Symposium 22 (S22): 4th International Symposium on Taxonomy of Cultivated Plants

Monday · August 12

Location: Metro Toronto Convention Centre, Room 103A

1100–1140
S22–O–1
50 YEARS OF THE INTERNATIONAL CODE OF NOMENCLATURE FOR CULTIVATED PLANTS: FUTURE PROSPECTS FOR CULTIVATED PLANT TAXONOMY

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The first edition of the International Code of Nomenclature for Cultivated Plants was published in June 1953 by the Royal Horticultural Society as a preprint from the Report of the Thirteenth International Horticultural Congress held in London, September 1952, and has undergone a total of six editions, the last being in 1995. In introducing this symposium, a short review of the changing provisions of the Code over the past fifty years is outlined. Codes of nomenclature have to reflect existing taxonomic practices as well as the needs of the end-users of names who are not the distinguished academics who historically construct codes, but individuals and organizations who need to label plants in some way for reasons of identification. A review of evolving taxonomic practice is accompanied by an analysis of the changing nomenclatural requirements. In particular, it is increasingly important that the names of cultivated plants have a meaning that is transparent to potential users of names. A number of proposals, some quite radical, are discussed which might help to make the naming of plants easier and which should help with the correct application of names. In addition, a range of nomenclatural tools are illustrated which should be of international benefit. Finally, the need for international co-operation between statutory and non-statutory bodies in the various acts of nomenclature and taxonomy is highlighted.

1140–1200
S22–O–2
NOMENCLATURE OF CULTIVATED PLANTS: A HISTORICAL BOTANICAL PERSPERPECTIVE

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In the words of the Preamble to the International Code of Botanical Nomenclature (ICBN), its "rules and recommendations apply to all organisms traditionally treated as plants"—and cultivated plants certainly remain plants. The Preamble to the ICBN goes on, of course, to say that the "International code of nomenclature for cultivated plants [ICNCP] .... deals with the use and formation of names for special plant categories in agricultural, forestry, and horticultural nomenclature." For horticulturists, and other users of names of cultivated plants, the ICBN and the ICNCP—and their interaction—together are important for effective communication about the raw materials of our industry. The history of the nomenclature of cultivated plants under the ICBN is explored, the present relationship between the ICBN and the ICNCP is discussed, and future prospects are considered.

1200–1240
S22–O–3
USE AND MISUSE OF TRADEMARKS IN THE EUROPEAN NURSERY INDUSTRY

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In this presentation mainly two denominations used in the marketing of plant varieties will be discussed. First, the variety denomination which must enable the variety to be identified and has to differ from already existing denominations used to identify other varieties of the same or of a closely related species. Secondly, the trademark, which is a designation of the origin of goods (and services) and enables a person who offers for sale or markets a certain product to distinguish this product from identical or similar products, offered for sale or marketed by someone else. The variety denomination is destined to identify a certain variety forever, i.e., not only during the (possible) period of protection, but also after the expiration of that protection. In the case of a protected variety a trademark may be associated with the designated variety denomination, but the latter must always be easily recognizable as such. Moreover, the applicant for plant variety protection has to waive any possible rights to the denomination in one or more UPOV-Member States in connection with identical or similar goods, e.g., when at the time of proposing the variety denomination he already used the same denomination as a trademark. Problems may arise when a variety is only marketed under the trademark, or when two or more persons use different trademarks for the designation of one and the same variety and do not use the official variety denomination as well. Problems may also arise when the trademark is put within single quotation marks (in order to make it look like a variety denomination), or when someone sells plants belonging to different varieties under one and the same trademark. In these cases the ends of the international system of variety denominations will be frustrated and there will be a lot of confusion in the horticultural trade. Moreover, there is the risk that the trademark right might become a kind of generic designation of the variety, and as a result it might be declared to be revoked. Further, the case law of the Board of Appeal of the Community Trade Mark Office (OHIM) in Alicante makes clear that a Community trademark can also be declared invalid if it consists exclusively of indications which have become customary in the bona fide and established practices of the trade.

1440–1500
S22–O–4
VARIETY DENOMINATIONS IN THE COMMUNITY PLANT VARIETY RIGHTS SYSTEM

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The Council of the European Union adopted a Regulation in 1994, establishing a system of Community plant variety rights as the sole and exclusive form of intellectual property rights for new plant varieties in the European Union. The system is administered by the Community Plant Variety Office (CPVO). In order to be granted Community plant variety rights, a variety must be Novel, Distinct, Uniform, Stable and have a suitable variety denomination. The use of this denomination is compulsory for any person commercialising a protected variety in the territory of the European Union. Article 63 of the Regulation defines the criteria that a denomination should fulfil in order to be suitable. For example, there is an impediment to the designation of a variety denomination where it is identical to, or may be confused with, the variety denomination used or officially approved in relation to another variety of the same or of a closely related species. These criteria (and guidance as to their interpretation laid down in a set of rules adopted by the Administrative Council of the CPVO) are presented. Of particular note is the recently introduced possibility to use codes—an arbitrary sequence of letters and numbers—as variety denominations. The search for identical or similar denominations already in use or officially approved is an important part of checking the suitability of a proposed denomination. The creation of a centralised database is being considered, in which official registers (created by legislation) would be included, and also registers of denominations of varieties on the market, particularly for ornamental plants. In this latter area, the Office hopes to collaborate with the maintainers of such registers. All proposed denominations are published in the Official Gazette of the CPVO, and any person can lodge an objection. It is in the interest of all parties involved in the registration of variety denominations to apply the rules in as harmonised as manner as possible in order to avoid conflict between the decisions taken by the various authorities concerned.

1500–1520
S22–O–5
APPLICATION AND REVISION OF ICNCP-1995: ISSUES AND SUGGESTIONS, ESPECIALLY FROM A CHINESE PERSPECTIVE

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The wide use of the International Code of Nomenclature for Cultivated Plants (ICNCP) depends on its rules being truly international and applicable to as many countries and languages as possible, and being precise and user-friendly. In the case of the Chinese language, the limit on the number of characters of a cultivar epithet is too lenient, and should be reduced to five Chinese characters. Forbidding the inclusion of the vernacular name of the genus as the final part of a Chinese cultivar epithet may render the cultivar epithet linguistically awkward so this rule should be modified. Since in French (and in many other Romance languages) adjectives usually come after the substantive they modify, the Code does not seem fair to stipulate that English names such as Camellia 'Perfect Rose' could not be established after 1995, while the equivalent French names such as Camellia 'Rose Parfaite' are still perfectly establishable. Naming cultivars with numerals or arbitrary sequences of letters (which are not words) should be allowed (though not recommended), and this should be clearly stated, since such names are fairly common, as can be seen in the examples in the Code. The limit on the length of cultivar-group epithets should be brought in line with that for cultivar epithets, instead of being based on number of words. The Code should provide for the formation of a "species" epithet in Latin form for all distinct graft-chimaeras that arise from the same component species belonging to the same genus or different genera, to distinguish them from graft-chimaeras that arise from other component species of the genus or genera. These and other issues that may or may not find easy solutions are presented for discussion.

