

8. Pellett, Harold M. 1983. Beauty and hardiness combined in breeding program at arboretum. *American Nurseryman* 158:69-73.
9. Pellett, Harold. 1983. Coordinated effort to enhance development of cold hardy landscape plants. *HortScience* 18:641-642.
10. Sakai, A. 1978. Frost hardiness of flowering and ornamental trees. *J. Jap. Soc. Hort. Sci* 47:247-260.
11. Sakai, A. and C. J. Weiser. 1973. Freezing resistance of trees in North America with reference to tree regions. *Ecology* 54:118-126.
12. Smithberg, N.H. and C. J. Weiser. 1968. Patterns of variation among climatic races of red-osier dogwood. *Ecology* 49:495-505.
13. Vaartaja, O. 1960. Ecotypic variation of photoperiodic response in trees especially in two *Populus* species. *For. Sci.* 6:200-206.
14. Weiser, C. J. 1970. Cold resistance and injury in woody plants. *Science* 169:1269.
15. Zagaja, S. W. 1974. Breeding cold hardy fruit trees. *Proc. 19th Inter. Hort. Congr. Warsaw* 3:9-17.

PLANT NOMENCLATURE AND NAMING NEW CULTIVARS

RUTH KVAALLEN

Horticulture Department

Purdue University

West Lafayette, Indiana 47907

To review how plant names are formulated, what makes a name legitimate, and why and how to register a cultivar name, let us follow an example. You are on a fishing trip. A storm comes up, the boat sinks, but you make it safely to a deserted island where there is no evidence that man has ever set foot before. While awaiting rescue, you discover some small trees that look very similar to *Hibiscus syriacus*, but the flowers and growth habit are different from any hibiscus that you know. Some specimens of this plant bear yellow flowers; others have finished flowering and have set seed. You gather seeds and specimens and, when rescued, you take your plant specimens with you.

Once safely at home, you try to determine the identity of the mystery plant by using keys in books such as Rehder's *Manual of Cultivated Trees and Shrubs*, but your specimens just do not fit the keys or descriptions. Having exhausted your own resources to identify the plant, you send it to a taxonomist at a local university. Some time later he informs you that your plant is indeed a *Hibiscus*, but that it appears to be a new species. He states that he will publish this information.

BOTANICAL NAME FOR THE SPECIES

He suggests that the new species be named for a mutual friend, Al Fordham. Together you weigh the merits of calling it *Hibiscus fordhamii* (Fordham's hibiscus) or *Hibiscus fordhamianus* (Fordhamian hibiscus). You decide on *Hibiscus fordhamii*. The taxonomist, Frank Smith, publishes the proposed name and a description of the plant (in Latin) in a botanical journal. A pressed specimen is placed in a herbarium as the official representative of this new species.

Since the first name properly published with description becomes the legal name for a plant, this plant will be known henceforth as *Hibiscus fordhamii*. The name of a species is composed of two words, the genus name followed by a specific epithet. The publisher's name, abbreviated, is added as the author of this binomial. The full name of the plant is now: *Hibiscus fordhamii* F. Sm.

Correct Usage: The initial letter of the genus name is always capitalized. The specific epithet is not capitalized. In the past, the first letter of certain specific epithets was capitalized, but the recommended practice today is to keep all specific epithets lower case. The entire binomial is in italics, or each word underlined separately if italics are not available.

COMMON NAMES

Now, we skip ahead a few years. An article about the plant and how you discovered it has appeared in the pages of *Horticulture* magazine. The author of that article coined a common name, "island hibiscus," thinking that this name sounded more exciting than Fordham's hibiscus and would make more readable copy. Actually, there are no rules for common names. They vary with time, place, people, and language and therefore are unreliable for clear communication.

BOTANICAL VARIETIES

Among plants found in nature, variants below the species level may be classified as a subspecies (subsp. or ssp.) variety (var.) or form (f.). Subspecies are used in complex species where taxonomists feel necessary. They are occasionally encountered in horticulture, but more often we deal with varieties and forms. Here, we will describe varieties next and forms later.

