



This publication has been scanned from a paper copy and may have some discrepancies from the original publication.

Cette publication a été numérisée à partir d'une copie papier et peut contenir des différences avec la publication originale.

Diese Veröffentlichung wurde von einer Papierkopie gescannt und könnte Abweichungen von der originalen Veröffentlichung aufweisen.

Esta publicación ha sido escaneada a partir de una copia en papel y puede que existan divergencias en relación con la publicación original.

UPOV

PLANT VARIETY PROTECTION

Gazette and Newsletter
of the
International Union for the Protection of New Varieties of Plants (UPOV)

No. 38

February 1984

Geneva

CONTENTS

Page

GAZETTE

Extension of the Application of the Convention

- United States of America 2

NEWSLETTER

UPOV

- Conclusion of a Headquarters Agreement with the Swiss
Confederation 2

- Development of Plant Variety Protection Throughout
the World in 1983 3

Member States

- South Africa: Modification of Fees 17

- Bibliography 18

Legislation

- United States of America: Regulations and Rules of Practice
Under the Plant Variety Protection Act (Title 7, Chapter I,
Part 180 of the Code of Federal Regulations) 19

General Studies

- Plant Breeding: A Trade Apart (Prof. J. Sneep) 45

Miscellaneous Information

- International Symposium on Intraspecific Classification of
Wild and Cultivated Plants 55

- Calendar 56

GAZETTE

EXTENSION OF THE APPLICATION OF THE CONVENTION

United States of America

The Government of the United States of America has notified the Secretary-General of UPOV, pursuant to the provisions of Article 35(2)(a) of the International Convention for the Protection of New Varieties of Plants of December 2, 1961, as revised at Geneva on November 12, 1972, and on October 23, 1978, that the United States of America has additionally applied the provisions of the said Convention to all sexually reproduced plant varieties, other than fungi, bacteria and first generation hybrids. The extension of the application of the Convention took effect on August 5, 1983, and concerns all applications for protection filed with the Plant Variety Protection Office of the United States of America on or after that date.

Editor's Note: The instrument of acceptance of the UPOV Convention, as revised at Geneva on October 23, 1978, which was deposited on November 12, 1980, and became effective on November 8, 1981, was accompanied by a specification that the United States of America would apply the provisions of the Convention to all asexually reproduced plant varieties, except the Irish potato and the Jerusalem artichoke, that is, to the varieties protected under the Plant Patent Act. The above announcement means that the application of the Convention has been extended to all sexually reproduced plant varieties, other than fungi, bacteria and first generation hybrids, that is, to the varieties protected under the Plant Variety Protection Act of December 24, 1970, as amended by Public Law 96-574 of December 22, 1980. The text of that Act was published in the legislation section of Plant Variety Protection No. 37. The extension was made possible by an amendment of the Regulations and Rules of Practice under the Plant Variety Protection Act. The amending text was published in the Gazette part of Plant Variety Protection No. 36, on page 17, and a consolidated text of the Regulations and Rules of Practice is published in the legislation section of this issue. The date of entry into force of the extension of the application of the Convention corresponds to the date of entry into force of the amendment of the Regulations and Rules of Practice.

NEWSLETTER

UPOV

Conclusion of a Headquarters Agreement with the Swiss Confederation

On November 17, 1983, an Agreement Between the International Union for the Protection of New Varieties of Plants and the Swiss Federal Council to Determine the Legal Status in Switzerland of That Union (Headquarters Agreement) was concluded in Berne, pursuant to the provisions of Article 24(3) of the Convention. It was signed on behalf of the Swiss Federal Council by Mr. Brunner, Head of the Directorate for International Organizations of the Federal Department of Foreign Affairs, and on behalf of the International Union for the Protection of New Varieties of Plants by its Secretary-General, Dr. Arpad Bogsch.

The Agreement places the Union on an equal footing with other intergovernmental organizations having their headquarters in Switzerland.

Development of Plant Variety Protection Throughout the World in 1983

Following established practice, the representatives of the States and organizations having participated in the seventeenth ordinary session of the Council (October 12 to 14, 1983) reported on the development of plant variety protection and related matters in their countries or at the international level.

A summary of the statements and of the discussions generated by the statements, as recorded in the report on the session, is given hereinafter.

a. Statements Made by the Representatives of Member States

Belgium.- A Bill approving the 1978 Act of the Convention and amending the Law of May 20, 1975, on the Protection of New Plant Varieties had been submitted to the Ministry of Foreign Affairs at the beginning of 1982 and was expected to be submitted to Parliament in the near future.

Protection had been extended as of April 20, 1983, to 29 new taxa, thus making a total of 104 entries in the list of taxa protected in Belgium.

As far as breeders' interest in the protection of plant varieties is concerned, detailed statistics are to be found in the table on pages 4 and 5 below. They gave rise to the following observations: in the case of maize, the absence of protection was explained by the fact that no seed production took place in Belgium for that crop. The lack of applications for protection of recently created varieties of hop would seem to prevent initiative on the part of Belgian producers and to put a brake on the development of that crop in Belgium. Triticale enjoyed increasing interest, although its economic value was not as yet confirmed, and it was still intended to extend protection to this new species. In the field of vegetables, two major breeders, one French and one Dutch, between them owned practically all the titles of protection issued for beans, lettuce and peas. In the ornamental plant sector, almost all titles had been issued for varieties of chrysanthemum, rose and azalea, mostly from the Federal Republic of Germany, France or the United Kingdom. As for fruit varieties, a resumption of activity by Belgian breeders could be noted--taking up a long tradition--particularly with the filing by a number of producers in the region of Saint-Trond in the Belgian province of Limbourg of applications for protection of apple and pear varieties and the filing by the Plant Breeding Station for Fruit and Vegetable Crops of applications for protection for two rootstock dwarf cherries.

As from 1984, Belgium would be able to offer the other member States examination of tuberous begonia to be carried out at the Plant Breeding Station in Melle. An agreement had already been concluded in respect of that species with the Federal Republic of Germany. On the other hand, it had not been possible to set up an institute for examining distinctness, homogeneity and stability of varieties and the current economic situation made it seem doubtful whether that could be done in the near future.

Denmark.- The Danish authorities had not yet been able to put in hand the drafting of a new law on plant variety protection, as had been decided shortly after the 1978 Diplomatic Conference for the Revision of the UPOV Convention. However, the Ministry of Agriculture had recently invited the various relevant authorities and organizations to propose members for a committee to be responsible for drafting the new law. It was therefore believed that work could begin in the near future. However that may be, it would seem that the delay incurred in preparing the draft was to have a beneficial effect since a large number of discussions had already taken place and had shown that on some points there was a need to reach a better understanding of the needs and wishes of some of the organizations.

As regards cooperation in examination, a rider had been added to the agreement between the Federal Republic of Germany and Denmark on February 1, 1983, as regards examination by Denmark of Christmas cactus and Easter cactus varieties. Negotiations had also taken place with the authorities of the Netherlands, the United Kingdom and Switzerland, but it had not yet been possible to complete them due to the workload of the Danish authorities. It was hoped that those negotiations could be concluded in the forthcoming six months. In that context, the representative of Denmark wished to express thanks to the authorities of the other member States--and also to the Office of the Union--for their cooperation.

USE MADE BY BREEDERS OF THE PLANT VARIETY
PROTECTION SYSTEM IN BELGIUM*

	1977	1978	1979	1980	1981	1982	1983**	total
<u>Agricultural Crops</u>								
Barley	-	17	1	2	2	8	3	33
	-	-	15	2	2	2	7	28
Bread Wheat	1	20	4	3	2	4	1	35
	-	1	20	4	2	2	4	33
White Clover	-	-	-	1	-	-	-	1
	-	-	-	1	-	-	-	1
Meadow Fescue	-	-	-	2	1	-	-	3
	-	-	-	2	-	-	-	2
Red Fescue	-	-	-	7	-	-	-	7
	-	-	-	7	-	-	-	7
Flax, Linseed	-	-	2	6	2	-	-	10
	-	-	-	7	-	-	3	10
Smooth Stalked Meadow-grass	-	-	-	4	-	-	-	4
	-	-	-	4	-	-	-	4
Oat	-	10	2	-	2	2	1	17
	-	-	11	-	2	2	-	15
Potato	-	-	-	33	-	-	1	34
	-	-	-	29	3	1	-	33
Rye	-	1	1	-	-	-	-	2
	-	-	2	-	-	-	-	2
Hybrid Ryegrass	1	1	-	-	-	-	-	2
	-	-	1	1	-	-	-	2
Italian Ryegrass	-	4	-	-	-	-	-	4
	-	-	4	-	-	-	-	4
Perennial Ryegrass	1	6	3	3	-	1	-	14
	-	-	7	-	1	2	-	10
Spelt	-	1	-	1	-	1	-	3
	-	-	1	-	1	1	-	3
Turnip	-	-	-	1	-	-	-	1
	-	-	-	-	-	-	1	1
<u>Fruit Crops</u>								
Apple	-	1	1	1	1	4	4	12
	-	1	-	1	-	1	1	4
Pear	-	-	-	-	-	-	1	1
	-	-	-	-	-	-	1	1
Plum	-	-	-	1	-	2	-	3
	-	-	-	1	-	-	-	1
Strawberry	-	8	2	-	3	1	3	17
	-	8	-	2	-	-	1	11

* First line: applications filed; second line: titles of protection issued.

** Until September 30, 1983.

	1977	1978	1979	1980	1981	1982	1983**	total
<u>Vegetables</u>								
French Bean	-	13	1	-	2	-	-	16
	-	5	3	4	-	-	1	13
Cauliflower	-	-	-	-	1	-	-	1
	-	-	-	-	-	-	1	1
Lettuce	-	-	2	1	1	-	-	4
	-	-	-	2	-	1	-	3
Pea	-	17	2	-	-	2	-	21
	-	6	7	2	2	-	-	17
Black Salsify	-	-	-	2	-	1	-	3
	-	-	-	1	-	-	-	1
<u>Ornamental Species</u>								
Azalea	-	4	1	3	3	-	3	14
	-	-	2	3	5	1	-	11
Bromeliaceae	-	-	-	-	-	2	-	2
	-	-	-	-	-	-	-	-
Carnation	-	-	4	-	2	-	-	6
	-	-	-	4	2	-	-	6
Chrysanthemum	-	-	-	-	-	13	3	16
	-	-	-	-	-	1	10	11
Freesia	-	-	-	-	-	-	1	1
	-	-	-	-	-	-	-	-
Rose	-	40	8	17	21	11	15	112
	-	-	19	9	26	27	6	87
<u>Forest Trees</u>								
Poplar	-	13	-	-	-	-	-	13
	-	-	-	13	-	-	-	13
TOTAL	3	156	34	88	43	52	36	412
	-	21	92	99	46	41	35	334

During 1982, 129 applications for protection had been received (48 agricultural crop varieties and 81 ornamental varieties) and 63 titles of protection had been issued (28 agricultural crop varieties, 1 vegetable variety and 34 ornamental varieties). From January 1 to October 10, 1983, 119 applications had been filed and 100 titles of protection issued.

France.- From the legislative point of view, the past year had been marked above all by the ratification of the 1978 Act of the Convention, which took place on February 17, 1983, and took effect on March 17. Deposit of the instrument of ratification was preceded by an amendment to Decree No. 71-764 of September 9, 1971, Concerning New Plant Variety Certificates and the Issue and Renewal Thereof, made effective by Decree No. 83-10 of January 5, 1983. The purpose of the amendment was to introduce into the French legislation the six-year period referred to in Article 6(1)(b)(ii) of the 1978 Act of the Convention.

** Until September 30, 1983.

Decree No. 83-22 of January 12, 1983, further extended protection to cypress (Mediterranean cypress, Arizona cypress, Duprez cypress, Leyland cypress --X Cupressocyparis and its hybrids), holly (hybrids of *Ilex aquifolium*), kalanchoë, streptocarpus and tulip. A further extension--to sorghum (inbred lines), thyme and triticale--was planned and it was hoped that it could be achieved before the end of the year. The list of protected taxa would then contain 79 entries.

The above-mentioned Decree also extended the rights afforded by the new plant variety certificate, in the case of fruit trees and shrubs and of hops, to plants and parts of the plant, such as grafts, cuttings, layers, to be used for laying down plantations with a view to the commercial production of fruit.

The examination fees were increased by Ministerial Order of March 17, 1983, to 2140 francs a year for "important" species and 1190 francs for ornamental plants and shrubs grown only in the garden or in pots, and the fee to be paid for a simplified examination of a duration of less than one year was increased to 356 francs.

Finally, the Committee for the Protection of New Plant Varieties decided on a number of proposals for improving, species by species, the situation of breeders of vegetatively propagated ornamental plants with respect to varieties deriving from natural mutations. That concerned the keeping of registers and conservatories of varieties to establish the common knowledge of mutants and prohibit the granting of protection to a third party, and the setting up of streamlined examination exclusively for mutants differing from the parent variety in one or more characteristics contained in an exhaustive list. Those provisions were to be applied, in particular, to carnation, rose and chrysanthemum.

Trends in the use made by breeders of the new plant variety protection arrangements are summarized below.

	1979	1980	1981	1982	Total*	1983 (9 months)
Applications filed	381	454	426	498	3834	358
Applications withdrawn	94	89	121	138	671	-
Applications rejected	3	18	8	7	66	-
Certificates issued	126	206	454	344	2040	247
Certificates in force at the end of the period	842	963	1291	1559	-	-

* Since 1971.

Over the last two years, the Committee for the Protection of New Plant Varieties and the National Institute of Industrial Property had acted together in examining the scope of the patent system, on the one hand, and of the system of protection for new plant varieties, on the other, as regards discoveries resulting from the development of biotechnology in the plant kingdom.

Federal Republic of Germany.-- A Bill authorizing ratification of the 1978 Act of the Convention and a Bill amending--on the basis of that Act--the Plant Variety Protection Law had been submitted to Parliament. Normally, the corresponding laws were expected to enter into force in 1984.

Quite apart from the amendments proposed in the legislative texts, a notice had been published in the Bundesgesetzblatt on the granting of reciprocity in respect of plant variety protection by Ireland, Japan, New Zealand and the United States of America. The governments of those States had been informed of the notice.

The list of protected taxa had been increased twice, once by *Achimenes-Hybridi*, *Aechmea Ruiz et Pav.*, *Chrysanthemum frutescens* L., *Prunus* L. (plum), *Rhipsalidopsis Britt. et Rose*, *Schlumbergera Lem.*, *Trifolium subterraneum* L., *Ulmus* L. and *Vaccinium vitis-idaea* L., and the second time by *Aeschynanthus Jack*, *Begonia-Knollenbegonien-Hybriden*, *Erica* L. (extension of the protection previously afforded to *Erica gracilis* Salisb. only), *Impatiens-Neu-Guinea-Hybriden*, *X Odontioda hort.*, *Odontoglossum H.B.K.*, *Pelargonium-Grandiflorum-Hybridi* and *Saintpaulia H. Wendl.* (extension of the protection previously afforded to *Saintpaulia ionantha* H. Wendl. only).

As regards cooperation in examination, it had proved valuable to invite the breeders of a given species from all those States for which the Federal Republic of Germany carried out examinations to discussions which took place at the reference collections and the test facilities. Such discussions had been held in the current year for *begonia elatior* and it was intended to continue that approach in the coming years.

During the year ending June 30, 1983, 623 applications for protection were filed (as against 603 during the preceding year).

In reply to a question put by the President, the representative of the Federal Republic of Germany explained that the Bill amending the Plant Variety Protection Law did not envisage any amendment to the scope of protection.

Hungary.- On March 16, 1983, the Government of the Hungarian People's Republic deposited its instrument of accession to the 1978 Act of the UPOV Convention, which took effect in respect of Hungary on April 16. Accession was notified by Decree-Law No. 14 of 1983 and Law No. II of 1969 on the Protection of Inventions by Patents--which also governed the protection of new plant varieties--was amended by Decree-Law No. 5 of 1983 to make it fully comply with the 1978 Act of the Convention. All conditions were thus met for full and complete application of the Convention in Hungary.

That event was considered an historical turning point in the development of legal protection for new plant varieties in Hungary. There was no doubt that the Convention would constitute a most efficient legal framework for protecting Hungarian varieties abroad and, consequently, for their sale. The Convention was also sure to play an important part in setting up an export structure for Hungarian agricultural produce and would favorably influence the composition and volume of seed exports. Conversely, the Convention would open up much more favorable opportunities for the use of foreign varieties in Hungary and for instituting international cooperation.

Plant breeding had been carried out in Hungary with great success for more than 100 years. Hungarian breeders had developed a large number of varieties of great value, some of which had acquired a flattering reputation at international level. At present, plant breeding work was done in 13 research institutes and five universities and also in the State farms and cooperatives. In 1982, some thousand varieties were qualified by the State, 65% of which were of Hungarian origin and 35% of foreign origin. Those figures demonstrated both the efficiency of Hungarian plant breeding and also the importance of foreign varieties.

The qualification of plant varieties was regulated by a decree of the Council of Ministers and was the responsibility of the Institute for Plant Production and Qualification. The Institute carried out tests on the varieties submitted for qualification (between 150 and 160 each year) in 15 experimental stations attached to the Institute and located throughout the country. Tests lasted for between three and five years and covered not only the distinctness, homogeneity and stability of the varieties but also their economic value. On the basis of those tests, the Institute made proposals, through its professional committees, to the Council for Variety Qualification, which was the decision-making body. Qualification was only given to those varieties that represented an improvement, in respect of at least one important characteristic, over the previously qualified varieties. As from the coming year, the Institute was to carry out examination for distinctness, homogeneity and stability of new varieties applied for protection in compliance with the UPOV Guidelines.

