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Agricultural Research Service

U.S. National Arboretum News and Notes

Fall 2006

News and Notes is issued three times a year, in January, May, and September, to stakeholder organizations to keep them informed about recent Arboretum accomplishments and activities. Stakeholders are encouraged to use material from this document in reports to their members. Please send comments to:

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Chinese Experts to Demonstrate Cultural Arts at Festival

Delegations from the Shanghai Botanic Garden and Linyi City in China will travel to the United States to participate in the arboretum's second annual Chinese Moon Festival in October. Co-sponsored by the Friends of China Garden of the U.S. National Arboretum, the festival extends over two weekends and features demonstrations and workshops on penjing, paper cutting, calligraphy, and painting. Staff from the Shanghai Botanic Garden will demonstrate Chinese flower arranging and the basic techniques of rock; tree; and land and water penjing. Penjing is the Chinese and original version of bonsai and incorporates materials such as stones and figures, which traditional Japanese bonsai does not. Chinese flower arranging was the precursor to ikebana, the Japanese form of flower arranging.

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The Chinese Moon Festival will feature a paper cut version of one of the most renowned paintings in China, the "Bian River during the Qing Ming Festival" (a small section is pictured above), painted during the 10th century A.D. The paper cut version, created by a Linyi artist, captures the intricate details of this famous painting in a ten-meter-long scroll.

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Artists from Linyi, one of China's most famous cultural cities, will conduct workshops on the traditional folk art of paper cutting and on calligraphy, an art form made famous by a fourth century A.D. master who lived in Linyi, Wang Xizhi. His style, still practiced by calligraphers in Linyi today, revolutionized the art form.

The Moon Festival centers on the celebration of the full moon, which rises on October 7th. A reservation-only banquet that evening takes place under a tent in the Herb Garden meadow and will include musical and dancing performances, a tea ceremony, demonstrations of penjing and paper cutting, tram tours, and the official food for the event—moon cakes. On the 14th and 15th, a full schedule of demonstrations and workshops are designed to attract family groups and non-Chinese to introduce them to the cultural traditions of China. All of the events support the goal of establishing a Chinese garden at the National Arboretum, and are made possible through the dedication of the Friends of China Garden at the U.S. National Arboretum, with whom arboretum staff has worked closely to plan the event.

For more information about purchasing tickets for the banquet and on the schedule of free workshops and demonstrations, visit www.usna.usda.gov/Education/events.html.



Ikebana International Celebrates 50th Anniversary with Extravagant Show

The [Washington, D.C. Chapter No. 1 of Ikebana International](#) celebrates its Golden Anniversary with a once-in-a-lifetime exhibit at the National Arboretum from September 30th through October 2nd. Over seventy-five arrangements done by chapter members and special invited guest arrangers from other Ikebana chapters will be on display in the Administration Building auditorium and in the [National Bonsai & Penjing Museum's](#) International Pavilion and Special Exhibits Wing. A unique feature will be an exhibit of Sumi-e paintings by the National Capital Area Chapter of the Sumi-e Society of America in the Administration Building lobby, some of which will be used by Ikebana members as inspiration for their arrangements. Four [free demonstrations](#) of Ikebana will be given by the chapter's highest ranking teachers.

For many years, the U.S. National Arboretum and the Washington, D.C. Chapter No. 1 of Ikebana International (I.I.) have co-sponsored an annual exhibition of Ikebana in the arboretum's National Bonsai & Penjing Museum. The exhibitions include demonstrations conducted by I.I. members to educate the public about Ikebana, and chapter members are present throughout the show hours to answer questions about Ikebana.

Ikebana is an international society that promotes the ancient art of Ikebana, or Japanese flower arranging.

The arboretum has a longstanding and continuing relationship with the organization founded to promote Ikebana, Ikebana International, and its Washington, D.C., chapter. In tribute to the woman who created Ikebana International, Ellen Gordon Allen, I.I. members donated approximately \$20,000 to establish the Ellen Gordon Allen Memorial Garden at the arboretum. Dedicated in 1983, it is located at the entrance to the National Bonsai & Penjing Museum.

In 1979, Chapter No. 1 gave 53 rare books on Ikebana to the arboretum's library. In 2000, a member of Chapter No. 1, Jesse Denvil Maggard, donated a complete collection of bound Ikebana International magazines to the arboretum library.

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Members of Chapter No. 1 also volunteer at the arboretum and provide ikebana arrangements in the National Bonsai & Penjing Museum on a regular basis.

The National Arboretum and Ikebana International make good partners: Ikebana shares a history and aesthetic principles with bonsai, so ikebana arrangements and special shows fit well in the arboretum's National Bonsai & Penjing Museum. In addition, ikebana practitioners rely on quality cut flowers and branches, and the arboretum's research includes work on enhancing the types and production of both.