A variety may be referred to as a botanical variety, natural variety, or *varietas*. It is a group of plants within a species characterized by variant traits which come true from seed and have a distinct geographic distribution.

Some of the plants of *Hibiscus fordhamii* which you discovered on the island had glabrous (hairless) leaves, while others, including the sample to which the name *Hibiscus fordhamii* was applied, had fuzzy, pubescent foliage. When seeds gathered from hairless plants are sowed, all of the seedlings are hairless, too. Since this variation comes true from seeds, plants with this trait should be considered a botanical variety and given a name to distinguish them from the typical species. Your taxonomist friend, Frank Smith, has retired, but another expert on *Hibiscus*, Martin Andrews, gives the name var. *glabrescens* (*Hibiscus fordhamii* var. *glabrescens*) and publishes this information. With the names of the authors included, the full name of the variety is *Hibiscus fordhamii* F. Sm. var. *glabrescens* M. Andr.

Since a variant has been named at the level of a botanic variety, a name at the same level automatically is given to the original plants (the typical species). This is done by repeating the specific epithet as the variety name: *Hibiscus fordhamii* var. *fordhamii*. Ordinarily, this variety name would be used only when necessary to distinguish between the two types.

Correct Usage: Note that names of botanical varieties are in Latin, italicized or underlined, and follow the name of the species with the abbreviation "var." between the specific epithet and the variety name.

AN INTERSPECIFIC HYBRID

You attempt to hybridize island hibiscus with shrub althea and succeed in creating large shrubs with yellow flowers during the summer months, a color not seen in shrub altheas (*Hibiscus syriacus*). The only name the hybrid plant has at this point is a formula showing its parentage: *Hibiscus fordhamii* × *H. syriacus*. These plants create a mild sensation. You decide that a hybrid with such "potential," commercially, should have its own specific epithet. You dub it *Hibiscus* ×*superbus*, and the taxonomist, Martin Andrews, concurs and agrees to publish this name.

Correct Usage: The name of a hybrid derived from crossing different species has a multiplication sign between the genus name and the specific epithet to indicate that the plant is an interspecific hybrid. (When the multiplication sign is distinctively different from letters, it should immediately precede the specific epithet; when the letter x is used for the multiplication sign, the name will be more readable if a space separates it from the epithet.)

CULTIVARS

A cultivar (cultivated variety) is a group of plants with some trait(s) valued by mankind and maintained in cultivation by mankind's efforts. Cultivars may be propagated asexually or by seed lines that give uniform offspring, such as inbred lines, or F_1 hybrids. Woody cultivars are usually asexually propagated, while among vegetables and annual garden flowers, seed-grown cultivars are common.

One day a mutation appears on a plant of *Hibiscus* \times *superbus* — a branch with yellow variegated leaves. Here is a novelty that might sell well. You propagate it from cuttings to preserve the variegation and decide to give the resulting plants a cultivar name. Should you use a name like 'Areomarginatus'? Absolutely not! Cultivars named before the start of 1959 may be (and often are) in Latin, but names given to cultivars from January 1, 1959, onward, must be in a modern language.

You like the name 'Golden Glow'. However, to make sure that this name has not been used previously, you contact the Registrar for *Hibiscus* cultivar names, requesting a list of cultivar names already in use in the genus *Hibiscus*. When the list arrives, you note that the name 'Golden Glow' is distinctive and not confusable with any name already given to this group of plants, so you decide to "go" with it.

Correct Usage: Names of cultivars are not italicized or underlined. Each word in a cultivar name is capitalized, and the name is distinguished by being set apart from the species name or common name by single quotation marks or the abbreviation, "cv." For this cultivar, the name could be written *Hibiscus* \times *superbus* 'Golden Glow,' *Hibiscus* \times *superbus* cv. 'Golden Glow,' or *hibiscus* cv. Golden Glow.

If the hybrid hibiscus had not been given its own specific epithet and still were known by the formula *H. fordhamii* \times *H. syriacus*, the cultivar name would be used directly following that of the genus: *Hibiscus* 'Golden Glow.'

