UPOV

PLANT VARIETY PROTECTION

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CONTENTS

C: Geschützt werden können sowohl Obstsorten als auch Unterlagen. Der Schutz bezieht sich auf alle Teile der Pflanze, die als vegetatives Vermehrungsmaterial verwendet werden sollen, z.B. Pflanzen, Pfropfreiser, Stecklinge, Senkreiser, oder die zur Anpflanzung für die gewerbsmässige Erzeugung von Früchten bestimmt sind. Er bezieht sich ausserdem auf Saatgut im Sinne von Artikel 1 der obengenannten Verordnung oder auf Kerne und Steine dieser Arten, falls sie als Saatgut für die generative Vermehrung der Sorten verwendet werden können.

D: Der Schutz bezieht sich auf die zur Verwendung als Vermehrungsmaterial bestimmte ganze Pflanze oder Teile davon.

E: Der Schutz bezieht sich auf die Stecklinge und ganz allgemein auf alle Teile der Pflanze, die als vegetatives Vermehrungsmaterial verwendet werden sollen.

F: Der Schutz bezieht sich auf Pflanzgut im Sinne von Artikel 1 der obengenannten Verordnung, das zur Vermehrung der Art bestimmt ist.

Plant Variety Protection in France* / Protection des obtentions végétales en France* / Sortenschutz in Frankreich*

Français	English	Deutsch	1	2
Abricotier	Apricot	Aprikose	25	C
Alstroemère	Alstroemeria, Herb Lily	Inkalilie	20	B
Amandier	Almond	Mandel	25	C
Aubergine	Eggplant, Aubergine	Eierfrucht, Aubergine	20	A
Avoine	Oats	Hafer	20	A
Begonia elatior	Elatior Begonia	Elatior-Begonie	20	B
Berberis	Berberis, Barberry	Berberitze	20	B
Blé dur	Durum Wheat, Macaroni Wheat, Hard Wheat	Durumweizen (Hartweizen)	20	A
Blé tendre	Soft Wheat, Bread Wheat	Weichweizen	20	A
Buddleia	Buddleia, Butterfly-bush	Buddleie, Schmetterlingsstrauch	20	B
Cassis	Black Currant	Schwarze Johannisbeere	25	C
Cerisier	Cherry	Kirsche	25	C
Châtaignier	Chestnut	Kastanie	25	C
Chicorée frisée et Chicorée scarole	Endive	Winterendivie	20	A
Chrysanthème	Chrysanthemum	Chrysantheme	20	B
Cognassier	Quince	Quitte	25	C
Colza	Rapeseed	Raps	20	A

* See explanations, page 2 / Voir les explications à la page 3 / Siehe Erläuterungen auf Seite 3.

Français	English	Deutsch	1	2
Cyprès (cyprès de Provence cyprès de l'Arizona, cyprès de Duprez, cyprès de Leyland - X Cupressocyparis et ses hybrides)	Cypress (Mediterranean cypress, Arizona cypress, Duprez cypress, Leyland cypress - X Cupressocyparis and its hybrids)	Zypresse (echte Zypresse, Arizonazypresse, Duprez Zypresse, Leyland Zypresse - X Cupressocyparis und ihre Hybriden)	25	B
Euphorbia fulgens	Euphorbia fulgens	Korallenranke	20	B
Forsythia	Forsythia, Golden Bell	Forsythie, Goldflieder, Goldglöckchen	20	B
Fraisier	Strawberry	Erdbeere	20	D
Framboisier	Raspberry	Himbeere	25	C
Freesia	Freesia	Freesie	20	B
Gerbera	Gerbera	Gerbera	20	B
Glaïeul	Gladiolus	Gladiole	20	B
Groseillier	Red and White Currants	Rote und Weisse Johannisbeeren	25	C
Groseillier à maquereau	Gooseberry	Stachelbeere	25	C
Haricot	Bean	Bohne	20	A
Hortensia	Hydrangea	Hortensie	20	B
Houblon	Hop	Hopfen	25	C
Houx (hybrides d'Ilex aquifolium)	Holly (hybrids of Ilex aquifolium)	Stechpalme (Hybriden von Ilex aquifolium)	25	B
Iris bulbeux et rhizomateux	Bulbous and rhizomatous Iris	Zwiebel- und wurzelstockbildende Iris	20	B
Juniperus	Juniper	Wacholder	25	B
Kalanchoë	Kalanchoë	Kalanchoë	20	B
Lagerstroemia	Crape Myrtle	Lagerstroemia	20	B
Laitue	Lettuce	Salat	20	A
Lavande et Lavandins	Lavender	Lavendel	20	B
Lin	Flax, Linseed	Lein	20	A
Lis	Lily	Lilie	20	B
Luzerne	Lucerne	Luzerne	25	A
Mâche	Cornsalad, Lamb's Lettuce	Feldsalat	20	A
Maïs	Maize	Mais		
- lignées endogames	- inbred lines	- Inzuchtlinien	25	A
- autres variétés	- other varieties	- andere Sorten	20	A
Malus ornemental	Ornamental Crab	Zierapfel	25	B
Nerium oleander	Oleander, Rose Bay	Oleander	20	B
Noisetier	Hazelnut, Filbert	Haselnuss	25	C
Oeillet	Carnation	Nelke	20	B

Français	English	Deutsch	1	2
Orchidées	Orchids	Orchideen	20	B
Orge	Barley	Gerste	20	A
Pâturin des prés	Kentucky Bluegrass, Smooth Stalked Meadow-grass	Wiesenrispengras	20	A
Pêcher	Peach	Pfirsich	25	C
Pélargonium (pélargonium zonale, géranium-lierre et hybride)	Pelargonium (zonal, ivy-leaved and hybrid Pelargonium)	Pelargonie (Zonal-, Efeupelargonie und Halbpeltaten)	20	B
Peuplier	Poplar	Pappel	25	E
Piment	Sweet Pepper, Capsicum, Chili	Paprika	20	A
Poinsettia	Poinsettia	Poinsettie, Weihnachtsstern	20	B
Poirier	Pear	Birne	25	C
Pois	Pea	Erbse	20	A
Pomme de terre	Potato	Kartoffel	25	F
Pommier	Apple	Apfel	25	C
Prunier	Plum	Pflaume	25	C
Pyracantha	Firethorn	Feuerdorn	20	B
Ray-grass	Ryegrass	Weidelgras	25	A
Rhododendron	Rhododendron	Rhododendron	25	B
Riz	Rice	Reis	20	A
Rosier	Rose	Rose	20	B
Ronces fruitières	Fruiting Blackberries	Obstbrombeeren	25	C
Saintpaulia	Saintpaulia, African Violet	Usambaraveilchen	20	B
Soja	Soya Bean, Soybean	Sojabohne	20	A
Streptocarpus	Streptocarpus, Cape Primrose	Drehfrucht	20	B
Thuya	Thuya	Lebensbaum	25	B
Tomate	Tomato	Tomate	20	A
Trèfle violet	Red Clover	Rotklee	25	A
Tournesol	Common Sunflower	Sonnenblume	20	A
Tulipe	Tulip	Tulpe	20	B
Vigne	Vine	Rebe	25	C
Weigela	Diervilla	Weigelie	20	B

NEWSLETTER

UPOV

Development of Plant Variety Protection Throughout the World in 1982

Following established practice, the representatives of the States having participated in the sixteenth ordinary session of the Council (October 13 to 15, 1982) briefly reported on the development of plant variety protection in their countries.

A summary of the statements, as recorded in the report on the above-mentioned session, is given hereinafter.

Member States

Belgium. - A draft law approving the 1978 Revised 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 and should be before Parliament during 1983.

The list of genera and species protected in Belgium contained 75 entries (unchanged since the last ordinary session of Council), a total that had been reached following a number of extensions to the initial list, particularly in response to requests by the breeders. However, the breeders' interest in protection did not seem to have been reflected in the number of requests for certificates since such had been received for only 29 of those entries. Detailed statistics on this are given on page 8 below.

It was intended to extend protection in the near future to various vegetables, Agrostis L., Begonia X tuberhybrida, B. elatior, Cymbidium, Gerbera, Gladiolus, Iris, Lilium, Salix, X Triticale and Tulipa. Examination of Begonia X tuberhybrida was to be carried out in Belgium. For all the other species, it was intended to continue cooperating with the other member States or to use the results of examinations carried out by the Committee for the Elaboration of the National Catalogue of Varieties of Species of Agricultural Plants.

Denmark. - Since the Board for Plant Novelties had been taken up with other tasks involved in the national lists, revision of the plant breeders' rights legislation could not be put in hand as had been envisaged for the current year. An ordinance on "the possibility for foreign breeders to obtain protection of plant breeders' rights, etc." was issued on March 26, 1982, and took effect retroactively on November 8, 1981, which was the date of entry into force in respect of Denmark of the 1978 Revised Act of the Convention. That ordinance enabled Denmark to give full and complete effect to the Act on the territory on which it was applicable. It also set out that, where priority was claimed on the basis of an earlier application filed in another member State of the Union, there were no "retroactive" effects, where applicable, until the date of extension of protection to the species or genus concerned.

The situation as regards cooperation in examination had remained unchanged. Nevertheless, negotiations had been held with the authorities of the Federal Republic of Germany, the Netherlands, Switzerland and the United Kingdom and it was hoped that they would soon be finalized. In most cases, it was a matter of incorporating in bilateral agreements cooperation which was already taking place on a non-contractual basis. In this context, the Delegation of Denmark emphasized the wish of the breeders that when protection was extended to a new species in a member State, the other member States should rapidly do likewise, particularly where the species was covered by an offer of cooperation, since protection of a variety in one member State only was generally of but limited interest.

The Gazette was now published with a new presentation and also contained information on matters of national lists.

In 1981, 93 applications for protection had been filed (43 varieties of agricultural plants, 1 variety of vegetable plant, 2 varieties of fruit plants and 47 varieties of ornamental plants), that is to say a number smaller than

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

	1977	1978	1979	1980	1981	1982**	total
Agricultural Crops							
Barley	-	17	1	2	2	3	25
	-	-	15	2	2	2	21
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	-	-	7
Smooth Stalked Meadow-grass	-	-	-	4	-	-	4
	-	-	-	4	-	-	4
Oat	-	10	2	-	2	2	16
	-	-	11	-	2	2	15
Potato	-	-	-	33	-	-	33
	-	-	-	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	-	2
Turnip	-	-	-	1	-	-	1
	-	-	-	-	-	-	-
Bread Wheat	1	20	4	3	2	1	31
	-	1	20	4	2	2	29
Fruit Crops							
Apple	-	1	1	1	1	2	6
	-	1	-	1	-	1	3
Plum	-	-	-	1	-	-	1
	-	-	-	1	-	-	1
Strawberry	-	8	2	-	3	1	14
	-	8	-	2	-	-	10

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

** Until September 30, 1982.

	1977	1978	1979	1980	1981	1982**	total
Vegetables							
French Bean	- -	13 5	1 3	- 4	2 -	- -	16 12
Cauliflower	- -	- -	- -	- -	1 -	- -	1 -
Lettuce	- -	- -	2 -	1 2	1 -	- -	4 2
Pea	- -	17 6	2 7	- 2	- 2	1 -	20 17
Black Salsify	- -	- -	- -	2 1	- -	1 -	3 1
Ornamental Species							
Azalea	- -	4 -	1 2	3 3	3 5	- -	11 10
Bromeliaceae	- -	- -	- -	- -	- -	2 -	2 -
Carnation	- -	- -	4 -	- 4	2 2	- -	6 6
Chrysanthemum	- -	- -	- -	- -	- -	2 -	2 -
Rose	- -	40 -	8 19	17 9	21 26	8 24	94 78
Forest Trees							
Poplar	- -	13 -	- -	- 13	- -	- -	13 13
TOTAL	3 -	156 21	34 92	88 99	43 46	25 34	349 292

the average for the six preceding years, which was 126. During the same period, 130 titles of protection had been granted (42 varieties of agricultural plants, 5 varieties of vegetable plants, 1 variety of fruit plant and 82 varieties of ornamental plants). From January 1 to October 11, 1982, 96 applications for protection had been filed and 46 titles of protection had been granted.

France. - A draft law submitted by the Government, authorizing ratification of the 1978 Revised Act of the Convention, had been approved by the Senate on June 1, 1982. It had been examined by the National Assembly in committee and was likely to be voted on before the end of the year*. France should therefore be able to deposit its instrument of ratification at the end of 1982 or the beginning of 1983.

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* It was effectively adopted on December 8, 1982, and signed by the President of the Republic on December 14, 1982 (Journal officiel of December 15, 1982, page 3743) [Note of the editor].

** Until September 30, 1982.

The implementing instruments to Law No. 70-489 of June 11, 1970, on the Protection of New Plant Varieties required only a few minor amendments to bring the French legislation into line with the Revised Act. A draft decree amending Decree No. 71-764 of September 9, 1971, concerning New Plant Variety Certificates and the Issue and Renewal Thereof that was to introduce the six-year period laid down in Article 6(1)(b) of the Revised Act, had been submitted and was soon to be signed by the ministers concerned. Finally, a new order concerning variety denominations had been issued to satisfy the new rules and new practices referred to in Article 13 of the Revised Act. It had been published in the Official Journal on September 23, 1982, and was to enter into force on the date on which the Revised Act entered into force in respect of France.

By decree of March 12, 1982, protection had been extended to alstroemeria, red clover, (cultivated) lucerne, pelargonium and ryegrass. A further extension--to cypress, holly, kalanchoë, streptocarpus and tulip--was planned and could be introduced by the end of the year.*

A number of bilateral agreements on cooperation in examination had been extended to other species or were in the process of being extended. Moreover, most of them had been adapted to the Recommendation on Fees Relating to Cooperation in Examination and therefore stipulated a tariff of 350 Swiss francs for the purchase or sale of examination results. The Recommendation had been taken into account in the national scale of fees laid down by ministerial order of August 24, 1981. The fees required for examination carried out in France had been increased by 10% by an order of February 24, 1982.

As regards use of the system of new plant variety protection by breeders, the trend is shown in the table below.