The representative of Hungary completed his statement by expressing his conviction that it would have made clear that as a result of the introduction of the necessary statutory provisions, the good results obtained in plant breeding and the system of variety qualification, Hungary would be a full member of the Union. It would also make every effort to fulfill its responsibilities stemming from accession to the Union and would request the other member States to give it any assistance that might be useful.

In reply to a question by the representative of the Federal Republic of Germany, the representative of Hungary confirmed that following the accession of his country to the Union it could also make use of the results of tests undertaken by other member States as part of cooperation in examination.

Ireland. - No changes had taken place during the past year in the legislative field. In particular, the list of protected taxa still comprised six entries. Extension was however envisaged during the coming year.

Since October 1, 1982, 22 applications had been filed, bringing the total to 169. The 165 validly filed applications were broken down as follows: oats - 10, wheat - 23, barley - 23, potato - 78, perennial ray-grass - 28, white clover - 3. To date, 28 titles of protection had been issued, two of which had been subsequently surrendered. From the relatively small number of applications received, it appeared that breeders preferred to wait before filing applications for protection until they had information on the value for cultivation and use of the varieties through the requests for entry in the national list of varieties approved for marketing.

Israel. - It had not proved possible during the past year to achieve accession to the 1978 Act of the Convention despite the fact that, three years ago already, it was thought that accession could take place rapidly. The reasons for that delay were many. In particular, it had been forecast at the onset that adaptation of the law, that had now been in force for ten years, would also present the opportunity for conducting a thorough revision in the light of experience. As a result of the great difficulties encountered by the revision, it was subsequently decided to separate it from the adaptation to the 1978 Act of the Convention, but this also had not proved possible due in particular to problems of an administrative nature.

During the past year, protection had been extended to banana, kalanchoë and sea lavender.

As far as cooperation in examination was concerned, Israel faced the problem of its climatic conditions, mainly that of high luminosity and high temperatures. Indeed, the descriptions of varieties, carnation or rose for example, established in the countries of northern Europe and those established in Israel contained differences affecting characteristics such as the color of the flower, the length of the stem or the number of petals, and those differences were such that one would be inclined to conclude that they concerned different varieties. In that respect, certain colors seemed to be more subject than others to variations resulting from the intensity of the light. In view of that problem, the Israeli authorities had decided to make use of tests carried out in other member States for determining distinctness, homogeneity and stability and then to carry out additional growing trials and an examination to draw up a description that corresponded to local climatic conditions. That practice had at least the advantage of dispensing with the--costly--upkeep of a reference collection.

The comments reported in the above paragraph gave rise to an exchange of views. The representative of New Zealand pointed out, in concluding his statement, that his country also had similar, or even greater, reservations to make as regards the usefulness of the descriptions drawn up in other countries. Indeed, his country enjoyed a climate characterized by an unusual combination of high luminosity and low temperatures. When comparing the description of a variety drawn up, for example, in Europe and drawn up in New Zealand, it was sometimes very difficult to convince oneself that they were descriptions of the same variety. Additionally, it sometimes happened that two varieties that had proved to be distinct in another country could not be distinguished in New Zealand or again that a variety had proved homogeneous in another country but was not so in New Zealand. Finally, for some species such as wheat, the assortment of varieties grown in New Zealand, was characteristic of the country

and unknown in the other member States, thus making it necessary to examine varieties for which protection had been requested, at national level, in comparison with that assortment. It was to a great extent because of those problems that New Zealand did not participate in the cooperation arrangements instituted within UPOV.

The representative of France felt that it had been clearly shown that the principles governing variety examination had to be adapted to each climatic zone and, notably, the lists of characteristics and the levels of expression used in the examination could not be harmonized in detail if the effect of the environment was ignored. Indeed, even at the level of a single country such as France, it could also be observed that the behavior of a variety, particularly as regards its distinctness in relation to another variety and also its homogeneity, varied depending on the environment in which it was studied. Knowledge of the various environments in which examinations were carried out and their effect on the behavior of the varieties would, however, enable variety descriptions to be drawn up that had practical significance for users. On the other hand, a description drawn up by a breeder in a specific environment was not necessarily comparable to those drawn up in the official testing locations.

The representative of the Federal Republic of Germany considered that the solution adopted by Israel, which was not unreasonable, raised a problem insofar as it was not included in the various recommendations made by UPOV in respect of cooperation. He therefore proposed that the matter be referred to the Administrative and Legal Committee which should examine whether the solution could be incorporated in the cooperation arrangements currently in force. Such an examination was all the more necessary since, as had been shown by the comments of the representative of New Zealand, the difficulties referred to by the representative of Israel also arose in a good number of other countries and UPOV indeed had a universal vocation. He further remarked that the problem was in fact even more complex. He noted, for instance, that a breeder to whom a title of protection had been issued in the Federal Republic of Germany for a variety of saintpaulia was required to furnish in the United States of America, in connection with an application for a plant patent, a description whose content did not correspond to that drawn up in the Federal Republic of Germany despite the fact that saintpaulia was a species cultivated under glass and that glasshouse growing conditions were very similar in both States. In his view, account should also be taken of that fact in order to further improve the cooperation arrangements.

Italy.- The Bill authorizing ratification of the 1978 Act of the Convention had been approved by the Council of Ministers and had been submitted to Parliament.

By Ministerial Order of August 20, 1983, protection had been extended to 15 new taxa of which the list is given in document C/XVII/6 Add. Altogether, the protection arrangements now applied to 84 taxa.

To date, 73 patents had been granted as follows: wheat - 13, carnation - 34, barley - 7, poplar - 7, rice - 9, rose - 3.

Japan.- No changes had taken place in the legislation--nor in the list of protected taxa--since September 3, 1982, when Japan became a member of the Union.

In the administrative and technical area, test guidelines had been adopted for a total of 137 genera and species, to which could be added 20 other documents by the end of next March. The guidelines were in conformity with those adopted by UPOV but contained a number of adaptations to local conditions. A new type of color chart was being finalized on the basis of a project funded by the public authorities and would be put on sale next January. Finally, the Ministry of Agriculture, Forestry and Fisheries had decided to promote the development of objective methods for determining characteristics such as fragrance and pungency by analyzing the components and expressing the results as numerical values. The project was being carried out by the Japan Food Research Laboratories.

Since the entry into force of the Seeds and Seedlings Law in December 1978, 1171 applications for protection had been filed, of which 226 were in 1982 and 256 during the first nine months of 1983. Since that same date, 454 titles of protection had been issued, of which 129 were in 1982 and 131 during the first nine months of 1983. 141 applications and 13 titles concerned foreign varieties.

Netherlands.- The Bill authorizing ratification of the 1978 Act of the Convention had recently been approved by the Lower House. Ratification was expected to take place during the forthcoming year.

Under the current unfavorable economic conditions, the Netherlands authorities felt that three questions in the field of plant variety protection deserved special attention. Firstly, funding of basic research and plant breeding was becoming increasingly difficult despite the fact that it was indispensable to continue the efforts undertaken in plant breeding in view of the need to increase the efficiency of agriculture and improve the food situation. In times of tight budgets, it should not be forgotten that plant variety protection was an effective means of promoting research, particularly private research, in the field of plant breeding.

A further phenomenon that could be observed was that of converging breeding programs. It was quite understandable in the current difficult economic climate that breeders should pursue similar breeding aims, meaning unfortunately that they devoted considerable means to programs that would lead to very similar products. The Netherlands authorities therefore felt that in order to promote innovation and to reduce the tensions that could result from competition between similar varieties, great importance should be attached to the question of minimum distances between varieties. They attached great importance to the matter being examined at international level and hoped that discussions would lead to a common solution.

The third question was that of variety examination. In view of the relative convergence of breeding programs and the increase in cases of infringement, it was clear that examinations of lesser precision could not be allowed, either as regards the characteristics observed or the varieties used for comparison. However, all possibilities of making that examination more efficient had to be looked into. The Netherlands authorities were convinced that large savings could be made in the budgets of the national services if duplication of examinations could be avoided. That aim could be achieved easily, at least in those regions of the world that were subject to similar climatic conditions, by reason of the fact that the States had agreed on the principles governing examination as shown by the large number of test guidelines adopted by UPOV. The Netherlands authorities were indeed keen to improve the arrangements for cooperation that enabled duplication of examinations to be avoided, and to use them for other purposes such as the entry of varieties in the catalogues of varieties approved for marketing.

In 1982, 791 applications had been filed and 347 titles issued.

New Zealand.- A Bill to amend and consolidate the Plant Varieties Act was drafted over two years ago, but it was only on October 6, 1983, after a protracted and frustrating period of inactivity, that the Bill was submitted to Parliament and referred to a select committee. The Bill contained important modifications, particularly as regards two matters. Firstly it would replace the current provisional protection arrangements, which were optional and imposed restrictions on the marketing of the variety, by an automatic system. Secondly, it would give more extensive rights in the case of fruit and certain ornamentals insofar as they would also apply to propagation of the variety for the purpose of commercial production of fruit, flowers or other products.

In view of the numerous amendments contained in the Bill, it would also be necessary to amend the Plant Varieties Regulations 1975. A lay-draft had already been drawn up, although the revision of the Act itself was as yet a draft, and communicated to the interested organizations in New Zealand to ensure proper consultation.

An increase of fees had been envisaged last year, but that did not prove possible following the price and wage freeze decided in March 1982.

As far as use made of the plant variety protection arrangements by breeders is concerned, detailed statistics will be found in the table below. A marked interest will be noted for protection of ornamental varieties of certain indigenous plants and also varieties of less well-known fruit plants.

USE MADE BY BREEDERS OF THE PLANT VARIETY
PROTECTION SYSTEM IN NEW ZEALAND

From October 1, 1982, to September 30, 1983

	Applications received	Titles issued	Titles in force
<u>Agricultural crops</u>			
Barley	-	4	19
Brassica	-	2	4
Brown Top	2	-	-
Cocksfoot	1	-	-
Fescue	2	-	-
Lentil	1	-	-
Linseed	-	-	1
Lucerne	-	-	2
Oat	-	-	2
Pea	1	2	15
Phacelia	-	-	1
Potato	-	-	2
Ryegrass	3	-	1
Soya Bean	-	-	1
Tick Bean	1	-	-
Triticale	2	-	-
Wheat	-	-	7
Total	13	8	55
<u>Ornamental Plants</u>			
Akeake (<i>Dodonea viscosa</i>)	-	-	1
Coprosma	1	-	-
Kawaka (<i>Libocedrus plumosa</i>)	1	-	-
Kowhai (<i>Sophora microphylla</i>)	1	-	-
Lemon (ornamental)	-	-	1
Orchids	1	-	-
Rose	33	10	85
Total	37	10	87
<u>Fruit Plants</u>			
Apple	1	4	5
Apricot	2	-	-
Babaco (<i>Carica pentagona</i>)	1	-	-
Cherry	2	-	3
Feijoa sellowiana	-	2	3
Peach	-	1	1
Pepino (<i>Solanum muricatum</i>)	1	5	8
Plum	1	-	-
Raspberry	1	-	-
Tamarillo (<i>Cyphomandra betacea</i>)	1	-	-
Total	10	12	17
TOTAL	60	30	159

In reply to a question by the representative of the Federal Republic of Germany, the representative of New Zealand explained that two applications had been filed in his country for sexually reproduced potato varieties, one of which had been withdrawn in the meantime. That was a rather new event that raised an important question of principle, that is to say the standard to be chosen for homogeneity. The question had been raised and discussed in the Technical Working Party on Agricultural Crops and the Technical Committee of UPOV. Generally, the New Zealand authorities thought it wrong, in the case of a species in which both vegetatively propagated varieties and sexually reproduced varieties existed, to require a level of homogeneity for the latter which was meaningful only for vegetatively propagated varieties. In any event, examination of the sole remaining application would take some time yet and that time would be put to good use for further reflection.

South Africa.- At the last session of the Council, the representative of South Africa had announced that his country's plant breeders' rights legislation was to be amended in order to make it easier to cooperate in examination. That amendment had been introduced by the Plant Breeders' Rights Amendment Act No. 38 of 1983, which entered into force in April 1983. The registrar was thus able to conclude agreements in respect of cooperation with the other UPOV member States. Negotiations initiated in 1982 with Israel and the Netherlands, and which had been interrupted due to that gap in the law, had now therefore been resumed. In the meantime, South Africa had acquired five examination reports on chrysanthemum from the United Kingdom authorities and one report on a nectarine variety from the French authorities.

No addition had been made to the list of protected taxa. It was however envisaged extending the list, in view of the interest shown in a number of ornamental plants, once the appropriate cooperation agreements had been concluded with other member States.

During the year ending September 30, 1983, 50 applications for protection had been received (20 agricultural crop varieties, 7 fruit varieties and 23 ornamental varieties) and 24 titles had been issued (3 agricultural crop varieties, 2 vegetable varieties, 8 fruit varieties and 11 ornamental varieties). As regards the number of applications filed, roses topped the list, but growing interest was shown in dried beans, lupins and cotton.

Spain.- Work had continued during the past year on the revision of the Plant Variety Protection Law with the main purpose of adapting it to the 1978 Act of the Convention and amending the schedule of fees. Additionally, fees were increased as of January 1, 1983, by Decree-Law No. 24/1982 of December 29, 1982, Concerning Urgent Measures in Budgetary, Financial and Fiscal Matters.

Since the last session of the Council, no addition had been made to the list of protected taxa, which therefore still comprised 17 entries. An extension was however under consideration.

During the first nine months of the current year, 141 applications for protection had been received and 94 titles of protection had been issued. The number of titles in force at present was 300. As with the other member States, Spain had noted a temporary increase in the number of applications filed, following extension of protection in June 1982, as a result of the transitional limitation of the requirement of novelty introduced in accordance with Article 38 of the 1978 Act of the Convention.

There had been no change from the point of view of cooperation in examination, since examination was still carried out at national level.

Finally, the publication of information concerning the national catalogue of varieties approved for marketing in the plant variety protection gazette--of which four numbers were published in 1982--was under consideration.

Sweden.- The 1978 Act of the Convention had been ratified on December 1, 1982, and had entered into force in respect of Sweden on January 1, 1983. The legislation on plant variety protection was amended with effect on that latter date to make it comply with the above-mentioned Act. In addition, the term of protection had been increased and was now twenty years for all species. Finally, protection had been extended to willow.

Since the start of plant variety protection some 12 years ago, 633 applications had been received in all, including 67 during the year ending on July 1, 1983. At present, 173 titles of protection were in force, of which somewhat more than one half concerned agricultural crop varieties.

Switzerland.- On April 5, 1983, the Federal Council brought into effect the amendment of February 28, 1983, to the Plant Variety Protection Order. That amendment increased the number of protected taxa to 44. In that respect, the representative of Switzerland referred to the recapitulative list of taxa made by the Office of the Union in number 34 of "Plant Variety Protection."

Two problems were to be taken up in the near future: the effect of protection in relation to propagation of a protected variety of a fruit plant for the propagator's own needs and the setting up of a center for examining vegetatively propagated varieties of the following ornamental taxa: Cyclamen, Gloxinia, Primula acaulis, polyantha and polycaulis, and Viola X wittrockiana. In the first case, the problem was to know whether current Swiss law also applied to propagation undertaken on a farm for the needs of its own commercial production of fruit or berries. In reply to a question in Parliament, the Federal Council had already instructed the Expert Committee on Plant Variety Protection to clarify the matter and, if necessary, submit proposals for adapting the existing legislation. The second question entered into unknown country insofar as the sexually reproduced ornamental species hardly ever qualified for protection since the varieties currently marketed were very frequently heterogeneous populations. Thanks to new, promising propagation techniques, it appeared possible to create clones and thus remedy the lack of homogeneity.

In the time between the last ordinary session of the Council and the current session, 48 applications for protection had been received, 2 applications had been withdrawn and 25 varieties had been given protection. In all, 186 applications had been recorded and 91 varieties were covered by a title of protection at the present time.

United Kingdom.- Submission to Parliament of a Bill whose main purpose was to align the Plant Varieties and Seeds Act 1964 with the 1978 Act of the Convention gave the signal for a vigorous attack on the plant variety protection system in the United Kingdom and indeed on the system as a whole. It therefore became necessary to use every effort and muster the necessary arguments for countering that attack. In that context, the representative of the United Kingdom expressed his thanks to the other member States and to the Office of the Union for their help which had been extremely useful. Despite the difficulties met in Parliament, the Plant Varieties Act 1983 was adopted and received the royal assent on May 9, 1983. It entered into force on August 9, 1983, enabling the United Kingdom to deposit its instrument of ratification of the 1978 Act of the Convention on August 24.

72. No new taxon had been placed under protection in 1983 although the interested parties had been consulted on various possibilities. Depending on the results of that consultation, extension of protection would be envisaged, particularly to mushrooms. Protection was likely to be extended to the following taxa early in 1984: Choisya, Euphorbia pulcherrima, ornamental Fragaria, Nerine, Zygocactus and to the genus Rubus (parts of that genus were already protected).