1520–1540
S22–O–6
CURRENT PROBLEMS IN NOMENCLATURE AND TAXONOMY OF CULTIVATED PLANTS

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In its last two editions, the International Code of Nomenclature for Cultivated Plants (ICNCP) has undergone dramatic changes, resulting in a reduction of the number of accepted categories and the adoption of the culton concept. Whereas the International Code of Botanical Nomenclature (ICBN) is still a system exclusively for scientific use, it is the scope of the present ICNCP to provide a simple system for practical purposes for a very diverse group of users with different intentions. The present situation is complex due to incompatibilities between the Codes on different levels: (1) Whereas at present the classification under the ICBN normally more or less implies a phylogenetic background, the ICNCP is aiming at providing a formal classification for practical use. (2) The culton concept as a non-hierarchical system is incompatible with the hierarchical system of the ICBN, resulting in problems with name conversions (especially for "convar."). Though the present system is far from being satisfactory, many problems related to synonymy result from the vast number of categories that have been introduced in the past. The sometimes very limited use of categories or their re-definition makes the comparison of different works very difficult, if not impossible. Aside from these general problems the acceptance of the ICNCP is very low as (1) for certain taxonomic aspects there is a lack of accepted categories, (2) the rules for naming cultivars are still too complicated or restrictive for practical use, and (3) the important commercial sector with trade-marks is not covered by the ICNCP. Some needs for the future can be identified: (1) harmonisation of the Codes (2) consequent use of them for new names or combinations (3) avoidance of ambiguous categories (4) inclusion of rules for naming clades. The development and establishment of worldwide databases providing tools for linking and maintaining information on the relationships of plant names will be of great help in this process.

1540–1600
S22–O–7
PLANT NAME CHANGES: GOOD SCIENCE, ANGRY GROWERS AND CONFUSED GARDENERS

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Nursery growers and plant taxonomists seem to come from different worlds, with each not fully understanding the needs and goals of the other. This concept is hardly a new one, but in an era of intensive plant breeding and marketing, international trade and high consumer interest in gardening, the problem may be reaching a critical point around the globe. Taxonomic name changes result in a state of confusion for growers, retailers and most especially for the end users: home gardeners, landscape contractors and designers, municipalities and botanical gardens. Name changes also result in unforeseen costs to commercial growers and label manufacturers amounting to hundreds of thousands of dollars in North America alone. Significant name changes can instantly create an inventory of out-of-date plant tags and other POP materials, not to mention reference books and catalogues.The perception of many growers, retailers and gardeners is that some unknown group of Academics makes random and arbitrary taxonomic name changes in order to justify their own existence. Growers may feel helpless and unconsulted—out of the loop—leading to feelings of resentment, lack of trust and possibly an unwillingness to change. The biggest fear is always that the end user, the consumer, will cease to purchase a now-unfamiliar plant. Adding to the state of confusion, Trademark names and so-called nonsense cultivar names are not widely understood by industry members, obvious by their common misuse. Various aspects of how growers, breeders and end users deal with Trademark names will be explored in this presentation.Scientific publications outlining nomenclature rules and changes are not readily available to nursery growers, and growers often have a hard time making sense of them. Improved communication between the scientific and horticultural communities appears to be the way of the future if both groups ever hope to co-exist in the world of horticulture. In an attempt to provide its Members with an up-to-date and common nomenclature reference, the Perennial Plant Association adopted the List of Names of Perennials in 1995. This book provides our Members with a regularly-updated reference for the vast majority of commercially-grown perennials, in an easy-to-use format and at an affordable price.

1600–1620
S22–O–8
THE ROLE OF THE GRIN DATABASE IN PROMOTING STABILIZATION OF ECONOMIC PLANT NAMES

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The taxonomic portion of the Germplasm Resources Information Network (GRIN) of the United States Dept. of Agriculture, Agricultural Research Service provides the scientific nomenclature for ca. 450,000 accessions of the National Plant Germplasm System. Most plants of agronomic or horticultural importance are represented among these accessions. Recently, we have extended the taxonomic coverage to many other plants of economic importance throughout the world, such as poisonous plants, ornamentals, weeds, medicinal plants, or plants of conservation concern, not represented among germplasm accessions. Thus GRIN Taxonomy now provides accurate scientific names for nearly 35,000 species of vascular plants. For nearly two decades botanists of the Systematic Botany and Mycology Laboratory have intensively surveyed the botanical literature and compiled extensive data relating to nomenclature, synonymy, classification, distribution, economic uses, and common names, and a bibliography of taxonomic resources for the included plants. Since 1994 these data have been freely available to internet users, and thousands of queries of these data are answered daily. Direct consultation for complex nomenclatural issues is also often provided. Many agricultural organizations rely on GRIN Taxonomy as a dependable source of accurate scientific names. Included among these are international seed-testing organizations such as AOSA and ISTA, which have used GRIN Taxonomy to promote stabilization of nomenclature in the seed industry. A thorough renovation of the GRIN Taxonomy web interface was completed for 2002, providing further improvements to user access and data presentation.

1620–1640
S22–O–8–A
TO BE ANNOUNCED

1640–1700
S22–O–8–B
TO BE ANNOUNCED

Tuesday · August 13

1100–1140
S22–O–9
THE ROLE OF BOTANIC GARDENS IN PLANT EXPLORATION, EVALUATION, AND INTRODUCTION

Paul W. Meyer*

ABSTRACT UNAVAILABLE

1140–1200
S22–O–10
CO-OPERATION AND COMPLIANCE BETWEEN BREEDERS AND PRODUCERS: THE COPF MODEL

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Acting as a liaison between breeders and growers since 1964, the Canadian Ornamental Plant Foundation (COPF) has achieved a high level of compliance and co-operation with Plant Breeders' Rights in Canada. How this was achieved, methods of protection, plant database management, commercialization, and how to proceed in an ever-changing climate of patents and PBRs will be discussed.

1200–1220
S22–O–11
INTRODUCING ORNAMENTAL CROPS WITHOUT A PLANT BREEDER: CAN IT BE DONE? A MODEL FOR COOPERATION BETWEEN INDUSTRY AND ACADEMIA

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Introducing new crops successfully is a difficult endeavor for academic institutions, due to limited time, limited facilities or insufficient industry-academic cooperation. Promotion and marketing of new crops also requires funding and additional personnel to be successful. The New Crop program at the Univ. of Georgia initially introduced several new greenhouse-landscape taxa by inviting local industry to share the material. New crops that were profitable were quickly propagated resulting in credibility fr the program. The methods of finding the plant material, as well as initial evaluation and distribution will be discussed. Recently, a number of national propagators and the New Crop program formed a marketing alliance known as Athens Select. The responsibility of the university is to find, evaluate and recommend taxa for the marketing group, while the responsibility of the industry members is to promote and sell the plants in the program. Univ. research facilities are also used for determining propagation, scheduling and solving production-related problems associated with the taxa. The protocol to establish such a partnership will be discussed using the Athens Select program as a model.

1220–1240
S22–O–12
NEW LATVIAN ORNAMENTALS

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At the National Botanic Garden of Latvia, in conjunction with plant introduction, a keystone is combining breeding with potentials of in vitro technologies (screening, multiplication of new cultivars, etc.). In Latvia there are approximately 115 breeders who have produced more than 1,000 new cultivars (registered under UPOV conditions and in other registers). The main objectives of breeding are winter-hardiness, disease resistance and fitness as a complex of traits for Baltic agroecological conditions, along with low light and energy consumption for hothouse plants. The main groups undergoing this research include: (1) Grasses for park lawns and intensively used turf where three forms of red fescues (resistant to rusts) have been selected, two sheep fescues, and two forms of Kentucky bluegrass (K. Buivids, I. Holms). In-vitro screening methods are used to search for forms tolerant to NaCl, which are suitable for roadsides and are tolerant to high doses of NPK for higher-intensity sport turfs: (2) Gerbera and chrysanthemums where the main activities include the elaboration of principles for the creation of forms suitable for growing and producing flowers under conditions of low energy, including light consumption. 40 cultivars and 95 other prospective clones of gerbera and 17 small and large-flowered chrysanthemums have been bred: (3) The Vice President of the Latvian breeder club, Aldonis Verinsh, is originator of more than 350 gladiolus cultivars, of which 40 are recognized as bestsellers North America: (4) Other ornamental cultivars have been bred in groups such as (a) rhododendrons: summer-green (18), evergreen (12), azalea (17 varieties, breeder R. Kondratovics) (b) lilacs (5 varieties, P. Upitis) (c) sweet peas (5 varieties, V. Dubovskis) (d) astilbes (4 varieties, M. Lusina) (e) tulips (more than 200, V. Skuja and others) (f) daylilies (more than 15, J. Vasarietis) (g) lilies (more than 250, V. Orehovs, A. Zorgevics, J. Vasarietis, A. Balode and others).