OTHER CULTIVARS

Another cultivar arises, not as a budsport, but as a botanical form. A form (*forma*) is composed of plants within a species with a minor variant trait which occurs occasionally or sporadically and seldom comes true from seed. In our case, orange flowers occasionally occur on island hibiscus. The taxonomist has named this form *Hibiscus fordhamii* f. *aurantiacus*.

You select a specimen of this form with compact growth habit and especially large flowers for propagation from cuttings. You decide to call this clone 'Harvest Moon.' Upon

checking with the Registrar for *Hibiscus*, you find that this name is acceptable. The full name of the cultivar is *Hibiscus fordhamii* f. *aurantiacus* 'Harvest Moon,' but in usage it may be shortened to *Hibiscus fordhamii* 'Harvest Moon' ('Harvest Moon' island hibiscus).

You submit the necessary information to the Registration Authority so that the cultivar names 'Golden Glow' and 'Harvest Moon' will be officially registered and included in their checklist of cultivar names. In addition to the names and descriptions of the cultivars, the Registrar requests certain information and perhaps photographs or herbarium specimens. To make your task easier, he supplies short forms for you to fill out with the necessary facts.

A third cultivar is selected from the glabrous variety: *Hibiscus fordhamii* var. *glabrescens* 'Daydream.' Note that the name of a cultivar selected from a botanical variety follows the varietal name.

A NECESSARY NAME CHANGE

Name changes may occur for several reasons.

1. Plants in cultivation have been misidentified. When the error is found, these plants will have to be re-labeled.

2. The same name has been applied to more than one plant. The first plant so named retains the name; others must be renamed.

3. An older, valid name is discovered for a plant already known by another name. The older name has priority, with the exception of certain genus names which have been conserved.

4. Scientific evidence requires redefining the limits of a group of plants, so that some members may be shifted to another category.

5. Different opinions exist among botanists as to the proper limits of a group of plants. In such a case, the horticultural community will have to decide which botanist to follow.

The taxonomist, Martin Andrews, has come across an article written in the Finnish language in 1890, about some plants discovered earlier and named by a Finnish plant explorer, Eero Helperin. The article describes one plant that appears to fit the description of *Hibiscus fordhamii*. Helperin had named it *Hibiscus magnificus*. Even though the plant was never brought into cultivation, it was adequately described in Latin, and a herbarium specimen has been located in a Finnish museum herbarium.

Taxonomists compare your plant with this specimen and determine that they are the same species. The older name has priority and takes precedence over the name you gave this species. A plant has one — and only one — current, correct, worldwide name, in this case, *Hibiscus magnificus*. The name you gave it is reduced to a botanical synonym — an out-of-date name. It can be listed in parentheses after the correct name so that people will recognize that the newly found name refers to the plant that you brought into cultivation and helped to popularize: *Hibiscus magnificus* Helperin (*H. fordhamii* F. Sm.).

RULES OF NOMENCLATURE

Guidelines for botanical names are in the *International Code of Botanic Nomenclature*. Of more importance to horticulture is the “Cultivated Code,” the *International Code of Nomenclature for Cultivated Plants — 1980* (Regnum Vegetabile Volume 104). This booklet includes rules and recommendations for forming cultivar names and determining the legitimacy of a name.

Articles 1 and 3 of the Cultivated Code state that cultivated plants are essential to civilization, and it is important, therefore, that a precise, stable, and internationally accepted system should be available for their naming. The aim of the Cultivated Code is to promote uniformity, accuracy, and fixity in the naming of agricultural, horticultural, and silvicultural cultivars.

The use of common names and trademarks are not regulated by the Code.

Who can name a cultivar? Any person may name a cultivar so long as it has not been legitimately named previously, and if it is not against the expressed wish of the cultivar originator or his assignee.

Can an older name be re-used if the plant has disappeared? A name may not be reused later for any other cultivar on the assumption that the original cultivar no longer exists. However, Registration authorities have the power to grant exceptions to this rule under certain specified conditions.

