- Burk, L.G., R.N. Stewart, and H. Dermen. 1964. Histogenesis and genetics of a plastidcontrolled chlorophyll variegation in tobacco. Amer. J. Bot. 51:713-724.
- Goffreda, J.C., E.J. Szymkowiak, I.M Sussex, and M.A. Mutschler. 1990. Chimeric tomato plants show that aphid resistance and triacylglucose production are epidermal autonomous characters. Plant Cell 2: 643-649.
- Jwamasa M., M. Nishiura, N. Okudal, and D. Ishiuchi. 1977. Characteristics due to chimeras and their stability in citrus cultivars. Proc. Intl. Soc. Citriculture 2:571-574.
- Marcotrigiano, M. 1986. Experimentally synthesized plant chimeras 3. Qualitative and quantitative characteristics of the flowers of interspecific *Nicotiana* chimeras. Ann. Bot. 57:435-442
- Marcotrigiano, M. 1997. Chimeras and variegation: Patterns of deceit. HortScience 32: 773-784.
- Marcotrigiano, M. and R. Bernatzky. 1995. Arrangement of cell layers in the shoot apical meristem of periclinal chimeras influences cell fate. Plant J. 7:193-202.
- Melquist, G.A.L., D. Ober, and Y. Sagawa. 1954. Somatic mutations in the carnation, Dianthus caryophyllus L. Proc. Natl. Acad. Sci. (USA) 40:432-436.
- Neilson-Jones, W. 1969. Plant chimeras. 2nd ed. Methuen, London.
- Pratt, C., R.D. Way, and J. Einset. 1975. Chimeral structure of red sports of 'Northern Spy' apple. J. Amer. Soc. Hort. Sci. 100:419-422.
- Stewart, R.N. and T. Arisumi. 1966. Genetic and histogenic determination of pink bract colour in poinsettia. J. Heredity 57:216-220.
- Stewart, R.N. and L.G. Burk. 1970. Independence of tissues derived from apical layers in ontogeny of the tobacco leaf and ovary. Amer. J. Bot. 57:1010-1016.
- Stewart, R.N., F.G. Meyer, and H. Dermen. 1972. Camellia + 'Daisy Eagleson', a graft chimera of *Camellia sasanqua* and *C. japonica*. Amer. J. Bot. 59:515-524.
- Tilney-Bassett, R.A.E. 1986. Plant chimeras. Edward Arnold, London.
- Winkler, H. 1907. Über propfbastarde und pflanzliche chimaeren. Ber. Dtsch. Bot. Ges. 25: 568-576.

The Cultivar Naming Code[®]

Chris Barnaby

Plant Variety Rights Office, P O Box 130, Lincoln, Canterbury

INTRODUCTION

Plant breeders and selectors routinely name their new creations and this includes those involved in plant propagation and production. At some point a plant propagator may need to name a new clonal selection or a seedling that comes up in a propagation tray. This may occur almost by accident such as the appearance of a different or "better" form of a commonly propagated species. This new form may then be developed into a new cultivar and possibly given a name. Is the name just something you dream up and go with or is there actually some guidelines or system to follow? You certainly can just pick a name and commercialise with it, this happens all of the time, but another option is to take a more systematic and considered approach utilising the International Code of Nomenclature for Cultivated Plants (the Code) and the appropriate International Cultivar Registration Authority (ICRA). It should be clear that The Code and ICRAs do not provide a new cultivar with any legal or official status. If you wish to obtain legal protection for a new cultivar and the name then you would need to make an application for variety protection to your national authority. For New Zealand, this would be the Plant Variety Rights (PVR) Office. The naming of cultivars with respect to PVR has specific requirements and will not be covered in depth in this paper as it has been covered in previous years.

THE CODE

The purpose of the Code or the Cultivated Code is to set internationally agreed standards for the naming of cultivars and is prepared and published by the International Commission for the Nomenclature of Cultivated Plants. This Code is updated periodically and is now the 6th edition, which is currently under review. For many years the Code was very similar to the International Code of Botanical Nomenclature. The 6th edition of the Cultivated Code adopts a very different format from earlier versions as it recognises that the naming of genera, species, and botanical varieties differs from the naming of cultivars. The naming requirements of botany and horticulture are interlinked and related in many ways, but they are also different. The Code reflects existing taxonomic methods but keeps in mind the diversity of the end user; plant taxonomists and researchers, statutory and nonstatutory registration authorities, the plant trade and academia, anyone in horticulture, agriculture, or forestry. People involved with plants have found that a precise, stable, internationally recognised system for the naming of cultivated plants is beneficial and the Code does promote international uniformity, accuracy, and stability in the naming of cultivars.

