

Ornamental Plant Germplasm Center

2002-2003 **Annual Report**

The goal of the OPGC is to conserve, assess and distribute herbaceous ornamental plant germplasm and to develop new techniques for conserving seed and clonally propagated germplasm.




**Ornamental Plant
Germplasm Center**
670 Vernon Tharp Street



Staff

Steve Slack, Ph.D., Project Principal Investigator
Associate Vice President for Agricultural Administration and
Director, Ohio Agricultural Research and Development Center

David Tay, Ph.D., Director/Co-Project Principal Investigator
Phone: 614-292-3708, E-mail: tay.9@osu.edu

Susan Stieve, M.S., Curator, Seed Collection
Phone: 614-292-3726, E-mail: stieve.1@osu.edu

Eric Renze, B.S., Research Assistant
Phone: 614-292-1941, E-mail: renze.2@osu.edu

Arthur Wells, B.S., Research Assistant,
Phone: 614-292-1941, E-mail: wells.267@osu.edu

Paul Schnapp, Student Helper/Website Assistant; Electrical
Engineering, Federal Work-Study Student, Phone: 614-292-1941,
E-mail: schnapp.4@osu.edu

Student Interns

Morgan Bettinazi, Horticulture and Crop Science (2002)
Fred Higginbotham III, Horticulture and Crop Science (2003)

Master Gardener Volunteers — 12 members
High School Student Interns — 4 students

Affiliated Staff

Department of Horticulture and Crop Science
Glen Arbogast, Administrative Officer
Brian Mowery, Computer Support/Website Design
Joan Randall, Shirley Hall, Financial Officers
Andrea Ramsey, Personnel Officer

HOCGC — OPGC Subcommittee

J. Ault, Chicago Botanic Garden (Chair)
J. Dole, North Carolina State University
J. Marotta, Possum Run Greenhouses
P. Talmadge, Pan American Seed Co.
M. Widrlechner, USDA, ARS, Ames, Iowa

For More Information, Contact:

Ornamental Plant Germplasm Center
The Ohio State University
670 Vernon Tharp Street
Columbus, OH 43210-1086
U.S.A.

Phone: 614-292-1941
Fax: 614-292-3768
E-mail: opgc@osu.edu

Web sites:
<http://opgc.osu.edu>

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About the OPGC

The Ornamental Plant Germplasm Center is a genebank to collect, preserve, study, and distribute germplasm of herbaceous ornamental plants.



A Message from the Director

Safeguarding the Gene Pool

This report highlights progress made during the period from July 2002 to December 2003, an important phase in the development of the Ornamental Plant Germplasm Center (OPGC), which was inaugurated on July 16, 2001. The OPGC is the first specialized flower genebank in the world, working to conserve and nurture the world's wealth of herbaceous ornamental plant diversity.

We are not only on target but are making an impact, based on the milestones stated in the OPGC Development Plan and approved for implementation by the USDA Herbaceous Ornamental Crop Germplasm Committee (HOCGC) at the Center's inauguration.

We have many accomplishments to celebrate. Our facility is fully functional and operates more efficiently. Our team of dedicated staff, student helpers, graduate students, and volunteers continues to be the main strength of our program.

We have acquired some 2,000 accessions, including 1,000 accessions that came to us as result of the cooperative network we developed with other universities and organizations. We have completed two seasons of trial seed multiplication, both in the field at The Ohio State University's Waterman Farm in Columbus and in our greenhouse; we regenerated 142 accessions.

Our industry partners have been generous with donations of horticultural equipment and materials for which we are grateful. You will find a list of donors later in this report as well as on our web site.

We have provided training and educational opportunities for Master Gardener volunteers and for Horticulture and Crop Science students. We organized and hosted the 2003 National Floriculture Forum of the American Society for Horticulture Science.

We are grateful for the assistance we have received from many sources. I invite you to read further to learn more about these — and the many other — accomplishments of the OPGC and visit our web site — <http://opgc.osu.edu> — during the coming months to learn more about new developments and our continued progress. Thank you.

Dr. David Tay
Director

Ornamental Plant Germplasm Center
March 28, 2004

Exploring the Complexity of Diversity

Why Preserve Germplasm?