It was expected that 725 varieties would be tested in 1983 (344 agricultural crop varieties, 49 vegetable varieties, 56 fruit varieties and 276 ornamental varieties). Since the entry into force of the protection system in 1965, 4438 applications had been received, of which 1307 had been withdrawn and 37 subsequently rejected, and 2369 had led to the granting of protection.

United States of America.- As far as the Patent and Trademark Office, responsible for the protection of vegetatively propagated varieties, was concerned, the past year was marked by no specific event. Finalization of the rules of practice for variety denominations--to include publication of proposed denominations to enable interested parties to make comments--had not yet been completed.

During the past year, 188 patent applications had been received, which was more than the average of 159 for the preceding three years. Of those 188 applications, 151 had been filed by United States nationals and 37 by foreigners (including 8 by residents of the Federal Republic of Germany, 7 by residents of the United Kingdom and 5 by residents of Switzerland). 173 plant patents were issued, also constituting a number above the average for the preceding three years (164). Of those 173 patents, 135 were granted to United States nationals and 38 to non-residents (including 16 to residents of the Federal Republic of Germany, 5 to residents of France and 4 to residents of Denmark).

An amendment to the Regulations and Rules of Practice Under the Plant Variety Protection Act, which applied to sexually reproduced varieties, took effect on August 5, 1983. That amendment brought the system of protection for such varieties into conformity with the 1978 Act of the Convention. It further instituted national treatment for nationals and residents of other UPOV member States.

During the past year, the funding of the Plant Variety Protection Office had been reduced by half. The Office was taking all possible measures to compensate for that reduction, particularly by increased computerization of its administrative tasks and of file management. The fees had to be increased from 750 dollars to 1500 dollars (that amount covered all the costs of obtaining a certificate of protection and there were no annual fees for maintaining it).

During the past year, 178 applications had been filed and 142 certificates issued, representing the second highest annual figure. Since the protection system was set up in 1970, 1166 certificates in all had been issued (734 for agricultural crop varieties, 364 for vegetable varieties and 68 for ornamental varieties). The five species for which the greatest number of certificates had been issued were soya bean (262 certificates), wheat (127), pea (117), bean (111) and cotton (110).

b. Statement on Behalf of Denmark, France, the Federal Republic of Germany, the Netherlands and the United Kingdom

In agreement with the representatives of Denmark, France, the Netherlands and the United Kingdom, the representative of the Federal Republic of Germany made the following statement.

80. The representatives of Denmark, France, the Federal Republic of Germany, the Netherlands and the United Kingdom had continued their efforts towards closer cooperation. It was now planned to introduce in the bilateral agreements between those States provisions to the effect that each of those States would automatically use the results of tests carried out by any other State of that group, in respect of the largest possible number of varieties of the largest possible number of species for which more than one national examination system existed. In other words, the aim was that there should only be one single examination for each variety. To that end, the examination methods were to be harmonized even further. It was moreover envisaged that examination would be increasingly centralized with the services of a single member State that would carry out such examination on behalf of the services of all the other member States participating in the cooperation arrangements, particularly for species to which protection was to be newly extended in future by the States participating in the arrangements. Finally, work was in hand towards drawing up a standardized application form.

Such cooperation should not be limited to the protection of new plant varieties but should also concern the national catalogues of varieties approved for marketing (it being understood that the States should continue to carry out separate tests to assess the value for cultivation and use where such had to be carried out prior to entry in the catalogues). Once such cooperation had taken shape, it would be necessary to examine the conditions for participation by any other interested member States of UPOV.

In his statement on the situation in his own country, the representative of France emphasized that France was actively seeking every possibility of extending the existing bilateral agreements and also every possibility of concluding new agreements by means of bilateral and multilateral contacts that were considered to be potentially as fruitful as in the past. In that respect, he welcomed the results that had been obtained by the "Group of 5" which the

representative of the Federal Republic of Germany had previously reported on. He drew attention to the fact that the ambition of that group was not to constitute or reinforce an exclusive club, but to explore a pathway, both bilateral and multilateral, that had to be followed if progress in cooperation was to be achieved.

c. Statements Made by the Representatives of Non-Member States

Austria.- Austrian breeders had long demanded that Austria should accede to UPOV, but since the current legislation on varieties and seed did not comply with the Convention, a new law had to be introduced. During the past year it had been possible to make sufficient progress with the Bill on plant variety protection for it to be submitted to Parliament. That step had been delayed, however, by the fact that a number of questions of responsibility between the Patent Office and the Ministry of Agriculture and Forestry were still unresolved. Those had now been decided upon to a great extent. However, adoption of a new plant variety protection law also required adoption of a new seed trade law as a result of the close links between those two fields. A draft was currently being drawn up for the latter text and it was to be expected that the consultation procedure, during which the drafts would be submitted to the UPOV Council for comment, would be initiated next year. It was also probable that the drafts would be submitted to the Parliament and that they could be adopted next autumn.

Egypt.- The Government of Egypt was most interested in knowing more about UPOV. Up to the beginning of the seventies, seed production was exclusively an activity of public authorities. At that time, following its policy of economic opening, the Government had invited a number of European and American firms to work together with the Egyptian authorities in the examination of varieties and of seed. That activity was carried out by the Agricultural Research Center through its thirteen research institutes and some twelve experimental stations spread over the whole country.

In view of the special geographic and climatic conditions in Egypt, the representative of that country was inclined to share the doubts expressed by the representatives of Israel and of New Zealand on using as they stood the variety descriptions drawn up in one or other of the European member States of UPOV. Nevertheless, he wished to make it clear that Egypt was very interested in receiving any aid that those States could give in examining varieties within the framework of multilateral or bilateral cooperation, particularly as regards vegetables.

As far as agricultural crops were concerned, Egypt had obtained excellent results in improving species such as cotton, barley, rice, maize, sorghum, lentils and beans. In that field, Egypt could perhaps give assistance to other countries in the Near East and also in Northern Sudan.

Panama.- Panama did not possess the necessary infrastructure for plant variety protection and, should it decide to set up such protection, within the framework of its own legislative system, it would have to be able to rely on assistance and cooperation from States that had already gained experience in the field.

Poland.- At the last session of the Council, the representative of Poland had announced that the Legislative Council of the Council of Ministers had asked that the draft law on plant breeding, protection of new plant varieties and seed matters be supplemented by a chapter on the protection of crops against pests, diseases and weeds. The Ministry of Agriculture and Food Economy had recently completed its adaptation of the draft law and the implementing regulations. Those texts were to be submitted to the Government for preliminary acceptance next December and it was envisaged that they would be submitted to the Diet at the beginning of 1985.

Yugoslavia.- The representative of Yugoslavia observed that the purpose of his participation at the Council session was to follow discussions and, above all, to obtain information on the experience gained by the other States.

Zimbabwe.-- As other States represented at the session by observers, Zimbabwe was very interested in learning more about the UPOV Convention and the rules and principles established by the Union. Contrary to those States, Zimbabwe already had a plant variety protection law, enabling it to cooperate with other States. That law applied to maize, wheat, barley, sorghum, millet, soya bean, ground nut, sunflower, dry bean, vegetable crops, Irish potato, sweet potato, cassava, cotton, grasses and pasture legumes.

The representative of Zimbabwe finished by referring to the fact that varieties developed in Zimbabwe were increasingly used in Southern Africa with the resultant need to pay more attention to plant variety protection.

d. Statements Made by the Representatives of Organizations

European Communities.-- The European Communities had for some years already concerned themselves with a number of problems that resulted from the coexistence at Community level of a common market for propagating material and national systems of new plant variety protection leading to the granting of titles of protection whose effect was limited to the national territory of each State. That situation had recently led the Commission of the European Communities to make an official proposal to the Community Member States and to the professional organizations set up at Community level. That proposal concerned the creation of a European/Community breeder's right having the following essential features:

(i) An optional nature (that is to say, it would coexist with national rights);

(ii) A single application leading to a single title with uniform and immediate effect for the whole of the Community market;

(iii) As regards conditions, terms and content, it would be based on the current and future results of UPOV's work;

(iv) It would provide suitable possibilities of participation by interested European countries that were not members of the Communities.

The Commission of the European Communities was shortly to hold hearings of the Community Member States and of the professional organizations, which could possibly be extended and would, in any event, be held in close liaison with UPOV.

The Secretary-General took note, with satisfaction, of the final remark made by the representative of the Commission of the European Communities and, in a more general way, of the details of the proposal. He also pointed to the positive experience gained in the parallel case of participation of the World Intellectual Property Organization (WIPO) in preparing the European Patent Convention.

Food and Agriculture Organization of the United Nations (FAO).-- The FAO was in the process of organizing a computerized seed information system including several subsystems, one of which concerned cultivars. Cultivars of major crops of social and economic importance from some 90 FAO member States had already been registered in the subsystem. The FAO was also developing a descriptor system to allow cultivars to be identified from a systematic point of view and to characterize them from an agro-ecological point of view. It was intended to extend that subsystem in the future to form a cultivar data bank.

The representative of France offered the following reflections to the session following the information given by the representative of the FAO. It was obvious that, in their respective areas of responsibility, the FAO and UPOV were situated at quite different levels since the vocation of the FAO was a very general one covering agriculture and food, contrary to that of UPOV. Moreover, the concerns of the Director General of the FAO--and of the FAO member States--were very different from those of UPOV since their prime vocation was to serve the development of agriculture and the improvement of the food situation, particularly in the developing countries, although indeed UPOV had such a vocation and such a concern, albeit acting at a more specialized level. In view of that convergence, the representative of France felt that possible interference between the approach adopted by the FAO and that followed by UPOV should be looked at closely to avoid any possible drawbacks. He therefore asked the Office of the Union to remain in close contact with the FAO

Secretariat in order to inform it of UPOV's activities. Moreover, he felt that it would be useful for UPOV to ask itself more seriously what were the true reasons for its action and also consider its action in relation to the developing countries. In his view, that would be a possible topic for a symposium.

The Secretary-General fully shared the point of view expressed by the representative of France and expressed the wish that relations between the two organizations should increase and would be even more fertile than in the past. He pointed out that the best token of UPOV's wish to inform the FAO of its activities, in order to avoid any duplication of work between the two organizations and any waste of public money, was the presence, for the second consecutive year, of a representative of the FAO at an ordinary session of the Council.

MEMBER STATES

South Africa: Modification of Fees

A new tariff of fees has been introduced with effect from January 1, 1984. Some details of the new tariff (in Rands) are given below.

Type of fee	Amount (in Rands)
Application for a plant breeder's right	72
Priority claim for the grant of a plant breeder's right	15
Application for the alteration or supplementation of the denomination of a variety	150
Examination fee)	see table
Annual fees)	below
Furnishing of the results of tests and trials to the appropriate authority in another country	192
Notice of the voluntary surrender of a plant breeder's right	30

Examination (A) and annual (B) fees

Species	A	B	Species	A	A
Actinidia chinensis Planch.	216	21	Coffea arabica L.	216	21
Allium cepa L.	150	21	Chrysanthemum spp.	216	29
Aloë spp.	216	21	Cucumis spp.	150	21
Amygdalus spp.	216	21	Cucurbita spp.	150	21
Ananas comosus (L.) Merr.	216	21	Cydonia spp.	216	21
Arachis spp.	150	29	Dactylis glomerata L.	150	21
Aulax, Leucadendron, Leucospermum,			Daucus carota L.	150	21
Mimetes, Orothamnus, Paranomus,			Dianthus caryophyllus L.	216	29
Protea, Serruria	216	21	Eragrostis curvula (Schrad.) Nees	150	29
Avena spp.	216	29	Euphorbia pulcherrima Willd.		
Beta vulgaris L. var. esculenta L.	150	21	ex Klotzsch	216	21
Brassica oleracea L. convar.			Fragaria ananassa Duch.	150	21
botrytis (L.) Alef. var. botrytis	150	21	Freesia spp.	216	21
Brassica oleracea L. var. capitata			Gladiolus spp.	216	29
L.	150	21	Glycine max (L.) Merrill	150	21
Brassica rapa L.	150	21	Gossypium hirsutum L.	216	29
Capsicum spp.	150	15	Helianthus annuus L.	150	29
Carica papaya L.	216	21	Hibiscus cannabinus L.	216	21
Carya illinoensis (Wangenh.)			Hordeum spp.	216	36
C. Koch	288	21	Humulus lupulus L.	216	21
Cenchrus ciliaris L.	150	21	Lachenalia spp.	216	21
Citrullus lanatus (Thunb.) Matsum.			Lactuca sativa L.	150	15
et Nakai	150	21	Litchi chinensis Sonn.	288	21
Citrus spp.	360	44	Lolium spp.	216	29

<u>Species</u>	<u>A</u>	<u>B</u>	<u>Species</u>	<u>A</u>	<u>A</u>
Lupinus spp.	150	21	Prunus persica (L.) Batsch	288	36
Lycopersicon lycopersicum (L.)			Prunus salicina Lindl.	288	36
Karst. ex Farwell	216	44	Psidium guajava L.	216	29
Macadamia spp.	216	36	Pyrus communis L.	288	36
Malus spp.	288	36	Rosa hort.	216	29
Mangifera indica spp.	288	29	Ricinus communis L.	150	21
Medicago sativa L.	216	29	Saintpaulia ionantha H. Wendl.	216	21
Musa cavendishii Lamb.	216	21	Solanum melongena L. var esculentum		
Narcissus L.	216	21	Nees	150	21
Ornithogalum spp.	216	21	Solanum tuberosum L.	216	36
Oryza sativa L.	150	21	Sorghum spp.	216	29
Passiflora edulis Sims	216	21	Thea sinensis L.	216	21
Pelargonium spp.	216	21	Trifolium hybridum L.	216	21
Pennisetum typhoides (Burm.) Stapf			Trifolium pratense L.	216	21
et C.E. Hubb.	150	21	Trifolium repens L.	216	21
Persea americana P. Mill.	216	29	Trifolium resupinatum L.	216	21
Phaseolus coccineus L.	150	29	Trifolium subterraneum L.	216	21
Phaseolus vulgaris L.	150	29	Triticum turgidosecale	216	36
Pisum spp.	150	29	Triticum spp.	288	36
Prunus armeniaca L.	216	36	Vigna unguiculata (L.) Walp.	216	29
Prunus avium (L.) L.	216	21	Vitis spp.	288	36
Prunus cerasus L.	216	21	Zea mays L. (grain maize)	288	44
Prunus domestica L.	288	36	Zea mays L. (sweet corn, popcorn)	150	21

BIBLIOGRAPHY

CIOPORA

Quatrième colloque international sur la protection des obtentions végétales, 8 octobre 1982, Genève - 105 pages; 21 cm.

The typewritten volume contains the report on the fourth international symposium on plant variety protection organized by CIOPORA, in particular the text of the following exposés:

Preliminary examination in plant variety protection matters and basic principles, by F. SCHNEIDER,

Plant variety protection in Israel, by B. BAR-TEL,

Plant variety protection in Japan, by T. HISAMUNE

Cooperation in the field of the preliminary examination, by Miss Edith V. THORNTON

The infringement of plant variety protection rights under German law, by E. von PECHMANN

The infringement of plant variety protection rights under French law, by G. GAULTIER

The infringement of plant variety protection rights under Dutch law, by A. WOLF

The infringement of plant variety protection rights under the law of the United States of America, by D. JEFFERY.

The report may be obtained in English, French or German from the administrative secretariat of CIOPORA, 4 Place Neuve, Geneva, Switzerland

(Editor's Note)

JACOBSSON (Måns)

Ändringar i den svenska lagstiftningen rörande skydd för växtförädlingsprodukter. [Amendments to the Swedish legislation on the protection of new varieties of plants]
in: NIR, Nordiskt Immateriellt Rättsskydd (SE 3), 1983, No. 2, pp. 230-238.

UNITED STATES OF AMERICA

Regulations and Rules Under the
Plant Variety Protection Act*(Title 7, Chapter I, Subchapter H, Part 180
of the Code of Federal Regulations)

CONTENTS

DEFINITIONS	180.105 Denial of Application
180.1 Meaning of Words	180.106 Reply by Applicant; Request for Reconsideration
ADMINISTRATION	180.107 Reconsideration and Final Action
	180.108 Amendments After Final Action
180.2 Plant Variety Protection Board	CORRECTION OF ERRORS IN CERTIFICATE
THE APPLICATION	180.120 Corrected Certificate - Office Mistake
180.5 General Requirements	180.121 Corrected Certificate - Applicant's Mistake
180.6 Application for Certificate	REISSUANCE OF CERTIFICATE
180.7 Statement of Applicant	
180.8 Specimen Requirements	180.122 Certified Seed Only Election
180.9 Drawings and Photographs	ASSIGNMENTS AND RECORDING
180.10 Parts of Application to be Filed Together	
180.11 Application Accepted and Filed when Received	180.130 Recording of Assignments
180.12 Number and Filing Date of Application	180.131 Conditional Assignments
180.13 When the Owner is Deceased or Legally Incapacitated	180.132 Assignment Records Open to Public Inspection
180.14 Joint Applicants	MARKING OR LABELING PROVISIONS
180.15 Assigned Novel Varieties and Certificates	
180.16 Amendment by Applicant	180.140 After Filing
180.17 Papers of Completed Application to be Retained	180.141 After Issuance
180.18 Applications Handled in Confidence	180.142 For Testing or Increase
180.19 Publication of Pending Applications	180.143 Certified Seed Only
180.20 Abandonment for Failure to Respond Within Time Limit	180.144 Additional Marking or Labeling
180.21 Extension of Time for Reply	ATTORNEYS AND AGENTS
180.22 Revival of Application Abandoned for Failure to Reply	
180.23 Voluntary Withdrawal and Abandonment of Application	180.150 Right to be Represented
180.24 Assignee	180.151 Authorization
EXAMINATIONS, ALLOWANCES, AND DENIALS	180.152 Revocation of Authorization; Withdrawal
	180.153 Persons Recognized
180.100 Examination of Applications	180.154 Government Employees
180.101 Notice of Allowance	180.155 Signatures
180.102 Amendments After Allowance	180.156 Addresses
180.103 Issuance of Certificate	180.157 Professional Conduct
180.104 Application or Certificate Abandoned	180.158 Advertising
	FEES AND CHARGES
	180.175 Fees and Charges

* Consolidated text supplied by the United States Department of Agriculture.
Entry into force (of last amendments): August 5, 1983.