	1979	1980	1981	1982 (9 months)
Applications filed	381	454	426	349
Applications withdrawn	94	89	121	79
Applications rejected	3	18	8	3
Certificates granted	126	206	454	225
Certificates in force at the end of the period	842	963	1291	1461

The Delegation of France followed attentively the work on "minimum distances between varieties." It considered that the fact of being able to distinguish one variety from the existing varieties did not necessarily lead to recognizing its status as a genuine new variety and assessment of what constituted a sufficiently large difference appeared as fundamental as the definition of what constituted an important characteristic. In that context, it observed that in forums other than UPOV the assessment, on the basis of the observed characteristics, of the "originality" of the variety for which protection has been requested had been spoken of. A species-by-species approach therefore seemed indispensable.

Federal Republic of Germany. - The drafts of the law authorizing ratification of the 1978 Revised Act of the Convention and the law amending the Plant Variety Protection Law had reached an advanced stage and were soon to be submitted to Parliament. Pending entry into force of the new legislative provisions, the Federal Republic of Germany was preparing a declaration to the effect that the States that had become members of UPOV on the basis of the Revised Act would enjoy the same treatment as the other member States.

Protection had been extended, last December, to Abies Mill., Euphorbia lathyris L., Ilex L. and Pinus L. Further extension--to Achimenes Pers., Aechmea Ruiz et Pav., Chrysanthemum frutescens L, Prunus L., Rhipsalidopsis Britt. et Rose, Schlumbergera-Hybridi, Trifolium subterraneum L., Ulmus L. and Vaccinium vitis-idaea L.--was being prepared. Furthermore, the bilateral agreements with Belgium, France, the United Kingdom and Switzerland had been extended to further species.

* See on page 2 of this issue.

During the year ending on June 30, 1982, 603 applications for protection had been received.

Ireland. - The system of protection for new plant varieties had been operational since January 22, 1981, and applied to six species. It was to be extended to other species in accordance with the requirements of the Convention and of needs.

To date, 147 applications had been filed of which 4 had been rejected and 16 had already led to the granting of a title of protection. The 143 validly filed applications were broken down as follows: potato - 78; perennial ryegrass - 23; barley - 21; wheat - 15; oats - 6. No application had as yet been made for white clover. Most of the applications concerned varieties already protected in other member States, particularly in the Netherlands and the United Kingdom. In those cases, the results of examinations made by those countries had been purchased, thus reducing the workload and the time required for procedures. Once the flow of applications had slowed down, following exhaustion of the possibilities offered by the transitional limitation of the novelty requirement, it might well be possible to establish variety examination at national level.

The arrangements were working well and, surprisingly, there had not as yet been criticism or objections. However, it was too early to rejoice since it was not at all unlikely that one or other of the seed merchants might complain once a greater number of protected varieties had gained a place on the market. Nevertheless, that was a small price to pay for the wide range of high performance varieties that were beginning to become available in Ireland. This was already putting a strain on the variety testing facilities, but this again was more a reason to be happy than to complain. For the moment, protection had not yet affected the national plant breeding programs but it was to be hoped that the private sector would become more involved in time. On balance, the story of new plant variety protection in Ireland was uneventful and no spectacular results had been obtained one way or the other, but satisfactory progress had been made.

Israel. - Although it had been agreed to reduce to a minimum the amendments to be made to the domestic legislation, the work involved in accession to the 1978 Revised Act of the Convention had gone forward slowly, but it was still hoped that it could be completed next year.

In 1981 and 1982, protection had been extended to four new taxa and the law was now applicable to 67 genera comprising 77 species. This year, 12 titles of protection had been granted (1 variety of vegetable plants, 1 variety of fruit plants and 10 varieties of ornamental plants, 5 of which were varieties bred abroad). Three titles of protection were surrendered and the number currently in force amounted to 150.

In addition to the agreement concluded with the Netherlands, which entered into force on September 25, 1981, an agreement was also concluded with the United Kingdom. However, it had proved essential that verification tests be carried out in Israel for all the varieties of foreign origin.

Italy. - The law authorizing ratification of the 1978 Revised Act of the Convention was to be submitted in the near future for Parliament's approval.

Ministerial decree of June 8, 1982 (Official Gazette No. 161 of June 14, 1982) had extended protection to lettuce and strawberry.

In 1982, 102 patent applications were filed for plant varieties (against 120 in 1981). The Consultative Commission set up to enable the Ministry of Agriculture and Forestry to give its opinion on the granting of patents for new varieties held its third meeting in June 1982 at which it pronounced in favor of granting 83 patents, broken down as follows: common wheat - 6, durum wheat - 4, rice - 12, barley - 2, lucerne - 1, poplar - 6, carnation - 58, rose - 4. Together with the 26 patents already granted (wheat - 11, barley - 7, rice - 7, poplar - 1), the total would rise to 109.

Japan. - In April of this year, Parliament approved the 1978 Revised Act of the Convention and, in July, the draft law amending the Seeds and Seedlings Law in respect of availability to foreigners of protection and priority rights. Following that preparatory work, the Government of Japan deposited its instrument of acceptance on August 3 and became a member of the Union on September 3.

Since the entry into force of the law--on December 28, 1978--644 applications for protection had been filed, of which 248 were in 1981 (80% more than in the preceding year) and 175 during the first nine months of the current year. 286 titles had been granted, of which 124 in 1981 and 92 during the first nine months of the current year. 74 applications and 5 granted titles concerned foreign varieties.

From the administrative and technical point of view, the service had a staff of 10 examiners. Examination of each application comprised a visit to the breeder's facilities in order, mainly, to confirm that he was the breeder and the way in which the variety had been bred and comprised also, where necessary, official growing tests. At present, the tests were carried out for all varieties but in future the possibility would be examined of restricting them to the doubtful cases only, for example where necessary to establish distinctness. Test guidelines had been adopted for 116 species and 16 others were to be adopted by the end of next March. Computer programs for retrieval of information on varieties were being developed and were to be fully operational in the spring of 1985. The Japan Mycological Culture Collection, under the authority of the Seeds and Seedlings Division of the Ministry of Agriculture, Forestry and Fisheries, was currently undergoing testing. Its main function was to be to keep sample spawn of edible fungi varieties for which protection was requested and of those which were to constitute the reference collection.

Finally, in view of the fact that the RHS Color Chart was exhausted and that such a color chart was necessary to examine varieties, the Government of Japan had funded a project to draw up a new type of chart. The project was put in hand in 1980 at the Japan Color Research Institute and was to be continued until next April.

Netherlands. - The draft law on the approval of the 1978 Revised Act of the Convention had been submitted to Parliament during last summer. As long as the Netherlands were not formally bound by that Act, all the necessary measures would be taken to meet the spirit and intentions of the Act. In that connection, particular note was to be taken of the amendment to the ministerial decision on reciprocity that had placed nationals of the "new" member States on the same footing as nationals of the "old" member States.

Extension of protection to Chrysanthemum (only the species morifolium was currently protected), Cotoneaster, Dianthus (only the species caryophyllus was currently protected), Euonymus, Eryngium, Mahonia, Potentilla and Zygocactus was being prepared as was the extention to X Triticale of the protection arrangements under Article 85 of the Seeds and Planting Materials Act.

Examination fees had been increased as of October 1, 1982, from 900 to 1,000 guilders for the first year of examination, from 400 to 430 for the second and from 250 to 265 for the third. The fee payable where an examination report was purchased had been increased from 400 to 500 guilders. In addition, a fundamental review of the scale of fees was being studied. It would probably mean that the fees would come closer to the real cost and may also lead to a differentiation between groups of plants as was the case in many other member States.

For legal reasons deriving from the legislation of South Africa, the bilateral agreement on cooperation in examination could not be concluded with that country. On the other hand, bilateral agreements concluded with France and Switzerland had been extended, in the first case to tulip and in the second to carnation, gerbera and lettuce, whereby all those species were examined in the Netherlands. Finally, for those genera to which protection was to be extended, the Netherlands would have to resort for some of them to cooperation with other member States.

In view of developments in genetic engineering, a working group comprising experts in the patent system and experts in the field of plant breeders' rights had been given the task of studying the respective scope of the two systems. It was, for example, to examine the following questions:

(i) Was there a clean cut between inventions protectable by patent and those protectable by plant breeders' rights?

(ii) Could such a clean cut be blurred by genetic engineering?

(iii) If there was a clean cut, was it rightly placed or should it be shifted to one or the other side?

(iv) If there were areas which were covered by both systems or by neither of them, where should the clean cut be placed?

During the preceding year, 661 applications for protection had been filed, including 368 for ornamental varieties.

New Zealand. - The Law relating to plant variety rights dating from 1973, which had been amended for the last time in 1979 in order to adapt it to the 1978 Revised Act of the Convention, was under review as a result of the trade having asked for a number of amendments and three years of application practice having revealed a number of shortcomings and ambiguities. The Bill amending and consolidating the Law was soon to be submitted to Parliament.

As regards use made of the system of protection for new varieties of plants, extended to the entire plant kingdom--except however fungi, algae and bacteria--by breeders during the one-year period ending on September 30, 1982, statistics are given on page 14 below.

Until recently, there had been virtually no serious opposition to the concept of plant variety protection. On the contrary, it had enjoyed support from the two major political parties, State and private breeders and their agents, commercial growers and amateur garden societies. However, a number of somewhat critical articles had been published in the press since July and the breeders, farmers organizations and the Plant Varieties Office were taking the necessary steps to refute those criticisms in the most appropriate way. In that respect, it was interesting to note that between the beginning of 1977 and the end of 1981 the price of seed had risen by approximately 72% in the case of cereals and 85% in the case of legumes. As a comparison, diesel fuel had increased by 153%, premium grade petrol by 100%, fertilizers by 125%, herbicide by 60% and labor by 60%. The price for a ton of second generation wheat seed was as follows in July 1982 for the main varieties (in New Zealand dollars): Rongotea and Oroua (protected): 459, Kopara (non-protected), 424, Arawa (non-protected): 415, Hilgendorf (non-protected): 475. It was therefore the seed of a non-protected variety that was the most expensive.

South Africa. - Negotiations with Israel and the Netherlands for the establishment of agreements on cooperation in examination of varieties had been finalized. However, it had not been possible to sign the agreements due to a shortcoming in the South African legislation, which was to be amended by Parliament in the first half of 1983. In addition, the examination results for an apple variety had recently been acquired from the French authorities.

No addition had been made to the list of protected genera and species but there was growing interest in development of varieties of various indigenous ornamental species, which were promising and had great potential with the public at large, and breeders wished to obtain protection for those varieties in as many countries as possible.

During the year which closed on September 30, 1982, 34 applications for protection had been received (12 varieties of agricultural plants, 2 varieties of vegetable plants, 3 varieties of fruit plants and 17 varieties of ornamental plants) and 26 titles had been granted (7 varieties of agricultural plants, 3 varieties of vegetable plants, 1 variety of fruit plants and 15 varieties of ornamental plants). In numbers of titles already granted, the first place was taken by roses, and in the case of agricultural plants, by soya beans.

Spain. - Revision of the law and regulations on the protection of new plant varieties was in hand and it was hoped that the drafts would be submitted to the Government, and subsequently to the Parliament, during the forthcoming year. The main aim of revision was to adapt the texts to the 1978 Revised Act of the Convention. It was also proposed to increase the fees.

Since the last ordinary session of Council, protection had been extended to broad bean, French bean, grapefruit, lemon, mandarine, orange, pea, peach, sunflower and common vetch. Examination of varieties of these species was carried out at national level, but the possible conclusion of bilateral cooperation agreements was being studied.

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

From October 1, 1981, to September 30,1982

	Applications received	Titles issued	Titles in force
Agricultural Crops			
Barley	8	5	16
Brassica	2	2	2
Cocksfoot	1	-	-
Flax, Linseed	-	-	1
Lucerne	1	-	2
Oat	-	-	2
Pea	1	-	17
Phacelia	-	1	1
Potato	2	1	2
Ryegrass	-	-	1
Soya Bean	1	-	-
Wheat	2	4	7
Total	18	13	51
Ornamental Plants			
Akeake (Dodonea)	1	1	1
Birch	1	-	-
Cypress	1	-	-
Lemon	-	1	1
Rose	13	19	79
Schefflera	1	-	-
Total	17	21	81
Fruit Plants			
Almond	1	-	-
Apple	21	1	1
Apricot	1	-	-
Cherry	1	-	-
Feijoa sellowiana	2	1	1
Macadamia	1	-	-
Peach	1	-	-
Pepino (Solanum muricatum)	1	3	3
Plum	1	-	-
Plumcot (Plum X Apricot)	1	-	-
Strawberry	4	-	-
Total	35	5	5
TOTAL	70	39	137

Last year, 143 requests for protection were filed (70 varieties of agricultural plants, 18 varieties of vegetable plants, 2 varieties of fruit plants and 53 varieties of ornamental plants) and 111 titles of protection were granted (33 varieties of agricultural plants--including 13 of wheat, 8 of barley, 7 of potatoe and 5 of rice--and 78 varieties of ornamental plants--including 49 of carnation and 25 of rose).

Sweden. - A draft law to approve the 1978 Revised Act of the Convention and to amend the plant variety protection law had been submitted to the current year's spring session of Parliament. It had been adjourned to the ongoing autumn session. It was hoped that Sweden would be in a position to deposit its instrument of ratification at the beginning of 1983.

Since the last ordinary session of Council, the only change that had occurred in the national legislation was an increase in the scale of fees.

Over the eleven years that the plant variety protection system had been in operation, 566 applications had been filed (including 50 last year). Currently, 180 titles of protection were in force, that is to say five more than last year.

Switzerland. - As a result of cooperation in examination with the Federal Republic of Germany, France, the Netherlands and the United Kingdom, the list of protected species would be supplemented, probably in 1983, by the following genera and species: Allium cepa (long day varieties), Begonia elatior, Chrysanthemum, Daucus carota, Dianthus (vegetatively propagated varieties), Euphorbia pulcherrima, Gerbera (vegetatively propagated varieties), Helianthus annuus (except ornamentals), Lactuca sativa, Phaseolus vulgaris, Pisum sativum sensu lato, Prunus (cherry and plum, except ornamentals, but including rootstocks), Rhododendron, Ribes (currants and gooseberry, except ornamentals), Rubus (raspberry and blackberry, except ornamentals), Secale cereale, Streptocarpus, Trifolium repens, Valerianella locusta and eriocarpa. Once the extension had been carried out, protection would be afforded to 44 genera and species.