Seeds and other materials from flower varieties that are no longer on the market are thrown away — and with them goes a portion of the flower gene pool. In today's floriculture market, concentrated breeding, with its focus on aesthetics, has been narrowing the genetic diversity of many popular flowers. This makes preservation of flower germplasm even more important.

In addition, preserving this germplasm may save genes that help plants survive drought, pests, and changes in climate. Other genes may have medicinal value for people and animals. So, in effect, what is being saved is options, options for the future.

The Ornamental Plant Germplasm Center (OPGC) serves the nation's and the world's needs for a genebank to collect, preserve, evaluate, and distribute germplasm of herbaceous ornamental plants. OPGC is a joint venture of The Ohio State University's Ohio Agricultural Research and Development Center (OARDC) and the Agricultural Research Service (ARS) of the U.S. Department of Agriculture (USDA).

Through this joint endeavor, the OPGC becomes an official repository for herbaceous ornamental species in the U.S. National Plant Germplasm System (NPGS). This is also the first time in the history of humankind that efforts to protect and conserve our valuable herbaceous ornamental plant diversities have been initiated and a specialized genebank just for this group of plants has been established in the world.

Our Goal

The goal of the OPGC is to conserve, assess, and distribute herbaceous ornamental plant germplasm and to develop new techniques for conserving seed and clonally propagated germplasm.

Focusing on Priority Crops

OPGC progress during this important reporting period has met the targets established by the OPGC Development Plan and Milestones formulated in 2001 and approved by the USDA Herbaceous Ornamental Crop Germplasm Committee (HOCGC) for implementation. In addition, significant progress has been made in all areas established by the HOCGC OPGC Subcommittee, in its strategic planning session held in July 2002, covering plans for the next two years.

The first of these areas was to rank priority genera and choose exemplar genera for germplasm management projects. Then, based on exemplars' biological features, OPGC will select a preliminary set of benchmarks and apply them to assessing performance.

Mission Statement

We work to conserve and nurture the world's wealth of herbaceous ornamental plant diversity by systematically collecting, saving, evaluating and enhancing its use to bring happiness and health to humankind and to promote awareness in herbaceous ornamental crop germplasm conservation.

Development Plan and Milestones (July 2001)

Establishment Phase (2001-2002)

- Building infrastructure
- Building the team — staff and networking
- Setting priority crops — consultation, survey, and literature review
- Launching germplasm introduction and accessioning

Development Phase (2002-2004)

- Evaluating progress and need analysis
- Perfecting genebanking techniques
- Expanding curation team, staff development, and graduate assistantships
- Seeking research and development funds
- Formulating a manageable OPGC program

Operational Phase (2004 onward)

- Running a predictable yearly program, including services and training activities with the flexibility to introduce new activities.
- Continuing to seek research and development funds and maintaining cooperator and clientele base.

The 30 HOCGC priority genera are ranked, in descending order, as follows (Tay, 2003): *Begonia*, *Impatiens*, *Pelargonium*, *Petunia*, *Salvia*, *Viola*, *Dianthus*, *Campanula*, *Hemerocallis*, *Alstroemeria*, *Lilium*, *Verbena*, *Rudbeckia*, *Phlox*, *Aquilegia*, *Poinsettia*, *Phalaenopsis*, *Anthurium*, *Spathiphyllum*, *Aster*, *Iris*, *Baptisia*, *Tagetes*, *Chrysanthemum*, *Veronica*, *Aglaonema*, *Philodendron*, *Narcissus*, and *Dieffenbachia*. They represent some 6,700 species; see <http://www.ars-grin.gov/npgs/tax/index.html>. Presently, OPGC curates more than 1,800 accessions (Table 1).

A recent survey of the floricultural industry and academia prioritized the HOCGC priority genera for conservation. The top 15 genera, in descending order of importance, are: *Begonia*, *Impatiens*, *geranium* (referring to *Pelargonium*), *Petunia*, *Salvia*, *Pelargonium*, *Viola*, *Dianthus*, *Campanula*, *Hemerocallis*, *Alstroemeria*, *Lilium*, *Verbena*, *Rudbeckia*, and *Phlox*.

Establishing an Acquisition Strategy

In these initial years, OPGC's acquisition strategy is to concentrate efforts within the country to build the collection. The Center's emphasis is focused on the HOCGC priority genera pertinent to OPGC specifically for germplasm of related wild species and of heirloom cultivars. This work is conducted in compliance with current NPGS acquisition guidelines.