180.176 Fees Payable in Advance
 180.177 Method of Payment
 180.178 Refunds
 180.179 Copies and Certified Copies

AVAILABILITY OF OFFICE RECORDS

180.190 When Open Records are Available

PROTEST PROCEEDINGS

180.200 Protests to the Grant of a Certificate
 180.201 Protest Proceedings

PRIORITY CONTEST

180.205 Definition; When Declared
 180.206 Preparation for Priority Contest Between Applicants
 180.207 Preparation of Priority Papers and Declaration of Priority Contest
 180.208 Burden of Proof
 180.209 Preliminary Statement on Novel Variety Developed in the United States
 180.210 Preliminary Statement on Novel Variety Developed In a Foreign Country
 180.211 Statements Sealed Before Filing
 180.212 Correction of Statement on Motion
 180.213 Failure to File Statements
 180.214 Access to Preliminary Statements
 180.215 Dissolution at the Request of Commissioner
 180.216 Concession; Abandonment
 180.217 Affidavits and Exhibits
 180.218 Matters Considered in Determining Priority

180.219 Recommendation by Commissioner
 180.220 Decision by Commissioner
 180.221 Status of Claims of Defeated Applicant
 180.222 Second Priority Contest

APPEAL TO THE SECRETARY

180.300 Petition to the Secretary
 180.301 Commissioner's Answer
 180.302 Decision by the Secretary
 180.303 Action Following Decision

GENERAL PROCEDURES IN PRIORITY, PROTEST, OR APPEAL PROCEEDINGS

180.400 Extensions of Time
 180.401 Miscellaneous Provisions
 180.402 Service of Papers
 180.403 Manner of Service

REVIEW OF DECISIONS BY COURT

180.500 Appeal to U.S. Courts

CEASE AND DESIST PROCEEDINGS

180.600 Rules of Practice

PUBLIC USE DECLARATION

180.700 Public Interest in Wide Usage

PUBLICATION

180.800 Publication of Public Variety Descriptions

DEFINITIONS

Section 180.1

Meaning of Words

(a) Construction of words. Words used in the singular form in this part shall be deemed to import the plural, and vice versa, as the case may be.

(b) Definitions. The definitions of terms contained in the Act shall apply to such terms when used in this part. In addition, for the purposes of this part, the following terms shall be construed, respectively, to have the following meanings:

(1) "Abandoned application" means an application which has not been pursued to completion within the time allowed by the Office or has been voluntarily abandoned.

(2) "Act" means the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).

(3) "Administrator" means the Administrator of the Agricultural Marketing Service of the U.S. Department of Agriculture or any other officer or employee of the Department of Agriculture to whom authority has heretofore been delegated or to whom authority may hereafter be delegated, to act in his stead.

(4) "Applicant" means the person who applied for a certificate of plant variety protection.

-
- (5) "Application" means an application for plant variety protection under the Act.
- (6) "Assignee" means a person to whom an owner assigns his rights in whole or in part.
- (7) "Board" means the Plant Variety Protection Board appointed by the Secretary.
- (8) "Certificate" means a certificate of plant variety protection issued under the Act by the Office.
- (9) "Certified seed" means seed which has been determined by an official seed certifying agency to conform to standards of genetic purity and identity as to variety, which standards have been approved by the Secretary.
- (10) "Commissioner" means the Examiner in Chief of the Office.
- (11) "Decision and order" includes the Secretary's findings of fact; conclusions with respect to all material issues of fact and law as well as the reasons or basis therefor; and order.
- (12) "Examiner" means an employee of the Plant Variety Protection Office who determines whether a certificate is entitled to be issued. The term shall, in all cases, include the Commissioner.
- (13) "Foreign application" means an application for plant variety protection filed in a foreign country.
- (14) "Hearing Clerk" means the Hearing Clerk, U.S. Department of Agriculture, Washington, D.C.
- (15) "Hearing Officer" means an Administrative Law Judge, U.S. Department of Agriculture, or other officer or employee of the Department of Agriculture, duly assigned to preside at a hearing held pursuant to the rules of this part.
- (16) "Hybrid" shall be defined as set forth in the regulations under the Federal Seed Act (Section 201.2(y) of this chapter).
- (17) "Office" or "Plant Variety Protection Office" means the Plant Variety Protection Office, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.
- (18) "Official Journal" means the "Official Journal of the Plant Variety Protection Office."
- (19) "Owner" means a breeder who developed or discovered a variety for which plant variety protection may be applied for under the Act or a person to whom the rights to such variety have been assigned or transferred.
- (20) "Person" means an individual, partnership, corporation, association, Government agency, or other business or governmental entity.
- (21) "Secretary" means the Secretary of Agriculture of the United States or any other officer or employee of the U.S. Department of Agriculture to whom authority has heretofore been delegated or to whom authority may hereafter be delegated to act in his stead.
- (22) "Seed certifying agency" shall be defined as set forth in the Federal Seed Act (53 Stat. 1275).
- (23) "Sale for other than seed purposes" means the transfer of title to and possession of the seed by the owner thereof to a grower or other person for reproduction for the owner, for testing, or for experimental use, and not for commercial sale of the seed or the reproduced seed for planting purposes.

ADMINISTRATION

Section 180.2**Plant Variety Protection Board**

(a) The Plant Variety Protection Board shall consist of 14 members appointed for a 2-year term. The Board shall be constituted every 2 years and shall consist of individuals who are experts in various areas of varietal development. The membership of the Board, which shall include farmer representation, shall be drawn approximately equally from the private or seed industry sector and from the sector of Government or the public. No member shall be eligible to act on any matter involving any appeal or questions under section 44 of the Act in which he or his employer has a direct financial interest.

(b) The functions of the Board are to: (1) Advise the Secretary concerning adoption of rules and regulations to facilitate the proper administration of the Act, (2) make advisory decisions on all appeals from the examiner or Commissioner, (3) advise the Secretary on the declaration of a protected variety open to use in the public interest, and (4) advise the Secretary on any other matters under the regulations in this part.

(c) The proceedings of the Board shall be conducted in accordance with the Federal Advisory Committee Act (P.L. 92-463), OMB Circular A-63, and Administrative Regulations of the U.S. Department of Agriculture (7 CFR Part 25) and such additional operating procedures as are adopted by the members of the Board.

THE APPLICATION

Section 180.5**General Requirements**

(a) Protection under the Act shall be afforded only as follows:

(1) Nationals and residents of the United States shall be eligible to receive all of the protection under the Act.

(2) Nationals and residents of Member States of the International Union for the Protection of New Varieties of Plants shall be eligible to receive the same protection under the Act as is provided nationals of the United States.

(3) Persons who are not entitled to protection under paragraph (a)(1) or (2) of this section and who are nationals of a foreign state which is not a member of the International Union for the Protection of New Varieties of Plants shall be entitled to only so much of the protection provided under the Act as is afforded by such foreign state to nationals of the United States for the same genus and species under the laws of such foreign state in effect at the time that the application for protection under the Act is filed, except where further protection under the Act must be provided in order to avoid the violation of a treaty to which the United States is a party.

(b) Applications for certificates shall be made to the Plant Variety Protection Office. An application shall consist of:

(1) A completed application form, except that the section specifying that seed of the variety shall be sold by variety name only as a class of certified seed need not be completed at the time of application.

(2) A completed set of the exhibits as specified in the application form, unless the examiner waives submission of certain exhibits as unnecessary based on other claims and evidence presented in connection with the application.

(3) Language and legibility:

(i) Applications and exhibits must be in the English language and legibly written, typed, or printed.

(ii) Any interlineation, erasure, cancellation, or other alteration must be made in permanent ink before the application is signed and shall be clearly initialed and dated by the applicant to indicate knowledge of such fact at the time of signing.

(4) For the purpose of determining the extent of reciprocity of the protection to be provided under the Act, persons filing an application for plant variety protection in the United States under the provisions of paragraph (a)(3) of this section shall, upon request,¹ furnish the Plant Variety Protection Office with a copy of the current plant variety protection laws and regulations for the country of which the applicant is a national and an accurate English translation of such laws and regulations.

(c) Application and exhibit forms shall be issued by the Commissioner. (Copies of the forms may be obtained from the Plant Variety Protection Office, Livestock, Meat, Grain, and Seed Division, AMS, USDA, Room 500, National Agricultural Library Building, Beltsville, Maryland 20705.)

(d) Effective as of the effective date of these regulations and rules of practice, the signature of the applicant or his agent or attorney on any affidavit or other statement filed pursuant to these regulations and rules constitutes a certification by him that no information is known to him which is inconsistent with that relied on in the affidavit or statement, which would tend to give an impression different from that conveyed by the affidavit or statement, or the failure to disclose which makes that or any affidavit or statement already filed in the course of the proceeding misleading when considered as a whole.

Section 180.6

Application for Certificate

(a) An application for a plant variety protection certificate shall be signed by or on behalf of the applicant.

(b) The application shall state the full name, including the full first name and the middle initial or name, if any, and the capacity of the person executing it.

(c) The fees for (1) filing application, and (2) search or examination, shall be submitted with the application in accordance with sections 180.175 - 180.178.

(d) The applicant shall submit with the application at least 2,500 seeds of the viable basic seed required to reproduce the variety.

Section 180.7

Statement of Applicant

(a) The applicant, by signing a completed application, states in accordance with section 42 of the Plant Variety Protection Act that (1) he believes himself, or his privies, to be the original and first breeder or discoverer of the variety for which he solicits a certificate; (2) he, or his privies, has sexually reproduced the variety; (3) he does not know and does not believe that the variety was ever a public variety before his, or his privies', date of determination; (4) he is a sole or joint owner of the variety; (5) the variety was not a public variety more than 1 year prior to the effective filing date of the application; (6) before the date of determination of the variety by the owner, or his privies, or more than 1 year before the effective filing date of the application, the variety was not effectively available to workers

¹ Copies and translations of foreign laws and regulations will be requested only if they are not in the files of the Plant Variety Protection Office. Applicants may learn whether such a request will be made by writing to the address given in paragraph (c) of this section or by calling (301)344-2518.

in this country and adequately described by a publication reasonably deemed a part of the public technical knowledge in this country, which description must include a disclosure of the principal characteristics by which the variety is distinguished; (7) he or his privies have not offered for sale or marketed the variety, with the agreement of the breeder, in a foreign state for longer than 6 years in the case of vines, forest trees, fruit trees, and ornamental trees, including, in each case, their rootstocks, or for longer than 4 years in the case of all other plants.

(b) If the same variety has been marketed with the agreement of either the applicant or his privies, the applicant shall state the names of the countries in which the variety was marketed and give the day, month, and year of first marketing in each country.

(c) When an applicant files an application, cross-references to other related applications may be made, when appropriate.

(Approved by the Office of Management and Budget under control number 0581-0055)

Section 180.8

Specimen Requirements

(a) The applicant may be required by the examiner to furnish representative specimens of the variety, or its flower, fruit, or seeds, in a quantity and at a specified stage of growth, as may be necessary to verify the statements in the application. Such specimens shall be packed and forwarded in conformity with instructions furnished by the examiner. If the applicant requests the examiner to inspect plants in the field before a final decision is made, all such inspection costs shall be borne by the applicant by payment of fees sufficient to reimburse the Office for all costs, including travel, per diem or subsistence, and salary.

(b) Plant specimens submitted in support of an application shall not be removed from the Office except by an employee of the Office or other person authorized by the Secretary.

(c) Plant specimens submitted to the Office shall, except as provided below, and upon request, be returned to the applicant at his expense after the specimens have served their intended purpose. The Commissioner, upon a finding of good cause, may require that certain specimens be retained in the Office for indefinite periods of time. Specimens which are not returned or not retained as provided above shall be destroyed.

Section 180.9

Drawings and Photographs

(a) Drawings or photographs submitted with an application shall disclose the distinctive characteristics of the variety.

(b) Drawings or photographs shall be in color when color is a distinguishing characteristic of the variety and the color shall be described by use of Nickerson's or other recognized color chart.

(c) Drawings should be sent flat, or may be sent in a suitable mailing tube in accordance with instructions furnished by the Commissioner.

(d) Drawings or photographs submitted with an application shall be retained by the Office as part of the application file.

Section 180.10**Parts of Application to be Filed Together**

All parts of an application, including exhibits, should be submitted to the Office together; otherwise, each part shall be accurately and clearly referenced to the application.

Section 180.11**Application Accepted and Filed when Received**

(a) An application if materially complete when initially submitted shall be accepted and filed to await examination.

(b) If any part of an application is so incomplete, or so defective that it cannot be handled as a completed application for examination, as determined by the Commissioner, the applicant will be notified. The application will be held a maximum of 6 months for completion. Applications not completed at the end of the prescribed period will be considered abandoned. The application fee in such cases will not be refunded.

Section 180.12**Number and Filing Date of Application**

(a) Applications shall be numbered and dated in sequence in the order received in the Office. Applicants will be informed in writing as soon as practicable of the number and effective filing date of the application.

(b) An applicant may claim the benefit of the filing date of a prior foreign application in accordance with section 55 of the Act. A certified copy of the foreign application shall be filed upon request made by the examiner. If a foreign application is not in the English language, an English translation certified as accurate by a sworn or official translator shall be submitted with the application.

Section 180.13**When the Owner is Deceased or Legally Incapacitated**

In case of the death of the owner or if the owner is legally incapacitated, the legal representative (executor, administrator, or guardian) or heir or assignee of the deceased owner may sign as the applicant. If an applicant dies between the filing of his application and the granting of a certificate thereon, the certificate may be issued to the legal representative, heir, or assignee, upon proper intervention by him.

Section 180.14**Joint Applicants**

(a) Joint owners shall file a joint application by signing as joint applicants.

(b) If an application for certificate is made by two or more persons as joint owners, when they were not in fact joint owners, the application shall be amended prior to issuance of a certificate by filing a corrected application together with a written explanation signed by the original applicants. Such statement shall also be signed by the assignee, if any.

(c) If an application has been made by less than all the actual joint owners, the application shall be amended by filing a corrected application together with a written explanation signed by all of the joint owners. Such statement shall also be signed by the assignee, if any.

(d) If a joint owner refuses to join in an application or cannot be found after diligent effort, the remaining owner may file an application on behalf of himself and the missing owner. Such application shall be accompanied by a written explanation and shall state the last known address of the missing owner. Notice of the filing of the application shall be forwarded by the Office to the missing owner at his last known address. If such notice is returned to the Office undelivered, or if the address of the missing owner is unknown, notice of the filing of the application shall be published once in the Official Journal. Prior to the issuance of the certificate, a missing owner may join in an application by filing a written explanation. A certificate obtained by less than all of the joint owners under this paragraph conveys the same rights and privileges to said owners as though all of the original owners had joined in an application.

Section 180.15

Assigned Novel Varieties and Certificates

In case the whole or a part interest in a variety is assigned, the application shall be made by the owner or one of the persons identified in Section 180.13. However, the certificate may be issued to the assignee or jointly to the owner and the assignee when a part interest in a variety is assigned.

Section 180.16

Amendment by Applicant

An application may be amended before or after the first examination and action by the Office, after the second or subsequent examination or reconsideration as specified in Section 180.107, or when and as specifically required by the examiner. Such amendment may include a specification that seed of the variety be sold by variety name only as a class of certified seed, if not previously specified or if previously declined. Once an affirmative specification is made, no amendment to reverse such a specification will be permitted unless the variety has not been sold and labeled or publication made in any manner that the variety is to be sold by variety name only as a class of certified seed.

Section 180.17

Papers of Completed Application to be Retained

The papers submitted with a completed application shall be retained by the Office except as provided in Section 180.23(c). After issuance of a certificate of protection the Office will furnish copies of the application and related papers to any person upon payment of the specified fee.

Section 180.18

Applications Handled in Confidence

(a) Pending applications shall be handled in confidence. Except as provided below, no information may be given by the Office respecting the filing of an application, the pendency of any particular application, or the subject matter of any particular application, nor will access be given to, or copies furnished of, any pending application or papers relating thereto, without written authority of the applicant, or his assignee or attorney or agent. Exceptions to the above may be made by the Commissioner in accordance with 5 U.S.C. 552 and Section 1.4 of this title and upon a finding that such action is necessary to the proper conduct of the affairs of the Office, or to carry out the provisions of any Act of Congress or as provided in section 56 or 57 of the Act and section 180.19.

(b) Abandoned applications shall not be open to public inspection, except that if an abandoned application is directly referred to in an issued certificate, and is available, it may be inspected or copies obtained by any person on written request, and with written authority received from the applicant. Abandoned applications shall not be returned.

