

50 Years of the *International Code of Nomenclature for Cultivated Plants*: Future Prospects for the *Code*

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Abstract

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. This presentation sets the scene for discussions on nomenclature issues which form one of purposes of this Symposium by reviewing past editions of the *Code* and illustrating a few of the problems confronting the formulation of a new edition. The need for international co-operation between statutory and non-statutory bodies in the various acts of nomenclature and taxonomy is highlighted.

INTRODUCTION

As the speaker following will describe (McNeill, these proceedings), before the advent of the *International Code of Nomenclature for Cultivated Plants* (Stearn, 1953a) otherwise known as the Cultivated Plant Code or ICNCP, the formal rules for naming cultivated plants was largely governed through the *International Rules of Botanical Nomenclature* through its various editions up until the Stockholm Code of 1952. In that *Code* a proposed set of rules for governing names of cultivated plants was presented in its Appendix III. In introducing that Appendix, it was stated that the regulations would not become official until formally accepted by the 13th International Horticultural Congress to be held in London in late 1952.

The history of cultivated plant nomenclature and the development of the *Code* was outlined in some detail by Stearn on its initial publication (1952, 1953a, 1953b) and later in retrospect (1986). The aim of this presentation is to briefly record and outline the more important changes in the subsequent editions of the *Code* to the present time, and to offer some comments on how a future edition might differ from those of the past.

The principle novelty of the 1953 *Code* was the formal introduction of the term "cultivar". This is often thought to be a contraction of the words "cultivated" and "variety" but this is not quite the case. The word "cultivar" was originally coined in the 1920s by that great American botanist and horticulturist Liberty Hyde Bailey as a category below that of cultigen, a word he had previously coined to distinguish man-made species from natural species which he termed the indigen (Bailey, 1918). While compiling revisions to his *Cyclopedia of Horticulture*, he wanted to distinguish natural species from those which had arisen by activity of mankind, yet he did not wish to disrupt the conventional Linnaean naming system of using binomial names. His solution was therefore simply to recognise two different "gentes" or types of species, the indigen and the cultigen. Later he realised that he needed a formal category below the rank of man-made species and that is the true origin of the word cultivar, a contraction of the words "cultigen" and "variety" (Bailey, 1923).

However, having put that record straight, there is no harm in treating the word cultivar as meaning "cultivated variety" as it serves to distinguish varieties developed by mankind from the botanical category *varietas* which itself has variety of meanings in different parts of the botanical world.

The introduction of the *Code* proved a success and, although originally designed for horticulture, agriculturists and foresters began to see its value for naming their own cultivated variants, so the problem arose of finding a suitable body on which agriculturists, foresters, and horticulturists could be represented so as to take responsibility for future editions.

At the 14th International Horticultural Congress held at Scheveningen 1955, it was agreed to ask the International Union for Biological Sciences (IUBS) whether the Commission for the Nomenclature of Cultivated Plants which they had already set up under their Division of Botany could undertake this work. The Union readily agreed and it was decided that the Commission should consist of 24 members (with the Chairman's power to co-opt) consisting of approximately equal numbers representing agriculture, forestry and horticulture. Dr. Roger de Vilmorin was confirmed as Chairman and the remaining members were appointed by the Union, those representing agriculture and forestry after consultation with Food and Agriculture Organization of the United Nations and the International Union of Forest Research Organisations respectively, and those representing horticulture on the nomination of the 14th International Horticultural Congress. Mr. John Gilmour, then at the University Botanic Garden Cambridge, and one of the driving forces behind promoting the original *Code* (cf. Gilmour, 1954), was appointed Rapporteur.

SECOND EDITION (1958)

The new Commission held its first meeting at the University of Utrecht in November 1956 to consider proposals received from many organizations and individuals for the modification of the first *Code* and to render it equally applicable to agriculture, forestry, and horticulture. A first draft was widely circulated for comment during 1957 prompting further proposals which were considered at a second meeting of the Commission in London during early December 1957. The resulting *Code* (Fletcher et al., 1958) was prepared by an editorial committee on the basis of decisions taken at that meeting and was published in 1958 for ratification by the 15th International Horticultural Congress held at Nice in April 1958. Agriculturists and foresters also ratified the *Code* at their respective international conferences.

