

ARTICLE

Evolution, importance and evaluation of cultivar protection in Brazil: the work of the SNPC

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Abstract – Law no. 9.456/97 instituted the Plant Variety Protection Act (*Lei de Proteção de Cultivares - LPC*) in Brazil, bearing a range of positive aspects for Brazilian agriculture, such as the increase in the number of new varieties in Brazil, both domestic and foreign; incentives for breeding activities in the country; and socioeconomic benefits to the agricultural sector. In 15 years of activity in the sphere of the Ministry of Agriculture, Livestock and Food Supply (*Ministério da Agricultura, Pecuária e Abastecimento*), the National Plant Variety Protection Service (*Serviço Nacional de Proteção de Cultivares - SNPC*) has consolidated its activity, not only through its credibility in analysis and granting of plant variety protection (PVP) applications, but also through its proactive stance in technical and legal activities in Brazilian and international affairs, as well as involving the scientific community in a participatory manner in the actions it develops. Nevertheless, in spite of these advances, there is a great deal of discussion regarding the limitations to effective exercise of plant breeders' rights caused by some legal provisions of the LPC that may lack refinement.

Key words: Intellectual property, plant variety protection, seeds.

INTRODUCTION

PLANT VARIETY PROTECTION

How it all began

Plant variety protection (PVP) in Brazil was discussed for the first time in 1976 with the intention of drafting a law that would regulate intellectual property concerning plant breeding. At that time, the matter was restricted to the sphere of the Ministry of Agriculture, without greater involvement of other governmental and social sectors (Araújo 2010).

Twenty years went by up to promulgation of Law no. 9.456 (BRASIL 1997a), April 25, 1997, which instituted the PVP Act (*Lei de Proteção de Cultivares - LPC*), and of Decree no. 2.366 (BRASIL 1997b), November 5, 1997 which regulated it. The *National Plant Variety Protection Service* (*Serviço Nacional de Proteção de Cultivares - SNPC*) was created and given responsibility for management of administrative and technical aspects related to the theme within the sphere of the Ministry of Agriculture, Livestock and Food Supply (*Ministério da Agricultura, Pecuária e Abastecimento - MAPA*).

Based on application of the provisions contained in the LPC, a significant increase in agricultural research investment in the country, especially on the part of private initiative, was sought for, resulting in a greater and more selective offering of new varieties adapted to the different edaphoclimatic conditions in Brazil, meeting the requirements and needs of the agro-industrial sector (BRASIL 1998).

In addition, with the LPC, Brazil placed agriculture within the context of globalization by means of technological, legal and administrative exchange with member countries of the International Union for the Protection of New Varieties of Plants (UPOV) and with various trade blocs. According to Araújo (2010), the sanction of the LPC was established as a fact of unequivocal relevance in the context of public policy related to the Brazilian crop and livestock sector because it represented a major innovation in regard to implementation of intellectual property rights in agriculture, hitherto non-existent.

Participation in the UPOV

Brazil rose to membership in the UPOV only in 1999 upon publication of Legislative Decree no. 28, April 19,

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1999 (BRASIL 1999a), which approved the 1978 UPOV Act, and Decree 3.109, June 30, 1999 (BRASIL 1999b), which confirmed its membership. As of that time, the Brazilian government came to have a seat in meetings of the Council, of the Technical Committee and of the Administrative and Legal Committee of the organization.

In particular, the Technical Committee is composed of six different Technical Working Parties, in which designated specialists participate to provide assistance in matters regarding specific crops/themes (TWA – Technical Working Party for Agricultural Crops; TWF – Technical Working Party for Fruit Crops; TWO – Technical Working Party for Ornamental Plants and Forest Trees; TWV – Technical Working Party for Vegetables; TWC – Technical Working Party on Automation and Computer Programs; BMT – Working Group on Biochemical and Molecular Techniques and DNA – Profiling in Particular).

Although formal representation to the UPOV occurs through the Brazilian Embassy in Geneva, Switzerland, where the UPOV headquarters is situated, the SNPC is responsible for subsidizing them and for coordination with the entity. SNPC Technicians began to participate in the UPOV Technical Working Parties since the TWA in 2000 in Sweden; since the TWV in Japan in 2002; since the TWO in Canada in 2003; since TWF in Germany in 2004; since the TWC in South Korea in 2008; and since the BMT in Spain in 2008; where they led the discussions for drafting consistent international directives for carrying out Distinctness, Uniformity and Stability (DUS) tests of various plant species, such as banana, coffee, sugar cane, pearl millet and rubber tree, as well as brachiaria grass, coriander, eucalyptus, cassava and coconut, which are in progress (BRASIL 2011, UPOV 2012). In addition, the SNPC jointly leads discussions regarding papaya, cocoa and feijoa.

Technical party meetings are itinerant and Brazil already had the privilege of hosting the 31st and 40th sessions of the TWA in 2002 and 2011, respectively, the 37th session of the TWF and the 39th session of the TWO, both in 2006, and the 13th meeting of the BMT, in 2011.

The technical-scientific exchange may be confirmed by the participation of SNPC representatives in various debate forums, among them, the debate forum of the Administrative and Legal Committee Advisory Group, created in 2006 and composed of only 15 specialists from the UPOV members; Training Course on Protection of Plant Varieties for Ibero-American Countries, which occurred in Spain, Bolivia and Uruguay from 2004 to 2011; from the International Seminar on Intellectual Property of Plant Varieties and Enforcement in Bogota, D.C., 2011; from the International Seminar on Breeders' Rights in Mexico D.F., Mexico, 2008 and 2011; from the VII International Workshop on DUS Testing in Mexico, 2009

and 2011; from the Seminar on DUS Testing in Geneva, 2010; from the Symposium on Contracts in Relation to Plant Breeders' Rights in Geneva, 2008; and from the Symposium on Plant Breeding for the Future in Geneva, 2011 (UPOV 2012).

Based on participation in these global forums, the SNPC seeks alternatives for improvement applicable to the LPC through fitting internationally recognized procedures within the Brazilian context with a view toward preserving the credibility of the PVP system, establishing clearly defined rules.

