

**State of Oregon Annual Report for Calendar Year 2005**  
**W-6 Technical Committee**

**Compiled by Shawn A. Mehlenbacher**

Oregonians continue to use the PI system extensively. Users include state and federal researchers as well as private seed companies and private individuals.

**Progress Reports:**

**1. James Myers**, Dept. of Horticulture, Oregon State University, Corvallis, OR 97331

Jim Myers and M.S. student Erron Haggard are working toward the introgression of resistance to white mold (*Sclerotinia sclerotiorum*) from the runner bean (*Phaseolus coccineus*) into the common bean (*P. vulgaris*). Examination of two lines from our collection of white mold resistant *Phaseolus*, Herbert Lamprecht's interspecific hybrids L192 and MO162, caused us to turn our attention to the accessions PI 527828 – PI 527873 as possible sources of resistance derived from *P. coccineus* and already incorporated into a *P. vulgaris* background. In 2005, we tested these 46 accessions for resistance to white mold in greenhouse straw tests (Table 1). Our results indicate the presence of partial resistance in several lines comparable to the resistant check G122, with one line (PI 527832) significantly more resistant.

**2. Shawn Mehlenbacher**, Dept. of Horticulture, Oregon State University, Corvallis, OR 97331

Hazelnut germplasm is evaluated for reaction to the eastern filbert blight pathogen, *Anisogramma anomala*. Incompatibility alleles are identified by fluorescence microscopy.

Notes taken in December, 2004 showed that one cultivar from Kharkiv, Ukraine ('**Lozovskoi Sharovidnii**') and two cultivars from Cacak, Serbia ('**Uebov**' and '**Crvenje 3/96**') remained free of infection. The most recent test (notes taken in Jan. 2006) showed that '**Yagli Findiq**' from Azerbaijan has complete resistance. However, 'Closca Molla', a Spanish cultivar that remained free of EFB in two greenhouse tests, showed small cankers when potted trees were exposed. It appears that 'Closca Molla' has a high level of quantitative resistance similar to 'Tonda di Giffoni' rather than complete resistance. 'Uebov', 'Crvenje 3/96' and 'Yagli Findiq' were used as parents in crosses in February 2006. Nuts collected in **southern Russia** in August 2002 were stratified and the seedlings are now growing in the field. The lots were shared with Rutgers University, where Tom Molnar found that 14 of 600 showed no EFB or a few small cankers, while most seedlings were highly infected. These resistant selections originated from seeds purchased near Krasnodar (Russia) and Simferopol (Crimea, Ukraine).

The **incompatibility alleles** of several cultivars and selections were identified using fluorescence microscopy (Table 2). The origins of three recently-identified S-alleles are: S29 from Russian selection OSU 495.049, S30 from 'The Shah', and S31 from Russian selection OSU 495.057. S31 is common in cultivars from Azerbaijan.

**3. David Sugar**, OSU Southern Oregon Research and Extension Center, 569 Hanley Road, Medford, Oregon 97502

In 2005 seedlings from 3 seedlots of *Cydonia oblonga* collected during a USDA exploration in Armenia were received, along with Quince A as a standard clone. The materials were planted in a completely randomized block at the OSU Southern Oregon Research and Extension Center and in September 2005 budded to 'Comice' pear. In spring 2006 any that had unsuccessful buds were grafted. The purpose of the study is to evaluate the new *Cydonia* material for potential as improved

rootstocks for 'Comice' pear, with respect to precocity, productivity, tree size, fruit size, and fruit quality.

**4. Sabry Elias**, OSU Seed Laboratory, Dept. of Crop and Soil Science, Oregon State University, Corvallis, OR 97331-3002

The OSU Seed Lab tested the purity and viability of some native species, and one article was published.

**5. Jason Sheedy**, OSU Columbia Basin Agricultural Research Center, 48037 Tubbs Ranch Road, Adams, Oregon, 97810

The 135 wheat accessions wererequested are primarily for screening purposes. The majority of the lines have been characterised elsewhere as resistant or susceptible to the root-lesion nematodes *Pratylenchus thornei* and *Pratylenchus neglectus*. We are currently developing a screening and breeding program in conjunction with WSU and OSU plant breeders to incorporate RLN resistance into PNW wheat varieties for the Pacific Northwest. The Iranian landrace PI 621458 has been identified as having multiple disease resistance and will be crossed to superior PNW germplasm.

