program (GRCP), with office on the Davis campus, continued to support plant germplasm collections and activities. A systemwide budget reduction in the 2003-04 fiscal year was continued in the current year, again limiting the GRCP small grants program in aid of imperiled California genetic resources collections. Twenty-eight awards were made in the 2006-07 fiscal year and 10 of these involved plant germplasm. Of these 10, six were on the Davis campus, one was on the Riverside campus, one was on the Santa Barbara campus, one was with the Santa Barbara Botanical Garden, and one was with the USDA Forest Service.

GRCP continues to manage a small USDA fund for research in support of the germplasm holdings of the National Clonal Repository for Fruit and Nut Crops at Davis. In this fiscal year four projects on the Repository crops almond, grape, olive, and pistachio, awarded last fiscal year, were underway.

GRCP serves as managing office for a National Science Foundation (NSF)-funded plant genomics research project involving a consortium of researchers (eight investigators at the University of

California, three at other universities, and two at the USDA-ARS-WRRC in Albany CA). It was extended to a four-year project and is in its final year. Its objective is the determination of the extent of haplotype variation in hexaploid wheat for production of single nucleotide polymorphisms for use as markers. As part of its management office activity for this project, GRCP organized undergraduate student internships, recruiting to date 46 interns from around the country who will have served for varying periods in the consortium labs.

GRCP continues to seek support for the characterization, utilization, maintenance, and distribution of genomic resources for agricultural crops. GRCP staff collaborated in a successful proposal to the Department of Energy Joint Genome Institute to generate ESTs for Pine and other conifers. The sequencing will get underway in the coming year and the GRCP involvement is to contribute genotypes of the commercial forest tree species coast redwood (*Sequoia sempervirens*). Unfortunately, another GRCP proposal in this fiscal year was not funded. This one was to the NSF's Plant Genome Research Program and would have supported a US-Canadian collaborative project to create and fingerprint a collection of relevant wheat breeding lines for single nucleotide polymorphisms (SNPs) identified in the NSF project described in the previous paragraph. The project's novel features were the participatory aspect of involving the breeders (some 70 in the US and Canada) in the identification of the germplasm and the use of the cutting edge SNP markers and high-throughput technology.