International Technical Cooperation

From the time it was created, the SNPC has established technical cooperation partnerships with international agencies, such as: CSIRO (Australia), JICA (Japan), CPVO (European Community), GEVES (France), NUFFIC (The Netherlands), AECD (Spain), SNICS (Mexico), USPTO (USA), INASE (Argentina), INASE (Uruguay), SENAVE (Bolivia), NIAB (United Kingdom), WIPO, FAO and IICA with a view toward training its technicians, as well as exchange of technical and legal information from the different PVP systems around the world.

Another form of cooperation comes about through the SNPC's request for results of DUS tests performed by other member countries. That reduces the cost for holders of plant breeders' rights, who are not obliged to perform tests on the candidate varieties if the tests have already been carried out by other authorities with which Brazil cooperates, also reducing the time for granting protection. In ornamental, fruit and vegetable crop species, this form of cooperation is very common.

National Technical Cooperation

There are various partnerships established on a national level by means of cooperation agreements and other ways of financing resources among the Ministry of Agriculture and public and private research institutions, aiming at creation or revision of DUS test guidelines, performing example-varieties tests, encouraging plant variety protection and training. SNPC managed a distance learning course on Intellectual Property in partnership with the University of Santa Catarina (UFSC) in 2008 and 2009, training 2000 participants, and the Plant Variety Protection Course, performed in 2010 and 2011 in partnership with the University of Viçosa (UFV/CEAD), when 300 professionals acting in areas related to intellectual property and to genetic plant breeding attempted to the course.

The Ministry of Agriculture, through the SNPC, also regularly supports Congresses, Seminars, Symposiums and Workshops related to PVP themes, plant breeding and genetic resources searching for a closer interaction with the academic community and scientific societies, creating opportunities for debating relevant themes, bringing up new ideas and proposals for actions that support continuous technological develop-

ment. Some of the more recent events were the 6th Brazilian Congress on Plant Breeding in 2011, the I Symposium on Plant Breeding of Asexually Reproduced Varieties in 2010, and the International Symposium on Forage Crops Breeding, in 2011. A study for assessing plant breeding capacity in Brazil performed in 2009 was also observed and sponsored by the SNPC for the purpose of mapping future demands in terms of protection of new varieties.

Thus, by means of strong actions, coordinated activity may be observed among public, private, academic and scientific sectors, committed on developing legal instruments and means of cooperation aimed at development in an environment favorable to innovation.

Applications for Protection and Titles Granted

Analyzing the number of applications for protection and titles granted per year since 1997 (Tables 1 and 2), it may be affirmed that the main objectives of the LPC were reached, which are, to add value to the result of research in obtaining new plant varieties, to attract Brazilian and foreign, and public and private investments for increase and advancement of genetic plant breeding programs and to encourage the entry of foreign technology in Brazil, especially in areas in which genetic breeding is not carried out

or research is still in its beginning stages, as in ornamental species, grapevines and others (BRASIL 2011).

According to Zylbersztajn (1992), the Brazilian legislation would “bring much more significant impacts in the sphere of commercial opportunities than in the technological sphere” as a result of the extensive Brazilian agribusiness market and of the international pressure the country is subjected to.

Upon analyzing the data regarding 14 member countries of the UPOV (Figure 1), with the exception of Mexico, Canada and Colombia, which mainly present grants of protection to foreign breeders (also called “non-residents”), the other countries, including Brazil, mainly present titles granted to domestic breeders (also called “residents”). According to Araújo (2010), at the time of discussion of the LPC, the argument that there would be denationalization of the seed production complex with the advance of multinational companies over the Brazilian seed sector has been partially confirmed in the cases of maize and soybeans, which have expressive economic relevance.

DUS Test Guidelines

SNPC must establish characteristics that will be used to describe the varieties. These characteristics are chosen and validated with the participation of Brazilian and foreign experts.

Table 1. Applications for Protection per year

Species	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Forest trees	0	0	0	0	0	5	1	0	0	5	11	9	3	4	9	47
Forage crops	0	0	0	0	1	2	3	4	2	1	6	4	1	12	5	41
Fruit trees	0	0	0	2	2	1	5	10	5	6	6	9	25	12	30	113
Vegetables	0	1	0	0	0	3	2	15	7	2	14	19	11	13	15	102
Ornamentals	0	0	0	0	0	7	5	62	50	47	85	54	83	73	112	578
Agricultural crops (except soybeans)	0	47	62	50	45	50	52	67	46	74	40	46	78	46	89	792
Soybeans	7	66	60	28	52	25	54	54	77	52	57	66	42	79	64	783
Total	7	114	122	80	100	93	122	212	187	187	219	207	243	239	324	2456

Source: SNPC

Table 2. Titles granted per year

Species	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Forest trees	0	0	0	0	0	2	3	1	0	0	14	2	7	6	2	37
Forage crops	0	0	0	0	0	1	3	3	1	2	3	7	2	0	8	30
Fruit trees	0	0	0	0	3	2	1	10	4	5	4	3	6	10	6	54
Vegetables	0	0	0	0	0	2	1	8	10	5	4	11	7	4	12	64
Ornamentals	0	0	0	0	0	2	7	4	51	52	37	69	29	79	54	384
Agricultural crops (except soybeans)	0	16	66	40	44	55	49	59	41	55	46	34	53	50	42	650
Soybeans	0	47	39	34	41	34	58	36	43	65	34	47	56	34	48	616
Total	0	63	105	74	88	98	122	121	150	184	142	173	160	183	172	1835

Source: SNPC

Fulfilling the requirements laid down in the LPC, the PVP system currently relies on 121 DUS Test Guidelines (Table 4).

The increasing number of DUS test guidelines is also attributed to the broadened participation of representatives of the SNPC in the Technical Work Groups of the UPOV and to the exchange of technical-scientific information with other member countries.