Acquiring Accessions

In this reporting period, some 800 new accessions were acquired from a university breeder (Dr. Dick Craig's *Pelargonium* collection of The Pennsylvania State University); crop-specific societies, including the American Begonia Society and the International Impatiens Society; botanic gardens; plant collecting consortia; seed companies and nurseries; and USDA plant exploration missions.

A complete list of germplasm donors appears in this publication and on the web site.

Regenerating Seeds

The goal in seed regeneration is to produce about 10,000 seeds with 80% germination per accession from at least 30 parental plants in order to preserve the genetic profile of each seed-propagated accession. Subsamples of 3,000 to 4,000 seeds are duplicated in the NPGS base collection at the National Center for Genetic Resources Preservation (NCGRP) in Fort Collins, Colorado.

In the 2003 season, regeneration of 105 accessions was attempted in pollination cages at Ohio State's Waterman Farm in Columbus and in the OPGC greenhouse using bumblebees, honeybees, and blue bottle flies as pollinators (Table 2). This represents a three-fold increase when compared to 37 accessions in 2002.

Winter seed production in the greenhouse was successfully tested in the 2002-03 season, and our current aim is to develop higher density, smaller plants with fewer seeds produced per plant so that more plants per accession can be used to capture a greater proportion of within-accession variation.

Table 1.
OPGC Germplasm Accessions
as of December 2003.

	Genus	Total
1	<i>Alstroemeria</i>	1
2	<i>Aquilegia</i>	8
3	<i>Aster</i>	8
4	<i>Baptisia</i>	3
5	<i>Begonia</i>	136
6	<i>Campanula</i>	35
7	<i>Chrysanthemum</i>	12
8	<i>Dianthus</i>	110
9	<i>Euphorbia</i>	2
10	<i>Geranium</i>	9
11	<i>Hemerocallis</i>	20
12	<i>Impatiens</i>	50
13	<i>Iris</i>	44
14	<i>Lilium</i>	54
15	<i>Narcissus</i>	12
16	<i>Pelargonium</i>	362
17	<i>Petunia</i>	4
18	<i>Phlox</i>	2
19	<i>Rudbeckia</i>	13
20	<i>Tagetes</i>	123
21	<i>Verbena</i>	19
22	<i>Veronica</i>	4
23	<i>Viola</i>	18
24	Priority Genera	1,049
25	Other Genera	797
	Total	1,846

Table 2. OPGC Seed Regeneration During 2002 and 2003.*				
	Genus	2002	2003	Total
1	<i>Anisodonteia</i>		2	2
2	<i>Antirrhinum</i>	2	15	17
3	<i>Aquilegia</i>	-	1	1
4	<i>Aster</i>	-	1	1
5	<i>Begonia</i>	-	2	2
6	<i>Belamcanda</i>	-	2	2
7	<i>Campanula</i>	1	1	2
8	<i>Cleome</i>	1	1	2
9	<i>Consolida</i>	1	1	2
10	<i>Coreopsis</i>	-	1	1
11	<i>Cosmos</i>	3	-	3
12	<i>Dianthus</i>	1	10	11
13	<i>Eupatorium</i>	-	1	1
14	<i>Gadalia</i>	-	1	1
15	<i>Gaillardia</i>	-	2	2
16	<i>Geranium</i>	-	1	1
17	<i>Gypsophila</i>	-	3	3
18	<i>Hosta</i>	-	1	1
19	<i>Hunnemannia</i>	-	1	1
20	<i>Impatiens</i>	-	1	1
21	<i>Lilium</i>	-	1	1
22	<i>Lysimachia</i>	-	1	1
23	<i>Melampodium</i>	2	-	2
24	<i>Myosotis</i>	-	1	1
25	<i>Narcissus</i>	-	1	1
26	<i>Nothoscordum</i>	-	1	1
27	<i>Oenothera</i>	-	4	4
28	<i>Passiflora</i>	-	3	3
29	<i>Penstemon</i>	1	5	6
30	<i>Petunia</i>	-	1	1
31	<i>Phlox</i>	1	-	1
32	<i>Platycodon</i>	-	1	1
33	<i>Rudbeckia</i>	4	7	11
34	<i>Ranunculus</i>	-	1	1
35	<i>Silene</i>	-	2	2
36	<i>Stokesia</i>	-	2	2