The Code is a very precise and detailed list of rules and recommendations set out in an ordered way. The Code aims to blend precision with an ease to read. The history of the Code is long, dating from the first edition in 1953 and in some parts appears historic with use of out-dated terminology. This unfortunately is necessary to maintain the continuity with past recommendations and rules. At first glance the Code appears to be rather complicated with unfamiliar terms; however the authors aim for users to come to understand these terms with use. The Code was last published in full in International Code of Nomenclature for Cultivated Plants 1995, a 175-page book. This book also contains a complete list of ICRAs and other information related to the naming of cultivars. The Code contains a useful key system, which can be used to make the process of checking a name simpler. The key is called the Nomenclature Filter and can be used to check whether or not a name is already established and accepted. The filter follows a key pattern and asks questions such as; is the name already a trademark, been published, a trade or selling name, used historically, and so on?

A full cultivar title consists of the botanical name and an epithet. The epithet is usually called the cultivar name and this paper will do the same. The epithet is always surrounded by single quotes, which are significant as the quotes readily identify that it is a cultivar name. The rules and recommendations set out what sort of cultivar name is acceptable and provide advice on details such as the length of the name, number of words, unacceptable word combinations, misleading names, and many other points. Some of the points may seem to be trivial, but on closer inspection could have much greater importance. The overall objective is to cover all aspects of creating a cultivar name. The primary language for the creation of names is English, however guidance is provided on the possible consequence of using an English cultivar name in a non-English-speaking country. An interesting example is English cultivar names in Japan. The Japanese language does not have the "L" sound. A name such as Lovely Lady would not be a good choice if the cultivar might be used in Japan. Cultivars can easily become used globally, which is the main reason for the international emphasis and consideration of the Code.

INTERNATIONAL CULTIVAR REGISTRATION AUTHORITIES

A component of the Code is the International Cultivar Registration Authority (ICRA). An ICRA has been recognised for a large number or horticultural plant groupings and genera. An ICRA is often a botanic garden, plant society, or other specialist plant group who have particular interest or expertise in a genus or plant grouping and have taken on the responsibility of maintaining the register. An ICRA can have a single point of contact or it can have several regional contacts in different parts of the world. The following examples list the genus or plant grouping with the designated ICRA:

Rosa	American Rose Society, U.S.A. with regional
	representatives.
Rhododendron	Royal Horticultural Society, U.K. with regional
	representation.
Australian Native Plants	Australian Cultivar Registration Authority, Canberra.
Coprosma	Royal N.Z. Institute of Horticulture c/o Lawrie Metcalf.
Proteaceae, South African	South African Department of Agriculture.
Camellia	International Camellia Society with regional
	representatives.
Hosta	American Hosta Society, University of Minnesota.

A list of all the ICRAs can be found on the International Society of Horticultural Science's (ISHS) website <www.ishs.org/icra/index.htm>. They are also listed in the published book of the Code.

Each ICRA has a slightly differing system depending on the genus concerned, but there is one common requirement. The cultivar must be morphologically described. The description should be as detailed as possible and can include photos. The description and the appropriate application form are forwarded to the ICRA which then records the cultivar information and in due course publish in their ICRA register. The ICRA may request an herbarium specimen of the cultivar. There is no cost to registering a cultivar, however it does take time to prepare the description. It should be remembered that ICRA registration is entirely voluntary and provides the new cultivar and name with no legal or other official status. To obtain legal protection of the name and cultivar it is necessary to make an application to the official statutory authority, the Plant Variety Rights Office in New Zealand. The user should be aware of limitations to the ICRA system. A register is essentially a list of names from which a cultivar name is never removed. It is possible that a cultivar belonging to that name no longer exists. A consequence of this is where a proposed cultivar name is rejected because the name is already on the list and yet the cultivar itself is extinct. Another limitation is that there is no certainty that a cultivar on the register is distinct. The register relies on the integrity and the knowledge of the person supplying the information. The majority of ICRAs do not grow the cultivar to check that it is distinct and true to type.

A NEW CULTIVAR NAME

You have propagated from your original seedling or mutation, it is uniform, and you believe it is different from other known cultivars. You decide that you actually have a new cultivar and it is worth naming. The full name always begins with the genus and if known the species. Determining the species can be difficult for many genera in horticulture and having a species or hybrid identity is not mandatory. The next

stage is the cultivar name which should be unique and able to identify the cultivar wherever it goes. Creating this unique name is by no means easy and can take considerable time and effort.