Example variety trials

Characterizations of the candidate varieties are made, as a rule, comparing them to control and example varieties, during the DUS tests. To establish example varieties trials are performed by the SNPC in cooperation with public and private institutions involved in production and commercialization of seeds and seedlings and plant breeding and their main goal is identification of the varieties used as a standard for DUS characteristics in the different breed-

ing programs, consequently increasing the reliability and quality of the data sent to the SNPC by applicants for plant breeders' rights. In addition, this type of cooperation allows training of human resources, harmonization of methodologies for carrying out DUS tests and review and validation of tests guidelines. Tests like this have already been carried out with soybeans, pearl millet, cassava, cotton, brachiaria and rice. Nowadays, species like wheat, sugar cane, rape seed and oat have example variety trials been carried out.

The more important example variety trials carried out by SNPC were that undertaken with soybeans, given their relevance to Brazilian agribusiness, to their extensive growing area in the country and the narrow genetic base that hinders differentiation among varieties. Tests were performed under coordination of the SNPC in the 2006/07, 2007/08 and 2008/09 crop seasons in thirteen research institutions facilities that voluntarily participated in the study. From 2006

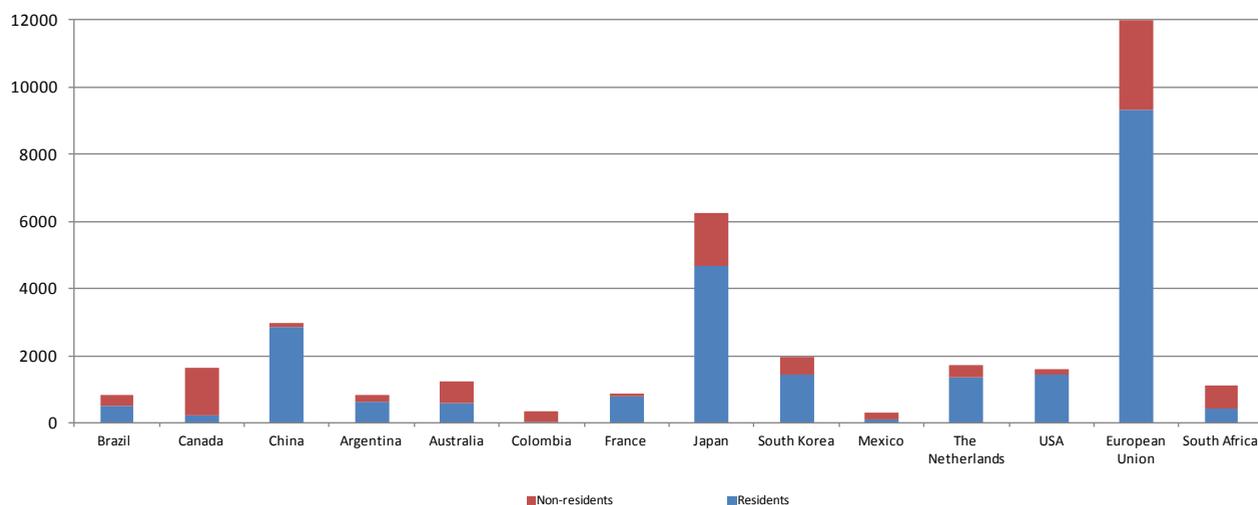


Figure 1. Titles granted for resident and non-resident holders by country during 2006-2010 period. Source: UPOV.

Table 4. Test guidelines published up to September 30, 2012

Plant group	Number of descriptors	Species
Agricultural	20	Cotton, peanuts, rice, oats, potatoes, sugar cane, coffee, rye, barley, french bean, cowpea, sunflowers, castor oil plant, cassava, corn, soybeans, sorghum, tobacco, wheat and triticale
Forest	2	Eucalyptus and Rubber tree;
Forage	22	Pinto peanut, perennial ryegrass, brachiarias (5 species), bromus, buffalo grass, orchard grass, Uganda grass, velvet grass, common vetch (2), fescue, pigeon pea, lotus, horse gram beans, pearl millet, poa, white clover and red clover;
Fruit	35	Avocado, pineapple, plum, banana, persimmon, pineapple guava, guarana, kiwi, oranges, apples (scion and rootstock), mango, passion fruit (15 species), blueberries, nectarines, olives, pears (scion and rootstock), stone fruit (rootstock), peaches, tangerines and grapes;
Vegetable crop	13	Squash, lettuce, garlic, onions, carrots, peas, stevia, watermelon, melon, strawberries, okra, tomatoes, green peppers and hot peppers.
Ornamental	29	Peruvian lily, amaryllis, anthurium, aster, begonia, begonia rex, bromelia (Guzmania), kalanchoe, cymbidium, calla lily, carnation, croton, chrysanthemum, turmeric, statice, ficus, gerbera, bermuda grass, zoysia grass, St. Augustine grass, baby's-breath, hibiscus, hypericum, impatiens, New Guinea impatiens, lilies, <i>Paspalum vaginatum</i> , poinsettia, roses, goldenrods and African violet

Source: SNPC

to 2009, six technical meetings were held for discussion of methodologies and evaluation, results and disease assessment. The quality of the information obtained in this test was recognized in the sphere of the UPOV, which uses it as a reference for collaborative work with expressive results, which may be replicated in other countries. Thus, Brazil was invited to share this experience at the VII Training Course on Protection of Plant Varieties for Ibero-American Countries, which took place in 2009 in Santa Cruz de la Sierra, Bolivia, and at the Seminar on DUS Testing, which took place in 2010 in Geneva, Switzerland (UPOV 2012).

IMPORTANCE OF PVP

Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce (WIPO 2008), and consists of a set of principles and legal rules that regulate the acquisition, use, enforcement and loss of rights over differentiating intangible assets that may be used in commerce (Pimentel 2010). For the World Intellectual Property Organization (WIPO), intellectual property is divided into two categories: a) Industrial property: which includes the inventions (patents), trademarks, industrial designs, geographic indications of source; and b) Copyrights: which includes literary and artistic works and connected rights (WIPO 2012). Some authors believe the PVP is included in the category of industrial property rights; however, for others, like Barbosa (2009), intellectual property is divided into four large areas: company creations, distinctive signs, authorship rights and protections *sui generis*, which encompass plant variety protection and the topography of integrated circuits.