Table 2 (continued). Progress in OPGC Seed Regeneration During 2002 and 2003.*

	Genus	2002	2003	Total
37	<i>Tagetes</i>	17	11	28
38	<i>Talinum</i>	-	2	2
39	<i>Thalictrum</i>	-	1	1
40	<i>Verbena</i>	-	1	1
41	<i>Veronica</i>	-	1	1
42	<i>Viola</i>	1	-	1
43	<i>Zinnia</i>	2	10	12
	Total	37	105	142

* Indicating number of accessions attempted but not all were successful.

Seeking Specialized Information

The diversity of the priority crops — 30 genera including 6,700 species — makes access to comprehensive technical advice on specific crops very difficult. Crop Specific Technical Working Groups (TWG) have been established to provide OPGC with advice for selected genera in the following areas:

- Germplasm diversity and acquisition.
- Natural distribution and existing collections.
- Gaps in collections.
- Taxonomic and evolutionary relationships.
- Genetics.
- Seed and plant propagation and storage.
- Formulation of crop descriptors.
- Germplasm characterization and evaluation.
- Germplasm related research areas.

A TWG consists of five to seven specialists in the crop who represent a range of pertinent scientific disciplines, e.g., plant collector, taxonomist, geneticist, plant breeder, pathologist, entomologist. Members of the current 17 TWGs are listed on the OPGC web site at: <http://opgc.osu.edu>.

A web-based e-mail and forum system has been established and is now under trial to facilitate communication among group members (http://opgc.osu.edu/twg.asp?ID=11#_20) and to promote discussion and feedback from OPGC clientele (<http://opgc.osu.edu/forum/forum.asp>).

Making Our Facility Efficient

Our building, a modern 6,000-square-foot office and laboratory complex, and our 11,500-square-foot-greenhouse are fully functional. We have, now, a more efficient physical facility and will continue to make further refinements. These improvements have resulted in improvements in seed handling, cleaning, and storage.

We were able to evaluate our seed drying and processing facility through various seed regeneration exercises. We constructed a second dryer, modified our belt thresher, designed a hand-threshing board, and procured two more laboratory seed blowers, based on our specifications.

A pre-filtering system was added for the activating air-intake of our two seed-cooler dehumidifiers. A central fertigation system was installed.

Improving Our Seed Cooler

Our medium-term seed cooler was improved by installing larger air filters for the reactivating air intake of the two chemical dehumidifiers. This prevents the clogging which had caused failure in both machines. A Sensaphone automatic telephone monitoring system was installed as an additional alarm system.

The seed handling procedure is to take all seed as quickly as possible into the storage cooler, including seed after drying but waiting to be cleaned and processed.

Customizing Our Threshing Operation

The seed-winnowing component of the belt thresher was modified so that small seed can be threshed without being blown off. The custom-built threshing boards, measuring 39 cm x 39 cm x 10 cm (H) with rubber bases and rubbing blocks, have greatly accelerated seed processing during 2003.

Assessing Seed Quality During Cleaning

The separation of seed from trash by using a series of sieves, an Oregon seed blower, and a seed vibrating table has been developed and the exact sieve sizes, blowing velocity, and vibrating speeds are being documented for our seed-processing manual. The determination of filled vs. empty seeds is evaluated by using standard germination tests and will be supplemented through the purchase of a digital X-ray unit in 2004 that should allow for more rapid seed quality assessment during seed cleaning.

Selecting Pollinators

The use of honeybees, bumblebees, and blue bottle flies for pollination in field cages and greenhouse compartments was compared and has allowed us to refine our selection of pollinators. Bumblebees were determined to be the best overall and will be used in the future. The height and width of our pollination cages were increased to seven feet to provide better access.

Developing an *In Vitro* Laboratory

A tissue-culture laboratory for the *in vitro* conservation of vegetatively propagated material is under development in cooperation with the Ohio State University Department of Horticulture and Crop Science. This laboratory is located in Howlett Hall on the Columbus campus, adjacent to the OPGC.

Assuring Quality and Workplace Safety

Information on seed production, processing, and testing techniques is being documented for the preparation of an OPGC operations manual.