1340–1440
S22–P–13
PLANTSMANSHIP: ADDING AN EXTRA DIMENSION TO HORTICULTURAL UNDERSTANDING

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For a many years, individual horticulturists with a good knowledge of the origins, cultivation, and use of garden plants have been referred to as Plantsmen. In 1995, the Royal Botanic Garden Edinburgh (RBGE) in conjunction with the Scottish Agriculture College (SAC) gained approval to offer the Higher National Diploma (HND) in Horticulture with Plantsmanship. The origins of the course will be described and the opportunities for student learning highlighted. Plantsmanship training is now recognised as a valuable discipline within horticulture and attracts students from a wide range of backgrounds. The HND Plantsmanship course is accepted as an integral part of the Scottish horticultural scene and allows students, through their study of plants, to progress to degree and post graduate level courses in horticulture and related specialisms.

1340–1440
S22–P–14
NORTH AMERICA AND THE BOTANICAL MAGAZINE

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Curtis's Botanical Magazine has been published continuously since 1787 when it was founded by William Curtis (1747–1799). His concept was to present colour portraits with accompanying descriptions of the many exotic plants entering Britain from all over the world at that time. During two centuries of the *Magazine*, North American plants have featured prominently. *Rubeckia purpurea* was illustrated as Plate 2 in 1787 and indeed many North American taxa were described and depicted for the first time in the *Magazine*, the plates thus representing "iconotypes". The flora of the New World dominated the *Botanical Magazine* during William Hooker's editorship under the proprietor Samuel Curtis between 1827–1844. Some 190 North American plants were illustrated during this period, especially those collected by Thomas Drummond (x–1823) and David Douglas (1798–1834). The *Botanical Magazine* is published quarterly, each four-part volume containing 24 colour portraits and associated line drawings, combined with readable texts giving detailed botanical and horticultural information. With this unique blend, the *Botanical Magazine* appeals to gardeners and botanists alike, as well as connoisseurs of botanical art. In addition to the *Magazine,* the Royal Botanic Gardens, Kew, publishes a series of *Botanical Magazine Monographs*, produced in a similar style. To date, eight have been published and several others are nearing completion or in preparation, for example new monographs of the genera *Epimedium*, *Lavandula* and the pinnate-leaved *Sorbus*. Also associated with the *Magazine* is the *Botanical Calendar,* which each year features a selection of twelve of the most striking images. Another series of books, which also draws upon the 12,000 subjects so far depicted in the *Magazine*, has been initiated. These volumes will focus on a genus or family, or on a popular group of plants such as alpines. The first of these, *The Illustrated Rhododendron*, was published in 2001.

1340–1440
S22–P–15
TAXONDATA: AN INFORMATION SYSTEM FOR EDUCATION OF PLANT DIVERSITY

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The Slovak Agriculture Univ. in Nitra launched the research program Protection and Conservation of Plant Germplasm in Slovakia which supports development and processing of a specialized database on plant species in multimedia form. The database's name is "Taxondata." Each plant species is represented by texts and images in the database and as well as featuring botanical taxonomy it has also displays the basic characteristics and economic value. Images of flowers, leafs, stems, fruits or seeds are presented. Development of the database has the active participation of scientists, teachers, students and postgraduates. The database has several possibilities for practical exploitation in education, research, breeding, knowledge of life, beauty and economic value of the plants. The database has opened the possibility for international cooperation, especially in collecting information and image documentation of non-indigenous plants. At present there is active cooperation with partners in Nicaragua. The life, beauty, and knowledge of plants help the young generation to support activities in conservation of biodiversity.

1340–1440
S22–P–16
DEVELOPMENT OF AN INTERNET-BASED STUDY GUIDE TO HELP STUDENTS IDENTIFY INTERIOR PLANT SPECIES

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The school of agriculture at the Univ. of Wisconsin-Platteville has offered an interior plant course as part of its ornamental horticulture curricula for several years. One main objective of the course is to teach students how to correctly identify selected species used in interior plantscapes. Students typically find the memorization and spelling of Latin names especially difficult. Recognizing this problem, we have developed a method that couples digital technology and the internet to develop study guides that allow students to effectively learn and spell plant names. Images of selected plants were inserted into a POWERPOINT® file which was uploaded into BLACKBOARD COURSEINFO™, an internet-based course utility. An "answer sheet" was developed using the Assessments section of BLACKBOARD COURSEINFO™ which contains a "fill-in-the-blank" quiz. The program was set up in a manner that allowed students to type in their answer and receive immediate feedback as to the accuracy of their response. Students were allowed to access the study guide for two weeks prior to an in-class exam. Data collected included the number of times that students used the practice quiz and their performance score on four plant identification exams. Data collected from students using the study guide was compared to the scores of students during semesters in which this technology was not available. Results indicated that the exam scores of students using the internet study guide were higher than those that did not use the technology when available or students registered for the course during semesters in which the technology was not available. Using the fill-in-the-blank method for the study guide was more effective in improving the ability of students to learn and correctly spell plant names compared to using a multiple-choice format in which students were not required to type plant names.

1340–1440
S22–P–17
TAXONOMIC RECONSIDERATION OF SOME *LACTUCA* SPP. GERMPLASM MAINTAINED IN WORLD GENEBANK COLLECTIONS

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The breeding of crop cultivars is dependent on the acquisition and utilization of genetic variability. The maintenance of plant germplasm requires a basic knowledge of the taxonomic status and other important morphological and biological features, which are essential for practical utilization. From a total of 97 wild *Lactuca* L. species reported in the literature, only 27 species (and related genera) are included in world genebank collections according to the "International *Lactuca* Database". However, the real number of *Lactuca* spp. in collections is lower due to the incorrect taxonomic determination. A total of 48 accessions of 24 wild *Lactuca* spp. and the related genus *Mycelis* Cass. were evaluated with the aim to validate their taxonomic status. Based on morphological and other characters assessment (e.g., isozymes, relative DNA content) 15 accessions were redetermined. The majority of these 15 accessions was classified to the species *L. serriola* L. and as primitive forms of *L. sativa* L. We were unable to identify unambiquously several accessions because of a lack of available reference herbarium specimens. Therefore the genetic variability of the genus *Lactuca* maintained in gene bank collections is represented by only 20 wild species and cultivated *L. sativa*. This research was supported by internal grants from Palacky Univ. (1999, 2000), the national programmes on Plant Genetic Resources, Conservation and Utilization (MA CR), and Stress and Pathological Biology, Biochemistry and Bioenergetics of Plants (MSM 153100010).