(c) Decisions of the Commissioner on abandoned applications not otherwise open to public inspection (see paragraph (b) of this section) may be published or made available for publication at the Commissioner's discretion. When it is proposed to release such a decision, the applicant shall be notified directly or through the attorney or agent of record and a time not less than 30 days shall be set for presenting objections.

Section 180.19

Publication of Pending Applications

Information relating to pending applications shall be published in the Official Journal periodically as determined by the Commissioner to be necessary in the public interest. With respect to each application, the Official Journal shall show the (a) application number and date of filing, (b) the name of the variety or temporary designation, (c) the name of the kind of seed, and (d) whether the applicant specified that the variety is to be sold by variety name only as a class of certified seed, together with a limitation in the number of generations that it can be certified. Additional information, such as the name and address of the applicant or a brief description of the novel features of the variety, may be published only upon request or approval received from the applicant at the time the application is filed or at any time before the notice of allowance of a certificate is issued.

Section 180.20

Abandonment for Failure to Respond Within Time Limit

(a) Except as otherwise provided in Section 180.104, if an applicant fails to advance actively his application within 6 months after the date when the last request for action was mailed to him by the Office, or within such longer time as may be fixed by the Commissioner, the application shall be deemed abandoned. The application fee in such cases will not be refunded.

(b) The submission of an amendment to the application, not responsive to the last request by the Office for action, and any proceedings relative thereto, shall not operate to save the application from abandonment.

(c) When the applicant makes a bona fide attempt to advance his application, and is in substantial compliance with the request for action, but has inadvertently failed to comply with some procedural requirement, opportunity to comply with the procedural requirement shall be given to the applicant before the application shall be deemed abandoned. The Commissioner may set a shortened period, not less than 30 days, to correct any deficiency in the application.

Section 180.21

Extension of Time for Reply

The time for reply by an applicant to a request by the Office for certain action, shall be extended by the Commissioner only for good and sufficient cause, and for a specified reasonable time. A request for extension shall be filed on or before the specified time for reply. In no case shall the mere filing of a request for extension require the granting of an extension or stay the time for reply.

(Approved by the Office of Management and Budget under control number 0581-0122)

Section 180.22

Revival of Application Abandoned for Failure to Reply

An application abandoned for failure on the part of the applicant to advance actively his application to its completion, in accordance with the regulations in this part, may be revived as a pending application within 3 months of such abandonment upon a finding by the Commissioner that the failure was inadvertent or unavoidable and without fraudulent intent. A request to revive an abandoned application shall be accompanied by a written statement showing the cause of the failure to respond, a response to the last request for action, and by the specified fee.

(Approved by the Office of Management and Budget under control number 0581-0122)

Section 180.23

Voluntary Withdrawal and Abandonment of Application

(a) An application may be voluntarily withdrawn or abandoned by submitting to the Office a written request for withdrawal or abandonment signed by the applicant or his attorney or agent of record, if any, or the assignee of record, if any.

(b) An application which has been voluntarily abandoned may be revived within 3 months of such abandonment by the payment of the prescribed fee and a showing that the abandonment occurred without fraudulent intent.

(c) An original application which has been voluntarily withdrawn shall be returned to the applicant and may be reconsidered only by refiling and payment of a new application fee.

(Approved by the Office of Management and Budget under control number 0581-0122)

Section 180.24

Assignee

The assignee of record of the entire interest in an application is entitled to advance actively or abandon the application to the exclusion of the applicant.

EXAMINATIONS, ALLOWANCES, AND DENIALS

Section 180.100

Examination of Applications

Examinations of applications shall include a review of all available documents, publications, or other material relating to varieties of the species involved in the application, except that if there are fundamental defects in the application, as determined by the examiner, the examination may be limited to an identification of such defects and notification to the applicant of needed corrective action. However, matters of form or procedure need not, but may, be raised by an examiner until a variety is found to be novel and entitled to protection.

Section 180.101**Notice of Allowance**

If, on examination, it shall appear that the applicant is entitled to a certificate, a notice of allowance shall be sent to him or his attorney or his agent of record, if any, calling for the payment of the prescribed fee, which fee shall be paid within 1 month from the date of the notice of allowance. Thereafter, a fee for delayed payment shall be made as required under Section 180.175.

Section 180.102**Amendments After Allowance**

Amendments to the application after the notice of allowance is issued may be made, if the certificate has not been issued.

Section 180.103**Issuance of Certificate**

(a) After the notice of allowance has been issued, the prescribed fee received by the Office, and the applicant has clearly specified whether or not the variety shall be sold by variety name only as a class of certified seed, the certificate shall be promptly issued. Once an election is made and a certificate issued specifying that seed of the variety shall be sold by variety name only as a class of certified seed, no waiver of such rights shall be permitted by amendment of the certificate.

(b) The certificate shall be delivered or mailed to the owner.

Section 180.104**Application or Certificate Abandoned**

(a) Except as provided in paragraph (c) of this section, if the fee specified in the notice of allowance is not paid within 1 month from the date of the notice, the application shall be considered abandoned.

(b) Upon request by the Office, the owner shall replenish the viable basic seed sample of the novel variety. Upon request, the sample of seed which has been replaced shall be returned to the owner, otherwise it shall be destroyed. Failure to replenish viable basic seed within 3 months from the date of request shall result in the certificate being regarded as abandoned. No sooner than 1 year after the date of such request, notices of abandoned certificates shall be published in the Official Journal indicating that the variety has become open for use by the public and, if previously specified to be sold by variety name as "certified seed only," that such restriction no longer applies.

(c) If the allowance fee, the viable basic seed sample or the fee, if any, for delayed payment are submitted within 9 months of the final due date, it may be accepted by the Commissioner as though no abandonment had occurred. For good cause, the Commissioner may extend for a reasonable time the period for submitting a viable basic seed sample before declaring the certificate abandoned.

(d) A certificate may be voluntarily abandoned by the applicant or his attorney or agent of record, in any, or the assignee of record, if any, by notifying the Commissioner in writing. Upon receipt of such notice, the Commissioner shall publish a notice in the Official Journal that the variety has become open for use by the public, and if previously specified to be sold by variety name as "certified seed only," that such restriction no longer applies.

(Approved by the Office of Management and Budget under control number 0581-0122)

Section 180.105

Denial of Application

- (a) If the variety is found by the examiner to be not novel the application shall be denied.
- (b) In denying an application for want of novelty, the examiner shall cite the reasons the application was denied. When a reason involves the citation of certain material which is complex, the particular part of the material relied on shall be designated as nearly as practicable. The pertinence of each reason, if not obvious, shall be clearly explained.
- (c) If prior domestic certificates are cited as a reason for denial, their numbers and dates and the names of the owners shall be stated. If prior foreign certificates or rights are cited, as a reason for denial, their nationality or country, numbers and dates, and the names of the owners shall be stated, and such other data shall be furnished as may be necessary to enable the applicant to identify the cited certificates or rights.
- (d) If printed publications are cited as a reason for denial, the author (if any), title, date, pages or plates, and places of publication, or place where a copy can be found shall be given.
- (e) When a denial is based on facts known to the examiner, and upon request by the applicant, the denial shall be supported by the affidavit of the examiner. Such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.
- (f) Abandoned applications may not be cited as reasons for denial.

Section 180.106

Reply by Applicant; Request for Reconsideration

- (a) After an adverse action by the examiner, the applicant may respond to the denial and may request a reconsideration, with or without amendment of his application. Any amendment shall be responsive to the reason or reasons for denial specified by the examiner.
- (b) To obtain a reconsideration, the applicant shall submit a request for reconsideration in writing and shall specifically point out the alleged errors in the examiner's action. The applicant shall respond to each reason cited by the examiner as the basis for the adverse action. A request for reconsideration of a denial based on a faulty form or procedure may be held in abeyance by the Commissioner until the question of novelty is settled.
- (c) An applicant's request for a reconsideration must be a bona fide attempt to advance the case to final action. A general allegation by the applicant that certain language which he cites in his application or amendment thereto establishes novelty without specifically explaining how the language distinguishes the alleged novel variety from the material cited by the examiner shall not be grounds for a reconsideration.

(Approved by the Office of Management and Budget under control number 0581-0122)

Section 180.107

Reconsideration and Final Action

If, upon reconsideration, the application is denied by the Commissioner, the applicant shall be notified by the Commissioner of the reason or reasons for denial in the same manner as after the first examination. Any such denial shall be final unless appealed by the applicant to the Secretary within 60 days from the date of denial in accordance with Sections 180.300 - 180.303. If the denial is sustained by the Secretary on appeal, the denial shall be final subject to appeal to the courts as provided in Section 180.500.

Section 180.108**Amendments After Final Action**

(a) After a final denial by the Commissioner, amendments to the application may be made to overcome the reason or reasons for denial. The acceptance or refusal of any such amendment by the Office and any proceedings relative thereto, shall not relieve the applicant from the time limit set for an appeal or an abandonment for failure to reply.

(b) No amendment of the application can be made in an appeal proceeding. After decision on appeal, amendments can only be made to carry into effect a recommendation under Section 180.302(b).

CORRECTION OF ERRORS IN CERTIFICATE**Section 180.120****Corrected Certificate - Office Mistake**

When a certificate is incorrect because of a mistake in the Office, the Commissioner may issue a certificate of correction stating the fact and nature of such mistake, under seal, without charge, to be issued to the owner and recorded in the records of the Office, or the Commissioner may issue a corrected certificate without charge in lieu of and with like effect as a certificate of correction, in accordance with section 84 of the Act.

Section 180.121**Corrected Certificate - Applicant's Mistake**

When a certificate is incorrect because of a mistake by the applicant of a clerical or typographical nature, or of minor character, or in the description of the variety (including, but not limited to, the use of a misleading variety name or a name assigned to a different variety of the same species), and the mistake is found by the Commissioner to have occurred in good faith and does not require a further examination, the Commissioner may, upon payment of the required fee, correct the certificate by issuing a certificate of correction stating the fact and nature of such mistake, under seal, to be issued to the owner and recorded in the records of the Office, in accordance with section 85 of the Act. If the mistake requires a reexamination, a correction of the certificate shall be dependent on the results of the reexamination.

REISSUANCE OF CERTIFICATE**Section 180.122****Certified Seed Only Election**

When an owner elects after a certificate is issued to sell the protected variety by variety name only as a class of certified seed, a new certificate may be issued upon return of the original certificate to the Office and payment of the appropriate fee.

ASSIGNMENTS AND RECORDING**Section 180.130****Recording of Assignments**

(a) Any assignment of an application for a certificate, or of a certificate of plant variety protection, or of any interest in a variety, or any license

or grant and conveyance of any right to use of the variety, may be submitted for recording in the Office in accordance with section 101 of the Act (7 U.S.C. 2531).

(b) No instrument shall be recorded which is not in the English language or which does not identify the certificate or application to which it relates.

(c) An instrument relating to title of a certificate shall identify the certificate by number and date, the name of the owner, and the name of the novel variety as stated in the certificate. An instrument relating to title of an application shall identify an application by number and date of filing, the name of the owner, and the name of the novel variety as stated in the application.

(d) If an assignment is executed concurrently with or subsequent to the filing of an application but before its number and filing date are ascertained, the assignment shall identify the application by the date of the application, the name of the owner, and the name of the novel variety.

Section 180.131

Conditional Assignments

Assignments recorded in the Office are regarded as absolute assignments for Office purposes until canceled in writing by both parties to the assignment or by a decree of a court of competent jurisdiction. The Office shall not determine whether conditions precedent to the assignment, such as the payment of money, have been fulfilled.

Section 180.132

Assignment Records Open to Public Inspection

(a) Assignment records relating to original or amended certificates shall be open to public inspection and copies of any recorded document may be obtained upon payment of the prescribed fee.

(b) Assignment records relating to any pending or abandoned application shall not be available for inspection except to the extent that pending applications are published as provided in section 57 of the Act and section 180.19, or where necessary to carry out the provisions of any Act of Congress. Copies of assignment records and information on pending or abandoned applications shall be obtainable only upon written authority of the applicant or his assignee, or attorney or agent of record, or where necessary to carry out the provisions of any Act of Congress. An order for a copy of an assignment shall give the proper identification of the assignment.

MARKING OR LABELING PROVISIONS

Section 180.140

After Filing

Upon filing an application for protection of a novel variety and payment of the prescribed fee, the owner, or his designee, may label the variety or containers of the seed of the variety or plants produced from such seed, substantially as follows: "Unauthorized Propagation Prohibited - (Unauthorized Seed Multiplication Prohibited) - U.S. Variety Protection Applied For."

Section 180.141

After Issuance

Upon issuance of a certificate, the owner of the novel variety or his designee may label the variety or containers of the seed of the variety or

plants produced from such seed substantially as follows: "Unauthorized Propagation Prohibited - (Unauthorized Seed Multiplication Prohibited) - U.S. Protected Variety."

Section 180.142

For Testing or Increase

An owner who contemplates filing an application and releases for testing or increase, seed of the variety or other sexually reproducible plant material produced from seed of the variety, may label such plant material or containers of the seed or plants substantially as follows: "Unauthorized Propagation Prohibited - For Testing (or Increase) Only."

Section 180.143

Certified Seed Only

(a) Upon filing an application, or amendment thereto, specifying seed of the variety is to be sold by variety name only as a class of certified seed, the owner, or his designee, may label containers of seed of the variety substantially as follows: "Unauthorized Propagation Prohibited - U.S. Variety Protection Applied for Specifying That Seed of This Variety Is To Be Sold By Variety Name Only as a Class of Certified Seed."

(b) An owner who has received a certificate specifying that a variety is to be sold by variety name only as a class of certified seed may label containers of the seed of the variety substantially as follows: "Unauthorized Propagation Prohibited - To Be Sold By Variety Name Only as a Class of Certified Seed - U.S. Protected Variety."

Section 180.144

Additional Marking or Labeling

Additional clarifying information that is not false or misleading may be used by the owner in addition to the above markings or labeling.

ATTORNEYS AND AGENTS

Section 180.150

Right to be Represented

An applicant may actively advance an application or he may be represented by an attorney or agent authorized in writing by him.

Section 180.151

Authorization

Only attorneys or agents specified by the applicant shall be allowed to inspect papers or take action of any kind on behalf of the applicant in any pending application or proceedings.

Section 180.152

Revocation of Authorization; Withdrawal

An authorization of an attorney or agent may be revoked by an applicant at any time, and an attorney or agent may withdraw, upon application to the

Commissioner. When the authorization is so revoked, or the attorney or agent has so withdrawn, the Office shall inform the interested parties and shall thereafter communicate directly with the applicant, or with such other attorney or agent as the applicant may appoint. An assignment will not of itself operate as a revocation of authorization previously given, but the assignee of the entire interest may revoke previous authorizations and be represented by an attorney or agent of his own selection.

Section 180.153

Persons Recognized

Unless specifically authorized as provided in section 180.151, no person shall be permitted to file or advance applications before the Office on behalf of another person.

Section 180.154

Government Employees

Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203 and 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, shall not be eligible to represent applicants, except officers and employees whose official duties require the preparation and prosecution of applications for certificates of variety protection.

Section 180.155

Signatures

Every document filed by an attorney or agent representing an applicant or party to a proceeding in the Office shall bear the signature of such attorney or agent, except documents which are required to be signed by the applicant or party.

Section 180.156

Addresses

Attorneys and agents practicing before the Plant Variety Protection Office shall notify the Office in writing of any change of address. The Office shall address letters to any person at the last address received.

(Approved by the Office of Management and Budget under control number 0581-0122)

Section 180.157

Professional Conduct

Attorneys and agents appearing before the Office shall conform to the standards of ethical and professional conduct generally applicable to attorneys appearing before the courts of the United States.

Section 180.158

Advertising

(a) The use of advertising, circulars, letters, cards, and similar material to solicit plant variety protection business, directly or indirectly, is forbidden as unprofessional conduct, and any person engaging in such solicitation,

or associated with or employed by others who so solicit, shall be refused recognition to practice before the Office or may be suspended, excluded, or disbarred from further practice before the Office.

(b) The use of simple professional letterheads, calling cards, or office signs, simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends and insertion of listings in common form (not display) in a classified telephone or city directory, and listings and professional cards with biographical data in standard professional directories shall not be considered a violation of this section.

FEES AND CHARGES

Section 180.175

Fees and Charges

The following fees and charges apply to the services and actions specified below:

(a) Filing application	\$500
(b) Search or examination	\$500
(c) Allowance and issuance of certificates	\$500
(d) To revive an abandoned application	50
(e) Reproductions of records, drawings, certificates, exhibits, or printed material (copy per page of material) ..	1
(f) Authentication (each document)	1
(g) Correcting or reissuance of a certificate	10
(h) Recording assignments	5
(i) Copies of 8x10 photographs in color	12
(j) Additional fee for reconsideration	25
(k) Additional fee for late payment	25
(l) Additional fee for late replenishment of seed	25
(m) Appeal to Secretary	50

(n) Field inspections by a representative of the Plant Variety Protection Office made at the request of the applicant shall be reimbursable in full (including travel, per diem or subsistence, and salary) in accordance with Standardized Government Travel Regulations.

(o) Any other services not covered above will be charged for at rates prescribed by the Commissioner, but in no event shall they exceed \$20 per man-hour.

Section 180.176

Fees Payable in Advance

Fees and charges shall be paid at the time of making application or at the time of submitting a request for any action by the Office for which a fee or charge is payable and established in this part.