A laboratory and greenhouse maintenance and workplace safety program, with monthly monitoring and inspection, is in place. Inventories of laboratory and field equipment and supplies are in place, including a full chemical inventory with easy access to Material Safety Data Sheets (MSDS).

Building Our Team

Staff building and networking with other institutions and individuals received top priority.

Our team of dedicated staff, student helpers, graduate students, and volunteers is essential to the OPGC program. The OPGC is organized based on teams for seed and clonal curation. Each team consists of a curator, a research assistant, and hourly assistants. Our new Research Assistant Eric Renze reported for duty in January 2003 and is working with Susan Stieve, Seed Crop Curator.

In 2003, we initiated a second team for the conservation of clonally propagated crops with the hiring of a second Research Assistant, Arthur Wells, on September 24, 2003. In November 2003, our second Curator, Jennifer Ehrenberger, a M.S. graduate from the University of Hawaii, to curate our *in vitro* collections. She will begin working January 2004.

In addition, seven high-quality graduate students (four Ph.D. and three M.S. candidates), including two Fulbright Scholars and one Distinguished University Fellow, were recruited.

We also provided training opportunities for 17 undergraduate students and several Master Gardener volunteers.

Developing Partnerships

We gave priority to the development of a cooperative network with universities, USDA, the floricultural industry, botanic gardens, crop-specific societies, and individuals to collect, conserve, and evaluate germplasm. Nearly 1,000 accessions were received through this effort. We also received donations of horticultural equipment and materials from the industry. Names of the donors are listed later in this publication. Donors also are acknowledged on the OPGC website at: <http://opgc.osu.edu>. The OPGC is grateful for these many contributions.

With Other Universities

We are developing a Tissue Culture Laboratory for *in vitro* collections in collaboration with the Department of Horticulture and Crop Science on Ohio State's Columbus campus.

A DNA marker project has been initiated with the collaboration of the Ohio State University Department of Plant Pathology and the USDA-ARS, Wooster, Ohio, on *Pelargonium* to duplicate identification and taxonomic studies.

In 2002 and 2003, the OPGC collaborated with Dr. Claudio Pasian, Department of Horticulture and Crop Science, Ohio State; Dr. Shawn Wright, horticulturist at the OSU South Centers in Piketon; and Dr. Allan Armitage, University of Georgia, in performance trials of *Cuphea* for the floricultural industry. The results of the trials are posted at <http://floriculture.osu.edu/archive/may03/Cuphea.html> and http://southcenters.osu.edu/hort/data/2003/03_cuphea.pdf.

With Associate Collectors

The OPGC is fostering cooperation with other institutions to help conserve the vast number of taxa of herbaceous ornamental plants. We are working with members of the North American Plant Collections Consortium (NAPCC) of the American Association of Botanic Gardens and Arboreta (AABGA) to adopt NAPCC collections as associated NPGS collections. The associate collection mode is particularly applicable to clonal collections where the cooperating partners will hold the field collections.

Presently, negotiation is ongoing with Toledo Botanic Garden (TBG) to curate *Hosta* where the TBG will maintain the field collection and the OPGC the *in vitro* collection as a backup for the field collection.

With International Partners

The OPGC is also proactive in exploring germplasm exploration, conservation, and exchange, and research collaboration with other countries.

International Forum on Seed Science and Technology and Seed Industry Development: The Center, in collaboration with the Department of Horticulture and Crop Science, acquired funding to jointly organize an International Forum in seed science and technology in Beijing, China, on November 11-13, 2002.

Funding for this joint effort was obtained from the Ohio Agricultural Research and Development Center (OARDC); Ohio State’s College of Food, Agricultural, and Environmental Sciences (CFAES) Office of International Programs; and the Ohio State Office of International Education.

The Forum was organized with our international partners — the China Agricultural University (CAU) and the University of São Paulo, Brazil. This forum allowed faculty members from these three universities to meet and develop a joint strategic plan on future cooperation in teaching and research. Some 200 participants were registered.

The outcomes included a Memorandum of Understanding (MOU) signed between CFEAS and CAU in March 20, 2003; the initiation of a project in seed science and technology teaching; and a Chinese Ministry of Agriculture Seed Management mission to the United States, which included a visit to Ohio State University.