Between November 1981 and October 1982, the Varieties Protection Office had received 29 applications, of which one had been rejected. 24 varieties had also been protected during that period. Altogether, 130 varieties had been registered and 69 titles were currently in force.

United Kingdom. - The authorities had every hope that the legislative instruments needed to ratify the 1978 Revised Act of the Convention would be presented to Parliament and adopted during the current session despite its already heavy workload.

During 1982, protection had been extended to elatior begonia, fodder kale, white, brown and black mustard, swede, triticale, African violet and to raspberry X blackberry hybrids. Further extension to blackberry, nerine, poinsettia, and seed reproduced annual and biennial ornamental plants was being considered and could take place in 1983. In the case of triticale, elatior begonia and African violet, testing would be carried out by the service of the Federal Republic of Germany, for whose assistance and cooperation the United Kingdom authorities were most grateful.

During the preceding year, the United Kingdom had concluded or extended bilateral agreements with a number of member States. It welcomed that extension of cooperation, both in its own respect and in general, since such cooperation--added to the implementation of the UPOV Recommendation on Fees in Relation to Cooperation in Examination--enabled the cost of protection to be kept at the lowest practicable level and to accelerate procedure.

Since the entry into force of the protection arrangments in 1965, 4,179 applications had been filed, 1,196 had been withdrawn, 126 rejected and 2,147 had led to the granting of a title of protection. The number of varieties under examination was 710 (404 varieties of agricultural plants, 57 varieties of vegetable plants, 18 varieties of fruit plants and 231 varieties of ornamental plants, including 148 varieties of chrysanthemum examined on behalf of other member States).

Finally, a statement was read out that had been made by the representative of the Guernsey Growers Association on September 27, 1982, at the 34th Congress of the International Association of Horticultural Producers (AIPH):

> "The horticultural industry of Guernsey has accepted the principle of the application to Guernsey of plant breeders' rights subject to the condition that this is achieved by the introduction of local legislation and not by the extension of the United Kingdom Act to the Island.

"The Government Committee responsible, in principle, supported this approach to the problem. It has been discussed with the Law Officers of the Crown and a report to the States of Guernsey recommending the enactment of appropriate legislation was drafted and submitted to the Law Officers of the Crown for comment in 1981. A copy of this draft was sent to the Plant Variety Rights Office [of the United Kingdom] and preliminary comments were received in April, 1981. Final comments on certain aspects of the draft, which had been referred to the Legal Advisor of the Plant Variety Rights Office are still awaited."

United States of America. - At the present time, the major event was the finalization of variety denomination rules. They were to be published in the very near future to enable those interested to make comments, following which they would be given final adoption. The rules basically provided that submission of a denomination constituted a formal requirement for granting a patent, that the acceptability of a proposed denomination for registration would be judged--in accordance with the principles set out in the International Code of Nomenclature for Cultivated Plants and on the principle that a genus constituted a class for the purpose of variety denomination--by the plant patent examiner together with the trademark experts from the Patent and Trademark Office, and that the proposed denominations would be published in the Trademarks Gazette in order to inform trademark owners and enable them to submit comments.

As regards the Plant Variety Protection Act--applicable to varieties reproduced by seed--it was intended to make the necessary amendments to the Regulations so that adherence of the United States of America to UPOV could very soon cover the whole range of varieties. As part of these amendments, it was also intended to afford to nationals of UPOV member States the same treatment as that afforded to nationals of the United States of America.

Non-member States

Austria. - As reported already at preceding ordinary sessions of Council, there existed seed and variety provisions in Austria that were not in conformity with the UPOV Convention. The draft of a new law on the protection of new plant varieties had been drawn up some years ago already but had met with difficulties of demarcation in view of the respective competence of the Patent Office and the Ministry of Agriculture. However, during the preceding year, those problems had been resolved for the most part and it could therefore now be hoped that the expert procedure, including submission to the UPOV Council for its opinion, could begin next year.

Brazil. - The question of adopting plant variety protection arrangements was under discussion. In fact, agriculture had progressed enormously in Brazil during the last fifteen years and had led to the adoption of new varieties that were better adapted, particularly to the new areas won for agriculture, and to an increase in the demand for quality seed. That tendency had also been reflected in a significant increase in agricultural investments, particularly in the seed industry.

For the moment, private investment in the plant breeding did not seem inhibited by the absence of a plant variety protection system and it was therefore not possible to say whether and to what extent such a system could encourage private research and investment. On the other hand, fears had been expressed that such a system could restrict the availability of seed for agriculture and, even if its implications were positive in the long run due to the stimulation of private research and investment, it could slow down the progress of agriculture. In that context, the results achieved and experience gained by the member States of UPOV--particularly the reports made by their representatives to the present session--would be taken into account by Brazil when deciding whether to accede to UPOV. In that respect, sight should not be lost of the fact that legal aspects were involved and, unfortunately, the establishment and implementation of new legal arrangements took a lot of time. However that may be, the 1978 Revised Act of the Convention, which had made the original text much more flexible, was being studied in Brazil.

Canada. - There had been no progress in the introduction of plant breeders' rights legislation. The Bill tabled in Parliament in 1980 had not as yet been debated as a result of greater priority having been afforded to more urgent matters and would therefore die at the end of the current session, that is to say at the end of the month. However, Parliament was to start a new session immediately afterwards, with a new schedule, and it was intended to reintroduce the Bill.

The Bill had strong support from those sectors of agriculture and horticulture most directly affected. Furthermore, a number of individuals and organizations have endeavored to throw light on the validity of theories that have been put forward in Canada to the effect that the introduction of plant breeders' rights would lead to a disaster. In that respect, the Delegation of Canada wished to express its appreciation to the member States and to the Office of the Union for having supplied factual information demonstrating that reality was far removed from those theories.

Egypt. - The situation--and consequently the prospects for introducing a system of plant breeders' rights--was the same in Egypt as in other developing countries, particularly those of Africa: plant breeding was almost entirely carried out by Government institutes (the private sector representing in Egypt but 1% approximately) and production of seed was entrusted to undertakings belonging to the Ministry of Agriculture.

Hungary. - Last February, the President of the National Office of Inventions and the Minister of Agriculture and Food had addressed a joint request to the Council of UPOV that the latter give its advice on the conformity of Hungarian legislation on the protection of varieties with the 1978 Revised Act of the Convention as provided for in Article 32 of that Act. The Council had taken a decision giving a positive advice at its fifth extraordinary session on April 29, 1982. Since then, the National Office of Inventions had put in hand, in accordance with Hungarian constitutional rules, the procedure leading to the deposit of an instrument of accession. It was forecast that accession could take place by the close of the current year.

Iran. - Although Iran had been engaged for two years in a war imposed upon it, it had not forgotten to strive to develop its agriculture and had drawn up a large scale program for self-sufficiency in agricultural produce. To achieve that objective, it was not sufficient to increase the surface of cultivated land, it was also necessary to increase the yield of all crops, which was not possible unless the necessary research had been made. Plant breeding was playing an ever growing part in agricultural research. Its importance had been recognized in Iran for years.

The Plant Improvement Institute, responsible for research, was located close to Teheran and possessed throughout the country more than 70 research stations having large experimental fields and the various laboratories that were needed. Its staff comprised more than 200 engineers and 230 technicians. The institute comprised 7 sections, each drawing up and conducting research programs at the stations. Thus plant improvement research covered all fields.

The methods used were hybridization and selection. The breeding programs were carried out each year among populations of Iranian and foreign plants. As a result of efficient collaboration with various international research institutes, such as the International Center for Maize and Wheat Improvement (CIMMYT), the International Rice Research Institute (IRRI) and the International Center for Agricultural Research in the Dry Areas (ICARDA), and with the French Research Institute for Cotton and Exotic Texiles (IRCT), Iran had been able to receive a great number of lines and new plant varieties from those institutes in order to experiment them and to check their suitability for the very varied climates found in the different regions of Iran. The features that were important to Iran included yield, resistance to disease, earliness and quality.

The wheat section possessed a germplasm collection of more than 21,000 samples and made use of this gene bank for the crossbreeding carried out each year. Thus, 22 varieties of wheat, that is to say one variety for each region of Iran, had been created. Those varieties had very good yield and were tolerant to certain diseases. Last year, four varieties of wheat (Azadi, that is to say "liberty," Kaveh (the name of the researcher), Darab (the name of the research station) and Bistun (drought tolerant and suitable for rain-fed growing) and one variety of barley had been registered.

Two research stations located in the north of the country, on the shores of the Caspian, were specialized in rice which constituted a very important crop in Iran (more than 300,000 hectares). Those stations had rice collections comprising 400 Iranian varieties and 700 foreign varieties that were sown every year in order to keep the collections active. Each year, 100 hybrids were produced; over 4,000 hybrids were currently under trial. Last year, two new varieties of rice with an extremely high yield and a fairly favorable quality had been developed. Those two varieties, Amol 2 and Amol 3 (from the name of the research station) were the result of numerous years of breeding in populations received from IRRI. The first variety was early and the other somewhat late. The latter had produced 6,000 kilos of rice in a farmer's field with a surface of half a hectare, that is to say 12 metric tons per hectare.

Cotton covered an area of 250,000 hectars. Iran had been working on that species for years and had benefitted from collaboration with IRCT. From hybridization between the varieties Upland "C100W X 539" resulted a variety which was given the name "Varamin" (name of the central cotton experimentation station) and showed a high yield, good quality and early growth. A further cross between C100W and 349, a variety that was resistant to Verticillium, had given the variety Sahel that was quite tolerant to that disease that had been destroying almost 80% of the cotton crop in the North of Iran. Recommended varieties had also been created for the hot regions in the South after a number of years of breeding. Research was currently in hand to create very early varieties for regions where autumn was early by making use of varieties of Russian and Bulgarian origin that were in the collection. At the same time, attempts were being made to find glandless varieties with a high yield.

In the case of maize, which was not a very well known crop in Iran, hybrids with very high yield and also lines that were resistant to drought and heat had just been developed.

There existed no special establishment for multiplying the improved varieties. As yet, it was still the Plant Improvement Institute that multiplied the varieties and produced the basic seed and elite seed, but with the increase in demand, it would be necessary to set up an organization for producing seed. For that purpose, a law was in the process of drafting for submission to Parliament. That law provided for giving certain advantages to members of the staff and to the undertakings that created new plant varieties by means of hybridization, selection or mutation.

Ivory Coast. - At the present time, practically all plant breeding work was carried out within State research institutes and the Ministry of Agriculture was responsible for disseminating the varieties bred by those institutes, which checked and certified the seed thus produced. In the case of rice, certification was in accordance with international standards. There was not as yet a system of plant breeders' rights since, as things stood, the State would be the sole judge and the sole party. However, it was expected that the private sector would develop and the legislation could be amended as a result, basing on what had been done in the UPOV member States.

Norway. - The Ministry of Agriculture was to propose shortly to Parliament an addition to the current legislation on seed so as to enable a system of fees on trade in seed and seedlings to be introduced. The fees were to be returned to the breeders as a function of the quantities of seed and seedlings marketed. The system would be similar to that used in Finland and, to a certain extent, in Sweden as well. Royalties had already been paid to foreign breeders for some years, in fact, but on a contractual basis.

The Ministry of Agriculture was well aware that the system would not permit Norway to have direct links with UPOV but it was nevertheless interested in being associated in the work of UPOV.

Panama. - The country was interested in protection for plant varieties and the presence of a delegation at the Council session was a manifestation of that interest. For the moment, it was the Agricultural Research Institute that carried out plant breeding work, particularly as regards maize and legumes.

Poland. - The Legislative Council of the Council of Ministers had examined the draft law on plant breeding, protection of new plant varieties and seed matters, together with the draft implementing regulations. It had

approved the principle of adapting the instruments to the provisions of the UPOV Convention. Moreover, in order to avoid uselessly multiplying the number of laws, it had requested that a chapter on the protection of crops against pests, diseases and weeds be added to the draft. Presently, the Ministry of Agriculture and Food Economy was completing the drafting of that new chapter, following which the amended draft would be submitted once more to the Legislative Council of the Council of Ministers. It was expected that the draft could then be submitted to Parliament in 1983.

Soviet Union. - Great importance was attached to the creation of new varieties and the improvement of existing varieties. Under the current legislation, that is to say the Ordinance on Discoveries, Inventions and Rationalization Proposals issued in 1973 and amended in 1978, new varieties of plants were assimilated to inventions as regards their legal protection. Article 22 of the Ordinance stipulated that new varieties were to be protected by means of inventors' certificates and improved varieties by means of certificates. Both categories of titles were issued by the Ministry of Agriculture of the USSR, author's certificates after registration of the results of inventive activity with the USSR State Committee for Inventions and Discoveries. The USSR Ministry of Agriculture determined, in accordance with prescribed procedure, the novelty and usefulness of the results of inventive activity and examined objections and appeals in respect of the granting of inventors' certificates and certificates, regulated problems of exploitation of the results of inventive activity, calculated the remuneration and paid it out from a special fund laid aside for the purpose.

Concluding its statement, the Delegation of the Soviet Union expressed its conviction that the exchange of information and the communication of experience that took place at meetings such as that of the UPOV Council contributed greatly to developing and improving the protection of new plant varieties in the interests both of the breeders and of society as a whole.

Organizations

Food and Agriculture Organization of the United Nations (FAO). - A computerized seed information system was being developed, presently covering some 90 States, organized as self-contained subsystems providing information on the situation within countries in respect of seed, particularly variety development and release, and seed production, quality control, marketing and promotion. FAO was currently establishing a cultivar data bank which put particular emphasis on the reaction of varieties to various agro-ecological conditions. Finally, FAO was managing a seed and planting material exchange service through which some 50,000 samples were supplied each year for experimentation purposes.