Section 180.177

Method of Payment

Checks or money orders shall be made payable to the Treasurer of the United States. Remittances from foreign countries must be payable and immediately negotiable in the United States for the full amount of the prescribed fee. Money sent by mail to the Office shall be sent at the risk of the sender.

Section 180.178**Refunds**

Money paid by mistake or excess payments shall be refunded, but a mere change of the plans after the payment of money, as when a party decides to withdraw an application or to withdraw an appeal, shall not entitle a party to a refund except for the examination or search fee, which shall be refunded if an application is voluntarily abandoned pursuant to section 180.23(a) before a search or examination has begun. Amounts of \$1 or less shall not be refunded unless specifically demanded.

Section 180.179**Copies and Certified Copies**

(a) Upon request, copies of applications, certificates, or of any records, books, papers, drawings, or photographs in the custody of the Office and which are open to the public, will be furnished to persons entitled thereto, upon payment of the prescribed fee.

(b) Upon request, copies will be authenticated by imprint of the seal of the Office and certified by the official authorized by the Commissioner upon payment of the prescribed fee.

AVAILABILITY OF OFFICE RECORDS**Section 180.190****When Open Records are Available**

Copies of records which are open to the public and in the custody of the Office may be examined in the Office during regular business hours upon approval by the Commissioner.

PROTEST PROCEEDINGS**Section 180.200****Protests to the Grant of a Certificate**

Opposition on the part of any person to the grant of a certificate shall be permitted while an application is pending and for a period not to exceed 5 years following the issuance of a certificate.

Section 180.201**Protest Proceedings**

(a) Opposition shall be made by submitting in writing a petition for protest proceedings, which petition shall be supported by affidavits and shall show the reason or reasons for opposing the application or certificate. The petition and accompanying papers shall be filed in duplicate. If it appears to an examiner that a variety involved in a pending application or covered by a certificate may not be or may not have been entitled to protection under the Act, a protest proceeding may be permitted by the Commissioner.

(b) One copy of the petition and accompanying papers shall be served by the Office upon the applicant or owner, or his attorney or agent of record.

(c) An answer, by the applicant or owner of the certificate or his assignee, in response to the petition may be filed with the Commissioner within 60 days

after service of the petition upon such person. If no answer is filed within said period, the Commissioner shall decide the matter on the basis of the allegations set forth in the petition.

(d) If the petition and answer raise any issue of fact needing proof, the Commissioner shall afford each of the parties a period of 60 days in which to file sworn statements or affidavits in support of their respective positions.

(e) As soon as practicable after the petition or the petition and answer are filed or after the expiration of any period for filing sworn statements or affidavits, the Commissioner shall issue his decision as to whether the protests are upheld or denied. The Commissioner may, following the protest proceeding, cancel any certificate issued and may grant another certificate for the same novel variety to a person who proves to the satisfaction of the Commissioner, that he is the breeder or discoverer. The decision shall be served upon the parties in the manner provided in section 180.403.

PRIORITY CONTEST

Section 180.205

Definition; When Declared

A priority contest may be instituted by the Secretary, on his own motion, or upon the request of any person who has applied for protection on the same variety for which an adverse certificate has been issued, for the purpose of determining the question of priority between two or more parties claiming development or discovery of the same novel variety: Provided, however, That any person shall have forfeited his right to assert priority when an adverse certificate has been issued if he fails to make a request for the institution of a priority contest within 1 year of the publication in the Official Journal of issuance of the adverse certificate by the Secretary or if he fails to make the request within the period for taking action after refusal of his application on the basis of the adverse certificate.

Section 180.206

Preparation for Priority Contest Between Applicants

(a) Before a priority contest will be handled by the Office, an examiner must determine that the same novel variety is involved in separate applications filed by two or more parties and apparently certifiable to each of the parties, subject to the determination of the question of priority.

(b) The fact that a certificate has been issued will not prevent a priority contest.

Section 180.207

Preparation of Priority Papers and Declaration of Priority Contest

(a) When a priority question is found to exist, the examiner shall forward the pertinent files to the Commissioner together with a written statement showing the reason for the contest.

(b) The Commissioner shall institute and declare the priority contest by forwarding a notice to each of the applicants involved. Each notice shall include the name and residence of each of the other applicants or those of his attorney or agent, if any, and of any assignee, and will identify the application of each opposing party by number and filing date, or in the case of a certificate, by the number and date of the certificate. The notice shall specify the basis of the priority contest. The notice shall specify a time, not to exceed 2 months, for filing preliminary statements.

(c) When a notice is returned to the Office undelivered, or when one of the parties resides abroad and his agent in the United States is unknown, notice may be given by publication once in the Official Journal.

Section 180.208

Burden of Proof

The parties to a priority contest will be presumed to have developed their varieties in the chronological order of the filing dates of their applications for certificates involved in the priority contest, and the burden of proof will rest upon the party who last filed an application.

Section 180.209

Preliminary Statement on Novel Variety Developed in the United States

(a) Each party to the priority contest is required to file on or before a date fixed by the Office, a concise preliminary statement giving the facts and dates relating to the development of his alleged novel variety. The preliminary statement must be signed by the owner: Provided, however, That in appropriate circumstances, as when the owner is dead or legally incapacitated or a showing is made of inability to obtain a statement from the owner, the preliminary statement may be made by the assignee or by someone authorized or entitled to make the statement and having knowledge of the facts.

(b) Preliminary statements shall be filed with the Office in duplicate. A copy shall be forwarded to each opposing party by the Office as soon as practicable after both parties have filed their statements within the requisite period.

(c) In filing a preliminary statement each party must show the following information:

(1) The date upon which the first determination of the novel variety was made.

(2) The date upon which the first written description of the novel variety was made. If a written description of the novel variety has not been made prior to the filing date of the application, it must be so stated.

(3) The date of the first act or acts susceptible of proof (other than making a written description or disclosing the novel variety to another person), which, if proven, would establish determination of the novel variety, and a brief description of such act or acts. If there have been no such acts, it must be so stated.

(4) The date of the actual production of the novel variety. If the novel variety had not been actually produced before the filing date of the application, it must be so stated.

(d) When an allegation as to the first written description (paragraph (c)(2) of this section) is made, a copy of such written description shall be attached to the statement.

(e) If a party intends to rely on a prior application, domestic or foreign, the preliminary statement shall clearly identify such prior application. Copies of the cited application and related documents will be served by the Office upon all interested parties to the contest. In the case of an application filed in a foreign country, English translations shall be served upon all interested parties by the party relying on the application filed in the foreign country.

Section 180.210**Preliminary Statement on Novel Variety Developed
In a Foreign Country**

When the novel variety was developed in a foreign country, the preliminary statement must show (a) the information specified in section 180.209(c) through (e) and (b) whether, and if so, when and under what circumstances the novel variety was introduced into the United States by or on behalf of the party.

Section 180.211**Statements Sealed Before Filing**

The preliminary statement shall be submitted in a sealed envelope bearing the name of the party filing it and the number and title of the priority contest as shown on the notice issued by the Office. The envelope should be enclosed in an outer mailing envelope marked "To Be Opened by the Commissioner."

Section 180.212**Correction of Statement on Motion**

In case of material error arising through inadvertence or mistake, a preliminary statement may be corrected upon a satisfactory showing to the Commissioner that the correction is of material significance. Correction of the statement must be made as soon as practicable after the discovery of the error.

Section 180.213**Failure to File Statements**

If any party to a priority contest fails to file a preliminary statement, he shall be restricted to his earliest effective filing date.

Section 180.214**Access to Preliminary Statements**

The preliminary statements shall be open to the inspection of any party after the date set for the filing of preliminary statements (section 180.207(b)), but shall not be open to inspection prior to that time.

Section 180.215**Dissolution at the Request of Commissioner**

If during a priority contest, information is submitted or found which, in the opinion of the Commissioner, may render the variety ineligible for a certificate, the priority contest may be suspended by the Commissioner and referred to an examiner for consideration of the matter and the parties will be notified of the reason for the suspension. Arguments of the parties regarding the suspension will be considered if filed within 60 days of the notification. The suspension will then be continued, modified, or dismissed in accordance with the determination by the Commissioner.

Section 180.216**Concession; Abandonment**

(a) An applicant or a certificate holder involved in a priority contest may, at any time, file a written concession of priority, or abandonment of the

certificate, signed by him. Upon the filing of such an instrument by any party, the decision shall be rendered against him by the Commissioner.

(b) A concession of priority may not be made by an assignee of a part interest.

Section 180.217

Affidavits and Exhibits

Affidavits and exhibits, including official records and any special matter contained in a printed publication, pertinent to the issue involved in the contest, may be introduced in evidence in a priority contest by any party to the contest. In the case of official records and printed publications, the party introducing the evidence shall specify the record or the printed publication, the page or pages thereof to be used, indicating generally its relevancy, and submit to the Commissioner the record or authenticated copy, or the printed publication or a copy. Copies of affidavits and exhibits, including any record or publication, shall be served by the Commissioner on each of the other interested parties.

Section 180.218

Matters Considered in Determining Priority

In determining priority, the Commissioner will consider only priority of development based on the evidence submitted. Questions of novelty generally will not be considered in the decision on priority. If he desires, the Commissioner may refer his proposed findings of fact, conclusions, and notice of priority to the Board for an advisory decision.

Section 180.219

Recommendation by Commissioner

The Commissioner may, either before or concurrently with his decision on the question of priority, but independently of such decision, direct the attention of the examiner to any matter not relating to priority which may come to the Commissioner's attention, and which in his opinion establishes the fact that there has been irregularity which amounts to a bar to the grant of a certificate to either of the parties. The Commissioner may suspend the priority contest and remand the case to the examiner for further consideration of the matters to which attention has been directed.

Section 180.220

Decision by Commissioner

(a) When a priority contest is concluded on the basis of preliminary statements, or otherwise, proposed findings of fact, conclusions, and notice of priority shall be issued by the Commissioner to the interested parties, giving them a specified period, not less than 30 days, to show cause why such proposed findings of fact, conclusions, and notice of priority should not be made final. Any response made during the specified period will be considered by the Commissioner. Additional affidavits or exhibits will not be considered unless accompanied by a showing of good cause acceptable to the Commissioner. Thereafter, final findings of fact, conclusions, and notice of priority shall be issued by the Commissioner.

(b) The decision shall be entered by the Commissioner against a party whose preliminary statement alleges a date of determination later than the filing date of the other party's application.

Section 180.221**Status of Claims of Defeated Applicant**

Whenever a final notice of priority has been issued by the Commissioner in a priority proceeding and the time limit for an appeal from such decision has expired, the claim or claims constituting the issue of the priority stand finally disposed of without further action by the Commissioner.

Section 180.222**Second Priority Contest**

A second priority contest between the same parties shall not be entertained by the Commissioner for the same novel variety.

APPEAL TO THE SECRETARY**Section 180.300****Petition to the Secretary**

(a) Petition may be made to the Secretary from any final action of the Commissioner denying an application or refusing to allow a certificate to be issued or from any adverse decision of the Commissioner made under sections 180.18(c), 180.107, 180.201(e), and 180.220.

(b) Any such petition shall contain a statement of the facts involved and the point or points to be reviewed and the actions requested.

(c) A petition to the Secretary shall be filed in duplicate and accompanied by the prescribed fee (see section 180.175).

(d) Upon request, an opportunity to present data, views, and arguments orally, in an informal manner or in a formal hearing, shall be given to interested persons. If a formal hearing is requested, the proceeding shall be conducted in accordance with sections 50.28 and 50.30 - 50.33 (sections 50.28, 50.30 - 50.33 of this chapter) of the rules of practice under the Agricultural Marketing Act of 1946, as amended (7 U.S.C. 1621, *et seq.*).

(e) Except as otherwise provided in the rules in this part, any such petition not filed within 60 days from the action complained of, shall be dismissed as untimely.

Section 180.301**Commissioner's Answer**

(a) The Commissioner may, within such time as may be directed by the Secretary, furnish a written statement to the Secretary in answer to the appellant's petition, including such explanation of the reasons for his action as may be necessary and supplying a copy to the appellant.

(b) Within 20 days from the date of such answer, the appellant may file a reply statement directed only to such new points of argument as may be raised in the Commissioner's answer.

Section 180.302**Decision by the Secretary**

(a) The Secretary, after receiving the advice of the Board, may affirm or reverse the decision of the Commissioner in whole or in part.

(b) Should the decision of the Secretary include an explicit statement that a certificate be allowed based on an amended application, the applicant shall have the right to amend his application in conformity with such statement and such decision shall be binding on the Commissioner.

Section 180.303

Action Following Decision

(a) Copies of the decision of the Secretary shall be served upon the appellant and the Commissioner in the manner provided in section 180.403.

(b) When an appeal petition is dismissed, or when the time for appeal to the courts pursuant to the Act has expired and no such appeal or civil action has been filed, proceedings in the appeal shall be considered terminated as of the dismissal or expiration date except in those cases in which the nature of the decision requires further action by the Commissioner. If the decision of the Secretary is appealed or a civil action has been filed pursuant to section 71, 72, or 73 of the Act, the decision of the Secretary will be stayed pending the outcome of the court appeal or civil action.

GENERAL PROCEDURES IN PRIORITY, PROTEST, OR APPEAL PROCEEDINGS

Section 180.400

Extensions of Time

Upon a showing of good cause, extensions of time not otherwise provided for may be granted by the Commissioner or, if an appeal has been filed, by the Secretary for taking any action required in any priority, protest, or appeal proceeding.

Section 180.401

Miscellaneous Provisions

(a) Petitions for reconsideration or modification of the decision of the Commissioner in priority or protest proceedings shall be filed within 20 days after the date of the decision.

(b) The Commissioner may consider on petition any matter involving abuse of discretion in the exercise of an examiner's authority, or such other matters as he may deem proper to consider. Any such petition, if not filed within 20 days from the decision complained of, may be dismissed as untimely.

Section 180.402

Service of Papers

(a) Every paper required to be served on opposing parties and filed in the Office in any priority, protest, or appeal proceeding must be served by the Secretary in the manner provided in section 180.403.

(b) The requirement in certain sections that a specified paper shall be served includes a requirement that all related supporting papers shall also be served. Proof of such service upon other parties to the proceeding must be made before the supporting papers will be considered by the Commissioner or Secretary.

Section 180.403**Manner of Service**

Service of any paper under this part must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in any of the following ways:

- (a) By mailing a copy of the paper to the person served by certified mail; the date of the return receipt will be regarded as the date of service;
- (b) By leaving a copy at the usual place of business of the person served with someone in his employment;
- (c) When the person served has no usual place of business, by leaving a copy at his home with a member of his family over 14 years of age and of discretion;
- (d) Whenever it shall be found by the Commissioner or Secretary that none of the above modes of serving the paper is practicable, service may be by notice published once in the Office Journal.

REVIEW OF DECISIONS BY COURT**Section 180.500****Appeal to U.S. Courts**

Any applicant dissatisfied with the decision of the Secretary on appeal may appeal to the U.S. Court of Customs and Patent Appeals or the U.S. Courts of Appeals, or institute a civil action in the U.S. District Court as set forth in sections 71, 72, and 73 of the Act. In such cases, the appellant or plaintiff shall give notice to the Secretary, state the reasons for appeal or civil action and obtain a certified copy of the record. The certified copy of the record shall be forwarded to the Court by the Plant Variety Protection Office on order of and at the expense of the appellant or plaintiff.

CEASE AND DESIST PROCEEDINGS**Section 180.600****Rules of Practice**

Any proceedings instituted under section 128 of the Act for false marking shall be conducted in accordance with sections 202.10 through 202.29 of this chapter (rules of practice under the Federal Seed Act) (7 U.S.C. 1551 et seq.), except that all references in those rules and regulations to "Examiner" shall be construed to be an Administrative Law Judge, U.S. Department of Agriculture, and not an "Examiner" as defined in the regulations under the Plant Variety Protection Act.

PUBLIC USE DECLARATION**Section 180.700****Public Interest in Wide Usage**

- (a) If the Secretary has reason to believe that a protected variety should be declared open to use by the public in accordance with section 44 of the Act, the Secretary shall give the owner of the variety appropriate notice and an opportunity to present his views orally or in writing, with regard to the necessity for such action to be taken in the public interest.

(b) Upon the expiration of the period for the presentation of views by the owner, as provided in paragraph (a) of this section, the Secretary shall refer the matter to the Plant Variety Protection Board for its advice, including advice on any limitations or rate of remuneration.

(c) Upon receiving the advice of the Plant Variety Protection Board, the Secretary shall advise the owner of the variety, the members of the Plant Variety Protection Board, and the public, by issuance of a press release, of any decision based on the provisions of section 44 of the Act to declare a variety open to use by the public. Any decision not to declare a variety open to use by the public will be transmitted only to the owner of the variety and the members of the Plant Variety Protection Board.

PUBLICATION

Section 180.800

Publication of Public Variety Descriptions

Voluntary submissions of varietal descriptions of "public varieties" on forms obtainable from the Office will be accepted for publication in the Official Journal. Such publication shall not constitute recognition that the variety is, in fact, novel.

GENERAL STUDIES

Plant Breeding: A Trade Apart *

Prof. J. Sneepp**

Introduction

Plant breeding started to take shape in the Netherlands about a hundred years ago. In the beginning, plant breeding activities mainly concerned the self-pollinating cereals and sugar beet. Potato breeding came into the picture only later, and no great progress was achieved with grasses and other herbage crops, or with the vegetables, until after the Second World War.