SARS Postpones an Exploration Mission to China: The planned USDA-funded exploration mission to Yunnan and Sichuan, China, in 2003 to collect *Chrysanthemum* and *Lilium* had to be postponed because of SARS occurrence in China.

Documenting Results

The NPGS Germplasm Resources Information Network (GRIN) is used to handle germplasm passport, characterization and evaluation, taxonomic, inventory, and distribution data. OPGC holdings are increasing rapidly, with 880 newly acquired accessions with OPGC numbers. The internal OPGC working accession numbering system will be added to the GRIN database. The goal in data management is to directly enter information into GRIN (<http://www.ars-grin.gov/npgs/searchgrin.html>), which has a secured data backup system.

Exchanging Germplasm

OPGC follows the USDA policy of free distribution and exchange of germplasm to both public and private bona fide researchers domestically and internationally. In this reporting period, 59 seed samples representing 10 genera were filled to meet 10 seed requests (Table 3).

Because not all the accessions have seed inventory data in GRIN, the seed distribution process had to be done manually. Information about all distributions will be retroactively added to GRIN as soon as possible.

Table 3. Number of Seed Samples Distributed in 2003.

	Genus	2003
1	<i>Chrysanthemum</i>	3
2	<i>Cleome</i>	1
3	<i>Impatiens</i>	1
4	<i>Iris</i>	5
5	<i>Leucanthemum</i>	7
6	<i>Liatris</i>	2
7	<i>Portulaca</i>	6
8	<i>Stokesia</i>	27
9	<i>Tagetes</i>	4
10	<i>Zinnia</i>	3
	Total	59

Making Academic Contributions

Engaging in Research

The OPGC, in collaboration with Ohio State University academic departments, initiated seven graduate student research programs in 2003. These consisted of one Master of Science and three Ph.D. projects in seed science and technology pertinent to herbaceous ornamental plant germplasm conservation. These projects were undertaken with the seed biology faculty of the Ohio State Department of Horticulture and Crop Science (HCS).

One Ph.D. project in germplasm evolution and one Master of Science in *Begonia* cultural management were initiated with Horticulture and Crop Science floriculture faculty. One Ph.D. project on invasiveness of introduced germplasm was started, involving the HCS weed science faculty, and one Ph.D. project on DNA marker research is underway with Ohio State’s Department of Plant Pathology and USDA’s Agricultural Research Service (ARS) at Wooster, Ohio.

Students involved in these projects include two Fulbright Scholars — one from the Pontificia Universidad Católica de Chile, Santiago, Chile, and another from the National Plant Genetic Resources Laboratory of the Institute of Plant Breeding, the University of the Philippines at Los Baños, the Philippines — and one Ohio State University Distinguished University Fellow.

Teaching Academic Courses

Dr. Tay also organized and taught a graduate-level course on Plant Genetic Resource Conservation (Horticulture and Crop Science 830) and collaborated in HCS 325, Crop Genetic Resources, a core undergraduate course.

The OPGC also participated in teaching classes in seed science and technology for the Department of Horticulture and Crop Science.

Serving as Hosts

National Floriculture Forum

The OPGC organized and hosted the 2003 National Floriculture Forum (NFF) of the American Society for Horticultural Science (ASHS) on February 21-23. NFF is an educational meeting of university professors, students, government scientists, and industry leaders with the objective of bringing together members of these communities for a weekend meeting to:

- Address issues of importance to the floriculture industry.
- Form collaborative relationships.
- Learn from each other.

This meeting is the only one of its kind and is bringing more and more members of the floriculture community together each year. Virtually any topic of significance can be the focus any one year the group meets.

This year's program consisted of an Ornamental Plant Germplasm Symposium and a workshop on building a collaborative network among NFF members. A total of 57 participants attended. The OPGC used the forum to launch the concept of OPGC crop-specific technical working groups and to invite the participation of the attendees and to propose names of experts for inclusion in the group. The aim is to make OPGC into a truly national program.

Dr. Tay received more than 10 letters of appreciation for doing a good job. The forum was reported in several floriculture trade magazines and posted on the OPGC website.

U.S. Department of Agriculture

We were fortunate to be able to welcome USDA Under-Secretary Dr. Joseph Jen for a tour and discussion of recent progress in May 2003.