The 1958 *Code* was published as part of the *Regnum Vegetabile* series of the International Association for Plant Taxonomy (a tradition that continues to this day) with a new design and with fewer pages than its predecessor. Although there were no alterations to its overriding principles, there were a number of major changes in layout to make the *Code* more acceptable to its intended users. The more important changes may be summarised:

- The term cultivar was for the first time defined for the purposes of the *Code* as “...denoting an assemblage of cultivated individuals which is distinguished by any characters (morphological, physiological, cytological, chemical, or other) significant for the purposes of agriculture, forestry or horticulture, and which, when reproduced (sexually or asexually), retains its distinguishing features.”
- The term “group” was introduced to designate assemblages of similar cultivars in those cases where a species or interspecific hybrid had many cultivars.
- Any language (instead of only those in Roman characters) could now be used for the description of a new cultivar.
- It was made clear that cultivar names had, from 1st January 1959 onwards, to be published in a language other than Latin with a description, but that before that date a description was not necessary.
- It was laid down that while “cultivar” is the technically correct international term for what in English was referred to as a variety, anyone was free to use their own national term if so wished. The term cultivar, was, however, promoted as being the true international term.
- A certain tolerance was allowed for the so-called “commercial synonym”, since the Commission realised that if the *Code* was to be generally accepted, account had to

taken of all reasonable commercial practices in the crops concerned.

- Registration of names by so-called official registration authorities was treated much more fully with regulations for these authorities included in a special Appendix.
- The problems arising from re-selected cultivars were clarified and the term “strain” was specifically excluded from the *Code*.
- It was made clear which Articles were to be retroactive and which were to apply only in the future.

THIRD EDITION (1961)

While the 1958 *Code* was well received, it soon became clear from the comments it attracted that there were shortfalls within it and in 1961 a new edition was produced (Fletcher et al., 1961) which corrected some unfortunate grammatical errors and oversights and introduced more clarity in Articles which were thought to be ambiguous. There were however four fairly major innovations:

- It became allowable to duplicate cultivar epithets in a genus when confusion was unlikely to occur; for example in *Prunus*, it was thought unlikely that names for cherries and plums would be confused. Likewise cabbages and cauliflowers in *Brassica*.
- Many of the prohibitions for forming cultivar epithets were thought to be not enforceable so they were relegated to the status of recommendations.
- The term “official registration authority” had the word “official” dropped, since it was thought that these authorities might have legislative status.
- Allowance was made for registration of what we now call the grex.

In the Preface for the 1961 *Code* the editors wrote that “*the Commission fully appreciates the inconvenience to users of frequent alterations in the Code and hopes that the present edition will remain current for a considerable number of years*”. And so it did, however international events were taking over on the cultivated plant front. In December 1961, the International Convention for the Protection of New Varieties of Plants was signed in Paris and within a few years was in force in several of the signatory countries. The implementation of these measures depended on the correct naming of cultivars (varieties in the parlance of the Convention) and without doubt the provisions of the 1961 *Code* had an impact on the legislation in which cultivar names were involved. So it was that a new edition of the *Code* was planned.

FOURTH EDITION (1969)

Work on the revised edition began in August 1964 when the Code Commission met in Edinburgh. It met again at College Park, Maryland, USA in August 1966 and the main work of collating proposals began in the Autumn of 1968.

An innovation set by John Gilmour, who had by now become Chairman of the Commission, was to invite plant breeders, merchants and buyers of plants to an open meeting in Cambridge, England in February 1969 to determine how the *Code* could best serve their common interests. This meeting was attended by representatives of commercial firms, professional organizations, and government departments concerned with cultivar (variety) names. Following that historic meeting, the Code Commission retired to formulate the 1969 *Code*.