Also a hundred years ago, research became a routine matter at the Rijks Hoogere Land-, Tuin- en Boschbouwschool (State University of Agriculture, Horticulture and Forestry). A special mention shall be made here of Luitje Broekema. Research gained a firm foothold in 1912, following the creation of the Instituut voor Veredeling van Landbouwgewassen (Institute for Agricultural Crop Breeding), better known as the Instituut voor Plantenveredeling (IVP - Plant Breeding Institute). A special chair was created for plant breeding in 1923. The situation was indeed favorable.

Later on, the Government opened new horizons and gave powerful impetus to research by setting up the Instituut voor de Veredeling van Tuinbouwgewassen (IVT - Institute for Vegetable Breeding) in 1943, and the Stichting voor Plantenveredeling (SVP - Foundation for Plant Breeding) in 1948. The Instituut voor Rassenonderzoek van Landbouwgewassen (Institute for Research on Varieties of Agricultural Crops), now known as RIVRO, dates back to the same period, having been created in 1942.

Let us now turn briefly to testing. 1932 saw the creation of the Nederlandse Algemene Keuringsdienst (Dutch General Testing Service). The testing services for vegetables are of somewhat later date.

An important stimulus was given to plant breeding enterprises by the recognition of breeders' rights in 1941.

It was in this way that plant breeding--and also all the activities known under the narrow term "seed business"--became a trade apart which, measured by the number of bred varieties on the seed and planting material market, placed such a small-sized country like the Netherlands in an enviable position.

Prospects and Reality

Plant breeding is to a great extent a synthesizing activity. It must have recourse to elements from various disciplines of fundamental sciences and test them for usefulness. It must shape those elements, adjust them, fit them together and make the resulting construction manageable before putting it to work.

That things have not gone like clockwork should not be surprising. Whereas plant breeding benefited in its development from many impulses from such disciplines as genetics, plant pathology, physiology, husbandry and many others, it has also been burdened with elements that have failed to meet the expectations placed in them, and sometimes has even imposed them upon itself. Still other elements (methods) needed a great deal of time and effort devoted to them before they could be made operational. Some examples could be cited here for the purpose of illustration and instruction.

* Extract from the valedictory lecture given on September 30, 1982, in the Great Hall of the Landbouwhogeschool (University of Agriculture) of Wageningen (Netherlands). The omitted part relates to education in plant breeding in the Netherlands.

** Professor of plant breeding.

a. Around 1700, knowledge of the sexuality of plants had again reached a decent level, and the scientific community increased that knowledge by applying it in the first place to interspecific and intergeneric crossings (**Fairchild**, **Koelreuter**, **Linnaeus**, **Haartman** and many others). They made dozens and probably even hundreds of such crossings, two centuries before the first protoplast fusion was realized. They were very busy carrying out recombinations and genetic manipulations. The knowledge derived therefrom concerned the limits of crossing possibilities, the apparition of sterility in hybrids of taxonomically distant parents and hybrid vigor (**Koelreuter**, 1766).

These crossings led to a widening of the assortment of ornamental plants, but they were of much less value to the improvement of food and fodder crops. We may even assume that the exaggerated interest shown in interspecific and intergeneric crossings diverted attention from crossings within the species. Intraspecific crossings were indeed less spectacular in most cases, albeit more important to plant improvement. Activities in that area did not start until around 1800 (notably through the work of **Knight**, see **Roberts**, 1929) and they developed to full scale only in the course of the nineteenth century. Despite that, the reduction in interspecific and intergeneric crossing to more reasonable proportions was very gradual.

b. In the second half of the nineteenth century, much use was already made in cereals breeding of crosses made for specific purposes, and with good results. The populations derived from crossings were subjected to line selection. **Henry de Vilmorin** bred his Date wheat, **Luitje Broekema** his Wilhelmina wheat, and **Mansholt**s also used crossing and line selection. In the potato breeding area, **Geert Veenhuizen** made crosses before 1900 with evident success.

It is therefore beyond understanding that **Hugo de Vries**, one of those who rediscovered the laws of **Mendel**, should have so passionately opposed crossings in cereals and selection spanning more than one generation in a book published in 1907 in England and subsequently in the Netherlands under the title "Het veredelen van kultuurplanten" (Crop Improvement - 1908). This proves, as do other sources of reference, that **De Vries**, even if we take account of the situation at the time, did not understand much about plant breeding. And yet it was he who claimed to teach plant breeders. However, plant breeding circles resisted the opinions of **De Vries**, who was at the time a man of great reputation, not only in their daily work but also in publications. This proves in turn that plant breeding had become an independent trade, able to judge on its merits whatever was imposed on it from outside.

c. In 1937, the discovery of the effect of colchicine on plants gave rise to quite some excitement. Many thought that thenceforth plant breeding would be able to produce miracle plants rapidly with that miracle substance, but they were counting their chickens before they were hatched. The popular press also entered the scene and stirred up the fire. **Wellensiek** was one of the first to conduct research with colchicine. Ten years later he wrote: "It is not surprising that man-made polyploids gave rise to great hopes. They have not been met, however, and after a period of great enthusiasm for the magic colchicine there was a feeling of deep disappointment." And the author added: "But that is not justified."

Indeed, colchicine was able to render useful services with a number of ornamental plants, and in the production of allopolyploids. But induced autopolyploids did not appear on the Rassenlijst voor landbouwgewassen (List of Varieties of Agricultural Crops) until 1955, 15 years later. The range of species with autopolyploid varieties remained limited, outside the ornamental sector, to cross-pollinated species cultivated for some vegetative part: beets, turnips, ryegrasses, clovers and radishes.

The eventual place of colchicine is thus out of proportion to the high-flying expectations of the initial phase, of which it was thought a priori that they had to be made known.

d. Before the use of colchicine to provoke genome mutations, the use of radiation to induce mutations at the chromosome or gene level had already become a research subject.

The years 1926 and 1927 may be regarded as the starting point for scientifically based mutations induced by radiation. L.J. Stadler was one of the first to conduct experiments on plants (barley and maize) on the basis of the fundamental work of Muller.

In the period after the Second World War, chemical mutagens also appeared. And in the fifties, it seemed that only a few remembered the lukewarm terms that L.J. Stadler used in 1930 in his report on four years of tests: "The practical value of induced mutation in the improvement of crop plants has been much overrated, at least as regards immediate application." Another batch of chickens counted before they were hatched.

In the case of vegetatively propagated ornamental plants, the induction of mutations has become a common technique which has often led to the creation of new varieties and will continue to do so. And yet there is not even one variety resulting from induced mutations on the Netherlands List of Varieties of agricultural crops or vegetables.

Simmonds (1979) said the following about mutations: "... the technique has simply taken its place as one more addition to the plant breeder's repertoire, occasionally very useful, but usually irrelevant..."

He draws two thought-provoking lessons from such a situation:

1. It is necessary to start investigations on limited, clearly defined subjects, on which work is justified from a biological viewpoint.
2. To obtain a mutant is one thing, but to select favorable genotypes and to make them into a variety ready to be used usually requires less effort than a classical breeding programme.

e. Mitochondria complementation

There was another flash in the pan following the publications in 1966 of McDaniel and Sarkissian on the possibility of using mixtures of mitochondria isolated from prospective parents of hybrid varieties to make laboratory predictions of the combining ability of those parents. The method was supposed to save a considerable amount of work. All ears were pricked up, but the little lesson did seem to have been learned. It was only in a relatively limited number of places that investigations were made to check how far the theory matched reality and whether the mitochondria examined *in vitro* gave a true picture of what happened *in vivo*. Indeed a number of questions already arose *a priori* from the fact that in the case of most species the mitochondria of the male parent are not transmitted through the gamete.

Within ten years after the first publication, it became obvious that *in vitro* mitochondria complementation could not be used to determine specific combination abilities. In the Netherlands, Van Gelder and Miedema (1975) did a good job and plant breeding circles were spared useless expenditure.

f. Hybrid varieties

Shortly after the unfortunate publication by Hugo de Vries, plant breeding received a favorable impulse from the studies on hybrid vigor of East (quoted by Shull, 1952) and Shull (1909).

Koelreuter described hybrid vigor in unambiguous words and also pointed to its possible practical importance as long ago as in 1766. Beal (1880) described the greater vigor of the offspring of a cross between two populations of maize. Shull (1909) suggested the process of first making inbred lines and producing single-cross hybrids therefrom. However, the production of seeds of inbred lines, which as we know manifest a great inbreeding depression, was difficult, and in addition, lines had to be found that combined well.

In 1918, D.F. Jones (quoted by Shull, 1952) came up with the idea of double-cross hybrids. Although that concept, even if looked at from a distance, was perfectly correct, it was 1940 before half of the American maize acreage was planted out with hybrids: the double-cross scheme must be carried out with as many as four inbred lines, capable between them of producing a good variety that is able to meet the many requirements of the farmer. And that took a lot of time.

Cytoplasmic male sterility and self-incompatibility have played a great part in the development of hybrid varieties. Indeed in number of instances one of these forms of self-pollination barrier is even a sine qua non. In this case also the transition from the discovery to the marketing of varieties derived therefrom has taken more time than theory had suggested.

f.1 Male sterility

In onions, cytoplasmic male sterility (cms) was discovered as early as in 1925. Jones and Clarke published a good scheme in 1943 for the production of hybrid varieties, in which the female parent was maintained through seeds. And yet it took ten more years before hybrid varieties with acceptable characteristics appeared in any quantity on the American market (Duvick, 1959).

Rhoades described cms in maize as early as in 1933. The T-cytoplasm, much used later on, was discovered in 1944. But it took until the end of the 1950s for hybrid varieties bred on that basis to come on to the market.

Cms must first be introduced in existing good lines; in addition, well-functioning genes restoring fertility must be found and subsequently introduced in the existing male lines.

Owen discovered cms in beets in 1942 (Duvick, 1959). In the United States of America, where diploid beets are used, one quarter of the acreage was planted out with hybrid varieties in 1958 (Duvick, 1959). In the Netherlands, where the demand is for triploid beets, it was not until about 1960 that the first varieties bred on the basis of cms came on to the market.

f.2 Self-incompatibility

As early as in 1932, Pearson described in detail a breeding method in which self-incompatibility could expect to be used in the production of hybrid Brassica varieties. But the first (Japanese) hybrid varieties were released on an experimental basis in 1950 only. In the Netherlands, hybrid cabbage varieties became successful in the 1960s. Today the quality is excellent. Breeding a hybrid variety frequently is not so difficult, but breeding a hybrid variety possessing so many good characteristics that a farmer or a market-gardener is excited at growing it requires a great deal of effort.

The purpose of the foregoing was to stress two situations that frequently occur in plant breeding:

1. Expectations from new developments are frequently disproportionate and unbalanced. Moreover, such expectations are at times nourished from outside, and in this the popular press has been playing its part for some decades.
2. It takes a long time to transform a really new discovery into varieties that are better than the existing ones. Producing such varieties is in fact the fundamental purpose of plant breeding. It is a big task, because the farmer and the market-gardener want a range of characteristics which are almost never positively correlated.

It may now be useful at this point to examine the present from a historical viewpoint and to consider the future on that basis.

One subject that is of great interest to plant breeders, geneticists, molecular-biologists and biochemists at the moment is biotechnology in higher plants.

Plant Biotechnology

There is no clear definition of this concept. Different views are held as to both "plant" and "biotechnology." In the following, the term plant will be taken to mean seed plant, although this restriction leaves out some horticultural crops such as ferns and mushrooms.

Plant biotechnology has at least two areas of application:

1. The industrial use of plant cells for the production of medicines and drugs, scenting and flavoring substances, enzymes, etc.

2. Genetic manipulation, or "genetic engineering," to obtain a fully structured plant with a modified genetic make-up.

For plant breeders, the second area of application is the most interesting. Unfortunately, the choice of the term "genetic engineering" is not a happy one. Genetic engineering has been going on for ages. Selection actually changes the genetic make-up of a population. The changes became more drastic with the beginning of crosses made for specific purposes in the eighteenth century and later on with the introduction of mutation induction. Adapting from De Groot, Van Kammen and Sybenga (1982), genetic engineering could roughly be described as follows:

The fusion of somatic cells (protoplasts), the transfer of isolated genomes or parts thereof--down to the single gene--the transfer of extranuclear DNA or parts thereof of a cell from one plant to a cell from another plant, in order to bring about a genetic transformation of somatic cells without intervention of the generative phase.

Some people also understand plant biotechnology as being the induction of mutations in cells. Others also include the induction of mutations in tissues. Some would even like to incorporate into it anther culturing and in vitro multiplication (tissue cultures). This is carrying things much too far. It would mean that many a gardener could from now on call himself a plant biotechnologist. In principle, he often actually does the same thing as a modern tissue culture specialist, albeit not in vitro.

Cell cultures and regeneration

The selection of adult plants is a time-consuming occupation, and from the viewpoint of population genetics it is rarely 100% efficient, in view of the unavoidable limit on the number of plants that can be grown. For that reason, it has always been found important to identify as many characteristics as possible at the seedling stage already. However, that was possible for only a small number of all the characteristics under selection. Characteristics such as straw stiffness, maturity date, fruit shape and quality, grain shedding, productivity and many others just cannot be examined on seedlings. It appears that even for many kinds of resistance, things are different at the seedling stage and at the adult stage. In fact, by no means all genes express themselves at all stages.

When working with microorganisms, one can apply in vitro selection to an enormous number of individuals on a very limited surface. Consequently, it may be attractive at first sight also to select plant cells in vitro. The following must be recognized, however:

- a. Selection in cultures of plant cells can only be successful if the cultures contain cells carrying mutations--either spontaneous, and possibly carried over from the original tissue, or induced.
- b. A plant cell is not a microorganism. It has a different make-up and is an element of the differentiated structure that forms a plant. A protoplast reacts differently from a cell, a cell differently from a tissue, and a tissue, in turn, differently from a differentiated plant.
- c. Any selection will practically always be done by means of chemical or physical techniques.
- d. In principle, it will not be possible to apply selection in cell or protoplast cultures for characteristics that are essential to plant breeding. What is true for seedlings is even more true here.

For some of the cases of successful selection in cell cultures recorded in literature, we are in need of undisputable evidence. It is striking that, even with the widely-used Daucus carota, only a small amount of detailed genetic research was done on plants obtained from cell cultures (Sung and Dudits, 1981).

- e. By no means do all genes express themselves in a cell. Many genes remain silent until the later developmental stages of a plant. The reverse is also true: genes may express themselves in a cell, whereas their effect becomes imperceptible in the adult plant resulting from such a cell.

There are in addition other limitations to selection in cell or protoplast cultures:

1. Many of the important crops are still resistant to regeneration and therefore to that technique.
2. If regeneration can be achieved, it often produces a variety of types. The question is then whether the result obtained at plant level is the one expected from the selection. Shepard et al. (1980), who work on potato protoplasts, relate that fact to genotypic variations existing in the cells of a plant (more precisely, in the mesophyll). Wenzel et al. (1979) obtain a few somaclonal variations only in dihaploid potatoes. And yet they are more frequent when the callus stage is prolonged in the regeneration process. Thomas et al. (1982) also ascribe the variations to events at the callus stage. Indeed they obtain various types of plants from a callus deriving from a single cell.

Van Harten et al. (1981) obtain off-types from calluses deriving from potato petioles or peduncles in more than half of the cases. The result is thus the same with this method as with the tissue - protoplast - cell - callus - plant procedure, but it is obtained with much less effort. Thomas et al. (1981) also refer to this fact.

The variation appearing on regeneration is primarily caused by changes in the ploidy level, including aneuploidy, chromosome breaks, etc., and also by smaller genotypic modifications.

Would this give rise to a modern form of craze for valuable bud-mutations?

Protoplast fusion

The fusion of somatic cells or somatic hybridization can be set against the fusion of gametes, which is the well-known hybridization technique via crosses. That technique may lead to the following:

- a. interspecific and intergeneric hybrids, even in cases where the parents differ to such a degree that hybridization by means of traditional crossings is impossible;
- b. cybrids, i.e. cells constituted by a nucleus and a cytoplasm of different origins.

Ad a. Hybridization

In the ornamental plants sector, there are already many interspecific and intergeneric hybrids. Some of them arose spontaneously and the others are man-made crosses. Protoplast fusion may perhaps open new possibilities for wide crosses that have not been feasible so far or have been impossible because of the sterility of the offspring or obligate apomixis in the parents. Since ornamentals are judged by particular standards, there are opportunities for undertaking useful work, particularly in the case of vegetatively propagated plants. However, in these cases, mitotic stability will be required in the newly created plants.

Many interspecific and intergeneric hybrids have been made in the case of agricultural crops, vegetables and forest trees too, and for various purposes:

- to obtain entirely new crops such as Triticale, Raphano-brassica, Festulolium, Hybrid Ryegrass;
- to resynthesize natural allopolyploids, as for example in the genus Brassica;
- to introduce certain characteristics such as resistances: many of our potato varieties possess genetic material from other Solanum species; by selecting for several characteristics in the back-cross offspring, it is often possible to obtain a better yield in addition to resistance;
- to take advantage of the mitotic instability that results from the crossing and may produce haploids, as when Hordeum vulgare or Triticum aestivum are crossed with H. bulbosum.