Discussion

Referring to the report on developments in Guernsey (see page 15 above), the Vice Secretary-General explained that the absence of protection on that island was of more concern to breeders than the absence of protection in Jersey due to the very differing economic orientation of the two islands. But, if the map of Europe was taken, one would find still more countries that were without protection and that could raise special problems within the framework of the European Communities as a result of the principle of free movement of goods within the Communities once they had been lawfully put on the market. A special case was that of Luxembourg. On a number of occasions, particularly at the Conference for the revision of the Convention in 1978, the Delegation of that country had announced that Luxembourg was aware of the need to introduce a system of protection for new plant varieties but that it was faced with a number of problems that could not be overcome except through administrative and technical cooperation with one of its neighboring countries or by the institution of a multilateral system, for example within the European Communities. In view of that situation, the Vice Secretary-General suggested that it might be judicious for the Office of the Union, Belgium and Luxembourg to form a working party to look for a solution to the problems of Luxembourg. A similar solution could also be envisaged in respect of Liechtenstein, which had already concluded an agreement with Switzerland for the protection of industrial property.

MEMBER STATES

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Ireland: Appointment of a New Controller of Plant Breeders' Rights

Mr. J.K. O'Donohoe has been appointed Controller of Plant Breeders' Rights, in replacement of Mr. J. Mullin, who has taken up another function.

PUBLICATIONS BY THE OFFICE OF THE UNION

Records of the 1978 Diplomatic Conference

The Office of the Union has issued the Records of the Geneva Diplomatic Conference on the Revision of the International Convention for the Protection of New Varieties of Plants, 1978, in French (UPOV publications 337(F)). Like the English and German editions (UPOV publications 337(E) and (G) respectively), it may be obtained from the Office of the Union at a cost of 90 Swiss francs, surface mail postage paid.

Test Guidelines

Guidelines for the Conduct of Tests for Distinctness, Homogeneity and Stability (Test Guidelines) have been published by the Office of the Union in a trilingual--English, French and German--edition for the following species.

Document	English	Français	Deutsch	Latin
TG/12/4	French Bean	Haricot	Bohne	Phaseolus vulgaris L.
TG/82/3	Celery	Céleri-branche	Bleichsellerie	Apium graveolens L. var. dulce (Mill.) Pers.
TG/83/3	Citrus (varieties of Oranges, Mandarins, Lemons and Limes, Grapefruit; excluding rootstock varieties)	Agrumes (variétés d'oranger, de mandarinier, de citronnier et de limettier, de pomélo; à l'exclusion des variétés porte-greffes)	Zitrus (Sorten von Orange, Mandarine, Zitrone und Limone, Grapefruit; Unterlagensorten ausgeschlossen)	Citrus L.
TG/84/3	Japanese Plum (fruit varieties only)	Prunier japonais (variétés fruitières seulement)	Ostasiatische Pflaume (nur fruchttragende Sorten)	Prunus salicina Lindl. & other diploid plums/ autres pruniers diploïdes/andere diploide Pflaumensorten

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FRANCE

Law on the Protection of New Plant Varieties*

No. 70-489 of June 11, 1970**

CHAPTER I

General Provisions

Article 1

For the purposes of this Law, "new plant variety" (obtention végétale) shall mean any new plant variety, whether created or discovered, which--

is different from similar already known varieties by one characteristic that is important, precise and subject to little fluctuation or by several characteristics the combination of which is such as to give it the status of a new variety;

is homogeneous in its characteristics; and

remains stable, that is to say identical with its original definition at the end of each cycle of multiplication.

Article 2

Any new plant variety fulfilling the conditions stated in the preceding Article shall be defined by a denomination to which shall correspond a description and a sample kept in a collection.

Article 3

Any new plant variety may be the subject of a title called "new plant variety certificate" (certificat d'obtention végétale), which shall confer on its owner an exclusive right to produce, introduce into the territory to which this Law applies, sell or offer for sale all or part of the plant or any element for the reproduction or vegetative propagation of the variety or of varieties derived from it by hybridization where their reproduction requires the repeated use of the original variety.

Under the conditions provided for in Article 39 below, the provisions of the preceding paragraph shall be applied progressively to the various plant species according to the evolution of scientific knowledge and of the means of verification. The elements of the plant to which the breeder's right relates shall be determined at the same time for each such species.

Article 4

There shall be set up under the authority of the Minister of Agriculture a Committee for the Protection of New Plant Varieties chaired by a magistrate and composed of a number of persons, from both the public and the private sectors, qualified by reason of their theoretical or practical knowledge of genetics, botany and agronomy. The Committee shall either issue the certificate, with effect from the date of application, or reject the application, stating the reasons for so doing.

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* French title: Loi relative à la protection des obtentions végétales.

** Translation by the Office of the Union of the text published in the Journal officiel of June 12, 1970.

Article 5

The certificate shall be issued only if a preliminary examination has shown that the variety being the subject matter of the application is a new plant variety within the meaning of Article 1.

The Committee may dispense with the preliminary examination if it has already been carried out with sufficient references in another country party to the Paris Convention of December 2, 1961[1]. The Committee may also call upon foreign experts.

Article 6

The duration of the certificate shall be twenty years from the date of issue. It shall be fixed at twenty-five years if the constitution of the elements for the production of the species requires a long period of time.

Article 7

A plant variety shall not be deemed new if, in France or elsewhere, and prior to the date of filing of the application, it has received sufficient publicity to enable exploitation or has been described in an application for a certificate or in an unpublished French certificate, or in an application filed abroad and enjoying the priority provided for in Article 10 below.

The use of the variety by its breeder in tests or experiments or its entry in a catalogue or an official register of a State party to the Paris Convention of December 2, 1961, for the Protection of New Varieties of Plants, or its display in an official or officially recognized exhibition within the meaning of the Convention relating to international exhibitions signed at Paris on November 22, 1928, and amended on May 10, 1948, shall in no case, however, constitute an act of disclosure causing prejudice to the novelty of the variety.

Nor shall disclosure constituting an evident abuse in relation to the breeder cause prejudice to the novelty of the variety.

Article 8

Any act concerning a new plant variety certificate and relating to the issue of the certificate, to the transfer of ownership, to the grant of a right of exploitation or to a pledge shall have effect vis-à-vis third parties only if it has been duly published in accordance with the conditions laid down by a decree issued under Article 39 below.

Article 9

The certificate shall designate the new plant variety by a denomination enabling it to be identified, without confusion or ambiguity, in any State party to the Paris Convention of December 2, 1961.

The breeder shall be under the obligation to keep at all times a vegetative collection of the protected new plant variety.

A description of the new variety shall be appended to the new plant variety certificate.

The certificate shall have effect vis-à-vis third parties as from the date of its publication.

Use of the denomination entered in the certificate shall be mandatory, as from the date of publication of the certificate, for any commercial transaction, even after expiry of the duration of the certificate.

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[1] International Convention for the Protection of New Varieties of Plants.

The denomination given to the variety may not be the subject of a trademark filing in a State party to the Paris Convention of December 2, 1961. Such a filing may be made, however, as a precautionary measure, without preventing the issue of the new plant variety certificate, provided that evidence of the renunciation of the effects of the application in the States party to the Convention is produced prior to the issue of the certificate.

The provisions of the preceding paragraph shall not prevent the addition, in respect of one and the same new plant variety, of a trademark to the denomination of the variety concerned.

Article 10

(I) Any person possessing the nationality of one of the States party to the Paris Convention of December 2, 1961, or having his domicile or establishment in one of those States may apply for a new plant variety certificate in respect of varieties belonging to the genera or species mentioned in the list annexed to the said Convention or in a supplementary list drawn up under the provisions of the said Convention.

Such person may, when filing in France an application for a new plant variety certificate, claim the priority of the first application previously filed in respect of the same variety by himself or by his predecessor in title in one of the States referred to above, provided that the application in France is made not more than twelve months after the first application.

Such matters as the filing of another application, the publication of the subject matter of the application or the exploitation of the variety concerned, occurring within the period of priority, shall not constitute grounds for contesting the validity of a new plant variety certificate for which an application has been filed in accordance with the conditions provided for in the preceding paragraph.

(II) In addition to the cases provided for in paragraph (I) above, any foreigner may enjoy the protection instituted by this Law, provided that French nationals are accorded, in respect of the genera or species concerned, reciprocal protection in the State of which that foreigner is a national or in which he has his domicile or establishment.

Article 11

Fees for services rendered shall be charged in respect of preliminary examination, issue of the certificate and all entries in or deletions from registers.

A fee shall be payable annually throughout the period of validity of the certificate.

The tariff of such fees shall be fixed by order of the Minister of Agriculture and the Minister of Economy and Finance.

The income from such fees shall be credited to a special section of the budget of the National Institute of Agronomic Research.

CHAPTER II

Ex Officio Licenses and Obligations on the Breeder

Article 12

A variety essential to human or animal life may be subjected to the system of ex officio licenses (licence d'office) by decree of the Council of State (décret en Conseil d'Etat) or, where public health is affected, by joint order of the Minister of Agriculture and the Minister Responsible for Public Health.

Article 13

As from the date of publication of the order or decree subjecting new plant variety certificates to the system of ex officio licenses, any person offering appropriate technical and professional guarantees may apply to the Minister of Agriculture for the grant of a license to exploit the variety.

Such license shall be non-exclusive. It shall be granted by order under specified terms, particularly in respect of its duration and scope, but to the exclusion of the royalties arising from it.

The license shall take effect on the date of notification of the order to the parties.

In the absence of an amicable settlement, the amount of royalties shall be fixed by the court determined in accordance with Article 33 below.

Article 14

Where the holder of an ex officio licence fails to comply with the prescribed conditions, the Minister of Agriculture may, upon the advice of the Committee for the Protection of New Plant Varieties, declare the license forfeited.

Article 15

The State may, at any time, obtain ex officio, for the purposes of national defense, a license to exploit a plant variety being the subject matter of an application for a certificate or of a new plant variety certificate, whether the exploitation is to be made by the State itself or on its behalf.

The ex officio license shall be granted, at the request of the Minister Responsible for National Defense, by order of the Minister of Agriculture. The said order shall fix the terms of the license, to the exclusion of those relating to royalties arising from its use. The license shall take effect on the date of the request for the ex officio license.

In the absence of an amicable settlement, the amount of royalties shall be fixed by the court determined in accordance with Article 33 below.

Article 16

The rights deriving from an ex officio license may not be assigned or transferred.

Article 17

The Minister Responsible for National Defense shall be empowered to take cognizance, on a strictly confidential basis, of the applications for certificates with the Committee for the Protection of New Plant Varieties.

Article 18

A joint order by the Minister Responsible for National Defense and the Minister of Agriculture shall fix the list of the plant species whose new varieties being the subject matter of applications for a certificate may not be disclosed or exploited freely without special authorization.

Subject to Article 19, such authorization may be granted at any time. It shall be deemed to be vested ipso jure at the expiry of a period of five months from the filing date of the application for a certificate.

Article 19

Prior to the expiry of the period provided for in the last paragraph of Article 18, the prohibitions laid down in the first paragraph of that Article may be extended, at the demand of the Minister Responsible for National Defense, for a period of one renewable year. The extended prohibitions may be lifted at any time, under the same condition.

The extension of the prohibitions under this Article shall give rise to a right to compensation commensurate with the prejudice sustained, in favor of the owner of the application for a certificate. In the absence of an amicable settlement, such compensation shall be fixed by the courts.

Article 20

A certificate owner may request revision of the compensation provided for in Article 19, at the expiry of a period of one year from the date of the final judgment fixing the amount of the compensation.

The certificate owner shall submit evidence showing that the prejudice sustained by him is in excess of the assessment of the court.

Article 21

For the purposes of national defense, the State may, at any time, expropriate by decree all or part of a new plant variety being the subject matter of an application for a certificate or of a certificate.

In the absence of an amicable settlement, the amount of compensation for expropriation shall be fixed by the district court (Tribunal de grande instance).

CHAPTER III

Forfeiture of Rights

Article 22

The rights of the owner of a new plant variety certificate shall be forfeited where--

(1) he is unable to furnish the administration at any time with the elements of reproduction or vegetative propagation such as seeds, cuttings, grafts, rhizomes and tubers, enabling the protected variety to be reproduced with its morphological and physiological characteristics as defined in the new plant variety certificate;

(2) he refuses to submit to inspections carried out for the purpose of checking the measures he has taken for the maintenance of the variety;

(3) he fails to pay, within the prescribed period, the annual fee provided for in the second paragraph of Article 11.

Such forfeiture shall be declared by the Committee for the Protection of New Plant Varieties. Where it is declared in accordance with subarticle (3) above, the owner of the certificate may, within the six months following the expiry of the prescribed period, lodge an appeal for reinstatement of his rights if he can give legitimate reasons for his failure to pay the fee. Such appeal shall not, however, prejudice any rights acquired by third parties. The final decision declaring forfeiture of rights shall be published.

CHAPTER IV

Infringement, Legal Proceedings and Penalties

Article 23

Any violation of the rights of the owner of a new plant variety certificate as defined in Article 3 above shall constitute an infringement for which the offender shall be liable. However, violations committed by a third party other than the person carrying out the reproduction or propagation shall constitute infringement only if they were committed with knowledge of the facts.

Subject to the provisions Article 3, the use of the protected variety as a source of initial variation with a view to obtaining a new variety shall not constitute violation of the rights of the certificate owner.

The holder of an ex officio license under Article 12 or Article 15 and, unless otherwise stipulated, the beneficiary of an exclusive right of exploitation may institute proceedings under the first paragraph above where the certificate owner fails, after a summons, to do so.

The certificate owner shall be entitled to take part in proceedings brought by the licensee in accordance with the preceding paragraph.

Any holder of a license shall be entitled to take part in proceedings brought by the certificate owner to obtain compensation for the prejudice that he personally has sustained.

Article 24

Any intentional violation of the rights of the owner of a new plant variety certificate, as defined in Article 3, shall constitute an offense punishable by a fine of from 2,000 to 15,000 francs. In the event of recidivism, a sentence of imprisonment of from two to six months may also be passed. Recidivism shall have occurred, within the meaning of this Article, when the accused has been convicted of the same offense during the five preceding years.