**6. Maxine Thompson**, 2715 NW Frazier Creek Drive, Corvallis, OR 97330

Maxine received scions of 'Shoghuri' pear from the Repository. 'Shoghuri' is an Asian pear that she collected in Pakistan in 1987, and finally made it through quarantine. It is now in its first year in the ground at her home. This is an excellent pear cultivar with long keeping quality, and she hopes that someone working with pears will evaluate it for potential commercial use. (Maxine is professor emeritus, OSU Horticulture).

**7. Jim Crane**, 724 Shannon Ct NE, Keizer, OR 97303 ([crane42@msn.com](mailto:crane42@msn.com))

*Limnanthes douglasii* germplasm ( PI 278170, 283709, 283718, 283715, 283716) is being used in the initial stages of a breeding project to develop new ornamental cultivars of meadowfoam. (Jimmy was a research assistant on the meadowfoam project at OSU until his retirement).

**8. Richard A. Weigel**, 12300 NE Wasco St., Portland, OR 97230

Richard searched for years for the Marshall strawberry, and I was very happy to finally locate it at the USDA Repository. From the three runners received in 2004 (the additional runners I received in 2005 didn't survive), he now has over thirty large plants in his garden, and each of those plants has produced numerous runners which are now rooting. He plans to share these new plants with a number of other old-timers who remember 'Marshall' from years ago.

**9. Bruce A. McCallum**, 550 West Boulevard, Falls City, OR 97344 ([bam36@open.org](mailto:bam36@open.org))

*Vaccinium membranaceum* seed was surface sterilized with 5% bleach solution, rinsed and placed on sterile medium in petri dishes. The seed was refrigerated (35 F) for one week then brought to room temperature (68 F), and then alternated between refrigerator and room for one month. After four (4) months at room temperature there was no indication of germination. He waited another six weeks, saw no germination, and then the seed was discarded.

**10. Scott Rozell**, 4121 SE Raymond Street, Portland, OR 97202

*Malus* budwood was received from the Geneva repository. He has 21 apple trees situated within a "city plot" in Portland. The total space used by the trees is about 3,000 square feet, although they are just a fraction of the plants in that space. All of the soil onto which the trees are

planted is amended clay, and they are fertilized twice a year with meal or manure fertilizers. Most of these trees are on dwarfing rootstock (P22, B491 and P2).

The objectives of his research and orchard are: 1) to reintroduce "lost" apple varieties; 2) to discover apples that are excellent in substance and taste; 3) to evaluate whether apples that fit into #1 and #2 are disease resistant for Portland's conditions; and 4) my eventual hope is to cross *Malus* species that are heavily russeted with red-fleshed varieties, two characteristics that he appreciates most in apples. The *Malus* hybrids were all successfully bud grafted last summer and are all growing well. The Centennial variety (588909) is the best looking of the four, showing both moderate vigor (it's noted for low vigor) and glossy foliage that resembles a crabapple. The other three were budded onto a P22. The rare MN 447 introduced by the University of Minnesota is a parent of 'Honeycrisp'. Linda Sweet (589609) is the most vigorous and has 16 inches of growth that was pruned once to encourage laterals. The leaves are a light green and look more like a typical *Malus* than a crabapple. The Amsib crab (127686) was growing well, but was broken when their house was remodeled. He believes it is more like a crabapple in appearance. Parkland (PI 589450) was pruned out later than the other 2 so it only has 6 inches of growth. All three varieties show good health. Other cultivars in his plot include Court Pendu Rose (PI 589587), Holaart Doux (PI 589585), and Court Pendu Gris (PI 589602). *Malus sieversii* accessions including GMAL 4039, GMAL 4051, GMAL 4053 were budded onto P2 or P22 rootstocks.

**11. Jim Renner**, Oregon Travel Information Council, Oregon Heritage Tree Program  
([jim@oregontic.com](mailto:jim@oregontic.com))

In March 2005, the Oregon Heritage Tree Program received from Joseph Postman at the USDA Repository one clone of the Hager Grove pear (*Pyrus communis*) which was planted on the grounds of the Oregon Department of Forestry, 2600 State Street, Salem Oregon (about one mile northwest near the ODF museum building on State Street). The Hager Grove pear is about 150 years old and is one of the oldest and largest pear trees in Oregon. The original lives in the NE quadrant of the I-5 exit 253/ Santiam Highway interchange, and was designated an Oregon Heritage Tree in 1997.