Using The Code. When you first look at the Code it certainly appears rather daunting but do not be put off by this as with use it becomes much less of a challenge. The Code may provide more information than perhaps you need as each rule and recommendation cover a specific aspect in detail. You can make up or use any words or a combination of letters or numbers to form the name but they should be pronounceable, not be complicated or confusing. Working through the Code will provide information and guidance on the following example points that may need to be considered:

- The length of the name including number of letters/numbers and number of words.
- Avoid words that imply something about the cultivar that may not be exactly true or are simply descriptive, e.g., 'Best Enormous Red'.
- Do not use Latin names and words or botanical or breeding terms, e.g., cross, hybrid, alba.
- Do not use any plant generic name if the name consists only of a single word, e.g., *Rosa* 'Erica'.
- Do not use the common name or species name of the genus the cultivar belongs to, e.g., *Malus* 'Apple Mountain'.

If you have successfully got this far and you have a name that you like and think is acceptable the next step is to publish the name and encourage use of the name as widely as possible. The name should be placed clearly on all labels and catalogues. It could also be an idea to draw attention to or emphasise the new name in some manner. The most effective way to establish the new name is by use.

PUBLISHING THE NEW NAME

There are two methods of publishing the new cultivar name. You can register the cultivar with the appropriate International Cultivar Registration Authority (ICRA). This is an international registration system, but is not the only way to make the new cultivar name known far and wide. A possibly simpler way is to publish yourself. The publication used must be printed and available to the general public or at least agricultural or horticultural organisations or institutions. This could be done by inclusion in a trade catalogue. Newspapers and popular publications are not considered appropriate. The publication of the new name must also have a date, at least the year, and a description covering at least the most significant plant characters. Publishing the cultivar name in this way may not achieve the same international coverage that the ICRA system does, however this way you can publish the name quickly and you would have greater control over when the name becomes established in the public domain.

THE CULTIVAR NAME AND OTHER NAMES

It has become common practice for many cultivars to be known by more than one name. Of course there is only one cultivar name but there could also be another name used to sell or market the cultivar. This name could be a trade name, selling name, or trademark. This practice was largely confined to roses and a few other genera but is now being adopted more widely. Some examples:

Rosa 'Macrexy', Sexy Rexy rose

Rosa 'Noamel', Apple Blossom, Flower Carpet[™] light pink rose

Calibrachoa 'Sunbelchipi', Sunbel Cherry calibrachoa

Argyranthemum frutescens 'Cobsing', Summit Pink

It is important to recognise that these other names do not necessarily identify the cultivar and may even be used for more than one cultivar over time. There are commercial advantages to using fancy or selling names to sell plants and they have a role to play. These advantages should not be at the expense of the unique and consistent cultivar name. When using other names, make sure that the cultivar name is used and not forgotten about. For cultivars subject to PVR, it is a legal requirement to use the cultivar name or denomination whenever the cultivar is listed or sold.

PLANT LABELS

The most likely place that the public and perhaps many growers will encounter nomenclature is the plant label. There is an on going debate about what to put on the label and what could be left out. There is the marketing view, the grower's view, the breeder's view, and lots of other views. Potentially the label could have a whole list of names: botanical, common, cultivar, selling, and trademark. If all have a purpose, have their own importance, and are necessary then this name information needs to be displayed in a clear manner. The label format should distinguish between the various kinds of names with the aim to reduce the confusion that already exists.

CONCLUSION

The naming of cultivars is not a simple process and has become more complex, particularly with the increasing trend of having more than one "name" per cultivar. As plant breeders and industry appear to favour this approach then The Code will have a key role in achieving consistent and stable cultivars names internationally. The users of plants will need to clearly understand the significance of each name attached to a cultivar and what the name tells you about the cultivar or the breeder or introducer. The name that actually identifies the cultivar is the cultivar name or epithet, surrounded by single quotations. This name can be established simply by use or by using the Code and the voluntary ICRA system. If official recognition and legal protection of the cultivar is considered necessary, then an application for PVR would need to be made.

REFERENCE

Trehane P., C.D. Brickell, W.L.A. Hetterscheid, A.C. Leslie, J. McNeill, S.A. Spongberg, and F. Vrughtman. 1995. The international code of nomenclature for cultivated plants-1995. Quarterjack Publishing, Wimborne, U.K.