1340–1440
S22–P–18
DESCRIPTORS FOR *MACADAMIA* SPECIES: A PROPOSAL

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This proposal is part of a dissertation thesis whose overall objective is to quantify and characterize accessions of *Macadamia* F. Muell. using phenotypic and molectular characters. The morphological characterizations was performed on accessions from the Centro Regional Universitario Oriente (CRUO) macadamia germplasm bank from the Universidad Autónoma Chapingo. This proposal is based on the International Plant Genetic Resources Institute (IPGRI) descriptors for fruit tree species and seeks to provide useful descriptors for Madademia. In elaborating our proposal we considered (a) the IPGRI literature published for descriptors of fruit-bearing species, (b) the guides for varietal descriptions published by the Mexican National System of Inspection and Certification of Seeds (SNICS), and (c) the data on morphology collected from the germplasm bank of CRUO. The proposed descriptors are presented in accordance with the format employed by IPGRI in their documentation of genetic resources and shows: (1) Passport descriptors, (2) Management descriptors, (3) Descriptors of location and environment data, (4) Phenotypic characters, (5) Evaluation of biochemical and molecular characters. Applying our proposal to material in the germplasm bank of CRUO, we conclude that the most useful characteristics for descriptors are (a) vegetative parts, (b) bark, (c) leaves, (d) flowers, (e) fruit, and (f) seed.

1340–1440
S22–P–19
THE PLANTSCOPE® DATABASE

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The PLANTSCOPE® database is an internet-based service of the "Nationaal Depot Siergewassen" (National Depot of Ornamental Plants, Netherlands). This foundation is a co-operation between the main parties in the Dutch ornamental plant industry, being traders, growers, and breeders of cutflowers, potplants, nurserystock, bulbous, and seed-raised cultivars. The goal of this co-operation is to bring together and distribute data regarding the identity of ornamentals and to improve the accessibility of pictures of ornamentals for promotional and identification purposes. Identity data consist of a correct and well-documented nomenclature which includes correct scientific names, synonyms, trade designations, common names etc. Additionally, descriptions of external characters are provided, as well as data on plant variety protection (Dutch and European), usage, trading codes, and one or more pictures. Promotional data consist of one or more pictures, either of one cultivar in particular or certain arrangements and settings with ornamental plant cultivars. A reference is given to the organisations where pictures can be obtained/borrowed. The database is

designed as an internet-based application. Subscription is free of charge. Data can be retrieved and printed locally. Pictures can be downloaded as low-resolution scans. The original slides from which the scans in PLANTSCOPE® have been prepared can be ordered through PLANTSCOPE® with an on-line ordering module. Instructions to this end are available in the database. Data are provided on a day-to-day basis by a network of several plant cultivar registration organisations and three plant promotional organisations in the Netherlands. This procedure guarantees highly up-to-date information. This unique co-operation between practitioners and science results in a high quality database which will provide the necessary basis for a stabilisation of nomenclature and identity of ornamental plants in the trade. The database was launched in June 2001 at http://www.plantscope.nl.

1340–1440

S22–P–20

MASTER CHECKLIST OF NURSERY STOCK HELPS TO SATISFY THE HUGE DEMAND FOR INTERNATIONAL UNIFORMITY OF PLANT NAMES

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The many checklists published by the different ICRAs are very important for international stabilization of names of cultivated plants. However those checklists are mainly consulted by specialist. For common users of plant names, e.g., growers, auctions and gardeners, they are too specialized and too cut up. To assist the Dutch nursery trade the Applied Plant Research in Boskoop has, since 1985, published the List of Names of Woody Plants and List of Names of Perennials. These lists of names are a master list of nursery stock products. These lists are based on the ICNCP and follow the many ICRA checklists as much as possible. The lists of names contain the preferred botanical names and most used synonyms and trademarks of about 17,000 woody plants and over 14,000 perennials. New editions appear every five years incorporating the names of new trade assortments and the most necessary corrections. Every ten years, broadly accepted taxonomic revisions are incorporated. This last revision took place in the 1995 edition and is scheduled to occur in the 2005 edition and all subsequent odd editions. Because of the intensification of the international trade there is a huge demand for international uniformity in the naming of cultivated plants. Therefore in 2000 a multilingual edition has been published. This is accepted as the standard by different international organizations such as European Nursery Association (ENA), International Stauden Union (ISU) and Perennial Plant Association (PPA). In 2005 new editions of the Lists of Names will appear. In order to get a good (international) transparency and influence for users, some agreements with the ENA have been made: A new website of all the potential new names and changes of names for 2005 will be established. Users can give their opinions and also send their own new names and proposals for changes of names. In 2002 a taxonomic platform in which every country member of the ENA recommends a specialist will be established.

1340–1440

S22–P–21

CHARACTERIZATION OF *PHALAENOPSIS* SPECIES USING RAPD ANALYSIS

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Twenty one *Phalaenopsis* species acquired from commercial nurseries were characterized by use of randomly amplified polymorphic DNA (RAPD) analysis. Christenson (200l) recognizes a total of 62 species. The species analyzed are distributed among 4 of 5 of Christenson's subgenera. Seven sibling seedlings of one species were also analyzed for diversity. The 21 species have been classified into 7 groups by UPGMA clustering. Identification using RAPD is generally consistent with morphologically established species. Characterization of additional species currently available in our collection, especially those recently transferred from other genera into *Phalaenopsis*, should provide firmer basis for analysis and conclusions.

1340–1440

S22–P–22

DOCUMENTING THE GLOBAL AGROBIODIVERSITY: MANSFELD'S WORLD DATABASE OF AGRICULTURAL AND HORTICULTURAL CROPS

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In 1959 Rudolf Mansfeld published his "preliminary catalogue" of cultivated crops. Whereas this work was mainly carried out by himself, the second edition (1986) was already created by a team of authors. The first English edition (2001, *Mansfeld's Encyclopedia of Agricultural and Horticultural Crops*) was prepared by a team of 20 authors. An online database (http://www.mansfeld.ipk-gatersleben.de) has been established on the basis of this recent edition of the book, already with a number of additions. The scope of the book and the database are agricultural and horticultural cultivated plants world-wide, including algae, fungi, pteridophytes and gymnosperms, excluding ornamental and forest plants. For more than 6,100 species the following types of information are included: accepted name, synonyms, taxonomic remarks, common names, distribution (wild and cultivated), plant uses, wild relatives, cultivation and domestication history, bibliographical references, and images. In the future the Mansfeld database is intended to form the core of a broader information system on cultivated plants with links to other databases, such as passport data of germplasm accessions, agronomic evaluation data, taxonomic monographs, country checklists, the IPGRI Home Garden project or images. Tools will be developed for online-editing that should provide convenient means for updating the information. The database development is part of the project "Federal Information System on Genetic Resources" (BIG) (http://www.big-flora.de), which involves four German partner institutions. The project is funded by the German Ministry of Research and Technology (BMBF) and includes, in addition to the Mansfeld database information on plant genetic resources, accessions of genebanks in Germany, botanical gardens, floristic mapping of the German flora, and other PGR-related data sets. Through a common search interface it is possible to interrogate these heterogeneous databases simultaneously.

1340–1440

S22–P–23

COMPLETION OF THE FIVE-VOLUME HORTICULTURAL FLORA OF SOUTH-EASTERN AUSTRALIA

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The Horticultural Flora of South-eastern Australia is a five volume identification guide to the cultivated plants of south-eastern Australia, both native and exotic, and covers South Australia, Tasmania, Victoria, New South Wales and southern Queensland. The Flora is a standard reference work for students of horticulture, landscape architects and designers, nurserymen, botanists and anyone involved with cultivated plants. It is the first comprehensive account of its kind in Australia, providing extensive identification aids and taking advantage of the resources and expertise at the Royal Botanic Gardens, Melbourne and Australia's foremost growers and collectors. Plant descriptions are in non-technical language and each is accompanied by a high quality line drawing and other identification aids. Emphasis has been given to aspects of the cultivated flora of the region that are of special Australian significance—the specialists and growers, major plant collections and prominent parks and gardens. With the formal descriptions and botanical keys are included: the range of available cultivars (with descriptions and details of their origin when known); specialists societies and their journals; the places and people that are holding outstanding collections of particular plant groups; the localities, sizes and brief histories of outstanding specimen trees; and an extensive list of references to technical literature dealing with identification in the various groups. The overall format is user-friendly with many coloured illustrations as back-up to the detailed line drawings.