The 1969 *Code* (Gilmour et al., 1969) renumbered the Articles to make the sequence more logical in the light of the new tone of the *Code* which aimed to clarify many of the Articles especially with the addition of many more examples. The more important changes presented may be summarised as follows:

- The status of variety names established by the new legal processes was clarified.
- The differences in status between statutory and non-statutory Registration Authorities was made clear.
- The concept of the cultivar class (what we now call the denomination class) was formally introduced to cover the taxonomic unit or assemblage of taxonomic units within which cultivar (variety) names may not be duplicated.

- More precise direction was given for the re-use of names of extinct cultivars.
- Precise directions were given for dealing with exceptions to the rules of priority in naming.
- The onus for challenging the publication or registration of a cultivar name was placed on the originator.
- Cultivar names not formed in accordance with the *Code*, including those previously referred to as inadmissible, were now to be rejected as invalidly published.
- The list of Registration Authorities in the Appendix was omitted since the increase in new appointments would make this redundant sooner than would be the life of the *Code*.

In the Preface to the 1969 *Code* it was written that it was hoped that the edition will remain current for the greater part of the next decade. Indeed it was for this edition of the *Code* remained in force throughout the 1970s.

FIFTH EDITION (1980)

By the time of the next revision (Brickell et al., 1980), John Gilmour had retired and been replaced by Chris Brickell of the Royal Horticultural Society as Chairman of the Code Commission. Proposals for amending the *Code* were circulated to the Commission Members in June 1979 and the Commission met in Plenary Session at the National Institute of Agricultural Botany, Cambridge, UK over 1st to 3rd October 1979 where the form that amendments should take was agreed and entrusted to an editorial committee. There were significant changes which may be summarised as follows:

- A clear distinction was drawn between cultivar names and trade-marks applied to cultivars and the registration of these marks when applied to cultivars.
- It was explicitly stated that a cultivar may, on occasion, be co-extensive with the botanical category under which it is classified.
- A forestry provenance, when sufficiently distinctive, may be treated as a cultivar.
- Particular growth-habit forms which are retained by appropriate methods of propagation were to be treated as cultivars.
- Segregates of interspecific or intergeneric crosses resembling one parent in nearly all its characters were to be classified under that parent, not under any hybrid combination.
- Latin cultivar names derived from botanical epithets published before 1 January 1959 were to be regarded as validly published as long as they were formed in conformity with the *Botanical Code*.
- The various approved ways of printing cultivar names was set out in detail.
- There was a strong recommendation that cultivar names should not incorporate the common name of the plant.
- Chinese, Japanese, and Korean books were to be considered as valid means of publication when reproduced from hand-written originals.
- Conditions for re-use of cultivar names was made more stringent.

This then brings us up to 1980 and there was to be a long delay (longer than some thought desirable) before a new *Code* was developed. This was largely due to the fact that there was no longer a Rapporteur for the *Code* and, more significantly perhaps, the long serving Dr. Robert Richens of the Commonwealth Bureau of Plant Breeding and Genetics at Cambridge who had assiduously collected any proposals for a new *Code* had long retired.

SIXTH EDITION (1995)

In March 1988, a number of horticultural taxonomists based at RBG Kew, RBG Edinburgh, Glasnevin, and the Royal Horticultural Society, formed the Horticultural Taxonomy Group (Hortax). A few others with an interest in horticultural taxonomy were later invited to join the group and this informal association set themselves the objective of drawing up a collective proposal for a revision of the *Code*. A early draft of their proposal was circulated around the world for comment prior to the ISHS International Horticultural

Congress in Florence in 1990 and this created much interest and stimulated responses from many people working with cultivated plants.

Later in 1988, a similar group in the Netherlands also began working on a proposal. The Nomenclature and Registration Working Group of the Vaste Keurings Commissie (VKC) issued an early draft of their proposal in mid-1990.

On 14th December, 1990 an historic meeting took place at the Royal Botanic Gardens, Kew between members of Hortax and VKC which, although identifying problem areas in the two independent approaches towards a new *Code*, also realised much common ground.

Hortax presented its final proposal to the Commission in April 1992 and VKC presented its independent proposal in February, 1994. Although there was a different philosophical approach behind each proposal, both had very much in common thanks to the Kew meeting and to the free exchange of ideas that followed that meeting.