In general, an intellectual property law aims at safeguarding creators and other producers of intellectual goods and services by granting them certain time-limited rights to control the use made of those productions (WIPO 2008).

In agriculture, granting varieties intellectual property encourages further investments in plant breeding. As a result, farmers have in hands more competitive varieties better suited to their needs, increasing planted area and spurring agribusiness (Bulsing et al. 2010).

The main mission of the UPOV is “To provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society” (UPOV 2011).

According to the UPOV (2005), a strong argument regarding the importance of PVP systems is the occurrence *per se* of protected varieties. Considering the processes involved in obtaining protection are quite costly, the breeders would not seek protection of their new varieties unless: i) protection was necessary, and ii) their cultivars have true market value. The first argument is bolstered by the observations that protection rights are much less frequently requested by breeders that have other means of controlling their varieties, as is the case of hybrids (UPOV 2005), where normally strategies of trade secret are used in agribusiness, restricting access to the parent lines of the respective hybrids (Benetti et al. 2010).

In this regard, Figure 2 allows comparison between the number of soybean and maize varieties with registration requested in Brazilian national list (Registro Nacional de Cultivares - RNC)³ and those with PVP applications in the SNPC. It shows the number of maize varieties two times over the number of soybean varieties registered. Nevertheless, comparing the data on PVP applications of the same species, we observe that the maize protection applications correspond to less than 10% the applications for soybean protection, demonstrating the existence of a bigger number of commercial maize varieties in comparison to soybeans but

³ Law no. 10.711, of August 05, 2003 created the National Registry of Cultivars upon establishing that “Art. 11. The production, processing and sale of seeds and seedlings is conditioned on previous registration of the respective variety in the RNC.”

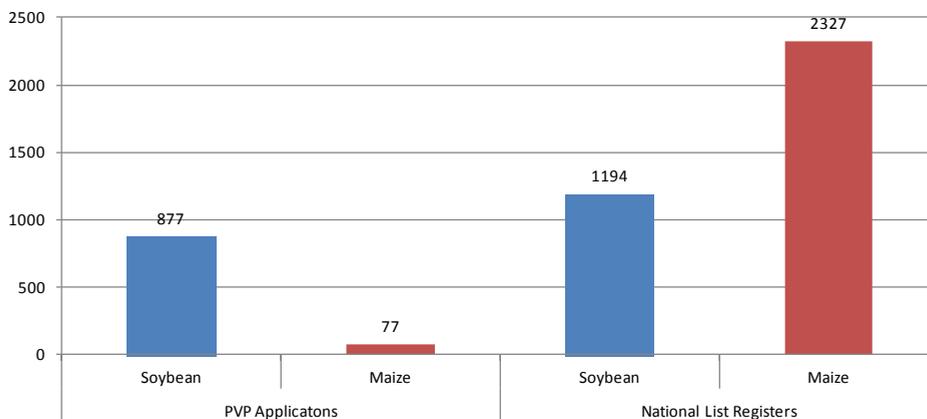


Figure 2. Number of PVP applications for soybean and maize in the SNPC and registered in the Brazilian national list (RNC). Source: SNPC and RNC.

low utilization of the protection system, considering a lower need due the control provided by the use of hybrid seeds.

The argument that the holders of breeders' right would not seek intellectual property if their varieties did not have true market value is backed up by the fact that the adoption of protected varieties is generally fast and significant even when, in most cases, the payment of royalties is required (UPOV 2005).

Number of new varieties

One of the positive impacts arising from introduction of the PVP system in countries is the increment of the number of varieties developed (UPOV 2005). In Brazil, a significant increase in the number of PVP applications may be observed in the following years after the introduction of the protection system (Figure 3). Obviously, an ideal comparison to manifest this increase in development of varieties in Brazil should be performed comparing the varieties in the Brazilian national list before and after 1997; however, as the Brazilian national list (Registro Nacional de Cultivares - RNC) only came in existence as of 1998, such a comparison is not feasible.

Nevertheless, we can get an idea of this stimulus upon comparing the number of soybean varieties introduced by Embrapa in the period from 1980 to 1997 (98 varieties introduced) (Almeida de et al. 1999) and in the period from 1998 to 2012 (299 varieties registered⁴), from which it may be seen that the development of new cultivars of that company increased from an average of 5.8 releases/year to 19.9 releases/year⁵.

⁴ Figure that corresponds to the number of varieties introduced. Data compiled from the RNC.

⁵ In the same period, 205 applications of soybean varieties were made by Embrapa, which would make for an average of 13.6 protection requests per year.

Introduction of “Foreign Varieties”

Another important observation made by the UPOV (2005) in countries that joined its PVP system is the significant increase in variety applications by “non-resident” breeders. It is known that one of the basic principles of the UPOV PVP system is rights reciprocity, which rules that member-countries must grant foreign breeders the same treatment afforded to domestic breeders⁶. This fact, allied to the great harmonization of laws and technical procedures and with globalization of markets, leads UPOV member countries to receive a large number of “foreign varieties”. In Brazil, approximately 40% of the PVP applications are submitted by non-resident breeders (Figure 3).

This legal harmonization encourages rights-holding companies to expand their operations to other countries. Due the edaphoclimatic conditions, foreign companies bring along a broad range of varieties which will be tested and adopted by farmers, according to their performance. Thus, the options for domestic farmers grow, which results in added value and, moreover, access to international markets. Such benefit was evident in Brazil regarding ornamental plants and flowers, where approximately 97% of the varieties are applied by non-resident breeders. Comparing Figures 4 and 5, the increase⁷ in flower exports and its coincidence with the growth in the number of ornamental varieties PVP applications may be perceived.