Arboretum Adds Images of Rare Ikebana Book to Web Site

In honor of Ikebana International's 50th anniversary, the National Arboretum has had one of the rare books in its library digitized. The images are posted in PDF format on the [arboretum web site](#). *Rikka shodoshu (The Right Principles of Rikka)* is a three-volume set of colored woodblock illustrations compiled by Jinkyusai, who was a gifted floral artist and most likely a Buddhist priest. Each volume represents one of three styles of rikka known as shin, gyo, and so. The book is one of a unique special collection of books on ikebana—the Ikebana Rare Book Collection—which includes



volumes dating back to the 17th century. The books, most in Japanese, were donated to the arboretum in 1979 by the Washington, D.C. Chapter No. 1 of Ikebana International in memory of their founder, Ellen Gordon Allen.

This historically significant fifty-three-book collection consists of several woodblock illustrated books printed on mulberry paper on double-leaved pages with side-sewn binding. The collection also contains original manuscripts and books published from 1684 to the mid-20th century. Twenty-four of the books were published during the Edo Period (1603-1867) in Japan. The collection provides a valuable historical perspective on the development of ikebana during the 18th and 19th centuries. The arboretum plans to make more of the books available online.

Construction Projects Renew and Improve Arboretum Facilities

The arboretum is fortunate to have the resources to move forward concurrently on multiple renovation and construction projects. This takes careful coordination between arboretum staff, the facilities units at ARS Headquarters and at the Beltsville Agricultural Research Center, and the different contractors. Two projects are nearing completion, three will begin construction in September, and two others are in the planning stage.

The bulk of the work on the new Flowering Tree Walk and the renovation of the reflecting pool at the [National Capitol Columns](#) is finished. A final planting plan is being developed for the Flowering Tree Walk to facilitate the remaining plantings. This work is generously supported by the [Friends of the National Arboretum](#), while the remaining projects are funded from Congressional appropriations. The newly rebuilt reflecting pool is ready for the installation of a new liner, the final step in this renovation project.

Contracts for three separate major projects were awarded, and construction will begin on two of them in September.

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The largest project is a 2.3 million dollar demolition of the nearly 50-year-old greenhouses. The old deteriorating greenhouses were unable to function adequately to support current research and horticultural needs. By the summer of 2007, the new state-of-the-art greenhouse complex will be ready to support arboretum research and horticulture programs.

Research programs benefit from the invention and development of new equipment, techniques, and procedures. As a result, laboratories must be updated from time to time to facilitate new equipment and procedures as well as meet more stringent safety requirements. The Administration Building houses the main research laboratory, which is nearly 50 years old. A complete renovation of this laboratory and accompanying office and support spaces should be completed in early 2007 to allow arboretum scientists to better carry out their work.

A third project to add outdoor lighting to the East Patio of the Administration Building includes coordinating all outdoor lighting in a new computer-based facility. This will greatly improve staff's ability to support and manage evening functions at the arboretum. This design/construction contract will be underway in early autumn 2006.

Additional projects in the pipeline include the preparation of detailed plans for a new entrance to [Fern Valley](#) from Ellipse Road. The design will also provide major path, bridge, and stream crossing improvements in this native plant collection. The landscape architecture firm of Mahan Rykiel of Baltimore, Maryland, is working with arboretum staff to develop the plans.

Another planning project underway is the revision of the arboretum Master Plan. The modified plan will incorporate the proposed new classical Chinese garden and a conceptual plan for improvements to Asian Valley and the Anacostia River acreage along the eastern side of the arboretum. The latter project will tie into plans being developed for improvements to the Anacostia River to make it a significant new recreational area in the Washington, D.C., area.

2006 Interns Contribute Hard Work, Valuable Projects

Nine aspiring gardeners and scientists signed on this spring for arboretum internships ranging in length from three months to one year. Interns provide much-needed garden and laboratory work, fresh energy, and ideas; in return, they gain valuable experience working with top garden professionals in one of the premier public gardens in

the country. Besides the daily chores in a specific garden or lab, interns must design and complete an individual project that should be both educational for the intern and beneficial to the arboretum. A sample of this year's projects include scanning historical garden photos and correspondence to store and share electronically, refreshing the camellia collection by planting arboretum introductions, compiling a reference book of memorial trees planted on the grounds, designing and planting a neglected bed, and creating informative plant labels for the herb garden.

The group takes part in regularly scheduled training and travel to other gardens. Training this year included Worker Protection, IT Security, Self Defense, and Public Presentations. Highlights of this year's field trips were Longwood Gardens in Pennsylvania, where the group got a behind the scenes tour of the famous public garden, and a visit to the collections of Jim Duke, a retired USDA ecologist and world-renowned ethno-botanist and expert on medicinal plants.