What makes a name legitimate? A legitimate name must be: 1. selected in accordance with the Cultivated Code; 2. published in a manner stipulated by the Cultivated Code (explanation follows); 3. applied to a cultivar not already legitimately named; 4. a name which does not duplicate a name already in use for another cultivar of the same cultivar class.

“Cultivar class” means the taxonomic level within which the use of a cultivar name for two distinct cultivars would lead to confusion. For example, the existence of the cultivar named ‘Harvest Moon’ among rhododendrons prevents the use of this name for an azalea cultivar, but does not prevent using ‘Harvest Moon’ as the name of a peony cultivar.

What are the requirements for valid publication?

1. The name must appear in printed or similarly duplicated reading matter which is distributed or available to the public. Non-technical newspapers and handwritten materials, even if reproduced by mechanical or graphic processes, are *excluded*.
2. The reading material must be clearly dated at least as to year.
3. Publication of the cultivar name must be accompanied by a description of the cultivar or by a reference to a previously published description. The description should contain particulars to distinguish the cultivar from related cultivars, whenever possible. Parentage and history of the cultivar and the name of the originator or introducer should be included, if known.
4. Whenever possible, an illustration should be provided with the description, and a pressed or otherwise preserved specimen should be deposited in a public herbarium, such as at the U.S. National Arboretum, 3501 New York Avenue NE, Washington, DC.

Examples of valid publication are the printing of the cultivar name accompanied with description (and illustration, if possible) in a dated trade catalog, horticultural journal or magazine, or registration list of a Registration Authority.

REGISTRATION AUTHORITIES

To administer the Code, cultivar Registration Authorities have been appointed. These are national or international agencies entrusted with compiling and publishing lists of cultivar names within a particular genus or cultivar class. They also establish which names are valid and legitimate and which are clearly synonymous; they advise on and accept new names; and they interpret the Code in certain instances. The main objective of registration is to stabilize and standardize the nomenclature of cultivated plants.

Registration is one way to ensure that names are the legitimate names for these cultivars and that no other plants may use these cultivar names. The name of every new cultivar should be registered with the appropriate Registration Author-

ity. Cultivar registration is simply the acceptance of a cultivar name by a Registration Authority and the inclusion of this name in a register. This process helps to avoid violating one or more of the rules and recommendations for cultivated plant nomenclature. It also helps to distinguish cultivar names from common and botanical names and ranks.

Registration is for the *name only*. Acceptance of a name for cultivar registration does not imply judgement on the distinctiveness or merit of the cultivar.

Examples of organizations which may act as Registration Authorities are plant societies, such as the Holly Society of America, Inc., or botanic gardens, arboreta, or research institutions, such as the Arnold Arboretum and the U.S. National Arboretum. The U.S. National Arboretum acts as Registration Authority for those genera of woody plants for which separate registration authorities do not exist. Information on Registration Authorities for various genera, and their addresses, may be obtained from Mr. F. Vrugtman, Vice-Chairman, ISHA Commission for Horticultural Nomenclature and Registration (address: Royal Botanical Gardens, Box 399, Hamilton, Ontario, Canada L8N 3H8), or from the American Association of Nurserymen.

In conclusion, the Codes of Nomenclature and Cultivar Name Registration have been designed to stabilize plant names and bring order out of a chaotic situation. We are presently in a transitional phase, sorting out what is right and wrong. By using correct names to the best of our ability, we who deal with aesthetically and economically important plants will speed up the process and arrive sooner at a point of stability.

NEW PLANT FORUM

JACK ALEXANDER AND GARY KOLLER, Moderators

MODERATOR ALEXANDER: Darrel Apps from Longwood Gardens will begin the new plants session with a presentation on the J. Franklin Styer Award of Garden Merit and then discuss a promising plant.

DARREL APPS: The Pennsylvania Horticultural Society established the J. Franklin Styer Award in 1980. Its purpose is to promote the recognition and dissemination of woody ornamental plants of outstanding garden merit. Any person or organization may submit a plant or plants. However, award is made to the plant and not the introducer. Entries must be