⁶ Law no. 9.456/97, “Art. 6 The provisions of this Law also apply to: I – applications for protection of plant varieties originated abroad and filed in the Country by a person or entity which protection is ensured by a Treaty effective in Brazil; II – national citizens or persons domiciled in a country that assures Brazilians or persons domiciled in Brazil the reciprocity of equal or equivalent rights”.

⁷ In relation to the decrease in exports as of the year 2009, this is due to the effects of the international economic and financial crisis, which significantly affected the main importing markets (Junqueira and Peetz 2010)

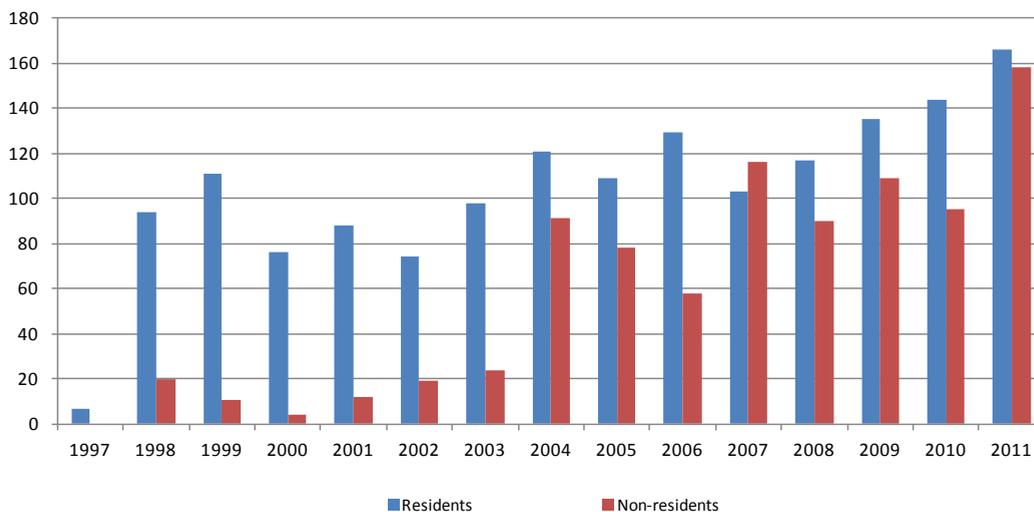


Figure 3. Evolution of PVP applications and Comparison of PVP applications filed by residents and non-residents. Source: SNPC.

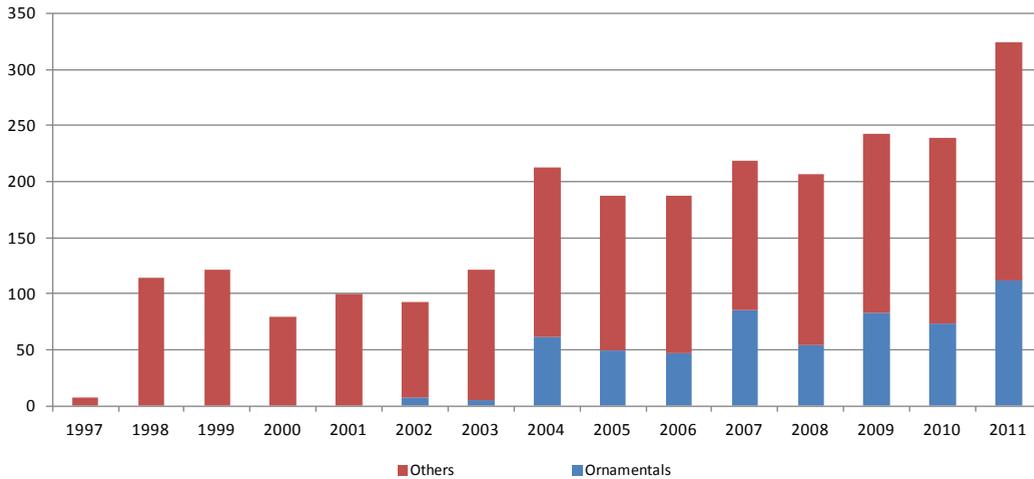


Figure 4. Evolution of applications for protection (1997-2011). Source: SNPC.

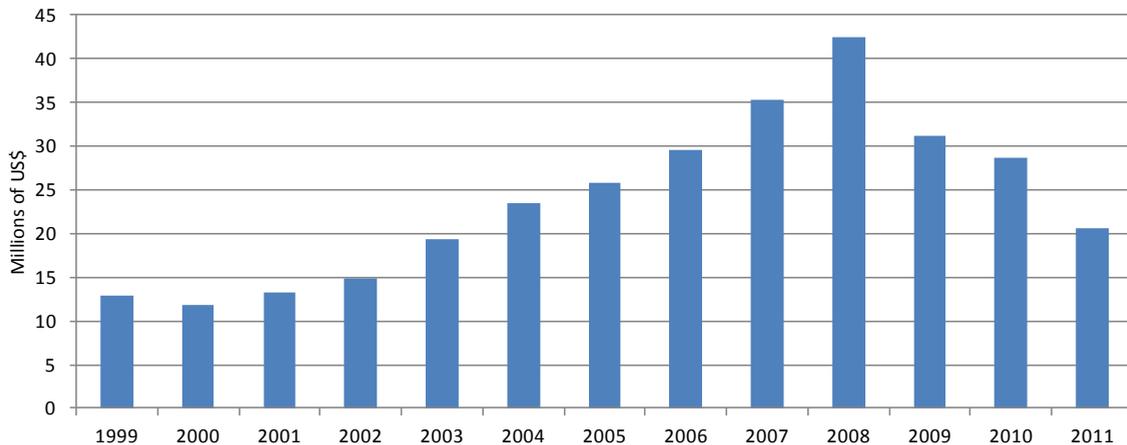


Figure 5. Exports related to the ornamental sector (in millions of US\$). Source: Instituto Brasileiro de Floricultura (IBRAFLOR)

Another benefit arising from the introduction of foreign varieties is the access provided to domestic breeders which, in consideration of the breeder⁸ exemption, may use elite-varieties in their breeding programs (UPOV 2005), moreover, generating gains through broadening the genetic base of some species. Furthermore, this aspect may be highlighted as an important means of transfer of technology and effective use of plant genetic resources (UPOV 2005).