The internships are sponsored by stakeholder groups such as the Woman's National Farm and Garden Association, The Herb Society of America, the American Conifer Society, the National Capital Area Garden Clubs, Inc., and the J. Frank Schmidt Family Charitable Foundation.

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2006 US National Arboretum interns. Standing, left to right: Bill Anhalt, Bradley Greene, Kristen Gauthier, Rebecca Horner, Rocky Ebener. Sitting, left to right: Kate Owens, Meghan Cook, Jacqueline Benson, Nathan Camp.

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Other positions are funded by private donors and the Federal Government.

Members of this year's class are: Bill Anhalt ([Conifer Collections](#)), from Upper Marlboro, Maryland, who is attending the University of Maryland studying for a BS degree in Horticulture, Crop and Soil Science; Jacqueline Benson (Shrub Breeding), from Pasadena, Maryland, who is attending St. Mary's College of Maryland studying for a BS degree in biology; Nathan Camp ([Camellia Collection](#)), from Daleville, Virginia, who is attending Virginia Polytechnic Institute studying for a BS degree in Agriculture Technology; Meghan Cook (Introduction Garden), from Towson, Maryland, who is attending the University of Maryland studying for a BS degree in Landscape Management; Kate Owens ([Dogwood Collection](#)), from Richland, Michigan, who is attending Michigan State University studying for a degree

from the Landscape and Nursery Program; Rebecca Horner ([Native Plants Collection](#)), from Gaithersburg, Maryland, who is attending the University of Maryland studying for a BS degree in

Environmental Science; Kristen Gauthier ([National Herb Garden](#)), recently arrived from Hawaii and living in Ashburn, Virginia, who graduated from the University of Hawaii with a BS degree in Tropical Horticulture and from the University of Illinois with a BS in Animal Science. Rocky Ebener ([Friendship Garden](#)), from Alexandria, Virginia, who has a BS in Humanities and Science from the Massachusetts Institute of Technology and Masters degrees from the U.S. Naval Postgraduate School and the U.S. Army Command and General Staff College; and Bradley Greene ([Asian Collections](#)), from Sautee-Nacoochee, Georgia, who graduated from Appalachian State University with a BS degree in Ecology & Environmental Biology.

Dr. Rob Griesbach Elected Fellow of American Society of Horticultural Science

During the recent American Society of Horticultural Science

(ASHS) annual meeting in New Orleans, arboretum Research Geneticist Dr. Rob Griesbach was inducted as a Fellow of the ASHS, the highest honor that the society can bestow upon members. The ASHS accorded Dr. Griesbach with this honor in recognition of his leadership and expertise in the genetics and biochemistry of flower color, and for the development of unique horticultural crops. He is a co-winner of the All-American Selection Award for the ornamental pepper 'Black Pearl', in addition to authoring many research papers and releasing other ornamental germplasm and varieties. He has served on the editorial boards of ASHS and the American Orchid Society, and is a past president of the American Orchid Society.

U.S. National Arboretum Continues International Plant Exploration

The U.S. National Arboretum has a long and productive history of collecting plants from other countries. This effort continued this summer with trips to the Republic of Azerbaijan and the Russian Far East by staff members Kevin Conrad, Curator of the [Woody Landscape Plant Germplasm Repository](#); Kevin Tunison, Curator of Plant Records; and Martin Scanlon,

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Woody Landscape Plant Germplasm Repository Technician.

Most experts would agree that horticulture has, as one of its roots, the cultivation of plants through the last millennium in the countries that made up Persia. It was this historical background and a friendly relationship with the Azeri Government that brought Kevin Conrad to the Republic of Azerbaijan where he spent two weeks in July collecting plants in the Talish Mountains. Conrad stated that seeing “*Parrotia persica* in its natural habitat, as it has been growing for thousands of years, was truly a wonderful experience.”

Other highlights of Conrad’s trip included visiting a forest of approximately 120 ancient *Zelkova carpinifolia*, said to be over 500 years old, growing in and protected by the local town cemetery; a ten-acre forest of *Buxus sempervirens* with trees reaching to 20’; and an afternoon tea with a shepherd and his family



Martin Scanlon, Kevin Tunison, and Boris Petropavlovsky (far right) at the Institute of Biology and Soil Science Herbarium in Vladivostok.

whose farm and herds were on top of one of the mountains.

Conrad’s journey did not end in Azerbaijan. At the end of his field work he traveled to Central Siberia and the Central Siberian Botanical Garden in Novosibirsk, Russia, in order to attend the week-long 60th anniversary celebration of the botanical garden. There he participated in discussions with botanists from all parts of Russia on potential collaborations and on the role of botanical gardens in conservation of the biological diversity of plants.

Soon after Conrad’s return, Kevin Tunison and Martin Scanlon left for a three-week expedition to the Russian Far East.