As one of the members of the Commission, I was then asked by the Chairman of the Code Commission to combine the two proposals along with the existing provisions of the *Code* to provide a working document for the next meeting of the Commission. This synthesis, and an overall re-design for a new *Code* intended to mimic that of the *Botanical Code*, was unveiled at the 2nd ISHS Symposium on the Taxonomy of Cultivated Plants held at the University of Washington, Seattle in August 1994. The proposals were debated in “open forum” towards the close of the meeting.

Following the symposium, the Commission met for two and a half days from August 17th 1994 during which time the Principles to underpin the revised *Code* were formulated and much of the detail refined. The resulting *Code* was published in November 1995 (Trehane et al., 1995) and its innovations may be summarized:

- At the outset, the *Code* set down the limits of its intended authority by defining what is meant by “cultivated plants”.
- The principle was stated that new names for taxonomic groups of cultivated plants are to be formed under the provisions of this *Code* and the recommendation made that such taxonomic groups below the rank of genus should no longer be named under the provisions of the *Botanical Code*.
- The relationship between the *Code* and the *Botanical Code* was more clearly stated.
- The Articles previously covering the formation of Latin names were consigned to a new Appendix.
- The rules for the formation of cultivar names were widened considerably with many of the previous restrictive rules and recommendations being replaced by rules designed to avoid the creation of confusing, or potentially confusing, names. In particular, for new names, there was no longer a limitation on the number of words in a cultivar epithet.
- The “cultivar-group” (previously “group”) was more closely defined and a number of rules provided for the formation of cultivar-group epithets.
- The “grex” became a proscribed term, except for its use in orchid nomenclature.
- The previously used term “cultivar class” was changed to “denomination class” to parallel the latter use in legislative texts.
- The starting point for nomenclature was altered: previous editions had stated that it was to be the very scarce Philip Miller’s *Gardeners Dictionary*, Ed. 6, 1752. The starting date was now to run parallel to that specified in the *Botanical Code*, Linnaeus’s *Species Plantarum* of 1753.
- The duties and powers of International Registration Authorities (IRAs) were specified and an extensive guide for IRAs provided in an Appendix.
- The relationship between cultivar names and “trade designations” (previously “commercial synonyms”) which are sometimes used instead of cultivar names, was exemplified.
- Translations of cultivar epithets were no longer permitted; if they occurred they were to be termed trade designations.
- International standards for transliteration were laid down.
- Provision was made to conserve cultivar names that would normally not be accepted yet which, *de facto*, are in common use and whose replacement with acceptable names

would cause confusion and do little to enhance stability in nomenclature. A list of conserved names was opened in an Appendix.

- Very stringent conditions were laid down to provide for re-use of a cultivar name.
- The concept of “Standards” was formally introduced for the first time.

THE NEXT EDITION

In July 1998, Hortax organized the Third International Symposium on the Taxonomy of Cultivated Plants held at the Pollock Halls, University of Edinburgh in Scotland which featured over 40 oral and more than 50 poster presentations, many of which made a considerable contribution to issues of nomenclature. The proceedings of this meeting were published by the Royal Botanic Gardens, Kew in December 1999 under the title “Taxonomy of Cultivated Plants”. At the close of that symposium an “open forum” on the 1995 *Code* was held which attracted much constructive comment. The Code Commission then met in closed session to consider proposals to amend the *Code*.

The Commission’s deliberations were greatly assisted by the various written submissions sent by a variety of interested persons. The Commission’s meeting was, however, inconclusive, largely due to constraints on time and it was clear that further discussion on a number of areas needed to be pursued.

Various proposals to amend the *Code* have been published in Hortax News, presently designated as the vehicle to publish such proposals, and as Rapporteur I have distributed documentation (Trehane, 2002) to the Code Commission and publicly prior to this symposium to be used as the basis for drawing up a seventh edition. This document remains in the background for our debates this week and I trust that the presentations we hear will enrich our understanding of the problems encountered by those of us who have to deal with issues around cultivated plant taxonomy. There are a few “issues” I would like to highlight today.