When a desired interspecific cross, e.g. for the purpose of obtaining resistance, appears to be impossible by the generative route, one could resort to protoplast fusion (among others in the cucurbits). However, several requirements must be met in that case:

1. The product of the fusion, i.e. the hybrid cell, must possess karyological stability;
2. The hybrid cell must be capable of regenerating a complete plant;
3. This plant must be at least female fertile;
4. The desired gene from the alien genome must be transferred into the genome of the cultivated crop.

For such transfer to be possible, it is important that the plant be fertile, so that homeologous chromosomes can recombine in meiosis.

One of the advantages of protoplast fusion is the allopolyploidy resulting from the combination of the genomes. This often obviates sterility. Unfortunately, it hampers the crossing-over of homeologous chromosomes.

When we wish to use protoplast fusion, we are likely to be faced with the following problems:

- For many important crops it is not yet possible to regenerate a whole plant from cells.
- It is often very hard or even impossible to select the products of fusion in a cell suspension.
- Mitotic and meiotic instability occurs with taxonomically remote species and genera.
- The fusion of unrelated species would very seldom result in a meaningful end product, for example a fusion of potato and tomato producing both potatoes and tomatoes. Something useful might perhaps be obtained with certain ornamental plants, however.
- Chromosomes from unrelated species often do not exchange genes, even when they are put together in one cell.

Conclusion

Protoplast fusion is an attractive technique for cases where it has been impossible so far to combine alien genomes through sexual hybridization. However, the capability of regenerating a plant from a cell is an absolute precondition. Protoplast fusion is also subject to limits on the parentage relations of the partners in the fusion, if the technique is to provide a useful and manageable product.

Ad b. Cybridization

When two unrelated genomes are brought together by crossing, one of them is frequently eliminated. One genome remains, and we thereby obtain a haploid. Plant breeding has in fact been using that technique for many years to produce haploids. In principle, it is also possible to use it to introduce a nucleus into a foreign cytoplasm. Repeated back-crosses, in which the plants with the desired plasma are always used as female parents, are generally applied. This is the technique by which a cms wheat has been obtained from the cross Triticum timopheevi X T. aestivum, with the cytoplasm of T. timopheevi.

In the case of protoplast fusion, the elimination of a nucleus also occurs, but sometimes it happens that the nucleus is embedded in a mixture of the two plasmas. With regard to the transfer of cms, it remains to be established whether the functioning of the organelles causing cms is dominant or recessive and whether the two groups of organelles are equally fit. Should we succeed in transferring only the nucleus into the sterility-causing cytoplasm, then there is no need to find the answer to the question.

Conclusion

If cybridization in vitro does not open really great possibilities, it may constitute a welcome complement to the classical methods used to obtain cytoplasmic male sterility, if the detection of the desired combination in the cell suspension and the subsequent regeneration can take place without disturbance.

DNA transfer into protoplasts

In principle (and certain techniques have become a matter of routine) we can today transfer DNA into a protoplast in the form of:

- a. cell-nuclei (genomes) (see also under protoplast fusion and cybridization);
- b. chromosomes;
- c. parts of chromosomes;
- d. organelles;
- e. pieces of DNA embedded in a plasmid (other vectors are in principle also possible).

The transfer of entire genomes has been realized for centuries by means of crosses, not only intraspecific, but also interspecific and even intergeneric. In this field a whole range of methods has been developed. Many combinations of alien genomes have also occurred spontaneously. Our bread wheat, which possesses three different genomes in association, originated spontaneously, through natural interspecific crosses, some millennia ago. Of other plants with a composite genome, we could mention oats, swede rape, tobacco, cotton and many ornamentals.

For the transfer of chromosomes and chromosome arms, wheat has been the classic example for decades. The techniques involving aneuploids as used by **Sears, Riley, Law** and many other scientists are commonly known. But genetic engineering will perhaps expand or facilitate transfers.

The combination of a nucleus with alien organelles is a matter of importance because the organelles may carry cytoplasmic male sterility. So far, recurrent back-crossing has been the only way of realizing a transfer. For crops with a short or easily-shortened generative cycle, recurrent back-crossing is not very time-consuming. Limitations do occur when cms originates from very remote species or genera. Then, crossability, female sterility of the hybrid, etc. could well create difficulties. The possibility of transferring organelles with the new *in vitro* techniques would therefore be welcome indeed. Anticipating these techniques, the question is how the dominance and competition behavior of the organelles from diverse origins will manifest itself in the case of a direct transfer.

The transfer of certain genes into another plant which should otherwise retain as much as possible of its own genotype can also be realized through the classical recurrent back-crossing. Modification of a single gene can also be achieved with a pin-point mutation. The technique of transferring a gene that has been embedded in a plasmid is expected to play an important role in the future, in particular since **Schell, Van Montagu** and their collaborators (cited by **Marx**, 1982) recently succeeded in eliminating the tumor-inducing element from the Ti plasmid of *Agrobacterium tumefaciens*. Nevertheless, quite a number of barriers have yet to be overcome. Many important traits such as yield, drought and cold resistance, and also many forms of durable resistance, are under polygenic control, i.e. they are governed by many genes spread over the entire genome. Whereas DNA transformation has to concentrate for the time being on monogenic traits, the quantitative (polygenically controlled) traits are of paramount importance to plant breeding. There are also requirements to be met by the recipient for success to be ensured:

The DNA must be absorbed in such a way that it becomes an integrated part of the nucleus and passes the meiotic phase without mutilation (for vegetatively propagated crops, a regular mitosis or cytoplasmic inheritance would be sufficient). Furthermore, it must be possible for the information carried by the incorporated DNA to be transcribed into messenger RNA, which must in turn be able to induce translation in the ribosome, i.e. the production of the desired proteins. The complications are many and varied, but worth overcoming.

Research in the Netherlands

Research may be roughly divided as follows:

- a. true fundamental research, which aims at deepening our knowledge of molecular genetics and is mainly oriented towards analytical knowledge;
- b. research that may ultimately lead to techniques with practical application in the breeding of better varieties, and therefore synthetic in approach.

Recent developments soon gave rise to the desire for involvement on all fronts. That provided strong incentives for research, which unfortunately is not possible in a small country. We shall of course have to introduce the new techniques under our roof, but we shall also have to make a choice among the subjects and select those that fit into the existing infrastructure. In that respect, we shall have to follow worldwide developments, which Dutchmen, incidentally, are quite good at. The choice between true fundamental research and more practical research will require consideration. Fortunately, suitable structures for such consideration are available in the Netherlands, in particular under the auspices of the NRLO, even if they are not always fully used in policy-making.

Also within the LH is coordination highly desirable between fundamental and more practical research in the form of intermediate research. It is therefore welcome news that attempts are being made to set up working groups in the field of plant biotechnology.

From the point of view of plant breeding, it seems appropriate to choose first the subjects already connected with breeding methods, that is:

1. Research on and transformation and transplantation of organelles with a view to extending the possibility of breeding hybrids with the help of cms to further species.
2. Analysis of the cause of the mutations and the epigenetic effects of the regeneration of protoplasts with a view to controlling the purity of the regenerated plants and examining whether these phenomena offer new possibilities for vegetatively propagated ornamental plants.
3. Transfer of one or more resistance genes from remote species or genera and incorporation into the genome of the recipient. Following incorporation, it will also be necessary to examine whether existing dominant genes can also be replaced if recessivity is desired.
4. Analysis in association with plant pathologists of the expression of resistance and virulence genes, followed in the case of resistance genes by amplification through cloning and integration into the genome of a recipient where they would express themselves; this, however, is a research to be embarked upon in the more distant future.

Even if a great part of the expectations placed in the new in vitro techniques becomes reality, so-called classical plant breeding will undoubtedly remain the basic tool for creating better varieties. A new technique must be able to do more than any one of the devices in the arsenal already available to plant breeding. Furthermore, successful in vitro manipulation must still be followed for a great part of the classical breeding programme, from selection via multiplication and up to release.

Classical plant breeding is therefore unquestionably still indispensable and must continue to receive the necessary attention. Careful administration, which--with the lessons of the past in mind--enables a balanced synthesis of the various branches of plant breeding to be achieved, constitutes the best imaginable basis on which to maintain the prominent position of the Netherlands in the plant variety sector.

Consequences for breeding companies

The time has not yet come for breeding companies to undertake research in the field of subcellular techniques themselves. It seems more likely that research at universities and institutions will first complete the mainly analytical investigation phase and proceed to the synthesizing phase, which will then reveal what shows promise for plant breeding and what does not. Such research must start at a fundamental level and provide tools and methods for practical application. For the sake of efficiency, all forces should be combined and a profitable dialogue and cooperation should take place between all disciplines and at all levels. That is better than calling in foreign commercial enterprises that are competitors of our breeding firms.

The activities of commercial research institutes, particularly in the United States of America, are also directed towards applying for patents in breeding techniques. This policy is at first sight similar to, but in fact contrary to breeders' rights, which protect newly bred varieties.

Of course is not the first time that attempts have been made to obtain a patent for a breeding method. The well-known D.F. Jones, whose name is associated with maize double-cross hybrids, once had a patent for the use of cytoplasmic male sterility in the production of maize hybrids. And Rabbethge & Giesecke (Kleinwanzleben) obtained a patent in about 1950 for the breeding of triploid sugar beets. Both patents raised quite a controversy in their time. For example my predecessor, the late Professor Dr. J.C. Dorst, wrote an article in the first volume of *Euphytica* (1952) against the last-mentioned patent under the title "A questionable novum." He referred in the article to the fact that in the case of plant breeding, it was the new product--the variety--that was to be protected, not the method. Protecting the latter prejudices the public interest.

Breeders should be able to apply every method to assure agriculture of a continuous flow of improved varieties. The application of a plant breeding method is no guarantee of a successful variety. Much more than that would be required. Fortunately, neither patent was very successful. It is nevertheless necessary to watch developments, since patents are now again being granted, and even for breeding methods that in essence are not even new.

In the United States of America, for instance, a commercial research company was recently granted a patent for a breeding method for Brassica based on the vegetative maintenance of non-inbred parent material for crosses. Maintenance is done by in vitro culture of tissues. And yet the principle and the method of vegetative maintenance, albeit not in vitro, are nearly 60 years old.

The company concerned has already announced that it "will aggressively defend its patent position" (Seedsman's Digest, July 1982).

This type of company is also involved with the European Patent Office. There is definitely a danger here for breeding companies.

The Dutch Patent Law and the European Patent Convention exclude, under provisions that are quite similar in wording, the protection of plant and animal varieties by patent, and also essentially biological processes for the production of plants or animals. However, microbiological processes and the products obtained by means of such processes are not excluded. The question is therefore whether or not the new techniques applied with plants at the cellular level are to be included among those microbiological processes. Should the genes also be protected separately? Certainly this is a suitable defense of breakthroughs.

Possible activities of breeding companies in the field of in vitro techniques must first of all be looked for in the field of tissue, including meristem, cultures. Some companies use their own facilities for such cultures, for instance for the maintenance and propagation of valuable source material, while others have recourse to foundations and private workshops. In total, there are already some 20 places in the Netherlands where tissue cultures are made.

Once fundamental and applied research at the cellular and subcellular level has made progress and has determined what is useful for breeding, a breeding company with its own facilities will be able to proceed, at its own pace, to the next step, which is the one that follows cellular research.

LITERATURE

- Beal, W.J., 1880. Indian corn. Michigan State Board Agric., 19th Ann. Rep.: 279-289.
- Dorst, J.C., 1952. A questionable novum. *Euphytica* 1:81-83.
- Duvick, D.N., 1959. The use of cytoplasmic male sterility in hybrid seed production. *Economic Botany* 13:167-195.
- Gelder, W.M.J. van, & P. Miedema, 1975. Significance of mitochondrial complementation for plant breeding: Negative evidence from a study on maize. *Euphytica* 24:421-429.
- Groot, B. de, A. van Kammen & J. Sybenga, 1982. Genetische manipulatie in dienst van de landbouw. Nat. Raad Landbouwk. Onderzoek, Studierapport 14a: 1-63.

- Harten, A.M., H. Bouter & C. Broertjes, 1981. In vitro adventitious bud techniques for vegetative propagation and mutation breeding of potato (Solanum tuberosum L.). II. Significance for mutation breeding. *Euphytica* 30:1-8.
- Jones, H.A. & A.E. Clarke, 1947. The story of hybrid onion. *Yearbook Agric.* 1943-1947: 320-326.
- Koelreuter, J.G., 1766. Dritte Fortsetzung der vorläufigen Nachricht von einigen das Geschlecht der Pflanzen betreffenden Versuchen und Beobachtungen. In: Ostwald's Klassiker der exakten Wissenschaften, Nr.41: 188-194.
- Marx, J.L., 1982. Ti plasmids as gene carriers. *Science USA* 216:1305.
- McDaniel, R.G., & I.V. Sarkissian, 1966. Heterosis: Complementation by mitochondria. *Science USA* 152:1640-1642.
- Pearson, O.H., 1932. Breeding plants of the cabbage group. *Agric. Exp. Station Berkely, Bull.* 532:22 pp.
- Rhoades, M.M., 1933. The cytoplasmic inheritance of male sterility in Zea mays. *J. Genet.* 27:71-93.
- Roberts, H.F., 1929. Plant hybridization before Mendel. Princeton Univ. Press: 374 pp.
- Shepard, J.F., D. Bidney & E. Shakin, 1980. Potato protoplasts in crop improvement. *Science USA* 208:17-24.
- Shull, G.H., 1909. A pure-line method in corn breeding. *Am. Breeders' Ass.* 5:51-59.
- Shull, G.H., 1952. Beginnings of the heterosis concept. In: Gowen, J.W. (ed.): *Heterosis*, Iowa Sta. Coll. Press: 14-48.
- Simmonds, N.W., 1979. Principles of crop improvement. Longman: 408 pp.
- Stadler, L.J., 1930. Some genetic effects of X-rays in plants. *J. Heredity* 21:3-19.
- Sung, Z.R., & D. Dudits, 1981. Carrot somatic cell genetics. In: Panopoulos, N.J. (ed.): *Genetic engineering in the Plant Sciences*. Praeger: 11-37.
- Thomas, E., S.W.J. Bright, J. Franklin, V.A. Lancaster, B.J. Mifflin & R. Gibson, 1982. Variation amongst protoplast-derived potato plants (Solanum tuberosum cv. Maris Bard). *Theor. Appl. Genet.* 62:65-68.
- Vries, H. de, 1908. Het veredelen van kultuurplanten. Tjeenk Willink & Zn.: 350 pp.
- Wellensiek, S.J., 1947. Grondslagen der algemeene plantenveredeling. Tjeenk Willink & Zn.: 541 pp.
- Wenzel, G., O. Schieder, T. Przewozny, S.K. Sopory & G. Melchers, 1979. Comparison of single cell culture derived Solanum tuberosum L. plants and a model for their application in breeding programs. *Theor. Appl. Genet.* 55:49-55.

MISCELLANEOUS INFORMATION

International Symposium on Intraspecific Classification of Wild and Cultivated Plants

The Systematics Association is organizing, in association with the Royal Horticultural Society of the United Kingdom, the International Union of Forest Research Organizations and the International Board for Plant Genetic Resources, an international symposium on intraspecific classification of wild and cultivated plants from September 26 to 28, 1984, at the Department of Zoology of the University of Oxford (United Kingdom). Lectures will be given on both the scientific and legal aspects. Concerning the legal aspects, emphasis will be put on plant variety protection, with several speakers deeply involved in these matters. For further details, please contact the conference secretary, Dr. B.T. Styles, Department of Forestry, Commonwealth Forestry Institute, South Parks Road, Oxford, OX1 3RB, United Kingdom.

CALENDAR

1984

UPOV Meetings

April 4 and 5	Administrative and Legal Committee
April 6	Consultative Committee
May 15 to 17 La Minière (France)	Technical Working Party on Automation and Computer Programs
June 11 to 15 Bet Dagan (Israel)	Technical Working Party for Vegetables
June 27 to 29 Lund (Sweden)	Technical Working Party for Agricultural Crops (Subgroups on June 26)
August 7 to 9 Hannover (Federal Republic of Germany)	Technical Working Party for Ornamental Plants and Forest Trees
September 26 to 28 Valencia (Spain)	Technical Working Party for Fruit Crops (Subgroup on September 25)
October 16	Consultative Committee
October 17 to 19	Council
November 6 and 7	Technical Committee
November 8 and 9	Administrative and Legal Committee

The International Union for the Protection of New Varieties of Plants (UPOV)--an international organization established by the International Convention for the Protection of New Varieties of Plants--is the international forum for States interested in plant variety protection. Its main objective is to promote the protection of the interests of plant breeders--for their benefit and for the benefit of agriculture and thus also of the community at large--in accordance with uniform and clearly defined principles.

"Plant Variety Protection" is a UPOV publication that reports on national and international events in its field of competence and in related areas. It is published in English only--although some items are trilingual (English, French and German)--at irregular intervals, usually at a rate of four issues a year. Subscription orders may be placed with:

The International Union for the Protection of New Varieties of Plants
34, chemin des Colombettes, 1211 Geneva 20 (POB 18)
(Telephone: (022) 999.111 - Telex: 22 376-OMPI)

The price per issue is 2 Swiss francs, to be settled on invoice by payment to our account, No. C8-763.163/0 at the Swiss Bank Corporation, Geneva, or by deduction from the subscriber's current account with the World Intellectual Property Organization (WIPO).