The objective of the expedition was to become familiar with the flora of the region and to develop collaborative relationships with the Vladivostok and Sakhalin Botanic Gardens.

The expedition was organized by Boris Petropavlovsky of the Vladivostok Botanic Garden and included field work in four areas of the Far East rarely visited by western botanists. The team spent six days on Sakhalin Island with the Director of the Sakhalin Botanical Garden, Alexander Taran, who led the expedition to sites ranging from the seashore to a mud volcano. The sites offered a wide diversity of flora, with opportunities to see many protected species, such as *Prunus ssiorii*, *Primula sachalinensis*, and *Trillium tschonoskii*.

Back on the Russian mainland, Petropavlovsky packed in nine days of adventure, coordinating visits to three nature reserves in the southern Primorskii Kari, an area encompassing land from the Sea of Japan to the borders of China. The reserves have very few roads, and access is strictly

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An explorer’s view of the 6,400-foot Talysh Mountains of Azerbaijan.



Martin Scanlon (left) and Kevin Tunison under a canopy of *Taxus* on Petrov Island.

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controlled. From lush meadows to extensive deciduous and coniferous forests, the region held both protected species (including the rare Siberian tiger) and species common in the Far East. The group hiked for miles each day, experiencing birch, maple, oak, and fir forests untouched for decades, and collecting material for herbarium specimens. When permission was granted, arboretum staff also collected seeds, which will be



Alexander Taran in the dunes on Sakhalin Island.

germinated at the arboretum over the next year. The woody plants will be added to the [germplasm repository](#), and the herbaceous species to the [Asian Collections](#).

Research Unit Holds Open House

The Floral and Nursery Plants Research Unit (FNPRU) held an Open House on Tuesday May 9, 2006, immediately before the In-Depth Review of the work of the unit on May 10-12. About fifty individuals and representatives of stakeholder groups attended the Open House. Research Leader

Dr. John Hammond presented an overview of FNPRU research accomplishments, followed by discussion with the attendees about the research areas presented, and of areas where future research might be needed. Breakout groups then discussed four topics: How does USNA research currently affect you and your business?; What kind of information do you need from the USNA (e.g., new cultivars, events, research reports, etc.)?; How would you like the USNA to communicate to you and receive input from you?; and, What sort of work (research) should we be doing in the future? A lunch break followed summation and prioritization of the results from the breakout groups. After lunch visitors had the opportunity to meet individually with the scientists, and were provided tours of the FNPRU facilities at both the USNA and Beltsville locations.

Arboretum Holds In-depth Review of Research Program

The Floral and Nursery Plants Research Unit was the subject of an in-depth review in May. The review team was chaired by Dr. Peter Raven (Director of the Missouri Botanical Garden) and included Dr. Allan Dodds (University of California-Riverside), Mr. J. Guy (Carolina Nurseries), Dr. Robert Shearman (University of Nebraska-Lincoln), Dr. Thomas Ranney (North Carolina State University,

Mountain Crops Research and Extension Center), and Dr. Patricia Duncan Raven (Missouri Botanical Garden). The review began with a tour of USNA facilities for the review team, followed by a public session during which Research Leader Dr. John Hammond made a presentation on the research programs. The invited guests (stakeholder representatives) then had the opportunity to meet with the review team in executive session. Over the next two days, the review team met individually with each of the FNPRU scientists, toured the Beltsville facilities, and met with the FNPRU support staff before preparing their draft report for discussion with all of the FNPRU staff. The review panel made a total of 11 recommendations, including expanding the tree, shrub, and herbaceous plant breeding programs; further developing the woody plant germplasm repository; developing a catalog of the cultivated plants of the U.S.; creating a new Urban Horticulture Initiative; and improving communications with stakeholders. Efforts will be made this year and in future years to implement as many of the recommendations as possible.

Scientists, Stakeholders Gather to Review Research

Representatives from the [Agricultural Research Service](#) (ARS), universities, botanic

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Production facility in Bonsall, California, showing initial stocks of a variety of ornamental crops being grown under protected conditions to minimize virus introduction and spread.

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gardens, and the horticulture industry gathered in Portland, Oregon, on June 12-15, 2006, to attend the 2nd Floral and Nursery Crops Researchers Workshop. The workshop, organized by ARS's National Program Staff, gave researchers and stakeholders an opportunity to report results, network, and assess progress and goals of the Floriculture and Nursery Research Initiative. Sponsored jointly by the American Nursery and Landscape Association and the Society of American Florists with strong support from their constituent groups, the research initiative was presented to Congress in 1998 to secure funding for research to solve problems related to ornamental horticulture.