The Name of the *Code*

We must ask ourselves, to whom is the *Code* addressed in the first place? All of us here, taxonomists and others, will (I trust!) know what the word “nomenclature” means, but it is a word which is quite alien to many nurserymen and certainly to a great many members of the general public – those who are supposed to *use* the *Code*. As the person who saw to the publication of the 1995 edition, I can testify to the great number of potential buyers, including libraries and book retailers, who had difficulty even pronouncing the word in the first place! I suggest that by maintaining this word in the title of our *Code*, we are intimidating and alienating a great number of potential users of the *Code* itself. If we were to change the name of the work to the slightly shorter “International Code for Naming Cultivated Plants”, we might get our message across to far more people and institutions, surely a worthy objective. The short name “Cultivated Plant Code” and the initialism ICNCP would not have to change. There is a degree of precedence in such a name change: the various editions of the “International Code of Botanical Nomenclature” was called the “International Rules of Botanical Nomenclature” until 1952.

Culton Versus Taxon

Since the formal introduction of the term culton (Hettterscheid and Brandenburg, 1995a; 1995b), use of the term has become widely discussed (cf. Alexander, 1997; Hettterscheid et al., 1996; Hettterscheid, 1998; 1999; Pickersgill and Karamura, 1999; Trehane, 1997; McNeill, 1998; van den Berg, 1999; Walters, 1998) and a number of proposed classifications based on the culton concept are beginning to appear (cf. Hettterscheid and van den Berg, 1996; Hoffman, 1996; Lange et al., 1999). Without doubt, the term is becoming recognized by taxonomists, but is the time now ripe for the next edition of the *Code* to full-heartedly embrace the terminology that goes with cultonomy, or should the present mere passing reference to the existence of the term be enough? I have argued more recently on the value of the term to replace the cumbersome oft-repeated phrase “taxonomic categories of cultivated plants whose names are governed by

this *Code*” (Trehane, 2002), and it will be interesting to see how our debates over the next few days influence the Code Commission in its deliberations on this question.

The Cultivar-Group

The unsatisfactory definition (to some) of this category has been discussed in a number of papers on cultonomy (see above) and the use of such a grouping system more specifically by Coombes (1996), Hettterscheid (1996) and Trehane (1996, 1997) amongst others. To me, it remains etymologically illogical to maintain this term for a grouping of miscellaneous plants on the basis of their similarity, whereas it summarizes very well the action of grouping cultivars. Surely we need to look more carefully at our terminology: after all, if we have different sorts of cultivars laid out in the *Code*, why should we not have different sorts of “groups”? Perhaps more importantly, we need to look again at the concept of coextension, often the basis for making decisions on whether a plant is classified as part of a cultivar or cultivar-group. Arguments on this were published as long ago as 1974 (Welch, 1974; replied to by Spongberg and Shaw, 1997).

Cultivar and Cultivar-Group Names

Obviously the *Code* must rule on the formation of cultivar and cultivar-group epithets, but just how far should it go in defining prohibitions in these epithets. Clearly such names should not be confusing, but ought they not to be misleading as well? Where is confusion most likely to occur, amongst names of similar plants (cultivars of the same denomination class) or at the point of sale of a plant? Since 1991, the International Convention for the Protection of New Varieties of Plants enables UPOV Member States to now offer Plant Breeders’ Rights to plants of any taxon, rather than within the restricted taxa provided for originally. UPOV itself is revising its guidelines on variety denominations and similar questions are being asked. Is this the time to try and harmonize our requirements?

And what about the long chain-names used for various crops, not to mention the various terms used for their different rank components (cf. Jirásek, 1961; 1966)? They are very interesting in that they contain quite detailed information on classification, but are the resulting names a convenient handle for growers and users of these crops? Surely a three-part group name is sufficient to define the taxon to which a cultivar belongs as suggested partly by Green (1991) and Trehane (2002: Prop. Art. 35). See also van den Berg (2004).