Participating in Professional Organizations

The staff participated actively in meetings of both domestic and international horticultural science societies, trade associations, crop-specific societies, and gardening groups. Presentations were made at international and domestic meetings, including the ISHS International Horticultural Congress 2002, the 2003 International Master Gardeners Conference, the 2003 National Floriculture Forum, the 2002 Annual Meeting of the American Association of Botanic Gardens and Arboreta, the OFA Short Course, and the American Seed Trade Association Vegetable and Flower Seed Conference.

Articles on OPGC were published in trade magazines and the USDA *Agricultural Research* magazine.

Increasing Public Awareness

The Center continues to increase public awareness by participating in conferences, symposia, public lectures, trade

shows and exhibits, and publishing articles and news in scientific publications and trade magazines.

In addition, an informational brochure and bookmarks were created and distributed at both local and national meetings and conferences.

The OPGC web site (<http://opgc.osu.edu>) was redesigned to better highlight our activities. The web site address changed from <http://hcs.osu.edu/opgc> to <http://opgc.osu.edu> and another address — <http://www.opgc.osu.edu> — can also be used. The number of hits per day is about 250.

Receiving Recognition

The OPGC was identified as “among the most prominent of the new and emerging scientific initiatives of OARDC” in the external review of the Ohio Agricultural Research and Development Center conducted by the Technology Partnership Practice of Battelle Memorial Institute in December 2003. In the 2003 OARDC Annual Report, the University's Vice President for Agricultural Administration Bobby Moser and OARDC Director Steven A. Slack highlighted OPGC as one of the examples of OARDC scientific efforts in their message.

Dr. David Tay, OPGC Director, was appointed as a Visiting Professor (agronomy and biotechnology) at China Agricultural University, Beijing, China, and as an Adjunct Associate Professor in the Department of Evolution, Ecology, and Organismal Biology in the College of Biological Sciences at Ohio State.

Additional Achievements

Other achievements during the reporting period are itemized in this report. The main strength of the OPGC program is our team of dedicated staff, student helpers, graduate students, and volunteers.

OPGC's Future

Our goal in the coming years is to increase our germplasm collection both through exploration missions and targeted solicitation from potential germplasm donors. We are working closely with the Ohio Department of Natural Resources to initiate efforts to collect native herbaceous species in 2004. The OPGC is also working closely with the USDA Plant Exchange Office in Beltsville, Maryland, to organize exploration missions and exchange opportunities in other countries.

Contributors to the OPGC

Germplasm Donors

Jim Adams, The Herb Society of America
Arnold Arboretum
James Ault, Chicago Botanical Gardens
Tony Avent, Plant Delights Nursery
Chris Baker, Bakers Acres Greenhouse
Steve Banovetz, Agrecol Corp.
Ernst Benary
Jim Bissel, Cleveland Museum of Natural History
Peggy Campbell, Botanical Interests
Nicole Cavender, The Wilds
Bill Claybaugh, The American Begonia Society
Brian Corr, Ball Seed
Richard Craig, The Pennsylvania State University
Russel Eckley, Ornamental Plant Germplasm Center
Michelle Grigore, Toledo Botanical Garden
Mary Lou Gripshover, American Daffodil Society, Inc.
Joseph Hamm, American Daffodil Society, Inc.
Gary Hayes, The Nature Conservancy, Kitty Todd Nature Preserve
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We invite you to be a part of this global effort to save our heirloom flowers by contributing to the Ornamental Plant Germplasm Center Endowment to ensure that our children and grandchildren will be able to enjoy the beauty of the flowers that our forebearers handed to us.

Any level of contribution is welcome.

We are always in need of germplasm of our priority genera, materials, and funding.

We will continue to make improvements and adjustments so that we can fulfill our mission and serve national and world needs for a genebank to collect, preserve, study, and distribute germplasm of herbaceous ornamental plants.

To Contribute

Please make your check payable to:

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For donations of germplasm, materials, and equipment, please contact the OPGC at:

Phone: 614-292-1941

Fax: 614-292-3768

E-mail: opgc@osu.edu

Thank You

We appreciate your willingness to assist us in this historic endeavor.



Ornamental Plant Germplasm Center

The Ohio State University

670 Vernon Tharp Street

Columbus, OH 43210-1086

Phone: 614-292-1941

Fax: 614-292-3768

E-mail: opgc@osu.edu

Web site: <http://opgc.osu.edu>