Although the ornamental horticulture industry represents more than 10% of total U.S. crop cash receipts, less than one percent of federal agriculture research dollars is devoted directly to research on these crops. The funding that resulted from this initiative is administered through ARS to

public- and private-sector scientists throughout the U.S. to conduct ornamental horticultural research to improve practices and strategies in three general areas: environmental and resource management; pest management; and production systems. The workshop in Portland featured progress reports in all three of these areas, including research conducted by the National Arboretum's [Floral and Nursery Plant Research Unit](#) on genetic improvement of floral and nursery crops, disease detection and management, and improved production of nursery crops.

Following the workshop, arboretum Plant Pathologists Drs. Ramon Jordan and John Hammond traveled to Bonsall, California, to visit the production facilities of EuroAmerican Propagators. There the two virologists met with Fred Ceballos and Sharon Kavanagh of EuroAmerican, and Jan Hall of the Paul Ecke Ranch, and discussed procedures for stock plant propagation, sanitary practices to prevent introduction and spread of virus diseases, and



Arboretum scientists and colleagues visit Clackamas Greenhouses in Aurora, Oregon.



Donna Fare examines production systems at Heritage Seedlings in Salem, Oregon.

methods for the detection and identification of new viruses.

Research Leader Presents Seminar and Visits Nurseries in Israel

During a trip to Israel in May to serve on a grants advisory panel, Floral and Nursery Plants Research Unit Leader Dr. John Hammond visited the Agricultural Research Organization's Volcani Institute in Bet Dagan (the Israeli equivalent of the USDA-ARS Beltsville Agricultural Research Center). He presented a seminar at the Volcani Institute on "Detection and identification at Beltsville of novel viruses affecting ornamental crops," and met with several Volcani scientists, including cooperator Dr. Abed Gera and Dr. Sara Spiegel, and with Dr. Radwan Barakat of Hebron University. Drs. Hammond, Gera, and Spiegel also visited several ornamental nurseries which propagate ornamental plants for shipment as unrooted cuttings to the United States, and discussed their procedures for nuclear stock propagation and sanitary practices to prevent introduction of virus diseases.

Arboretum Scientists participate in the American Phytopathological Society Meeting

Floral and Nursery Plants Research Unit Plant Pathologists Drs. John Hammond, Ramon Jordan, and Dilip Lakshman traveled to Quebec City to attend the annual meeting of the American Phytopathological Society from July 28 – August 2. Drs. Hammond and Jordan participated in the Virology Committee meeting, and in the Ornamental Virus Discussion Group session, where information was exchanged with other research scientists and representatives of the nursery and diagnostics industry on current research and newly emerging virus problems in the ornamentals industry. Dr. Hammond also presented a poster “Partial genomic sequence and characterization of a novel carlavirus isolated from *Phlox divaricata*,” and Dr. Jordan presented a talk “Molecular characterization of several new and emerging potyviruses of ornamental plants.” Dr. Lakshman presented a poster entitled “Screening and characterization of *Streptomyces* isolates for biocontrol of *Rhizoctonia solani* and other plant pathogens,” and he also interacted with several plant pathologists specializing in biocontrol of soilborne pathogens to discuss common research interests.

Dr. Lakshman Presents Lecture in India

Dr. Dilip Lakshman, a Research Plant Pathologist in the [Floral and Nursery Plants Research Unit](#), presented an invited talk during a symposium entitled “Exploring the Enigma of Cell/Molecular Biology” held on August 7-10, 2006, at the Sri Satya Sai institute of higher learning, Prashanti Nilayam, Andhra Pradesh, India. The talk concerned “Hypovirulence, its mechanism and use in the biocontrol of a soilborne plant pathogenic fungus, *Rhizoctonia solani*.” Dr. Lakshman had discussions with an Indian scientist who has been identifying biocontrol agents (*Trichoderma* spp., *Streptomyces* spp., etc.) from arid soils in India that may be useful in the biocontrol of plant pathogens in tropical agro-climatic conditions. This discussion may lead to future collaborations with Indian plant pathologists.

The symposium was organized jointly by U.S., Canadian, European, and Indian scientists in the area of human and plant pathology, molecular biology, chemistry, and environmental sciences to update their Indian counterparts with current research in these fields and to exchange views.

Dr. Huang Presents Poster at Bacterial Wilt Symposium in England

[Floral and Nursery Plants Research Unit](#) Plant Pathologist Dr. Qi Huang attended the 4th International Bacterial Wilt Symposium held at the Lakeside Conference Centre, Central Science Laboratory in York, England, from July 17 to 20, 2006, and gave a presentation entitled “Identification of ornamental plant species susceptible to *Ralstonia solanacearum* race 3, biovar 2.” The symposium was attended by scientists from 24 countries and provided a valuable opportunity to catch up on current research on various aspects of bacterial wilt caused by *Ralstonia solanacearum* and *Xanthomonas campestris* pv *musacearum*. *R. solanacearum* race 3, biovar 2 causes bacterial wilt of geranium and brown rot of potato. Accidental introduction to the U.S. of *R. solanacearum* race 3, biovar 2 in infected geranium cuttings is a potential threat to the U.S. potato industry, and costly eradication measures have been undertaken to eliminate infections originating in imported geranium cuttings. Dr. Huang’s work includes evaluation of which other ornamental crop species could harbor the bacterium; this will aid control of the disease while minimizing the destruction of other ornamental crops growing in association with any infected geraniums discovered in the future.