Article 25

Public proceedings for the imposition of the sentences provided for in the preceding Article shall be instituted by the public prosecutor only upon formal complaint of the injured party.

The criminal court (tribunal correctionnel) hearing the case shall make no decision until the civil court, by a decision amounting to res judicata, has found the offense committed. Pleas of nullity of the new plant variety certificate or of matters relating to ownership of the certificate may only be entered by the respondent before the civil court.

Article 26

Acts committed prior to the publication of the issue of the certificate shall not be considered to violate the rights under the certificate. Acts committed after a true copy of the application for a certificate has been served on the party presumed liable may however be the subject of a report and prosecution.

Article 27

The owner of an application for a new plant variety certificate or of a certificate shall be entitled, with the court's authorization, to cause a detailed description to be made, with or without effective seizure, of any plants or parts of plants or of any elements of reproduction or vegetative propagation alleged to have been obtained in violation of his rights. This

Article 32

Without prejudice, should circumstances dictate, to the heavier penalties provided for violations of State security, any person who has knowingly committed a breach of the prohibitions laid down in Articles 18 and 19 shall be liable to a fine of from 3,000 to 30,000 francs. Where such violation has effectively prejudiced national defense, a sentence of imprisonment of from one to five years may also be passed.

Article 33

Any litigation arising out of this Law shall fall within the jurisdiction of the district courts and of the corresponding courts of appeal, with the exception of appeals from decrees and ministerial orders and decisions which shall fall within the jurisdiction of the administrative courts.

The Court of Appeal of Paris shall hear directly appeals from decisions of the Committee for the Protection of New Plant Varieties made under this Law.

A decree shall designate the district courts competent to hear civil actions. The number of such courts shall not be less than ten. The same decree shall also define the precincts within which the said courts shall perform the functions thus assigned to them.

Article 34

(I) Article 7, second paragraph, of Law No. 68-1 of January 2, 1968, to Promote Inventive Activity and Revise the Patent System shall be supplemented as follows:

"The following, in particular, shall not constitute industrial inventions:

.....

(4) new plant varieties of a genus or species enjoying the protection instituted by Law No. 70-489 of June 11, 1970, on the Protection of New Plant Varieties."

(II) Article 16 of the same Law shall be supplemented as follows:

"Any patent application shall be rejected:

.....

(7) which relates to a new plant variety of a genus or species enjoying the protection instituted by Law No. 70-489 of June 11, 1970, on the Protection of New Plant Varieties."[1]

Article 35

The provisions of Articles 42 and 43 of the Law of January 2, 1968, mentioned above shall apply to applications for new plant variety certificates and to new plant variety certificates.

The same shall apply to Articles 44, 46 and 47 of the Law referred to above, the Committee for the Protection of New Plant Varieties being substituted for the National Institute of Industrial Property[2].

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[1] The Law referred to, as last amended and supplemented by Law No 78-742 of July 13, 1978, bears the title: "Patent Law" (Loi sur les brevets d'invention). The second paragraph of Article 7 has become the sole paragraph, subparagraph (4) has become subparagraph (b) and the introductory sentence has been amended to read as follows: "The following shall not be patentable." Subparagraph (7) of Article 16 has been repealed.

[2] For the text of the Articles referred to, see at the Annex.

CHAPTER V

Miscellaneous Provisions

Article 36

The breeder of a plant variety may apply for the protection of his rights by a certificate, if the variety has lost its character of novelty at the time of application, provided that, for less than twenty or twenty-five years, depending on the cases referred to in Article 6 above, and in any event before the entry into force of the decree provided for in Article 39 concerning the procedure for the issue of a certificate and the organization of the Committee for the Protection of New Plant Varieties, the variety in question--

has been the subject of a patent issued in a State party to the Paris Convention of March 20, 1883,

or has been entered in an official catalogue of one of the States party to the Paris Convention of December 2, 1961,

or has been registered with a French professional association approved by the Committee for the Protection of New Plant Varieties.

The authenticity of the variety shall be determined by the date of filing of the application for a patent, of the entry in the official catalogue or of registration by the professional association.

The new plant variety certificate, if granted, shall take effect from the date of application. Its duration shall be reduced by the period which has elapsed since the filing of the patent application, the entry in the official catalogue or the registration by the professional association.

Where the breeder of the variety concerned has at different times fulfilled more than one of the above conditions, only the date of the earliest such condition shall apply.

Article 37

Assignments of new plant variety certificates and exploitation concessions shall be registered for a fixed fee of 50 francs.

Article 38

This Law shall apply to the overseas territories of New Caledonia, French Polynesia, Saint-Pierre and Miquelon[1], Wallis and Futuna and the French Southern and Antarctic Territories.

Article 39

The detailed application of this Law shall be fixed by decree of the Council of State.

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1 The overseas territory of Saint-Pierre and Miquelon acquired the status of an overseas department by Law No. 76-664 of July 19, 1976. The Law on the Protection of New Plant Varieties was extended to that department by Article 14 of Order No. 77-1106 of September 26, 1977, Extending and Adapting to the Department of Saint-Pierre and Miquelon Various Legislative Provisions Relating to Industry, Agriculture and Commerce.

ANNEX

Extracts from the Patent Law*

CHAPTER IV

The Patent as an Object of Property

Article 42**

(1) Joint ownership of the patent application or of the patent shall be governed by the following provisions:

(a) Each joint owner may work the invention for his own benefit subject to equitably compensating the other joint owners who do not personnally work the invention or who have not granted a license. Failing agreement between the parties, such compensation shall be fixed by the District Court;

(b) Each joint owner may take action for infringement for his own exclusive benefit. A joint owner who takes action for infringement shall notify the other joint owners of the action that has been brought. Judgment shall be deferred until such notification has been proved;

(c) Each joint owner may grant to a third party a nonexclusive license for his own benefit subject to making equitable compensation to the other joint owners who do not personnally work the invention or who have not granted a license. Failing agreement between the parties, such compensation shall be fixed by the District Court.

However, the draft licensing contract shall be notified to the other joint owners with an offer to transfer the share at a specified price.

Within three months of such notification, any of the other joint owners may oppose the granting of a license on condition that he acquires the share of the joint owner wishing to grant the license.

Failing agreement within the time limit laid down in the above paragraph, the price shall be fixed by the District Court. The parties shall have one month from notification of the judgment or, in the case of an appeal, of the decision, to forego the granting of a license or the purchase of the joint ownership share, without prejudice to any damages which may be due; the costs shall be borne by the renouncing party;

(d) An exclusive license may only be granted with the agreement of all the joint owners or by the authorization of the court;

(e) Each joint owner may, at any moment, assign his share. The joint owners shall have a right of pre-emption for a period of three months from the notification of the intended assignment. Failing agreement on the price, such price shall be fixed by the District Court. The parties shall have a period of one month as from notification of the judgment or, in the case of an appeal, of the decision, to forego the sale or the purchase of the joint initial share, without prejudice to any damages which may be due; the costs shall be borne by the renouncing party.

(2) Sections 815 et seq., 1873-1 et seq., and 883 et seq. of the Civil Code shall not apply to the joint ownership of the patent application or the patent.

(3) The joint owner of a patent application or a patent may notify the other joint owners that he relinquishes his share in their favor. Once such relinquishment has been entered in the National Patent Register or, in the case of an unpublished patent application, as from its notification to the National

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* Reproduced from Industrial Property, October 1979.

** Text as amended by Law No. 78-742 of July 13, 1978.

Institute of Industrial Property, such a joint owner shall be relieved of all obligations vis-à-vis the other joint owners; the latter shall divide the relinquished share between them in proportion to their rights in the joint property, except where otherwise agreed.

(4) In the absence of provisions to the contrary, the provisions of this Section shall apply.

The joint owners may derogate from this Section at any time by means of a joint ownership agreement.

Article 43**

The rights deriving from a patent application or a patent shall be transferable in whole or in part.

They may be subject in whole or in part to the grant of an exclusive or a nonexclusive license.

The rights conferred by the patent application or the patent may be invoked vis-à-vis a licensee who exceeds any of the limits on his license stipulated in accordance with the above paragraph.

Notwithstanding the case referred to in Section 2, the transfer of rights referred to in the first paragraph shall not prejudice the rights acquired by third parties before the date of transfer.

Acts comprising a transfer or a license, referred to in the first two paragraphs, shall be, on pain of nullity, executed in writing.

Article 44

Seizure of a patent shall be effected by means of an extra-judicial instrument, served on the owner of the patent, on the National Institute of Industrial Property and on any other person in whom rights under the patent are vested; any subsequent change in the rights deriving from the patent shall not, by reason of such seizure, be invoked against the creditor effecting seizure.

On pain of nullity of the seizure, the creditor effecting such seizure shall, within the prescribed time limit, petition the court for validation of the seizure and for the purposes of offering the patent for sale.

Article 46**

All acts assigning or modifying rights deriving from a patent application or a patent shall be entered in a register, known as the National Patent Register, kept by the National Institute of Industrial Property, if they are to have effect vis-à-vis third parties. However, an act shall have effect prior to entry vis-à-vis third parties who acquired rights after the date of the act and who had knowledge of the act when acquiring such rights.

CHAPTER V

Expiration and Nullity of Patents

Article 47

The owner of a patent may, at any time, relinquish either the entire patent or one or more claims under the patent.

Relinquishment shall be effected in writing and filed with the National Institute of Industrial Property. It shall take effect on the day of its publication.

Where real property rights, derived from a pledge or a license, have been recorded in the National Patent Register, the relinquishment shall only be admissible if the beneficiaries of such rights give their consent.

The second and third paragraphs of this Section shall not apply to relinquishments made under Section 20.

FRANCE

Decree Concerning the Committee for the Protection of New Plant Varieties*

No. 71-454 of June 7, 1971**

CHAPTER I

Tasks

Article 1

The Committee for the Protection of New Plant Varieties established under Article 4 of the Law of June 11, 1970, mentioned above[1] shall have the following tasks:

to issue the new plant variety certificates corresponding to the applications which satisfy the requirements of the Law mentioned above, and all official documents concerning such applications and certificates;

to declare the forfeiture of breeders' rights in the circumstances set out in Article 22 of the Law referred to.

Article 2

The Committee for the Protection of New Plant Varieties may propose to the Minister of Agriculture the provisions of a regulatory nature necessary for the application of the Law mentioned above and may, in general, submit any suggestions to him relating to the implementation of plant variety protection.

CHAPTER II

Organization and Activity

Article 3

The headquarters of the Committee for the Protection of New Plant Varieties shall be in Paris. In addition to its president, the Committee shall have ten members appointed by order of the Minister of Agriculture, one of them on the proposal of the Minister Responsible for the Overseas Departments and Territories, in accordance with the conditions set out in Article 4 of the Law of June 11, 1970, mentioned above.

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* French title: Décret relatif au comité de la protection des obtentions végétales.

** Translation by the Office of the Union of the text published in the Journal officiel of June 17, 1971.

[1] Law for the Protection of New Plant Varieties, No. 70-489 of June 11, 1970.

Article 4

The magistrate entrusted with the chairmanship of the Committee shall be chosen from the magistrates of the Court of Appeal of Paris or the District Court (tribunal de grande instance) of Paris belonging at least to the first grade of the judiciary.

He shall be appointed by joint order of the Keeper of the Seals, Minister of Justice, and the Minister of Agriculture.

It shall be the duty of the president, outside the Committee's meetings of which he shall assume the chairmanship, to ensure the smooth working of the Secretariat General provided for in Article 10 of this Decree and to undertake with the latter's aid the preparation and execution of the Committee's decisions.

Article 5

The president and the members of the Committee shall be appointed for four years. Their term of office may be renewed. Half the membership of the Committee shall be renewed every two years. Those members whose term is to expire at the time of the first renewal shall be chosen by lot two months after the installation of the Committee. Where, through death or other cause, a member has ceased to exercise his functions, he shall be replaced within a period of two months. The newly appointed member shall stay in office for the remainder of the term of the member he is replacing.

Article 6

The members of the Committee who are not civil servants shall be subject to the provisions of Decree No. 68-724 of August 7, 1968, governing the reimbursement of travel and living expenses of State agents and other persons who take part in councils, committees, commissions and other bodies assisting the State.

Article 7

The president and the members of the Committee shall be under an obligation of secrecy in relation to anything coming to their knowledge in the exercise of their functions. Moreover, a member of the Committee may not take part in the deliberations relating to a plant variety where he is directly interested in the acceptance or refusal of an application for a certificate.

Article 8

The Committee shall meet on convocation by the president whenever necessary. It may only deliberate if the number of members present is more than half the number of members in office. Where the votes are equal, the president shall have a casting vote.

Article 9

To expedite the preparation and examination of cases before it, the Committee may:

appoint a standing bureau from among its members;

set up specialized expert commissions;

call upon any expert or other person whose advice appears necessary.

Article 10

The Committee for the Protection of New Plant Varieties shall have a Secretariat General. The Secretary General shall be appointed by order of the Minister of Agriculture on the Committee's proposal and after consultation with the Director General of the National Institute of Agronomic Research.

The Secretary General shall be assisted by agents under contract engaged by the Director General of the National Institute of Agronomic Research under the same conditions as those governing its own agents. Their remuneration shall be drawn from the special section of the budget referred to in Article 11 of the Law of June 11, 1970, mentioned above.

The direction of the staff shall be assumed by the Secretary General, by delegation of power from the Director General of the National Institute of Agronomic Research.

The Secretary General shall in particular have the following tasks, in accordance with the Committee's directions, under the authority of the president and within the terms of the Law of June 11, 1970, mentioned above and its implementing legislation:

to receive, register and examine applications for new plant variety certificates and oppositions to the issue of certificates;

to maintain the various registers relating to the protection of new plant varieties, to record any acts affecting the property in certificates and to publish the various notices provided for;

to keep in contact with all the competent bodies, in particular--for questions of denomination--with the National Institute of Industrial Property and the Office of the International Union for the Protection of New Varieties of Plants, as well as with the experts to whom the technical examination of plant varieties is entrusted;

to provide the secretariat for the Committee's meetings;

to draw up new plant variety certificates and to issue copies of official documents;

to inspect or to arrange for the inspection of the maintenance of varieties for which certificates have been granted;

to prepare the budget relating to the special section of the budget of the National Institute of Agronomic Research referred to in Article 11 of the Law of June 11, 1970, mentioned above.