1340–1440

S22–P–24

STUDIES IN CULTIVARS OF CHINESE PLUM

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For promoting and enhancing international communication and utilization of plum germplasm, we established a new descriptor for distinguishing features in Chinese plum (*Prunus salicina* Lindl.) based on the model promoted by the International Plant Genetic Resources Institute (IPGRI). Standard leaf sample fractions were studied. According to the degree of character variation, sample volumes were calculated and each set of numerical characters were divided into several grades according to the results of system cluster analysis and SSR analysis. Self and open fertilizing fruit set of 71 plum cultivars were studied. Results indicated that 63.68% of Chinese plum cultivars were self-incompatible, 23.08% were partly self-incompatible, and 13.85% were self-compatible. It also appeared that the higher the fruit set rate in self fertilization, the higher fruit set rate in open fertilization. The fruit set rate in self-fertilization was significantly positive correlated against the fruit set rate in open fertilization. We analyzed the hardiness of 98 plum cultivar shoots and the results suggested that all the cultivars could be allocated to 6 different groups according to hardiness. Sugar content and components in the fruit were analyzed with gas chromatography. The data were analyzed with correlation and by cluster analysis methods. 351 correlation coefficients from 27 numerical characters including the characters of fruit kernel, leaf and flower etc. were calculated. There were 86 significant or highly significant correlation coefficients, some of which were reported for the first time. For example, the fruit weight was significantly correlated to the length from leaf base to the leaf's broadest point. This is a very useful character for the early selection of seedlings. Several regression equations were established such as the fruit weight against vertical, horizontal, and side diameters in relation to different fruit shapes.

1440–1500
S22–O–25
PCR ANSWERS SOME LONG-STANDING QUESTIONS ABOUT ROSE IDENTIFICATION

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In the past 20 years, there has been a resurgence in interest in "historic", "heritage", or "antique" rose varieties. Numerous commercial nurseries now specialize in producing old roses. In many cases, there is little or no evidence that the rose currently being grown is the cultivar historically connected with the name being used. In some cases, a rose sold under a historic name by one nursery may not be the same cultivar as is being sold under the same name by a different nursery. Also, historic records of roses' parentage are not always accurate. This paper illustrates how DNA analysis using the polymerase chain reaction (PCR) can assist in answering such questions about the identity and relationships of old roses. The early members of the Noisette class were studied–the parentage of 'Champneys' Pink Cluster', the relationship of that rose to 'Blush Noisette', and the relationship of the various forms of Rosa moschata currently in commerce. Also, accessions of 'Champneys' Pink Cluster' and 'Blush Noisette' from multiple nurseries were compared to deterine if they are all the same clones.

1500–1520
S22–O–26
CULTIVAR CLASSIFICATION OF TAXUS

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The cultivars of the genus *Taxus* L. (yew) are up till now classified in species and hybrid species. The three main ones are: *T. baccata* L., *T. cuspidata* Siebold & Zucc. and their hybrid *T. xmedia* Rehder. Less important are *T. canadensis* Marshall, *T. brevifolia* Nutt. and *T. xhunnewelliana* Rehder. Most of the above mentioned species freely hybridize with each other. Because many cultivars show influence of two or more species, there is a lot of confusion about the right classification. Therefore this system is not satisfactory anymore based on habit of the cultivar. The new classification is based on practical application (culton concept), while the old classification is based on genetic relationships (taxon concept). The definitions of the various cultivar-groups are simple and clear, cultivars can be classified better and this system is easy to work with, even for non-specialists. This system is an for *Taxus*. Instead a new, more stable classification of six cultivar-groups is proposed here. The classification is mainly extension of the classification as proposed by Welch (Manual of Dwarf Conifers, 1979). The cultivar-groups so far proposed are: Adpressa Group (needles adpressed), Fastigiata Group (habit fastigiate), Procumbens / Dovastoniana Group (habit weeping), Nana Group (dwarf habit), Hicksii Group (habit columnar), Washingtonii Group (habit spreading). Detailed descriptions and designation of standard cultivars will be presented.

1520–1540
S22–O–27
AFLP-BASED INDENTIFICATION PROCEDURES FOR WOODY ORNAMENTALS

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Within the European Union, traded ornamental plants have to fulfil standard quality requirements: the so-called EU-quality. Among these, correct nomenclature and identification of the cultivar are important criteria. Until now, control of authenticity of the produced plant material has been based only on morphological descriptions. This causes difficulties especially when identification has to be done in Winter or on juvenile plant material. Recently, new DNA-based techniques have offered possibilities for fast characterisation and control of authenticity of a plant. A highly reproducible standard procedure for AFLP-based identification and control of authenticity of vegetatively multiplied woody ornamentals was developed using *Acer, Tilia, Syringa*, and ornamental *Prunus, Pyrus*, and *Malus* as test species. Starting from true-to-type plant material originating from nuclear stock plants, a database of fingerprint patterns was compiled. Statistical analysis of the data revealed that between most cultivars of all species, the genetic distance was high enough for identification. Furthermore, the protocol for DNA extraction and analysis starting from Winter buds was optimised. Finally a detailed sampling and data analysing procedure was described and tested.

1540–1600
S22–O–28
AN ADVENTURE IN PARADISE: NEW DEVELOPMENTS IN THE RAISING OF CULTIVARS OF THE GIANT WATERLILY *VICTORIA*

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There are two recognized species of the aquatic *Victoria*, *V. amazonica* growing in quiet pools and inlets of the Amazon river and *V. cruziana* from the cooler regions of Argentina, Bolivia and Paraguay. In 1961, Patrick Nutt of Longwood Gardens created the first hybrid between the two using *V. amazonica* as the pollen parent. Due to the fact that *Victoria* is in most cases an annual, this hybrid, named *V.* 'Longwood Hybrid' has to be re-created every season yet its morphological features are distinct and uniform every year. This paper describes how the reverse cross, *V.* 'Adventure' was made in 1998 by a small number of *Victoria* enthusiasts working independently. This and subsequent back-crosses, thought not to be possible on account of ill-matched chromosomes, made through controlled pollination between a parent species and its hybrid progeny are all recognizably distinct from each other. A number of distinctive cultivars have been named and are distributed annually to specialist collections all over the world. This presentation illustrates the history and continuing development of *Victoria* hybrids and demonstrates what can be achieved by a group of cooperating enthusiasts who are determined to show that the "impossible" can be achieved through careful planning and experimentation.

1600–1620
S22–O–29
CLASSIFICATION OF *PULMONARIA* 'ROY DAVIDSON' BASED ON FLUORESCENT-AMPLIFIED FRAGMENT LENGTH POLYMORPHISM (F-AFLP)

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'Roy Davidson' is one of the most popular commercial *Pulmonaria* culti-

vars. Its nomenclature is confusing. It is listed as a cultivar of *P. saccharata* by some authors while others list it as a cultivar of *P. longifolia*. In this study, fifteen primer combinations were selected out for F-AFLP analysis. The genetic distance revealed by UPGMA dendrograms generated from AFLP polymorphism markers showed that 'Ray Davidson' should share more genetic information with *P. longifolia* than with *P. saccharata*. Thus it should be classified under *P. longifolia*. Factors that affect the F-AFLP profiles were investigated. Genomic DNA isolation from leaf tissues of *Pulmonaria* spp. and the F-AFLP procedures were optimized.