Trade Designations and Trademarks

The increasing use of trade designations (commercial “names”), those “names” used when the true cultivar name is not suitable for marketing a plant, and trademarks is evident as is the amount of damage they do to stability of nomenclature. The general public, the main users of plant names, are becoming increasingly confused as what are the correct names for their plants, especially when true cultivar names are not presented at all. The current edition of the *Code* endorses a system of rendering the epithets of trade designations in a different font, but just how effective is this solution in being able to recognize what is going on? Gioia (1999) illustrated the use of trademarks in horticulture while Tramosch (1999) demonstrated how such marks should be used and, more importantly, how their value might be lost. As I have commented extensively elsewhere (Trehane, 2001), I remain unconvinced that the nursery trade uses trademarks properly: more often they are no more than trade designations, often only synonyms in the true sense of the word. I have no doubt that we shall be enlightened by the presentation from a legal perspective later this morning (van der Kooij, these proceedings).

Signs and Symbols

Should the *Code* promulgate the use of signs and symbols to indicate the status of cultivars that their names represent? The Australian Plant Breeders’ Rights Office allows cultivar epithets to be tagged with their sign **A** to indicate whether or not the cultivar has

been granted such intellectual property rights from them. Should such a system be made more universal? Should genetically-modified plants have their names tagged with a similar international motif? Under the *Botanical Code*, Latin botanical names may have their names tagged with the sign × to indicate their status as hybrids and graft-chimaeras may be similarly tagged with the + sign under the *Cultivated Plant Code*; these systems provide valuable extra information to users about the plants concerned. How much universal information do we want to impart with a name, and how far should the *Code* go in promoting such international use?

Linguistic Problems

The present edition of the *Code* muddles transliteration and transcription (Paclt, 1953) which does little to assist scientists and plantmen from different cultures with different language systems in adopting the provisions of the *Code*. Indeed, it could be argued that the entire tone of the *Code* is Euro-centric (if not Anglo-centric!); hardly surprising since most of the Code Commission has historically come from the West. With the rapid emergence of oriental horticulture and its increasing impact on western horticulture through export and plant exchange, the *Code* must, surely, pay more than lip-service to the needs of oriental nomenclature, especially with regard to the standards of transliteration and transcription to be used (cf. Trehane, 1998). Translations of the *Code* into as many languages as possible must be an objective of the Code Commission and to that end we must look carefully at the use of English and jargon or technical words in the text of the definitive English version.

Spelling and Linguistic Standards

Debates on orthography (which means “correct spelling”) are, more than anything else, likely to raise the blood temperature of its participants – especially when taxonomists are involved. Indeed, at the last Botanical Congress, the whole issue was so contentious, that rather than debate the core of the proposals on orthography, the Nomenclature Section voted not to discuss the issues at all and to reject them en bloc (Greuter et al., 2000). Hopefully, cultivated plant taxonomists are a more tolerant bunch who will be willing to discuss proposals to alter the spelling of names when it can be shown that original publication is evidently incorrect. Likewise, when trying to provide standards for the purposes of consistency in using abbreviations, hyphens, and top-line punctuation, including the use of accents and other diacritical signs, I hope we can swallow pride in our different national linguistic customs to arrive at common solutions that we can all implement.

CONCLUSION

These then are just some of the issues before us this week and no doubt the Code Commission will use their best judgement next week in trying to sort out the good ideas from the not-so-good in developing the next edition of the *Code*. But what of the future? I very much doubt that a similar Symposium to this will be organized at the next Horticultural Congress in Seoul, so where are we going to hold our “open forum” sessions on the *Code*? Clearly, another mechanism must be put into place so that organized and well developed ideas can be brought to the Code Commission for discussion prior to publication of new editions of the *Code* (which will, I hope, not occur too often if we are to have stability in our rules). We need better lines of communication internationally if we are to get to grips with issues of cultivated plant taxonomy, indeed if we are to promote and expand this worthy discipline in the first place. At the conclusion of the Edinburgh Symposium, a founding meeting was held of the proposed International Association for Cultivated Plant Taxonomy and I shall be reporting on the rather slow progress towards its development at a side meeting here later this week. Surely, this could be a consensus based vehicle for developing new ideas, representing as many sub-disciplines as possible with the interests of many, including governmental and non-governmental organizations, participating in trying to solve problems in what is, after all a very international theatre.

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