The Secretary General shall draw up the implementing legislation of the Law referred to, which shall be submitted by the Committee to the Minister of Agriculture. He shall prepare and take part in the negotiation of international agreements proposed by the Committee to the Minister of Agriculture and the Minister of Foreign Affairs with a view to facilitating or improving plant variety protection.

Article 11

The Committee for the Protection of New Plant Varieties and its Secretariat General shall be considered, in accordance with the provisions of Article 30(1)(b) of the Convention of Paris for the Protection of New Varieties of Plants of December 2, 1961, as the authority entrusted with the protection of new plant varieties in France. For this purpose, the Secretariat General of the Committee shall keep in contact with the International Union for the Protection of New Varieties of Plants and shall participate in its work.

CHAPTER III

Financial Provisions

Article 12

The special section of the budget of the National Institute of Agronomic Research, created by Article 11 of the Law of June 11, 1970, mentioned above, shall be decided upon by the Governing Body of the Institute after consultation with the Committee for the Protection of New Plant Varieties. The income and expenses of the special section shall be administered by the Secretary General of the Committee for the Protection of New Plant Varieties, by delegation of power from the Director General of the National Institute of Agronomic Research and under the same conditions as those applying to the income and expenses of the Institute.

Article 13

The assets of the special section shall consist in particular of the income from all fees that are chargeable in relation to plant variety protection under Article 11 of the Law of June 11, 1970, mentioned above.

Article 14

The liabilities of the special section shall consist of:

running and equipment expenses of the Committee and its Secretariat General, including staff salaries and travel expenses;

the costs of the technical examination and, where required, of making reference collections;

the financial contribution of France to international organizations concerned with plant variety protection;

any other expense resulting from the application of the Law of June 11, 1970, mentioned above.

Article 15

The Minister of State Responsible for National Defense, the Minister of State Responsible for the Overseas Departments and Territories, the Keeper of the Seals, Minister of Justice, the Minister of Foreign Affairs, the Minister of Economy and Finance, the Minister of Industrial and Scientific Development, the Minister of Agriculture, the Minister for Public Health and Social Security, the Secretary of State attached to the Minister of Economy and Finance Responsible for the Budget and the Secretary of State for Light and Medium Industry and Handicraft shall each be responsible, within his sphere of interest, for the application of this Decree, which shall be published in the Journal officiel of the French Republic.

[This text replaces the text published in Plant Variety Protection No. 29]

FRANCE

Decree Fixing the List of Plant Species for which New Plant Variety Certificates may be Issued, and the Scope and Duration of the Breeder's Right in the Case of each Plant Species*

Consolidated Text of Decrees No. 71-765 of September 9, 1971, as Amended by Decree No. 76-775 of August 9, 1976, Decree No. 78-245 of February 23, 1978, Decree No. 82-247 of March 12, 1982, and Decree No. 83-22 of January 12, 1983**

Article 1

New plant variety certificates may be issued, under the conditions provided for by the Law of June 11, 1970, mentioned above[1] and its implementing decrees, for the following species: apple, barley, bean, carnation, red clover, lettuce, lucerne, maize, oats, pea, potato, rice, rose, ryegrass, hard wheat, soft wheat.

For those species, any foreigner who is a national of a State party to the International Convention for the Protection of New Varieties of Plants of December 2, 1961, or who has his domicile, registered office or establishment in one of those States may obtain a new plant variety certificate under the same conditions as French nationals.

Foreigners who are not nationals of one of those States or do not have their domicile, registered office or establishment therein may obtain new plant variety certificates only under the conditions of reciprocity set out in Article 2 below.

Article 2

New plant variety certificates may also be issued under the conditions provided for by the Law of June 11, 1970, and its implementing decrees for the following species: almond, alstroemeria, apricot, elatior begonia, berberis, fruiting blackberries, Kentucky bluegrass, buddleia, cherry, chestnut, chrysanthemum, cornsalad, ornamental crab, black currant, red and white currants, cypress (Mediterranean cypress, Arizona cypress, Duprez cypress, Leyland

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* French title (of Decree No. 71-765): Décret fixant la liste des espèces végétales pour lesquelles peuvent être délivrés des certificats d'obtention végétale ainsi que, pour chacune d'elles, la durée et la portée du droit de l'obtenteur.

** Consolided text prepared by the Office of the Union from the texts published in the Journal officiel:

Decree No. 71-765: J.O. of September 18, 1971;
Decree No. 76-775: J.O. of August 18 and September 12, 1976;
Decree No. 78-245: J.O. of March 8, 1978;
Decree No. 82-247: J.O. of March 18, 1982;
Decree No. 83-22: J.O. of January 15, 1983.

[1] Law on the Protection of New Plant Varieties (No. 70-489 of June 11, 1970); J.O. of June 12, 1970.

cypress - X Cupressocyparis and its hybrids), eggplant, endive, Euphorbia fulgens, firethorn, flax and linseed, forsythia, freesia, gerbera, gladiolus, gooseberry, hazelnut, holly (hybrids of Ilex aquifolium), hop, hydrangea, bulbous and rhizomatous iris, juniper, kalanchoë, lagerstroemia, lavender, lily, oleander, orchids, peach, pear, pelargonium (zonal, ivy-leaved and hybrid pelargonium), sweet pepper, plum, poinsettia, poplar, quince, rapeseed, raspberry, rhododendron, soya bean, strawberry, streptocarpus, common sunflower, thuya, tomato, tulip, vine, African violet, weigela.

For these species, any foreigner may obtain a new plant variety certificate provided that French nationals are accorded reciprocal protection for the said species by the State of which the foreigner is a national or in which he has his domicile or establishment.

Orders of the Minister of Agriculture and the Minister for External Relations, issued on the proposal of the Committee for the Protection of New Plant Varieties shall determine, for each species and for each State concerned, that the legislation of that State satisfies this condition of reciprocity.

Article 3

For the species appearing in the following list, the breeder's right shall relate to the seeds, as defined in accordance with Article 1 of the Decree of May 18, 1981, mentioned above[1], as well as to the plants or parts thereof marketed for planting purposes: barley, bean, red clover, Kentucky bluegrass, cornsalad, eggplant, endive, flax and linseed, lettuce, lucerne, maize, oats, pea, sweet pepper, rapeseed, rice, ryegrass, soya bean, common sunflower, tomato, hard wheat, soft wheat.

Article 4

For potatoes, the breeder's right shall relate to the seeds to be used for the propagation of the species as defined in accordance with Article 1 of Decree No. 81-605 of May 18, 1981, mentioned above.

Article 5

For poplars, the breeder's right shall relate to the cuttings and, generally, to any part of the plant which is to be used as material for the multiplication of the variety.

Article 6

For strawberries, the breeder's right shall relate to the whole plant or part thereof which is to be used as material for the multiplication of the variety.

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[1] Decree No. 81-605 Issued for the Implementation of the Law of August 1, 1905, on the Repression of Fraud as far as the Commerce in Seed and Planting Material is Concerned (J.O. of May 20, 1981). Article 1 of this Decree reads as follows:

> "This Decree shall apply, under the term "seeds" or "planting material," to plants or parts of plants of any kind intended for production or multiplication.
>
> "In the marketing of these products, the terms "seeds" or "planting material" may only be preceded by the qualifiers "basic," "certified," "commercial," "standard" or by another qualifier fixed under the conditions laid down in Articles 9 and 10."

Article 7

For the species appearing in the following list, the breeder's right shall relate to the whole plant or part thereof, as well as to any reproductive or vegetative propagating material of the variety concerned: alstroemeria, elatior begonia, berberis, buddleia, carnation, chrysanthemum, ornamental crab, cypress (Mediterranean cypress, Arizona cypress, Duprez cypress, Leyland cypress - X Cupressocyparis and its hybrids), Euphorbia fulgens, firethorn, forsythia, freesia, gerbera, gladiolus, holly (hybrids of Ilex aquifolium), hydrangea, bulbous and rhizomatous iris, juniper, kalanchoë, lagerstroemia, lavender, lily, oleander, orchids, pelargonium (zonal, ivy-leaved and hybrid pelargonium), poinsettia, rhododendron, rose, streptocarpus, thuya, tulip, African violet, weigela.

Article 8

For the species appearing in the following list, fruit-bearing varieties and rootstocks may be protected: almond, apple, apricot, fruiting blackberries, cherry, chestnut, black currant, red and white currants, gooseberry, hazelnut, hop, peach, pear, plum, quince, raspberry, vine. The breeder's right shall relate to any part of the plant which is to be used as vegetative propagating material, such as plants, grafts, cuttings, layers, or which is to be used for laying down plantations with a view to the commercial production of fruit. It shall also relate to the seeds, as defined in accordance with Article 1 of Decree No. 81-605 of May 18, 1981, mentioned above, or to the pips and stones of the said species in cases where they may be used as seeds for the generative reproduction of the varieties.

Article 9

The term of protection shall be twenty years for the following species: alstroemeria, barley, bean, elatior begonia, berberis, Kentucky bluegrass, buddleia, carnation, chrysanthemum, cornsalad, eggplant, endive, Euphorbia fulgens, firethorn, flax and linseed, forsythia, freesia, gerbera, gladiolus, hydrangea, bulbous and rhizomatous iris, kalanchoë, lagerstroemia, lavender, lettuce, lily, maize (except inbred lines), oats, oleander, orchids, pea, pelargonium (zonal, ivy-leaved and hybrid pelargonium), sweet pepper, poinsettia, rapeseed, rice, rose, soya bean, strawberry, streptocarpus, common sunflower, tomato, tulip, African violet, weigela, hard wheat, soft wheat.

The term shall be twenty-five years for the following species: almond, apple, apricot, fruiting blackberries, cherry, chestnut, red clover, ornamental crab, black currant, red and white currants, cypress (Mediterranean cypress, Arizona cypress, Duprez cypress, Leyland cypress - X Cupressocyparis and its hybrids), gooseberry, hazelnut, holly (hybrids of Ilex aquifolium), hop, juniper, lucerne, maize (inbred lines only), peach, pear, plum, poplar, potato, quince, raspberry, rhododendron, ryegrass, thuya, vine.

Article 10

Any person who desires at the time of any act of assignment, concession or commercialization of the varieties referred to in the foregoing Articles, to avail himself of the possibility under Article 9 of the Law of June 11, 1970, mentioned above of adding a trademark to the variety denomination, whether he is the owner of the mark or other lawful user thereof, shall take the necessary precautions, especially in correspondence, in advertisements, in the preparation of trade catalogs and on packages or labels, to ensure that the denomination is sufficiently visible in its context so as to prevent any likelihood of confusion in the mind of the purchaser as to the variety's identity.

Article 11

Orders of the Minister of Agriculture issued on the proposal of the Committee for the Protection of New Plant Varieties shall determine, when the need arises, the details of the application of this Decree, which shall enter into force on publication in the Journal officiel of the French Republic of the Order provided for by Article 11 of the Law of June 11, 1970, mentioned above[1].

Article 12

The Minister for External Relations and the Minister of Agriculture are entrusted, each within his attributions, with the implementation of this Decree, which shall be published in the Journal officiel of the French Republic.

[1] Order of September 17, 1971, Relating to the Tariff of the Fees Charged in New Plant Variety Protection Matters (J.O. of October 2, 1971). The entry into force referred to is that of the original Decree No. 71-765.

GENERAL STUDIES

A Chronicle of Thirty Years of Maize in France: Genetics, Breeding and Expansion*

André Cauderon**

Plant Variety Protection No. 31 contained the records of the UPOV Symposium of November 10, 1981, devoted to "Plant Breeding Activities of Government Institutes, International Centers and the Private Sector." The article published below adds a new facet to the exposés by Mr. Jacques Huet on "Plant Breeding at the French National Institute of Agronomic Research (INRA)" and by Mr. Cornelis Mastenbroek on "The Significance of Plant Breeding by the Private Sector" in that it supplements those exposés--which had to be of general character in view of the theme of the Symposium--with a description of the history, the present situation and a possible route for the future for a specific crop, namely maize.

UPOV Newsletter No. 25 contained the records of the UPOV Symposium of October 15, 1980, devoted to "The Use of Genetic Resources in the Plant Kingdom." The article published below also adds some information to what was said at that Symposium. But above all it shows the intricacy of the various, and numerous, factors governing the fate of a crop which is very different from the near-continuous progress of wheat and barley in the United Kingdom described by Mr. Patrick W. Murphy in his exposé on "Plant Breeders' Rights and the Improvement of Plant Varieties" and Mrs. Valerie Silvey in her study on "The Influence of Improved Crop Varieties and Husbandry Methods in Increasing Cereal Yields." No doubt this will open new horizons to those who will have the task of analyzing the advantages of plant breeding and plant variety protection--and show to those who are fighting against the latter that reality is far from being as manichaeistic as they sometimes tend to believe.

The article was originally written for a special issue of the French publication Cultivar and it is thus coincidental that it should fit so neatly into the series of articles published in Plant Variety Protection. Given its purpose, it was bound to address itself to issues currently debated in France, such as the orientation of research policies and the relations that should exist between public and private breeding efforts. By opening the columns of Plant Variety Protection to Mr. André Cauderon, UPOV does not mean to take a position on these issues by giving one point of view precedence over another, but rather to afford its readers ready access to the wealth of information contained in his article.

The editor

France is anxious about research. Men who in many cases have never engaged in research themselves are now involved in evaluating, structuring, directing and programming this form of activity which seems somewhat difficult to grasp. And yet, when one gets down to it, magic words apart, what does an operation that has had such important social and economic repercussions really look like?

Recently maize has enjoyed an expansion in France which is plain to see in the changed landscapes of the northern part of the country: no one is surprised any longer, on travelling towards Chartres, to see the spires of the cathedral rearing out of a horizon of vegetation that until quite recently would have been considered exotic. This is only one further stage in the continuing progress of one of the main crop species.