1620–1640
S22–O–29–A
TO BE ANNOUNCED

1640–1700
S22–O–29–B
TO BE ANNOUNCED

Thursday · August 15

1100–1140
S22–O–30
PLANT GENETIC RESOURCES MANAGEMENT AND CONSERVATION STRATEGIES: PROBLEMS AND PROGRESS

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The conservation of plant genetic resources has developed into an important technical, socio-economic and political concern over the past forty years or so. With the successes of the Green Revolution in the sixties and the concomitant losses of landraces of the major food crops, especially in the developing countries, it became apparent that coordinated efforts to collect and conserve these threatened resources needed to be initiated. Genebanks were established in almost every country based on a two-tiered conservation concept that was developed for the storage of orthodox seed-producing cereal crops. However, vegetatively propagated and recalcitrant seed producing species, as well as other materials for which the genebank concept did not work, became increasingly threatened and also needed to be conserved. New techniques and strategies were called for. With the ratification of Convention on Biological Diversity (CBD) in 1992, considerable awareness was created about the importance of conserving biodiversity, its sustainable use and the need for equitable benefit sharing arrangements. The discussions which led to the CBD and thereafter gave a real boost to in-situ and on-farm conservation and brought to light the realization that adequate management practices for genetic resources conserved in farmers' fields and home gardens were badly needed. This paper deals with important PGR management and conservation approaches taken by both public and non-governmental institutions, assesses their constraints and describes the progress made toward their further development.

1140–1200
S22–O–31
CASE STUDIES FOR THE USE OF INFRASPECIFIC CLASSIFICATIONS IN MANAGING GERMPLASM COLLECTIONS OF CULTIVATED PLANTS

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Comprehensive genebank collections with solid characterization data are suitable for judging the diversity observable within cultivated plant species. Units for quantification of infraspecific diversity are useful when discussing gene erosion and making management decisions for maintenance of ex-situ collection in genebanks. The application of formal taxonomic rules for structuring the diversity observed in ex-situ collections of coriander (*Coriandrum sativum* L.), flax (*Linum usitatissimum* L.) and oat (*Avena sativa* L.) are discussed with particular reference to the needs of genebank management, plant breeding and biodiversity research. The use of classical taxonomic concepts and nomenclature are elaborated and the need for continued adaptation and integration of new findings is emphasized.

1200–1220
S22–O–32
THE CROP CONCEPT IN CULTONOMIC CLASSIFICATION

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Following the 1995 International Code of Nomenclature for Cultivated Plants (ICNCP) the categories cultivar and cultivar-group are used to classify cultivated plants. However, in order to link the cultonomic classification to the taxonomic (botanical) classification it is necessary to indicate to what botanical category the cultivated plants are to be assigned. In other words, it is necessary to circumscribe the crop and define its relationship to the categories of the botanical classification governed by the ICBN. Obviously, this relationship will be different for different crops. In some case it may be desirable to subdivide crops into subcrops, or combine a number of crops into a higher category. Also, the relationship between crop and denomination class should be made clear. By comparing the situation in a number of crops the problems and possibilities of crop classification will be illustrated.

1220–1240
S22–O–33
EVALUATION OF IRANIAN OLIVE GERMPLASM ON THE BASIS OF MORPHOLOGICAL CHARACTERS

Mohammed-Reza Samaee[1], Hamid Ashrafi[1], Hossein Sadeghi[2], Sayed-Mehdi Hosseini-Mazinani*[1]

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Iran, located in the Eastern Mediterranean region, shares many geographical characteristics and common historical roots with the countries of the Mediterranean basin, which are home to the major known cultivars of olive. Iran, for its part, harbors numerous olive cultivars, whose morphological and biological characters are yet to be characterized. This is important both from commercial and nutritional points of view. Building upon earlier work and in conjunction with a molecular genetics program for molecular characterization of Iranian olive cultivars, we undertook to evaluate Iranian olive germplasm on the basis of morphological characters. Mature plants from olive clones in the major growing areas in the country (Gorgan, Roodbar, and Dezful) are being studied using morphological traits (leaf, flower, and fruit). Multivariate statistical methods are being used for analysis (PCA, cluster analysis). The availability of molecular genetic data has proved to be of substantial help in facilitating our morphological study. It is expected that the present study will yield new insights into the classification and relationships of Iranian olive cultivars.

1340–1440
S22–P–34
THICKENING AND SUGAR ACCUMULATION AT THE STEM ABOVE GRAFT UNION OF TOMATO PLANTS GRAFTED ONTO *SOLANUM* ROOTSTOCKS

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'Momotaro' tomato (*Lycopersicon esculentum* Mill.) plants were homografted, and heterografted onto *Solanum* rootstocks: 1) *S. melongena* L. 'Daitaro', 2) *S. integrifolium* Poir. 'Akanasu', and 3) *S. torvum* Sw. 'Torvum biggor'. Two weeks after grafting, the stem diameter of scion was measured immediately above the graft union (A) and 2 cm above it (B) to calculate thickening index (A/B), which could indicate graft incompatibility. The thickening index was the greatest for *S. torvum* rootstocks, then for *S. integrifolium*, then for *S. melongena*, and it was the smallest for tomato rootstocks. Sugar concentration was higher in the scion than

in the rootstock, and the highest value was found in the thickening section except for *S. torvum* rootstock, where the highest concentration was measured in the scion stem. As the value of thickening index was greater, sugar concentration in the thickening section and in the scion stem increased, but not so evidently in the rootstock. Vascular bundles bent more with heterografting than with homografting in the thickening section of the tomato plants. The results indicated that the translocation of photosynthate from leaves to roots through sieve tubes would be impaired at the graft union, therefore, in incompatible pairs sugars accumulate immediately above the graft union, resulting in the thickening of the scion stem bottom.

1440–1500

S22–O–35

MOLECULES OR METRE STICKS: THE FUTURE FOR VARIETY IDENTIFICATION AND REGISTRATION

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Exciting possibilities for the use of molecular techniques in variety registration, supplementary to or replacing some current morphological examinations, have been under consideration within UPOV (the International Union for the Protection of New Varieties of Plants) for a number of years. Statutory testing authorities face increasing resource problems with large reference collections and have been attracted by the way in which molecular techniques might be used to provide permanent and environmentally neutral variety descriptions. This could allow the molecular characterisation of varieties and reduce the need for large scale field trials to determine variety morphology. However, the potential discriminating power of the molecular techniques also brings some risks for both authorities and plant breeders in that the desire to increase the access to the marketplace for new varieties must always be balanced against the maintenance of adequate protection for existing varieties. This paper provides a brief update on the development of model systems for some crops which might, in future, allow molecular techniques to be employed and discusses some of the issues surrounding their possible future introduction.

1500–1520

S22–O–36

IDENTIFICATION OF SATSUMA MANDARIN CULTIVARS IN CALIFORNIA USING AMPLIFIED FRAGMENT LENGTH POLYMORPHISM (AFLP) MARKERS

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Satsuma mandarin (*Citrus unshiu* Marcow.) is one of the most important types of citrus grown world-wide, especially in China and Japan. It is also produced in California from mid-October to January. Several new Satsuma mandarin cultivars, originally from Japan or China, were introduced into California in the past few years. We intend to identify all the Satsuma mandarin cultivars in California using amplified fragment length polymorphism (AFLP) markers. Fourteen Japanese Satsuma mandarin cultivars or selections, 4 Chinese Satsuma mandarin cultivars, and 3 Satuma mandarin cultivars of unknown origin were included in the studies. *Citrus yatsushiro, C. reticulata, C. vulgaris*, and *C. aurantium* were used as out-group controls. Six primer sets, E+GG/M+CTA, E+CC/M+CTA, E+GC/M+CTC, E+CA/M+CTC, E+TT/M+CTG, and C+AG/M+CTG were used in the AFLP analyses. We were able to differentiate 19 individual Satsuma mandarins. Twenty Satsuma mandarin cultivars were separated into 8 groups based on the unweighted pair-group method using arithmetic average (UPGMA) analysis. The AFLP marker system developed here will be useful for Satsuma mandarin fingerprinting and future Satsuma mandarin germplasm collection and maintenance.