**12. Richard Hardt**, 2199 Bailey Hill Road, Eugene OR 97405

Germplasm acquired from the Corvallis Repository is being used to evaluate drought tolerance among minor fruit, with particular focus on adaptability in summer-drought climates. He is interested in suitability of minor fruits for home garden use. Last year, he acquired from NCGR scions for grafting of 3 varieties of pear: [Tyson PI 541506, Rousselet de Reims PI 541256, Buzas Korte PI 449285], one variety of quince (Ekmeq, Q 25979), and one variety of *Sorbus* (Moravskaya, PI 635900). He also received rooting cuttings of gooseberry O.T. 126 (Jeanne, PI 555830), Blackberry (Ashton Cross, PI 553278), and softwood cuttings for rooting of gooseberry (Niesluwowski, Q 36526). Unfortunately the Gooseberry (Niesluwowski) cuttings failed to root, and the pear (Rousselet de Reims) and quince (Ekmeq) grafts did not leaf out this year. Otherwise, the plants are thriving.

**13. Shayne Kimball**, Eastern Oregon School, 129 Main Street, Nyssa, Oregon 97913  
([shaynekimball@hotmail.com](mailto:shaynekimball@hotmail.com))

He received one accession of *Crotalaria juncea* to see how this specific strain would grow in Nyssa, Oregon. This plant has a high level of cellulose in it, which would make it a good candidate for making ethanol via a dual-sacrificiation fermentation process. This specific strain was

found in some northern part of the former Soviet Union and should have the ability to set seed in our climate. Other accessions only have the potential of setting seeds in more equatorial regions. He found that the plant did not live up to its potential. The largest of three plants only grew to three feet and no seed came from any of the plants even after he tried to pollinate them. He was fairly disappointed, but someone who knows more about plant breeding than he does might be able to cross this one with another *Crotalaria* strain in controlled conditions and have better success. He inoculated the seeds with a rhizobial inoculum to enhance nitrogen uptake, but weeds around it grew faster than it did. He has seen stalks of *Crotalaria* in Colorado that were about six feet tall.

### **Publications:**

- Chen, H., S.A. Mehlenbacher and D.C. Smith. 2005. AFLP markers linked to eastern filbert blight resistance from OSU 408.040 hazelnut. *J. Amer. Soc. Hort. Sci.* 130:412-417.
- Elias S., Garay A., Schweitzer L. and Hanning S. 2006. Seed quality testing of native species. *Native Plants Journal* 7(1): 15-19.
- Mehlenbacher, S.A., R.N. Brown, E.R. Nouhra, T. Gokirmak, N.V. Bassil and T.L. Kubisiak. 2005. A genetic linkage map for hazelnut (*Corylus avellana* L.) based on RAPD and SSR markers. *Genome* 49:122-133.
- Yezhov, V.N., A.V. Smykov, V.K. Smykov, S.Y. Khokhlov, D.E. Zaurov, S.A. Mehlenbacher, T.J. Molnar, J.C. Goffreda and C.R. Funk. 2005. Genetic resources of temperate and subtropical fruit and nut species at the Nikita Botanical Gardens. *HortSci.* 40:5-9.

**Table 1.** Response of *Phaseolus* lines to inoculation with the white mold pathogen, *Sclerotinia sclerotiorum* in two greenhouse tests (J. Myers and E. Haggard).