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* Original publication in French in "CULTIVAR" - Spécial Maïs - November 1980, pp. 13 - 19.

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ACCLIMATIZATION IN WESTERN EUROPE

Ever since the "discovery" of America, maize has been experimented with in Europe: varieties of essentially Caribbean origin were introduced into the southern part of the Iberian peninsula, where regions with subtropical climates are to be found; the new species proved interesting for the production during the summer period of grain for human consumption. It spread slowly, however, and its progress can be traced in communal archives: even in regions with climates as favorable as the Southern part of the Landes and the Western Pyrenees, maize did not have its important, secure place alongside other cereals until right at the end of the seventeenth century. Thus it will have taken the species two centuries to overcome the obstacles of distance, tradition and above all marked climatic difference.

Indeed, in the course of their northward migration by what were probably different routes, these varieties of exotic origin, which fortunately were very heterogeneous, were forced to grow through progressively less warm and shorter summers: only those plants that flowered sufficiently early in the season had time for their grain to ripen before the autumn frosts. Farmers quite naturally kept back the best ears for sowing the following year: the species thus gradually adapted to the climate under a continuous selection pressure which was imposed on it by both nature and man, and which did not entail any scientific knowledge other than the idea of the progeny being rather similar to their parents. In this way **ecotypes**--or local varieties that are in harmony with the natural environment and husbandry techniques--evolved.

The northward movement of maize is therefore not a recent phenomenon. It was accompanied and supported by the creation of more and more early types, with the plant, that machine for transforming the solar energy of the summer months into chemical energy, functioning for less long and at lower temperatures; of course, other things being equal, its production potential diminishes. The geographical move thus quickly reaches its limit, given the competition of other cereals like wheat or barley, whose growing cycle follows a different pattern, taking advantage of the energy dispensed by sunlight from the spring onwards. In terms of grain production, this limit is at present just north of Paris.

EBB AND FLOW OF A CROP

The new cereal thus found a place for itself among other crops; the balance between them is determined by a number of different factors: the requirements of producers and market requirements, the potential of the various crops and the consistency of their performance in the environment concerned, and the possibility for man to harness that potential according to the technology and manpower available. All that is to be evaluated in relation to the farming system concerned; the social and economic situation also has an effect, as do eating habits, the range of other productions and the level of technology. It is thus a case of perpetual evolution, and the history of maize in France testifies to this.

Maize growing spread gradually through the regions in which the summers were both warm enough and humid enough for growth to be steady and strong and for full maturity to be attained at the beginning of the autumn and a fairly high yield achieved. In fact **the climate of France is at the limit** of what is essential for the proper growth of maize: if we disregard the extreme south-west, which is both warm and humid, the summers are either slightly too cool or slightly too dry for the "needs" of the species to be extensively and consistently met. In overall terms, the risk of drought tends to push maize growing northward, but the risk of cold conditions drives it back to the south. Thus the frontiers of maize are the result of compromises, and they vary according to context: increase of the productivity of early varieties, and improvement of the techniques for harvesting and storing the crop and for sowing the next one, point maize in a northerly direction; on the other hand, well-organized irrigation favors its development in the south. These general trends should not be allowed to conceal the influence of local peculiarities, which may be significant right down to plot level.

Maize finally established itself at the beginning of the nineteenth century in some eastern parts of the country (the Isère, Bresse and Alsace regions), and above all in the south-west in the broadest sense, namely as far as Ruffec and Brive, and the Languedoc. In 1787 Arthur Young noted that this new crop made it possible to eliminate fallow ground in the rich soils of the southern half of France, and he was in admiration of the intensive rotation practised in the Adour Valley: indeed, the soil was bearing crops practically throughout the year. It is estimated that at the time the yield per hectare of maize averaged twice that of wheat; of course, both cereals were used for human consumption. Around 1850, maize covered about 700,000 hectares in France.

THE GREAT DECLINE

As from the end of the nineteenth century it experienced a relative decline, at the same time in fact as did the region that it had made its home. Around 1930 the area planted with maize was little more than 300,000 hectares, half of it in the Adour basin. The yield, which was probably somewhere near 500,000 metric tonnes, was used for home consumption, in the feeding of poultry and pigs; moreover, France was not even using its potential in order to meet the growth of demand: it was importing a million tonnes of maize annually from South America and South-East Asia.

This regression in relation to other cereals was due to the combined effect of scientific, technological and economic factors. Briefly, we would say that local varieties, which were the only ones grown at the time, were ecotypes tailor-made on the spot by farmers. The continuous selection pressure had made it possible to produce, as a result of various new introductions and random crosses, quite a high degree of adaptation to local conditions and traditional husbandry techniques. We now realize, however, that these breeding methods are not sufficient to raise productivity rapidly to a level above the average. The improvement of production techniques, as a result of scientific and industrial progress, was therefore of little interest: it introduced risks (such as that of lodging), while the economic stake was not all that attractive. Indeed the surplus yield was quite small, and the price of the product, being limited by imports, was quite low compared with the cost of the new production factors (fertilizers) that had to be used in the regions where farmers were short of facilities and sufficient information.

The regional aspect of these difficulties should be emphasized; maize production techniques had stagnated as a result of the relative regression of the south-west. At the other end of the scale, the developed agricultural region of the Parisian Basin was specifically attracting the attention of extension services and of enterprises (producing machinery, seed and fertilizers), and was strengthening its position. Moreover, wheat, a self-pollinating species, was being subjected to research which led the Vilmorin family, as from the end of the nineteenth century, to devise efficient breeding methods that made use of crosses, which from 1900 onwards caused continuous progress to be made in variety development. As we know, for maize, which is **a cross-pollinating species**, rapid methods of genetic improvement did not become widespread until 1930 in the United States of America and did not really reach Europe until 1945.

By causing temporary inferiority, this biological factor contributed to the relative decline in the position of maize during the first half of the twentieth century, in spite of the appearance of purpose-built machinery (seeders) and simplified technology (sowing in squares to facilitate hoeing), and also in spite of the growth of a new market for seed for the production of summer fodder for ruminant livestock. By 1945, compared with wheat, oats and barley, maize had become a forgotten cereal in France, and of only minor importance; its technical lag afforded little inkling of what was to follow.

RENAISSANCE: Science, Technology, Economics... and Determination

The expansion of maize growing observed during the last thirty years has been the result of the simultaneous operation of a number of efforts and innovations in the scientific, technological and economic fields, and of the high quality of communications across the various links of the maize "chain" within the overall cereal policy. The general setting did of course contribute something, in that it provided prospects and did not get in the way of any action taken. Yet it was the men who wanted the change, and we shall be mentioning a number of protagonists, who have since retired from the immediate nurly-burly.

Science and Technology

First, the **farmers:** during the years before the war, the determination of a number of enlightened people to develop agriculture in the south-west inspired a movement that selected maize production as its main subject and placed technological progress at the forefront of its concerns: the "Association Générale des Producteurs de Maïs" was the material result of this determination; in collaboration with the "Association Générale des Producteurs de Céréales," it gradually mobilized some very varied forces in the professional sector, under the driving influence of Louis Bidau and Jacques Etchebarne.

For their part the **Government research laboratories,** which were very small before, began to grow quite rapidly from 1945 onwards. The use of this still-small potential for the benefit of maize was directed and conducted within INRA by Luc Alabouvette and Jean Bustarret. Owing to the scanty nature of national scientific and technical knowledge of maize, and the extraordinary lead of the United States of America, any transferable technology was transferred with the official endorsement and active participation of researchers like M.T. Jenkins, N.P. Neal and E.H. Rinke. However, INRA also ventured, with far smaller means at its disposal than the United States of America, to undertake on its own initiative original research on maize, particularly with regard to its genetic improvement, instead of concentrating its effort on crops such as wheat, where France traditionally played an international role.

This policy was of course justified after the event by the size of the scientific and technical breakthrough achieved. But in fact that size was itself extremely difficult to anticipate; cornering the market in such a way is usually the privilege of those researchers who are not under the obligation to follow fashions. The writer--who was a beginner at the time--is not likely to forget the scepticism sometimes shown by groups of those persons who had not yet come to be called technocrats. It would be an interesting exercise to present this scientific and technical option, as conceived at the time, to the present systems of "allocation of public funds," whose faceless inertia is a cause of de facto conformism that is forced to bend to the prevailing wind of either change or continuity.

The **extension services,** which at the time were answerable to the Ministry of Agriculture, devoted much of the work of their engineers to the dissemination of technology. In 1950 an organization for the production of hybrid seed was established by the Administration and professional groups (Fédération Nationale de la Production des Semences de Maïs, Commission Officielle de Contrôle); grain cooperatives were to play a major part in the initial operation of the system.

Economics

The general setting was provided by the existing economic set-up: maize benefited from price guarantees and, compared with what was happening on the world market, its position in relation to other cereals was favorable. Successive plans were to set more and more demanding targets for area and yield per hectare: it was a question first of making up the national shortfall, and then to cater for the expected growth of demand for fodder use, not only in France but also in other countries. For in the course of the period in question, the marked increase in the consumption of meat both in Europe and in Japan, was to be catered for mainly by increasing the production of poultry and pigs, which were given a cereal-based feed consisting mainly of maize.

In the France of 1980, after some thirty years of expansion, **grain maize** covers nearly two million hectares (or about six times as much as in 1950), with an average yield of around 5 tonnes per hectare, or three to four times as much as in 1950. The annual grain harvest is thus about twenty times as great, and its value today is close to ten thousand million francs. Almost half of this production takes place in areas that are new to maize (Beauce, Brie, etc.). National consumption is close to six million tonnes (ten times the 1950 figures). Instead of importing, France now exports arounds three million tonnes a year, whereas the nine countries of the EEC are still importers of some ten million tonnes, in spite of the inroads made by cassava.

Moreover, a new product, **silage maize,** now occupies more than a million hectares: not just the ear but the entire plant is harvested and preserved by fermentation to provide fodder suitable for ruminant livestock. This use of early hybrids has been expanding since 1970, and now it plays a particularly

Development of Maize Production and Marketing in France (Sources: SCES-AGPM)

Growing period	Area in hectares	Yield per hectare in quintals	Production in tonnes	Marketed production in tonnes	Imports in tonnes	Domestic demand in tonnes	Exports in tonnes		Net growing price (1)	Net growing price (2)
							Total	EEC share		
1948-49	293,308	15,70	461,278	10,206	402,000	412,206	-	-	-	-
1949-50	304,000	6,40	194,560	4,295	718,180	722,475	-	-	19,30	110,59
1950-51	325,300	12,40	403,372	10,509	471,624	482,133	-	-	22,25	114,81
1951-52	349,200	19,80	691,416	28,483	581,896	610,378	-	-	31,70	139,80
1952-53	354,800	12,30	436,304	16,333	369,233	385,566	-	-	35,70	140,66
1953-54	371,900	21,10	784,709	63,601	296,643	360,244	-	-	35,70	142,44
1954-55	400,500	23,20	929,160	120,896	244,089	364,985	-	-	35,70	143,16
1955-56	445,000	22,50	1,001,250	180,900	400,000	580,900	-	-	35,70	141,73
1956-57	651,000	27,40	1,783,740	447,121	110,000	557,121	-	-	35,68	138,80
1957-58	544,000	26,60	1,447,000	360,698	275,000	635,693	-	-	35,68	133,44
1958-59	590,000	28,00	1,652,000	614,684	119,000	700,000	-	-	39,26	127,60
1959-60	704,000	25,90	1,823,360	892,200	-	623,236	86,000	-	38,10	116,20
1960-61	824,300	34,12	2,812,690	1,472,642	-	851,116	621,526	390,504	35,00	103,25
1961-62	975,461	25,30	2,470,450	1,205,139	77,400	1,225,709	56,830	48,747	36,50	104,39
1962-63	865,860	21,50	1,864,310	1,007,690	470,800	1,225,991	252,500	202,800	38,00	103,74
1963-64	952,432	39,40	3,870,680	2,032,220	423,100	1,568,820	886,500	425,100	38,00	99,18
1964-65	892,780	23,60	2,105,190	1,283,299	726,200	1,523,799	485,700	403,100	39,00	98,28
1965-66	868,700	39,10	3,402,800	2,106,390	546,381	1,496,797	1,155,974	767,715	39,00	95,55
1966-67	961,437	45,00	4,331,000	2,838,587	531,295	1,768,061	1,601,821	742,692	38,50	91,98
1967-68	1,012,755	41,00	4,139,370	2,925,415	520,251	2,151,066	1,294,601	497,504	39,32	91,22
1968-69	1,021,660	53,00	5,378,980	3,899,136	451,351	2,054,634	2,295,854	1,319,187	39,66	88,24
1969-70	1,183,675	48,00	5,722,660	4,339,200	429,500	2,256,500	2,238,761	1,282,322	40,78	85,43
1970-71	1,483,100	51,00	7,580,900	6,224,100	498,900	3,248,800	3,562,300	2,101,300	40,72	80,87
1971-72	1,642,400	55,00	8,953,500	7,173,200	302,300	3,506,600	3,726,500	3,628,300	41,97	79,20
1972-73	1,895,500	44,00	8,251,550	6,646,900	285,100	3,647,400	2,911,500	2,847,600	44,44	79,01
1973-74	1,941,500	55,10	10,697,660	8,678,700	316,200	4,404,100	4,431,200	4,124,500	49,51	81,54
1974-75	1,907,000	46,00	8,699,094	6,926,000	564,400	4,391,700	2,750,600	2,617,900	57,80	83,87
1975-76	1,965,512	42,00	8,163,637	6,530,900	336,300	5,105,300	2,795,300	2,595,500	59,13	76,75
1976-77	1,375,000	39,00	5,368,150	4,396,500	1,387,400	5,379,500	509,300	440,400	70,32	83,61
1977-78	1,639,400	51,00	8,311,900	6,774,900	1,032,200	5,280,400	2,225,300	2,158,800	73,13	79,86
1978-79	1,814,500	53,00	9,580,000	7,684,200	775,000	5,550,000	2,755,100	2,707,500	76,90	
1979-80	1,994,000	58,00	10,405,000	8,565,000	502,000	5,922,000	3,359,000	3,284,000	84,70	

NB: Net growing price: after payment of tax and drying costs: (1) in francs of the year concerned (2) in "constant" francs - January 1979 value

important part in the north-western quarter of the country. For the raising of cattle, silage maize represents a technological advance of prime importance, indeed perhaps the most important of all those that have occurred recently.