1520–1540

S22–O–37

DNA POLYMORPHY IS IN ACCORDANCE WITH BOTANICAL AND CULTIVATED-PLANT TAXONOMY OF THE HIGHLY POLYMORPHIC *CUCURBITA PEPO*

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According to recent botanical and cultivated plant taxonomic treatments of *Cucurbita pepo* (gourd, pumpkin, squash), this highly polymorphic species consists of three subspecies containing wild and cultivated, inedible, small-fruited sorts (gourds) and eight groups of edible, large-fruited cultivars (pumpkins and squash). Our objective was to determine if these treatments reflect genetic relationships as viewed at the DNA level. Forty-five accessions were subjected to AFLP, ISSR, and SSR techniques, and compared using cluster analysis. The results were fairly well in accordance with the botanical division of *C. pepo* into three subspecies (*fraterna, ovifera,* and *pepo*), but the two accessions of subsp. *fraterna* were more closely related to subsp. *ovifera* than they were to subsp. *pepo*. The cultivated gourd 'Miniature Ball', which has the smallest fruits, occupied a position basal to subsp. *pepo* according to ISSR analyses, but basal to subsp. *ovifera* according to ALFP analysis. The results were fairly well in accordance with the division into cultivar-groups too, as within subsp. *ovifera*, the Acorn, Crookneck, Scallop, and Straightneck Groups, the cultivated gourds, and the wild gourds formed well-defined sub-clusters. Within subsp. *pepo*, the Cocozelle, Vegetable Marrow, and Zucchini Groups formed fairly well-defined sub-clusters, but the representatives of the Pumpkin Group were dispersed, subclustering not only with themselves but also with the cocozelles and vegetable marrows. Overall, clustering and sub-clustering were much in accordance with two highly polygenic characteristics, fruit shape and size.

1540–1600

S22–O–38

RECONSIDERATION ON THE ORIGIN OF CULTIVATED PEARS NATIVE TO EAST ASIA

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The commercial pear cultivars native to East Asia are composed of five groups: Ussurian pear, Chinese white pear, Chinese sand pear, Xinjiang pear, and Japanese pear. It has been well known that Ussurian pear cultivars are derived from *Pyrus ussuriensis* Maxim., Chinese sand pear cultivars from *P. pyrifolia* (Burm. f.) Nakai grown wild in southern China. However, the origin of Chinese white pear cultivars and Japanese pear cultivars, and the genetic makeup of Xinjiang pears are still obscure. Chinese taxonomists have assigned cultivars of Chinese white pears to *P. bretschneideri* Rehd. Researchers outside of China speculated that *P. bretschneideri* may be a natural hybrid between *P. betulifolia* Bunge and cultivated *P. pyrifolia*, and Chinese white pear cultivars may originate from hybridization between *P. ussuriensis* and *P. pyrifolia*. By means of RAPD analysis, we found RAPD markers specific to *P. betulifolia* or *P. ussuriensis* are not present in Chinese white pear cultivars. On the other hand, Chinese white pear cultivars are most closely related to Chinese sand pears based on analyses of RAPD markers, AFLP makers and SSR markers. A new nomenclature for Chinese white pear cultivars has been proposed: *P. pyrifolia* var. *sinensis* Y.Teng & Tanabe. As for the origin of native cultivars of Japanese pears, both our study and other researches using different DNA markers infer that at least some Japanese pear cultivars or their progenitors may have been introduced from ancient China and Korea. These results disagree with the traditional point of view that Japanese pear cultivars have been domesticated from wild *P. pyrifolia*. Xinjiang pears, mainly distributed in northwestern China, have been suspected to be of hybrid origin involving *P. communis* L. and *P. bretschneideri*. However, RAPD analysis indicated that at least *P. communis, P. armeniacifolia* T.T. Yu and Chinese white pears or sand pears have been involved in the origin of Xinjiang pears.

1600–1620

S22–O–39

ELECTRIC TONGUE DISTINGUISHES ONIONS AND SHALLOTS

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Onion and Jersey shallot belong to the same species (*Allium cepa* L.), but are from distinctive different groups: *A. cepa* group *cepa* and *A. cepa* group *aggregatum*. Grey shallot belongs to another species, *Allium oschaninii* O. Fedtsch. Onions are seed-propagated whereas shallots are vegetatively multiplied. There is a practical need to discriminate onions from shallots. Onions and shallots do differ in taste but they all contain sulphur organic compounds making tasting evaluation difficult. Thus it is necessary to establish new characteristics that are specific to each of these groups. The aim of this study was to apply the electric tongue (e-tongue) in the classification of several cultivars of onions and shallots. The e-tongue is an analytical instrument comprising an array of cross-sensitive (non-specific) chemical sensors and multivariate data processing tools. It has previously been successfully applied in the classification, quantitative analysis and taste quantification of different beverages and foodstuffs. Measurements were made in homogenates resulting from weighted pieces of vegetable chopped and stirred with distilled water. The sensor array comprised 21 potentiometric chemical sensors containing different active substances. Data processing was aimed at sample recognition and classification and was performed mainly by Principal Component Analysis (PCA). Three series of experiments were performed. Each set of samples included cultivars of onions and shallots having different dry matter content. The e-tongue was capable of separating onions from shallots as well as distinguishing all the samples within each group. Grey shallot was well separated apart from all others, which is in accordance with its botanical nature. The separation of onions and Jersey shallots could not be solely attributed to their respective dry matter content but also due to some intrinsic features of their chemical composition which the e-tonge was able to detect.

1620–1640
S22–O–39–A
TO BE ANNOUNCED

1640–1700
S22–O–39–B
TO BE ANNOUNCED

Friday · August 16

0900–0940
S22–O–40
THE FUTURE OF THE TAXONOMY OF CULTIVATED PLANTS

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In agriculture and horticulture, at least 80% of taxonomic problems are related to the cultivar. In particular, questions such as—(a) Am I really dealing with a new cultivar? (b) To which species does a cultivar belong? (c) How can I recognise a cultivar phenotypically, especially if it is a hybrid? and (d) Does the cultivar-group system always work?—continually impact on the work of those dealing with the classification and naming of cultivated plant material. Further questions dealing with the very nature of cultivars and whether wild forms or other categories named under the provisions of the International Code of Botanical Nomenclature (ICBN) should be eligible for cultivar status form an ongoing debate, as do a range of other issues such as the nomenclatural treatment of mixtures as cultivars in the agricultural industry, and the impact of genetically modified plants on cultivar status. Statutory registration systems are based on DUS (Distinction, Uniformity, and Stability). The requirements are embedded in national and international legal systems that are difficult to change. The denominations provided through these systems have historically been made with minimal reference to the International Code of Nomenclature for Cultivated Plants (ICNCP). Stability in naming is the first priority for those trading in, and legislating for, cultivars in the market place. Clearly there is a need to provide an international forum for discussion and resolution of these and other related problems so that the interests of plant breeders, collection mangers, plant traders, taxonomists, and legislators may be discussed and resolved in a decisive way through a platform that carries international recognition. These and other issues are discussed from the perspective of European legislation, UPOV recommendations, and statutory registration in vegetables, fruit, and ornamentals, with examples to demonstrate the problems and to promote a discussion on the future of taxonomic work in the field of cultivated plants.