Arboretum Represented at the 14th METRIA Conference in Minnesota

Research Geneticist Dr. Richard Olsen and Horticulturist Susan Bentz, of the arboretum's tree breeding program, participated in the 14th Metropolitan Tree Improvement Alliance (METRIA) Conference held at the Minnesota Landscape Arboretum, Chanhassen, Minnesota, June 26-28, 2006. The conference theme was "Recent advances in the breeding, production and culture of trees for urban landscapes," and Dr. Olsen gave the opening presentation entitled "Unexplored diversity within *Catalpa* and related taxa: breeding novel urban trees." His talk was well received and timely, owing to the damage incurred in the Upper Midwest urban forests by recently introduced pests like Asian longhorned beetle and emerald ash borer, to which catalpa is resistant. There was also much interest in Dutch elm disease-resistant American elms, with two talks focused on the return of the American elm to urban forests, of which retired arboretum scientist Dr. Alden "Denny" Townsend's lifelong research on breeding elms was highlighted. Attendees were pleased to hear Susan Bentz field questions regarding Dr. Townsend's research and the USNA American elm releases 'Valley Forge', 'New Harmony', and 'Jefferson', all of which exhibit high levels of tolerance to Dutch elm disease and

are now available in the nursery industry.

METRIA was founded in 1974 to foster collaboration among researchers, nursery professionals, urban foresters, and landscape architects in developing and promoting superior trees for urban landscapes. Dr. Townsend and now-deceased National Arboretum tree physiologist Dr. Frank Santamour, Jr. were instrumental in establishing the alliance, and arboretum Director, Dr. Thomas Elias, was among the founding members.

Dr. Olsen was elected assistant Executive Director of METRIA, and will entertain hosting the 16th METRIA conference at the National Arboretum in 2010.

Woody Landscape Plant Support Group Meets

Several arboretum staff attended the annual meeting of the Woody Landscape Plant Crop Germplasm Committee (WLPCGC), held June 21-22, 2006, at the arboretum's McMinnville, Tennessee, worksite. The committee, composed of individuals representing industry, universities, arboreta, and government, meets yearly to advise the [Agricultural Research Service \(ARS\)](#) on issues relating to the genetic resources (germplasm) of woody landscape plants. Items discussed included problems with

acquiring germplasm from outside the U.S., dangers posed to woody landscape germplasm by emerging pests, and plans for re-vamping the public interface of the [Germplasm Resources Information Network \(GRIN\)](#) website. The meeting included reports from curators of woody landscape plant germplasm on the status of their collections.

The McMinnville worksite—the TSU Nursery Crop Research Center—was a perfect venue for such a group of woody plant enthusiasts, as the facility is located in the heart of the nursery-rich middle Tennessee valley. It is shared by scientists from ARS and Tennessee State University and boasts modern lab and greenhouse facilities on an 87-acre plot of land.

Committee participants took advantage of pre-meeting tours to visit Pleasant Cove Nursery in Rock Island, Tennessee, where they saw field, container, and pot-in-pot nursery facilities and equipment. They then traveled to southern Warren County where

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Members of the WLPCGC (including National Arboretum Director Tom Elias, standing second from left) inspect the native *Stewartia ovata*, found in middle Tennessee, during a wagon tour of a woodland in Warren County.

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Mr. Gary Clendendon, a local nursery owner, took them on a tractor and wagon tour of a wooded cove to see the diversity of native plant germplasm present in that area. Most impressive were the native *stewartias*, which were just coming into bloom. The day ended with a tour of Shadow Nursery in Winchester, Tennessee. Mr. Don Shadow, owner, treated the group to a tour of his nursery which showcases rare and unusual plants and animals.

Arboretum staff who attended the meeting and tours were Director Tom Elias; scientists Sandra Reed, Margaret Pooler, Richard Olsen, and Alan Whittemore; herbarium botanist Michael Chamberland; and Kevin Conrad and Martin Scanlon of the [Woody Landscape Germplasm Repository](#).