MO Line Straw Test 1					MO Line Straw Test 2				
PI	Line	LSMean	91G	G122	PI	Line	LSMean	91G	G122
PI 527832	MO061	4.24	**	**		G122-3	3.09	**	
PI 527829	MO048	4.47	**		PI 527858	MO169	3.10	**	
PI 527834	MO070	4.50	**		PI 527864	MO186	3.50	**	
PI 527838	MO107A	4.83	**		PI 527873	MO207A	3.50	**	
PI 527851	MO157	4.90	**		PI 527853	MO159	3.80	**	
PI 527839	MO107B	4.93	**		PI 527857	MO163	3.90	**	
PI 527830	MO056	5.00	**		PI 527868	MO196	3.90	**	
PI 527835	MO082	5.16	**		PI 527869	MO197	3.90	**	
PI 527850	MO156	5.20	**		PI 527862	MO179	4.10	**	
PI 527849	MO155	5.30	**		PI 527855	MO161	4.10	**	
	G122-3	5.40	**		PI 527865	MO192	4.10	**	
PI 527840	MO113	5.42	**		PI 527860	MO175	4.20	**	**
PI 527831	MO059	5.50	**		PI 527854	MO160	4.24	**	**
PI 527837	MO098	5.50	**		PI 527867	MO194	4.30	**	**
PI 527847	MO146	5.50	**		PI 527872	MO204	4.30	**	**
PI 527852	MO158	5.80	**		PI 527863	MO184	4.50	**	**
PI 527841	MO118	5.82			PI 527861	MO178	4.60	**	**
PI 527844	MO133	6.00			PI 527856	MO162	4.65		**
PI 527843	MO122	6.15			PI 527866	MO193	4.76		**
PI 527836	MO088	6.20			PI 527871	MO203	5.20		**
PI 527842	MO120	6.20				91G	5.58		**
PI 527846	MO140	6.20			PI 527870	MO198	6.40		**
PI 527828	MO010	6.40		**	PI 527859	MO173	7.90	**	**
PI 527845	MO137	6.50		**	1= no disease		9=total plant collapse		
	91G	6.72		**	Straw Test	** indicates not significantly different from check (p<0.05)		Straw Test 2 Mean	
PI 527833	MO069	7.00		**	1 Mean				
PI 527848	MO150	7.50	**	**	5.75			4.48	

**Table 2.** Incompatibility alleles of introduced hazelnut cultivars identified by fluorescence microscopy, summarized Feb. 2006. Shown are cultivar name, S-alleles, and comments.

**A. From Chile and Argentina:**

Amarillo	2	<u>6</u>	testing completed
Amarillo Tardio	<u>2</u>	?	testing completed, S2 pollen
Durazno	<u>1</u>	2	testing completed
Gauna	1	?	female testing completed
Naranjo	<u>1</u>	2	testing completed
Verde	2	<u>6</u>	testing completed

**B. From Azerbaijan:**

Arzu	<u>31</u>	?	female testing completed
Ashrafi	<u>16</u>	31	testing completed
Aslan Baba	4	<u>15</u>	testing completed
Ata Baba (1190.026)	4	<u>31</u>	testing completed
Ata Baba early Balakan	4	<u>31</u>	testing completed
Ata Baba large Car	4	<u>31</u>	testing completed
Ata Baba small Car	4	<u>31</u>	testing completed
Ata Ula	4?	<u>10</u> ?	nine alleles to retest
Azeri	<u>2</u>	<u>27</u>	testing completed
Barli	<u>10</u>	31	testing completed
Bomba	<u>2</u>	?	female testing completed
Elbari	<u>2</u>	?	female testing completed
Firavan	4	<u>31</u>	retest five alleles
Galib	4	<u>16</u>	testing completed
Ganja (1190.037)	<u>4</u>	<u>4</u>	testing completed
Ganja (1190.061)	<u>4</u>	<u>4</u>	testing completed
Gizil Findiq	<u>10</u>	31	testing completed
Nasimi	4	<u>31</u>	testing completed
Perzivan zerifi	4	<u>31</u>	testing completed
Qabala	4	<u>6</u>	testing completed
Sachakhli	<u>10</u>	31	retest four alleles
Uzum Sakar	4	<u>10</u>	poor reactions, retest 4 alleles
Zaqatala-9	4	<u>10</u>	testing completed

**C. From Other Countries:**

Alli	9	<u>20</u>	female testing completed
Catalan	<u>10</u>	25	testing completed
Crvenje	<u>6</u>	23	testing completed
Dedoplistiti	<u>8</u>	14	testing completed
Dnepr-1	<u>15</u>	<u>21</u>	testing completed
Ducalovici	<u>1</u>	9	testing completed
Khachapura	<u>3</u>	18	retest 4 alleles
Lozovskoi Sharovidnyi	<u>2</u>	25	female test completed
Pirosok	<u>10</u>	<u>24</u>	testing completed
Reka 2	2	?	female testing completed
Shveliskura	4	<u>14</u>	testing completed
Tankoljuskasti	<u>5</u>	<u>10</u>	testing completed
Uebov	<u>12</u>	<u>16</u>	testing completed
Veleten	<u>15</u>	?	female testing completed