0940–1000
S22–O–41
SPREADING THE WORD AND BRIDGING THE GAP

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Many diverse groups of professionals from a wide range of backgrounds are in some way involved in activities connected with the raising of plants in cultivation. These include nurserymen and seeds merchants, landscape architects, those involved in cultivar testing and the granting of Plant Breeders' Rights, patents and other Intellectual Property Rights, lawyers responsible for drafting or modifying national and international legislation, and of course botanists and horticulturists, some of whom are responsible for the international codes of nomenclature. Unfortunately the links between these groups are often poor, in some cases almost non-existent, and the results are all too apparent in the form of widespread confusion about the differences between cultivar names, selling names and trade marks: legislation takes little heed of the basic principles of nomenclature, and most noticably, plant material on sale or in collections is often wrongly or inaccurately named. Underlying these more visible problems is a fundamental lack of skilled personnel. Over a century ago, Charles Darwin observed that "botanists have generally neglected cultivated varieties as being beneath their notice". While some excellent and fascinating research has been carried out in cultivated plant taxonomy, especially in the field of crop-weed complexes, we are probably not paying enough attention to training the next generation of cultivated plant taxonomists. Unless this need is more widely appreciated—and acted on—by the appropriate colleges and universities, many of the problems facing us today are likely to get worse. In some countries the protocols by which plants are released to the trade, and the names under which they are released, are closely controlled; in others, including Britain, the process is much looser. Against this background, in the late 1980s, the Horticultural Taxonomy Group (Hortax) was set up with the general aim of trying to improve accuracy in the names of plants in cultivation by drawing up proposals to make the Cultivated Plant Code more user-friendly, organising international symposia, and forming links with the statutory bodies involved in granting Plant Breeders' Rights. With a view to reaching a wider audience, including students, nurserymen and gardeners, Hortax is now working on publications setting out as clearly and simply as possible the basic principles on which the names of cultivated plants are given and applied.

1000–1020
S22–O–42
DEVISING A PLANT LABELLING SYSTEM THAT SATISFIES EVERYONE!

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The most direct contact between plant names and the general public is through display labels on plants in retail nurseries. Over the last decade, product marketing on plant labels has shifted from botanical and common names to legally protected names, especially trademarks (trade denominations). Labels now carry a plethora of names of uncertain botanical and legal status that are as confusing to industry employees as they are to the general public. In Australia, the threat of legal action for trademark infringements has encouraged an attempt to resolve this dilemma. A label format is proposed that clearly distinguishes the various kinds of names that appear on labels. This will satisfy retailers, wholesalers, marketing and promotion personnel, lawyers, botanists, label companies and customers. This format (or a variation of it) could have global application.

1020–1040
S22–O–42–A
TO BE ANNOUNCED

1400–1420
S22–O–43
STANDARD SPECIMENS FOR CULTIVARS: THE WAY FORWARD

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The Herbarium of the Royal Horticultural Society at Wisley has been designating herbarium specimens as Standards for many years. Since the recommendations made in the 1995 edition of the International Code of Nomenclature for Cultivated Plants, there has been a systematic search for Standards in the RHS specimen and image collections. British nurserymen and plant breeders have been contacted and are actively encouraged to supply material and images of new cultivars. Lists of RHS designated Standards are published. A website has been created which can be searched for the Standards held at Wisley with supporting illustrations of the living plants. The process has highlighted a number of problems which have been overcome and the solutions may help others carrying out similar procedures. It has also emphasised the importance of Standards for the work of horticultural taxonomists and nurserymen, and for the correct and stable nomenclature of ornamental plants.

1420–1440
S22–O–44
COLLABORATING TO PRODUCE STANDARD PORTFOLIOS IN AUSTRALIA

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The Royal Botanic Gardens, Melbourne (RBG), and the Univ. of Melbourne–Burnley College, have combined resources to document cultivars available in the Australian nursery industry. The project combines the expertise of the Univ. (which provides the horticultural knowledge and student input), the RBG (which provides the experience in botanical nomenclature and herbarium procedures), and horticultural industry mentors (who provide specialist knowledge of the particular cultivar). Under supervision, the students prepare a Standard portfolio. This is lodged with the RBG and the findings progressively published in Australian Horticulture. Details are also being published on the RBG and Univ. websites with links to the RHS.

1440–1500
S22–O–45
NAKTUINBOUW MOTHERPLANT GARDEN: A REFERENCE COLLECTION FOR PERENNIAL PLANTS

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Growers of perennials of the Netherlands attach great importance to guaranteed trueness-to-type for varieties of plant material sold or distributed. A motherplant garden has been started in order to achieve the possibility for comparison of plant materials with a verified reference collection. The objects of the project are (a) to bring together a reference collection, in one location, of all cultivars of perennials traded at a regular base in The Netherlands (b) to use the motherplant garden for questions about the identity of perennials (c) to use the garden as a basis for the propagation of cultivars for which the identity is determined (d) to provide a long-term hallmark for correctly named plant material in perennials. The initial lifespan of the project is projected to be five years. In this period 3,000 cultivars will be planted and judged for their identity. After this period the core of the assortment of perennials will be investigated and reviewed. All cultivars will be described and published in PLANTSCOPE®, the internet database for horticulture plants and fruits traded in or through The Netherlands (http://www.plantscope.nl). The garden has been established for almost a year and 1,200 cultivars have already been planted. Roughly 200 plants are identified as the true representative of a cultivar. The list of determined cultivars is updated regularly at the website of the Naktuinbouw (http://www.naktuinbouw.nl). About 650 cultivars are already described for the characters that are not influenced by the age of the plants. These descriptions need some verification and development in 2002, in order to create the final descriptions. Productschap Tuinbouw (PT) is funding this project for five years. The total budget for the initial five years is slightly more than 400,000 Euro.

1500–1520
S22–O–46
CONSERVATION OF COLLECTIONS OF CULTIVATED PLANTS

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Various possible reasons for conserving collections of cultivated plants are outlined using ethical, botanical and horticultural arguments. Existing collections are distinguished on the basis of the collection holder and are evaluated according to criteria such as maintenance, continuance, scientific value and duplication efforts. Considering the lack of compatibility between national schemes, it is suggested that an organisation such as ISHS takes action in order to establish an international policy for the recognition and conservation of important collections of cultivated plants.

1520–1540
S22–O–47
TOWARD A EUROPEAN CATALOGUE OF NURSERY CATALOGUES

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A new project to trace European library holdings of nursery catalogues has been put in place by the Royal Horticultural Society (UK), which maintains extensive holdings in the RHS Lindley Library. These catalogues are important as the first place of publication of a new name for a cultivated plant. A surprising amount may be inferred about the introduction of plants into cultivation, and the way in which they are used in the garden. There are particular difficulties associated with the collection of nursery catalogues: there is often no way of knowing if one holds a complete set for a nursery. A number of organisations across Europe have collections of catalogues, and the RHS Lindley Library, together with the Botany Dept. at Wisley Garden, has developed a project to collate information on these collections. In due course, it is planned that this information will be made available on the internet.

1540–1600
S22–O–48
FROM PLANTS TO TAXONOMISTS TO USERS

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Plants make up a large, diverse world which is becoming more complex. Unfortunately, we as professional horticulturists are leaving many of those with plant interests confused and bemused. As a horticultural librarian, I will bring a perspective of trying to connect "users" with plants through taxonomy. How can one impart basic or complex information on plants, yet maintain an acceptable standard of taxonomy? To illustrate, the example of Plant Information Online, a large web-based informational service which is built on large taxonomic databases, will be used. This service features over 275,000 citations to illustrations and information on a large number of the world's cultivated plants; sources in North American nurseries for over 70,000 different plants; a guide to online and CD-ROM plant illustration resources; and a guide to 1400 North American nurseries.