We should not forget the “other hand” of the principle of reciprocity; i.e., that Brazilian breeders will receive equal treatment given to the breeders belonging to any one of the 71 member-countries of UPOV, being able to protect their varieties abroad and expand their business interests. Nevertheless, in spite of all these possibilities, Brazilian

breeders have not taken advantage of the basic principles of intellectual property and have not introduced their varieties in other countries, as may be seen in Table 3.

Breeding activities on a national level

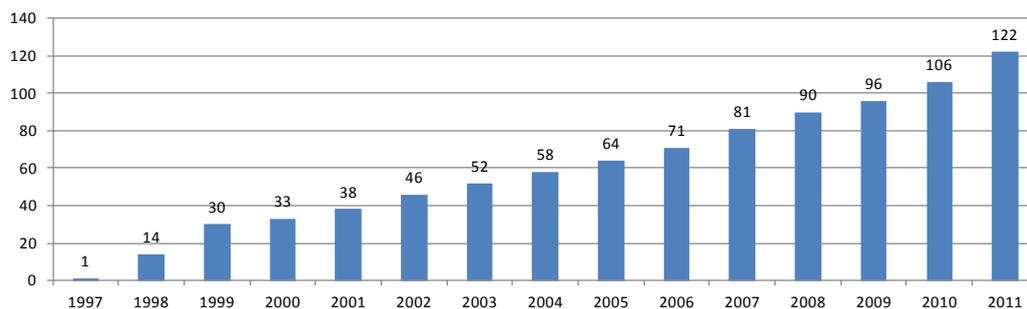
In addition to the above-mentioned impacts, the introduction of a PVP system also has repercussions on domestic breeding activities, whether through the increase in the number of breeding entities, or by the increase in the number of their protected varieties. Encouraged by the PVP system, new breeders emerge, especially in the private sector (UPOV 2005). In fact, it is easy to notice that every year since the beginning of the PVP system in Brazil, there has been a considerable increase in the number of resident holders of breeders’ rights (Figure 6). Annually, an average of eight new resident title holders have their varieties protected in Brazil.

⁸ Law 9456/97, “Art. 10. Property rights on the protected cultivar are not violated by the one who: [...]III – uses the cultivar as a source of variation in genetic breeding or in scientific research”

Table 3. Applications for protection and titles granted to Brazilian breeders in foreign UPOV member countries

Countries	Applications for Protection	Titles Granted
Argentina	4	3
Chile	1	1
Colombia	6	0
Paraguay	19	19
European Union	1	1
USA	1	1
Uruguay	3	0
South Africa	1	0
Total	36	25

Source: UPOV

**Figure 6.** Number of new resident title holders (total sum). Source: SNPC.

Economic, environmental and health benefits

In addition to the points already highlighted, it may be seen that encouragement of innovation in plant breeding favors competition through the release of varieties that benefit farmers and meet the needs of consumers; thus, there are notable gains in the areas of: i) economics, with the increase in yield, leading to reduction of food prices to consumers and increased quality of products, adding greater commercial value to them; ii) health, due to products with greater nutritional content; and iii) the environment, because, considering that one of the main focuses of plant breeding is obtaining pest resistant varieties, the adoption of these new varieties may lead to less use of agricultural chemicals (UPOV 2005).

One of the more visible impacts brought about by the development of new, ever more productive varieties is reduction in the need for new growing areas, thus assisting environmental conservation. In this regard, it is interesting to note that there was a nearly threefold increase in domestic grain production (Figure 7) from 1990 to 2012; however, planted area increased little more than 30%. It was not a coincidence that the leap in production after the 1997/1998 crop season occurred after the beginning of PVP system in Brazil.

Another example that merits distinction is the increase in cotton yield in recent decades (Figure 8). From the 1976/77 crop season to the 1996/1997 crop season, there was a considerable increase in crop yield; however, from the 1997/1998 crop season to the most recent crop seasons, this increase was even more substantial, achieving a nearly threefold increase in average domestic production. A coincidence in the number of PVP applications made and an increase in yield may be observed, leading to the belief that the decrease in PVP applications in the years from 2007 to 2011 was reflected in stagnation in yield increase in the same period.

Obviously, several improvements led to the yield increases highlighted here, such as new production technologies, improvements in fertilizers and agricultural chemicals, machinery, etc. Nevertheless, it is interesting to highlight a study carried out by the National Institute of Agricultural Botany (NIAB) in the United Kingdom⁹, cited by Bruins (2009), indicating that in the last 25 years, approximately 90% of the increase in the crop yield of wheat, barley and oats of that country should be attributed to the introduction of new varieties, thus showing the importance of the genetic component to economic gains in agriculture and, consequently, the importance of tools that encourage and protect the work undertaken by the breeders of new plant varieties.