Finally, the production of **hybrid seed** has increased: 200 tonnes in 1950 and 130,000 tonnes in 1979, of which 80% consists of early hybrids. This output meets national demand and keeps up a flow of exports that has ranged between 30,000 and 50,000 tonnes a year since 1974. France accounts for one-third of the world's exports of maize seed (equalling the United States of America), and it is very comfortably in first place for early varieties, providing the agriculture of a number of neighboring countries (Federal Republic of Germany, Belgium, Netherlands, Switzerland, Austria, etc.) with an efficient production factor.

GENETICS AND BREEDING, Stategic Factors

It is impossible to give just a brief account of all the important stages in this adventure. It is possible that its salient features, which today are clear, were perceived with far less clarity at the time by those actually responsible for the undertaking. There was much interference from outside, and there were periods of stagnation or acceleration due to a variety of factors, apart from which the regions did not develop at the same rate.

It would not be out of place, however, to give an account of the main stages in the course of the improvement of varieties, as **the raising of the genetic potential had a beneficial effect on all the other factors**, whose role one should nevertheless not overlook, namely mechanization, fertilization, irrigation, weed control, drying, ensilage, etc.

Introduction of hybrids

A new type of variety, the **hybrid**, established itself in the United States of America between 1930 and 1940. These were in fact systematic hybrids between stable lines, as opposed to local varieties, which are variable mixtures of chance hybrids; we shall be using the accepted term "hybrid" without further definition.

The use of hybrids (and generally a very small number of hybrids) as replacements for very varied local varieties is the preserve of a small number of men specializing in the selection and production of seed, tasks that every farmer traditionally performed on his own behalf. This specialization is without any doubt a factor of productivity; it also introduces a number of stringent conditions, including the absolute obligation to find the necessary seed every year and the genetic standardization over very great areas, which increases the risk of accidents due to parasites or climate. And, above all, if the future is to be preserved, the genetic wealth represented by local varieties must also be protected: research bodies and breeding firms, which have a direct interest in the availability of biological base material, have set up collections in a rather unsystematic way. Public opinion spotted the advantages of hybrids before actually understanding the inescapable character of the obligations that their adoption entailed.

It was not until the end of the war that Europe really came up against this discovery, which took the form of seed of an assortment of hybrids that had already been thoroughly tested in the United States of America, together with cultivation technology and machinery. The distribution of this "package" was one aspect of that country's technical assistance to Europe.

Experimental work on a very large scale, in which the countries of Europe cooperated under the auspices of the FAO, enabled each one of those countries to form an opinion on the technology that was transferable. France chose (and began to multiply in 1950) the few hybrids that had proved to be the best (Wisconsin 240, 255, 355; Iowa 4417); while their growth at the beginning of the growing period was indeed less rapid than that of local varieties, better suited to the French spring, which is colder than in the American corn belt, they reacted favorably to improvements in growing conditions. Being more resistant to lodging and more productive than local varieties, they enhanced and therefore promoted general agronomic progress.

Within about ten years, between 1950 and 1960, hybrids had established themselves, and maize coverage rose from 300,000 to 700,000 hectares, above all at the expense of oats and lucerne. More than a quarter of that area was located in a region that was new to the species, thanks to the early hybrids W 240 and W 255, namely part of the Parisian Basin, the province of Beauce in particular. This northward move was to combine the improvement in maize agrotechnology with the competence, vitality and material facilities of new regions. The average national yield rose from 1-1.5 to 2.5-3 tonnes per hectare. Maize imports almost stopped. Moreover, France was producing all the hybrid seed that it required.

Creation of original genetic material

At the same time as they were taking part in the testing of American hybrids to select the best for release, European Government laboratories set about creating original genetic material on the spot on the basis of ecotypes from Western Europe whose good climatic adaptability we have already mentioned. In this way the National Institute of Agronomic Research thus obtained lines such as INRA F7 and INRA F2, both of which are derived from a variety from the south of the Massif Central. European countries were exchanging lines among themselves in the course of the cooperation mentioned earlier. Thus INRA F7 and INRA F2 (Versailles Plant Improvement Station) featured in the first series of exchanges (1953), but there was also Ep 1, created by the Biological Mission of Galicia, Spain's most important maize region.

On the basis of these new European lines and those received from the United States of America and Canada, a study was made of the hybrids obtained by combining these lines. The Versailles Plant Improvement Station developed **reciprocal breeding** methods between the two geographical groups concerned: it created hybrids each between a European and an American partner, that embodied the optimum combination of overall adaptation to the rather cold temperatures of the French spring and acceptance of intensive growing. These early hybrids, INRA 200, INRA 258 and INRA 260, were released between 1957 and 1960; seed production began without delay, and the American hybrids were very quickly replaced. The new hybrids strengthened the expansion of maize growing in France, most especially in the northern half of the country. Around 1970 the total area reached 1.5 million hectares and the average national yield 5 tonnes per hectare; exports were about three million tonnes.

These hybrids were also very successful in the northern half of Europe, and they have become an international development factor. Some of them have shown a very high degree of adaptability, especially INRA 258, which combines four lines, one Spanish (Ep 1), one American (Wisconsin 33) and two French (F7 and Fl15).

This progress, which illustrates the advantages of the free circulation of genetic material, has been expressed accurately in figures: many tests were made in the Paris region to compare the performance of three groups of early varieties, the French varieties (ecotypes), the American hybrids of the 1950s (W 240 - W 255) and the INRA hybrids of 1960 (INRA 200 - INRA 258 - INRA 260).

The group of American hybrids outyielded the group of ecotypes, but very unevenly owing to the latter's diversity; the minimum increase in yield was in the region of 30%. We should bear in mind that these ecotypes were not normally grown in the Parisian Basin. As for the group of INRA hybrids, it consistently outyielded the American hybrids by about 20%...

Such productivity jumps are rare in history. In the present case they were the result of general agronomic progress and also genetic improvement work effected by the introduction of new elements in three areas simultaneously:

- the breeding methods (lines and hybrids, then, in a second stage, reciprocal selection for heterosis between complementary geographical groups),

- the plant material (inclusion of European ecotypes in breeding work),

- the breeding objectives (adaptation to fairly low average spring temperatures, common in north-western Europe).

Research carried on in France on types of average earliness, intended specifically for the south-west, also produced good results (lines Fl6, Fl9, F502 - hybrids INRA 310 - INRA 508).

THE UNCERTAINTIES OF THE PRESENT

The direction of development since 1970 is not yet clearly apparent.

In spite of the development of breeding...

The large seed producing firms have built up their breeding departments, some of them in association with North American firms. They may use INRA lines against payment of royalties, and they are creating their own hybrids and taking care of their multiplication and distribution; the INRA hybrids have a smaller and smaller place among these. The breeding firms create new lines themselves, but the INRA lines still play a very important direct part: in particular, F7 and even more so F2 feature in the majority of early hybrids grown today. In tests, the latter outclass the 1960 INRA hybrids (INRA 258) by 5 to 10% in terms of yield for equal earliness, and they have better resistance to lodging at overmaturity. This progress is due to original combinations of known lines rather than to the incorporation of newly created lines.

Yields reach a ceiling

In spite of this improvement the average grain yield from slightly less than two million hectares, continues to oscillate around 5 tonnes per hectare, and the fact that the United States of America, from nearly thirty million hectares, achieves average yields of around 6 tonnes per hectare saves us--should that be necessary--from any undue complacency. And there is absolutely no saying that it is due to environment-orientated and economic considerations, which might have led to less fertilization and irrigation. The problem is one of at least apparent stagnation, and it is not easy to interpret.

Climatic fluctuations have of course had something to do with it: we have recently experienced summers that have been exceptionally cold (1972) or dry (1975 and especially 1976), or simultaneously quite cold and quite dry (1974). Moreover, maize had extended in a rather haphazard fashion to areas in which the natural conditions are hardly favorable; the difficult years will no doubt have served to rectify these errors. Apart from this, the habit of success and the appearance of machinery that makes it possible to work even in unfavorable conditions, may well have contributed to a slackening of growing techniques and a consequent impairment of the physical state of the soil. There is an urgent need to make an accurate diagnosis of the reasons for this gap between theoretical potential and average performance in each major agronomic zone. The **"Conférence Générale du Maïs"** is applying itself to the promotion of this movement. It seems that **as much effort has to be devoted to growing techniques as to the varieties themselves;** the increasing scarcity of energy has to be taken into account in relation to nitrogen fertilization, irrigation and drying--objectively and without recourse to magic formulas, for maize growing continues to be a great energy producer.

Spread of silage maize

Silage maize has developed considerably since 1970: 1,150,000 hectares in 1979. The hybrids used are the same as for grain production, and the growing techniques differ little. Following the slightly too-cold years, silage production was substituted for grain production in the regions at the northern edge of the maize growing area, at least in farms that raised cattle. As for the dry years, they proved that the production of maize for silage was less irregular than that of grassland, and they contributed to the expansion of maize growing. Research is now in progress with a view to obtaining hybrids specifically intended for silage, with improvements in their total dry matter yield and its quality: protein content, digestibility, appetibility.

THE WILL TO PREPARE THE FUTURE

The expansion of maize growing is not an end in itself; the objective is to improve the efficiency of the production of a number of grain crops, cereals, oil and protein crops. The production of starches, oils and proteins can thus be planned and structured for the best in each region according to conditions that are hard to anticipate. Nevertheless, maize has an increasing number of agricultural and industrial outlets, especially in Europe and the Mediterranean area.

Progress is not automatic: it is the result of determination and constant effort. With regard to maize, we have mentioned a number of serious problems facing farmers, technicians and scientists today. Research, which is the basis of all effective action, has to be developed. In particular it is essential that France should continue to play a leading international role in the genetic improvement of maize, the strategic importance of which has made itself so manifestly clear.

The essential fact in this connection has been the breeding of a small number of early lines, mainly by North American and French Government laboratories; private bodies seldom ventured into original work, which has not long been eligible for protection by patent or plant variety certificates. These lines are an asset which is used on a world scale. France, which contributed to creating it, has also been able to exploit it rapidly and efficiently enough for its own farmers to be among the first to have highly suitable varieties at their disposal, which is essential in economic competition.

Yet places won are not secure; competitors are at work, apart from which everything evolves, science, agriculture and the overall setting. Science, in particular genetics and physiology, provides concepts, criteria and methods that bring changes to breeding work; it is not easy to take all these factors into account when facing up to an uncertain agronomic situation (energy, European politics). It requires as much hard work as it does common sense to distinguish genuine problems from mere vicissitudes of fashion.

Are we in France making the necessary effort at the present time in order to be the first to obtain new lines that will produce more effective, less demanding and more consistent hybrids, hybrids of better quality that correspond specifically to production conditions and users' needs? **Where is the parent material for the varieties of the year 2000 being developed?**

The Government laboratories that have created and widely distributed most of the lines now used by commercial undertakings do not seem poised to press on in the same direction: the United States of America is unlikely to be as generous to foreign countries as it was; moreover there seems to be little intention on the part of the Government laboratories of a number of countries to continue breeding superior lines--and for that matter little capital available to French laboratories, which, from their reduced allowances, are doing what they can to save their basic research.

The international conventions providing protection will of course enable breeders to "patent" their varieties in an ever-greater number of countries. That should induce breeding firms to earmark more funds for the creation of original lines, now eligible for protection; to do that they will have to **build up their research teams** and give them the opportunity to carry on with their research in greater depth, which in turn calls for a great deal of time and care in addition to credit. **That is the priority task for firms, and the enlarged teams will then have improved communications with the Governement laboratories, such as INRA and the National Center of Scientific Research (CNRS), but also with other public or private bodies both in France and abroad. It is all the more necessary to open up relations in this way, as one cannot easily imagine today any breeding activity confined to the French hexagon, alone: research cannot be made profitable without geographical expansion.**

This development might perhaps make it possible to give a touch of realism to the projects for **collaboration between French firms and Government laboratories.** In the past, INRA has provided a great deal of basic material free of charge, and also a few hundred lines, charging royalties for the commercial use of the latter. Genuine cooperation calls for coordinated action by both parties: each contributes what it knows best--and the other less well --and each has to extract from the results something that corresponds to its own interests and vocation. Carefully worked out programs would make it possible to monitor and correct progress at short intervals; but it is above all essential that the partners should have in addition sufficiently important scientific activities of their own to bring original contributions to the joint work: the mere combination of weaknesses does no more than create an illusion of cooperation.

Public opinion is in the process of discovering, in the wake of recent upheavals, that genetic wealth is still one of our most precious resources: it has to be made quite clear that it cannot be used to full advantage unless we have the will.

CALENDAR

1983

UPOV Meetings

April 26 and 27	Administrative and Legal Committee
April 28	Consultative Committee
May 17 to 19 Cambridge (United Kingdom)	Technical Working Party on Automation and Computer Programs
May 30 to June 1 Zaragoza (Spain)	Technical Working Party for Vegetables
June 8 to 10 Skaelskør (Denmark)	Technical Working Party for Agricultural Crops (Subgroups on June 7)
September 21 to 23 Rome (Italy)	Technical Working Party for Fruit Crops (Subgroup on September 20)
September 27 to 29 Conthey (Switzerland)	Technical Working Party for Ornamental Plants and Forest Trees
October 3 and 4	Technical Committee
October 11	Consultative Committee
October 12 to 14	Council
November 7 and 8	Administrative and Legal Committee
November 9 and 10	Hearing of International Professional Organizations

Meetings of Other International Organizations

June 5 to 8 Budapest (Hungary)	International Federation of the Seed Trade (FIS), Congress
June 8 to 10 Budapest (Hungary)	International Association of Plant Breeders for the Protection of Plant Varieties (ASSINSEL), Congress
July 17 to 22 Munich (Federal Republic of Germany)	International Association of Horticultural Producers (AIPH), Congress

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.

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