Arboretum Staff Host Booth, Attend Conference, for Southern Nursery Trade Show

The National Arboretum displayed a booth at the Southern Nursery Association (SNA) Trade Show held in August in Atlanta, Georgia. The booth featured posters of many of the newest arboretum cultivars, including ‘Betsy Ross’, ‘Declaration’, and ‘Old Glory’ lilacs, ‘Arapaho’ and ‘Cheyenne’ crapemyrtles, ‘Brandywine’, ‘New World’, ‘Red Rocket’, and ‘Sun Valley’ maples, and ‘Black Pearl’ pepper. Staff from the arboretum’s

work site in McMinnville, Tennessee, staffed the booth and distributed informational brochures and magnets.

Arboretum scientists from McMinnville also participated in the 51st Annual SNA Research Conference, held in conjunction with the trade show. Dr. Sandy Reed, Research Geneticist, presented “*Hydrangea macrophylla* and *serrata* – Should We Lump ‘em or Split ‘em?” and chaired the growth regulators section. Dr. Keri Jones, postdoctoral research associate, presented “Wide Crosses in the *Hydrangeaceae*: *Dichroa febrifuga* × *Hydrangea macrophylla*.” Dr. Donna Fare, Research Horticulturist, was co-author on two poster presentations, “Microscopic and Macroscopic Studies on the Development of *Puccinia hemerocallidis* in Resistant and Susceptible Daylily Cultivars” and “Epidemiology of Powdery Mildew on Resistant and Susceptible Flowering Dogwood Cultivars.”

The SNA Trade Show and Convention was held at the Georgia World Congress Center in Atlanta, included over 10 acres of products from 700 exhibitors, and had an estimated attendance of 12,000.



Arboretum booth at the Southern Nursery Association Trade Show in Atlanta.

Research Unit Participates in Tennessee Green Industry Field Day

Posters highlighting arboretum research were on display during the 5th Tennessee Green Industry Field Day at the Tennessee State University Nursery Crop Research Station (TSU-NCRS) in McMinnville, Tennessee. Both scientists stationed at the arboretum’s McMinnville, Tennessee, work site, Dr. Sandy Reed and Dr. Donna Fare, were on hand to discuss their research programs with interested attendees. In addition, Dr. Fare participated in the “Ask the Experts” booth. Suzanne Overbey, Biological Science Technician, was the narrator for four wagon tours of the research plots.

Over 400 people attended the August 22nd field day, which featured educational talks, guided tours of the research station, and nursery and equipment exhibits.

National Arboretum Plants Important for Smithsonian DNA Barcode Project

Plants contained in National Arboretum gardens and collections are part of a project to develop a biochemical way to separate species. The work involves identification of a DNA locus that can be used to determine whether

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or not two plants are the same species. David Erickson, a postdoctoral researcher at the Smithsonian Institution Laboratories of Analytical Biology in Suitland, Maryland, is collecting multiple accessions of 67 species growing at the arboretum. The high degree of confidence in the taxonomic identity assigned to the arboretum's plants, along with the availability of multiple independent and unrelated accessions of a given species from widely different locations, are two factors that make the arboretum an indispensable resource for this work.

National Herb Garden Collections Utilized for Research

Two researchers are currently using the extensive collections of *Rosmarinus* and *Pelargonium* growing in the [National Herb Garden](#). Jim Motes, a retired Oklahoma State University horticulture professor and consultant for Southwest Spice, is investigating rosemary accessions in the National Herb Garden to determine the level of the antioxidants carnosic acid and carnosol. Currently, Southwest Spice has 400 acres of 'Arp' rosemary in production for the extraction of these compounds, which are used with fresh cut meat to prevent browning in the package or meat case. The objective of this work is to include other cultivars to diversify the genetic basis of production. He is looking for upright types—the best for



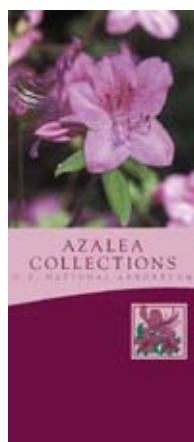
Rosemary in the National Herb Garden.

machine harvesting—that have high levels of the antioxidants.

Hwei-Yiing Li Johnson, a researcher at Lincoln University in Jefferson City, Missouri, and Dr. Jinguo Hu at the Agricultural Research Service Red River Valley Agricultural Research Center in Fargo, North Dakota, are investigating the history of hybridization of scented geraniums and are using the extensive collection of scented *Pelargonium* cultivars in the National Herb Garden to determine the genetic relationship between cultivars.

Azalea Collections Subject of New Brochure

This summer the arboretum published the second in its series of new collection brochures. The new brochure focuses on the popular [Azalea Collections](#) and includes an illustrative map rather than a graphic one. The format of the brochure complies with the family of design created for the arboretum by USDA Design staff.