⁹ http://www.bspb.co.uk/newsarticle_2008_06_10a.html

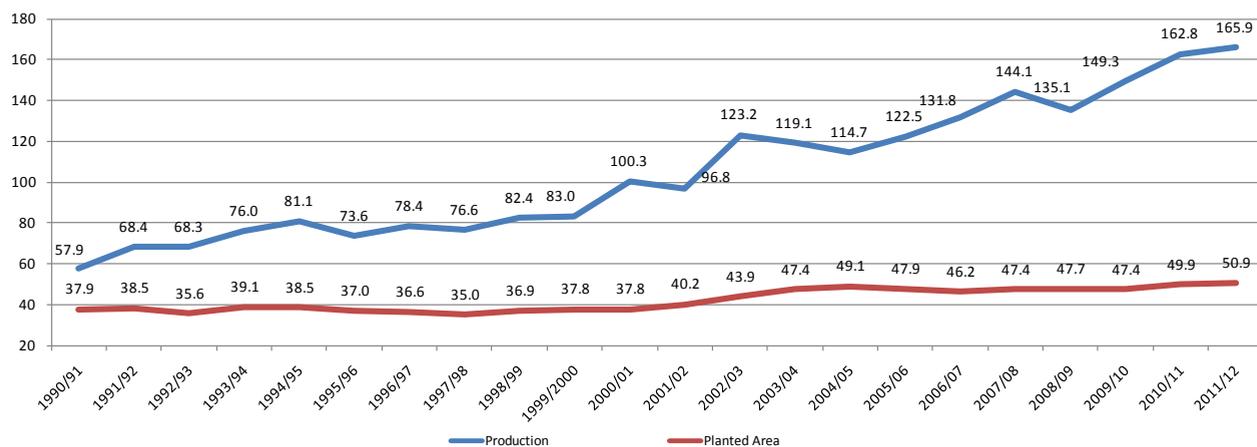


Figure 7. Evolution of domestic grain¹⁰ production (in millions of tons) and of the respective planted area (in millions of hectares)¹¹. Source: Companhia Nacional de Abastecimento (CONAB).

EVALUATION OF THE PVP ACT

After establishment of the LPC in Brazil, an expressive advance was observed regarding security of investments in agricultural research. The rise of private breeding programs directed to generation of new varieties, in addition to hybrids, and the increase in allocation of investments directed to national needs within an economic context favorable to Brazil, have greatly contributed to the rapid adaptation and spread of technologies that have leveraged agribusiness and raised the income of those working in agriculture. Nevertheless, some questions related to the scope of LPC application and to the limits of the property rights conferred to the holders of breeders' rights are subjects of constant questioning.

The first provision placed in check refers to the extent of protection given to ornamental flowers and plants. In a formalized manifestation to the Ministry of Agriculture in 1999, the Brazilian ornamental plant production sector indicated the lack of consistency between Brazilian legislation and the Convention of 1978 of UPOV, which for ornamental species already expanded the breeders' rights to harvested products, foreseeing differentiated treatment from the other agricultural species. Such mechanism would stimulate the entry of varieties recently released abroad into the country, allowing Brazil to export production directly to the United States and Europe, the main consumer markets, competing on an equal basis with Ecuador and Colombia, notoriously large flower exporters.

Some years later, seed-producing segments of field/major crop species – like soybeans, wheat, rice, cotton – joined the ornamental plant segment in demanding review

of the provisions related to farm saved seed and questioning (in addition to the extension of the breeders' rights to the harvested products – which would increase the security of the licensing contracts that govern their activity) the inapplicability of the sanctions provided by the law.

The holders of breeders' rights, for their part, through mediation of the Brazilian Plant Breeders Association – BRASPOV, their representative entity, question the short protection period and the difficulty of undertaking inspection of unauthorized use of protected varieties,

In 2007 and 2008, two legislative bills (PL) were submitted to National Congress of Brazil proposing changes to the LPC. PL 2325/2007 by Representative Rose de Freitas and PL 3100/2008 by Representative Moacir Micheletto, later incorporated to the first one as dealing with the same matter. The Ministry of Agriculture, as well, is drafting a bill for alteration of the LPC, including some of the points presented by the legislative body, as well as other administrative and technical aspects that would speed up and reduce costs for plant breeders and for Brazilian Government on granting protection. The main goals of the propositions will be discussed below.

Farmer Saved Seed

Farmer saved seed is undoubtedly the most controversial point imposed on the plant breeders' rights. The LPC, article 10 and subsections, does not define farm saved seed. The term originated from the traditional practice in agriculture which ensures permanent access to the seed for planting in future crop seasons, guaranteeing, firstly, the food and economic security of the producers. There was no intention of the

¹⁰ In these values are calculated data on production of: cotton, peanuts, rice, oats, canola, rye, barley, common beans (all three crop seasons), sunflowers, castor oil plant, corn (both crop seasons), soybeans, sorghum, wheat and triticale.

¹¹ Data on the 2010/2011 crop season corresponds to a forecast and the 2011/2012 crop season corresponds to an estimate, made by CONAB.

legislator in establishing a limit for the scale of production or income level of the farmer who would be exempt from authorization of the plant breeder in the case of use of the protected variety. At a later date, Law 10.711 (BRASIL 2003), August 5, 2003, which legislates in relation to the National System of Seeds and Seedlings, established a definition of farm saved seed in article 2: “the quantity of material for plant reproduction saved by the farmer in each crop season for sowing or planting exclusively in the following crop season on his property or on another to which he holds title, observing, for the calculation of quantity, the parameters registered for the variety in the National List (RNC)”. Article 115 of Decree 5.153 (BRASIL 2004), July 23, 2004, which regulates Law 10.711/2003, establishes the rules for farm saved seed. It highlights that family farmers, settlers of land reform programs and indigenous populations that multiply seeds or seedlings for distribution, exchange or trade amongst themselves are exempt from these rules.

Nevertheless, there is still divergent understanding among the sectors involved because plant research and breeding companies argue that the insertion of the provision from the Law of Seeds and Seedlings that defines farm saved seed has not been sufficient to inhibit indiscriminate use, placing investment in research and development in new plant breeding technologies at risk in Brazil. Breeders, in a general way, want a limitation of farm saved seed as a manner of strengthening public and private institutions working in the seed sector, thus ensuring technological innovation. For holders of breeders’ rights of vegetatively propagated ornamental plants, this practice has discouraged the continuity of efforts in research and development of new varieties (Sá 2010). On the other hand, representatives of farmers argue in favor of maintaining the legal provisions in effect in defense of the right to use their own seeds, justifying that farm saved seed prohibition would increase dependency in relation to seed producing companies.

Upon justifying the legislative bill under his sponsorship which restricts farm saved seed, Representative Micheletto considered: “The merit of retribution of the use of industrial inputs by means of royalties is not questioned. On the contrary, it is obligatory and imperceptible. Nevertheless, the same does not occur when payment is in regard to repeated use of a variety, the only input exempt from the charging of royalties, in the case of having its propagative material reused for more than one generation. On the way around, this actually involves that which is most vulnerable to copying, given the ease of multiplication.” At this time, it is the responsibility of the National Congress to analyze the proposals, considering security and the extension of private rights and sparing the most sensitive social groups, thus taking care to engender an equitable balance of interests and promote the public interest.