This design style features a “swoop” shape, which also appears on outdoor collection and interpretive signs. In an effort to make its maps more user friendly, the arboretum contracted with a local artist, Bill Cook, to draw original maps for each of the collections as well as the grounds as a whole. Each brochure includes a map and the history and highlights of the collection. The [Asian Collections](#) and [Friendship Garden](#) will each receive a brochure in the new style this fall and winter, respectively.



The [National Bonsai & Penjing Museum](#) brochure was completed last spring. Staff is working with USDA Design to design a weatherproof brochure box, which will replace the assortment of containers currently being used. The [Friends of the National Arboretum](#) has generously agreed to help pay for these new boxes.

Popular Weeping Cherries to Receive Greater Exposure and TLC

Two 'Higan' weeping cherries growing between the

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Administration Building and the [National Herb Garden](#) will be getting some much needed help. Three large white pines are shading the trees more with each passing year of growth, and are competing with the cherries for water and nutrients. Two white pines that are growing too close to the cherries will be removed before winter arrives, as will a third adjacent white pine that twisted and cracked in last year's heavy snowfall. Following the removal of the pines, plans are to brace one of the large outspreading branches of one of the trees and install cabling to prevent storm damage. A fence will be built around the root zone to alleviate compaction caused by foot traffic from visitors admiring the spring curtains of flowers. The trees are unusual since they are on their own roots and therefore lack the pronounced graft union found on most weeping flowering cherries. Nearly all weeping cherries are now grafted on non-weeping understock at a height of five to ten feet to speed production of sizeable trees.

Future plans include a path that will be constructed to allow visitors to experience the beauty of the trees. The service drive to the National Herb Garden will be relocated as part of this effort and

a display of drought- and shade-tolerant herbaceous perennials and ground covers will be planted where the pines are currently located.

New Collections Policy Adopted for the National Bonsai & Penjing Museum

The [National Bonsai & Penjing Museum](#) has a new collections policy that will create a simplified and uniform means to acquire new specimens. Large numbers of bonsai and penjing were donated to assemble the collections, and new acquisitions have steadily improved and expanded the museum's holdings in recent years. The new policy provides for an orderly means for deaccessioning specimens from the collections. Along with the collections policy, an evolving acquisitions strategy will be developed and evaluated frequently to ensure that collection development needs are kept current.

Urn Installed in Perennial Collection

The [Perennial Collection](#) got a new focal point in May: A new urn was installed in the centrally located rectangular garden that is surrounded by four herbaceous peony beds. The site was formerly used to display herbaceous peonies and is now home to a new palette of perennials. The redesign is part of an ongoing effort to broaden the types of perennials growing in the collection, which has been

dominated by peonies and daylilies in the past. The Perennial Collection is co-located with the [National Boxwood Collection](#), and the urn is framed by boxwood, which provide year-round structure for the garden. The urn is dry-cast limestone and is large enough to fit the scale of the space. Staff selected a model with clean, simple lines to match the understated elegance of the plants and garden beds in the area. The plant they chose to grow in the urn, the variegated *Agave americana* 'Marginata', met their requirements for a drought-resistant specimen with striking foliage and bold form and color.



New Introduction Garden Horticulturist

Bradley Evans joined the National Arboretum as Horticulturist for the Introduction Garden in April 2006. Evans worked previously as a gardener for the arboretum's China Valley in the [Asian Collections](#). While there, he greatly improved the maintenance of the collection and solved many erosion problems within the site.

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Evans' experience as Greenhouse Manager and Xeric Collection Gardener at Towson State University afforded him extensive plant knowledge, especially of tropicals and xeric plants. He brings a wealth of aquatic plant knowledge to the position as well. His love of plants has led him to study and become the arboretum expert on tropical, aquatic, and xeric plants, as well as orchids.



Museum Specialist Hired for National Bonsai & Penjing Museum

Aarin Packard joined the Gardens Unit staff at the end of June as a Museum Specialist in the [National Bonsai & Penjing Museum](#). Packard recently received his master's degree in Museum Studies from the George Washington

University. While working on his master's, he was also employed by the Smithsonian Institution as a collection's assistant working on the historic Wilke's botanical specimen collection. He is originally from California and has been surrounded by bonsai since his childhood. For the past five years, he has been studying and practicing the art of bonsai. His primary duties will be assisting in the maintenance and

development of the extensive bonsai and penjing collections.



Koi Sale a Success

The first-ever sale of surplus koi in the Introduction Garden aquatic garden brought in more than \$8,000 in sales



of more than 1,000 koi, in spite of rainy weather. Members of the ZNA Koi Club assisted arboretum staff in the sale of the koi and lent their expertise to help determine which koi would remain in the pool after it was cleaned and refilled. The burgeoning koi population had led to water quality problems in past years, and the population in the pool was reduced to 150 to alleviate the problem. The proceeds from the sale have been used to fund Introduction Garden Intern Meghan Cook, who is spending part of her time in maintaining the aquatic garden.

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