Extension of the Right of Protection

According to the LPC, the PVP is applicable to the propagation material and ensures the right of commercial reproduction to the holder of breeders’ rights, and, during the period under protection, production for trade purposes, offering for sale, or commercialization of the variety is prohibited to third parties without the title holder’s authorization. Increasing the range of this right by extension to the harvested material, being the result of unauthorized use of propagation material of the protected variety, is important to increase the guarantee of the title holders’ right to protection and facilitate inspection of unauthorized use. Nevertheless, sectors against changes to the LPC contend that there may be difficulties to operationalize it, keeping in mind the difficulty of identifying and proving violation of rights after harvest (due the complexity of characterizing the object which is subject to violation, above all when dealing with agricultural commodities), even though detection and proof of misuse of the variety would be under the responsibility of the holder of breeders’ rights, which must seek means so that the evidence is unequivocal.

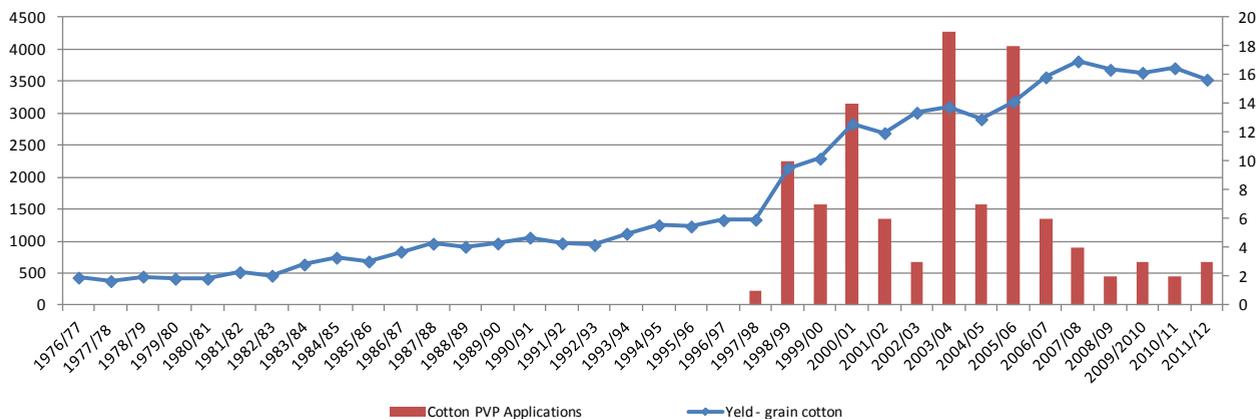


Figure 8. Evolution of yield of grain cotton (kg ha⁻¹) and number of cotton PVP applications. Source: SNPC and CONAB.

Protection Period

The duration of the protection is a relevant aspect to encourage agents to make investments in research and development (Nogueira 2006). The time needed for obtaining a variety varies considerably among species and reflects the duration of the protection, which may be 15 years or 18 years. Tree species and grapevines have a longer protection period than other species because, traditionally, the process of obtaining a new variety of these species has been longer and therefore more taxing when compared to other species.

Reviewing the protection period of varieties is a demand of plant breeders. The sector contends that extension of the validity of protection is necessary to ensure an adequate period for return on investment, thus justifying the long time and capital necessary for generation and development of a variety. On average, the time needed for obtaining a cultivar ranges from 6 to 12 years for annual species (soybeans, maize, wheat, and rice) and from 20 to 30 years for perennial species like fruit trees, grapevines and forest varieties. Add to this period the necessary time for carrying out different tests for validation of the varieties, such as verification of adaptability in different regions, the Value for Cultivation and Use testing – VCU, and Distinctness, Uniformity and Stability – DUS.

Classification of Crimes and Penalties

The enforcement of the PVP Law is another concern for agents involved in the seed production system. Article 37

and respective paragraphs of the LPC legislate regarding sanctions on violation of the established rules. Nevertheless, only one article of the Law mentions administrative, civil and penal sanctions, limiting understanding and applicability of the provisions. LPC doesn't establish criminal sanctions or penalties for those who violate breeders' rights. In order to strength those rights, the new LPC proposal prepared by the SNPC splits this article so as to better define the administrative, civil and criminal sanctions and, for this last item, detail the criminal offenses and establish the penalties to be applied.

Modification of the LPC

A possible revision of the LPC could rectify the divergent themes indicated above through refinement of the control systems and improvement of technical and administrative provisions, strengthening the Brazilian PVP system and maintaining high levels of incentive for technological innovation so as to bring benefits to all the sectors involved.

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Evolução, importância e avaliação da proteção de cultivares no Brasil: o trabalho do SNPC

Resumo – A Lei 9.456/97 instituiu a Lei de Proteção de Cultivares (LPC) no Brasil, trazendo uma gama de aspectos positivos para a agricultura nacional, como: o aumento de número de novas cultivares - nacionais e estrangeiras; o incentivo às atividades de melhoria no país; e benefícios sócio-econômicos para o setor agrícola. Em 15 anos de atuação no âmbito do Ministério da Agricultura, Pecuária e Abastecimento, o Serviço Nacional de Proteção de Cultivares (SNPC) consolidou sua atuação, não somente por sua credibilidade na análise e concessão dos pedidos de proteção, mas também pela postura proativa em atividades técnicas e legais nas esferas nacional e internacional, além de agregar, participativamente, o meio científico nas ações que desenvolve. No entanto, apesar dos avanços destacados, muito se discute sobre as limitações ao efetivo exercício dos direitos dos obtentores causadas por alguns dispositivos legais da LPC que careceriam de aperfeiçoamento.

Palavras-chave: Propriedade intelectual, proteção de cultivares, sementes.

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