

The end of farm-saved seed?

***Industry's wish list for the
next revision of UPOV***



The WIPO building in Geneva, where UPOV is housed

The big players in the world seed industry are grumbling about loopholes in the plant variety protection system, which was the alternative to patenting that they set up in the 1960s. The Europeans want to get rid of farmers' limited entitlement to save seed. The Americans want to restrict the exemption by which breeders have the free use of each other's commercial varieties for research purposes. In both cases, the point is to reduce competition and boost profits. In the short term, the victims will be farmers, who will probably end up paying the seed giants an additional US\$7 billion each year. But in the long run, we will all lose from the growing corporate stranglehold over our food systems. This briefing traces the recent discussions within the seed industry and explores what will happen if a plant variety right becomes virtually indistinguishable from a patent.

Introduction

No more farm-saved seed and no more free access to protected varieties for breeding. In other words, remove the two main differences between plant variety protection and industrial patents. That's the beginning of the seed industry's wish list for a new revision of the UPOV convention.¹

When plant variety protection (PVP) was first standardised by the UPOV convention in the 1960s, it was a mostly copyright-like form of intellectual property. The variety owner had a monopoly on the commercial propagation and marketing of the variety, but little control over other uses. Farmers were free to multiply seed for their own use for as long as they wished. Other breeders could freely use protected varieties to develop their own material.

This changed dramatically with the 1991 revision of UPOV. Based on successful lobbying from the global seed industry, the revision turned PVP into something very close to a patent. Farm-saved seed was allowed only as an optional exception, restrictions were put on further breeding, and monopoly rights were extended all the way to harvest products. This is the version of UPOV which is now being rapidly rolled out across developing countries as a result of the WTO TRIPS² agreement.

The industry, however, is still not content. Over the past few years, it has started gearing up its lobby machine for a final attack on the remaining "loopholes" in the PVP system. If it succeeds, it will certainly spell the end of farm-saved seed, probably the end of free access to PVP-protected material for plant breeding, and a general tightening of the ropes with longer terms, stricter enforcement and wider scope of monopoly rights.

This GRAIN briefing traces the recent internal discussions of the seed industry and tries to visualise what will happen if a plant variety right becomes a patent. Will UPOV become superfluous and slowly disappear? Not necessarily. The seed industry is promiscuous in its use of intellectual property rights (IPR). It likes to have many options. Judging from developments in the USA, the future lies not in opting for one form of IPR over another, but in combining two, three or more layers of legal monopoly on top of each other.

The History

When the global seed industry starts again to sing its familiar lobby tune about strengthening IPRs, it is useful to know some history. No matter how often lobbyists repeat that strong IPRs are necessary as an incentive for plant breeding, the fact is that for most of its existence, the seed industry managed to develop and thrive without any IPRs at all. IPRs on seeds and other propagating material are a very recent phenomenon. They played no part in the establishment and rapid expansion of the seed industry during the first half of the 20th century.

With a few insignificant national exceptions, no forms of IPRs were available for plant breeders until just over 30 years ago. For all practical purposes, the original version of the UPOV treaty was the beginning of plant IPRs. And although adopted in 1961, it did not come into practical use before the 1970s. By that time, commercial seed had all but eliminated traditional farmer-bred varieties in developed countries, and was making inroads into the developing world.

So it was not until the seed industry had already become dominant that it was able to secure IPR protection, first with UPOV PVP, and soon after with industrial patents as well. This is not a coincidence. As a large and well consolidated industry it now had considerable lobbying power over governments, much more than it had when it was newly established in the first decades of the 20th century.

Had they been more powerful, plant breeders would have secured monopoly rights at a much earlier stage. There is evidence of lobbying at least from the 1920s, and while unsuccessful regarding specific IPRs on the seed itself, the industry was able

1 UPOV means the International Union for the Protection of New Varieties of Plants; the acronym is from the French name. Website at www.upov.int

2 TRIPS, the Agreement on Trade-Related Aspects of Intellectual Property Rights, was one of the package of agreements which entered into force when the World Trade Organisation (WTO) was established in 1994. Website at www.wto.org



to use several other mechanisms to reduce competition from traditional farmers' seeds.³

- Seed laws were the most important factor in many countries. By making seed certification mandatory and trade in uncertified seeds illegal, governments indirectly supported commercial seeds against traditional seed-exchange systems.
- Trademarks could be used to protect the variety name. Even if the seed as such could be freely multiplied and traded, only the breeder had the right to use the trademarked name.
- Farm credit policies and support schemes have long been deployed to oblige farmers to use certified seeds. This means that as a farmer you may be locked out from low-interest loans, crop insurance or direct support payments unless you use a government-approved commercial variety.
- Patents on plants were not explicitly excluded by the Paris Convention, and were used to some extent by a handful of European countries, particularly Germany for a period around 1930.
- Hybrids became a means to force farmers to buy new seed every year. Hybrid seed cannot be reproduced on-farm, because it requires two different parent lines, which are kept secret and closely guarded by the seed company. Between 1930 and 1960, the whole of the US main crop – maize – was gradually converted to hybrid seed. While officially this was done to secure the heterosis effect (yield increase), in reality the main reason was the monopoly effect.⁴

UPOV 1961

During the 1930s and 1940s, a few countries experimented with specific IPR systems for plants. In the US, the Plant Patent Act (PPA) was passed in 1930.⁵ Still in force today, it allows for monopoly rights on the multiplication of asexually propagated plants (those multiplied by tubers, cuttings, grafts or other vegetative material, not by seed). The system was mostly geared to breeders of ornamental plants, has not been much used and was never copied in any other part of the world. In both Germany and the Netherlands, however, national PVP systems were set up which became forerunners of UPOV.

But when the serious lobbying for an international plant IPR system started after the Second World War, the seed industry was not asking for specific PVP systems, but for ordinary industrial patents on plants. The initiative came primarily from the European breeders, who were already developing a sizeable trade across their borders, and saw the need for international regulation. The newly formed international breeders' association, ASSINSEL,⁶ became the main voice of the industry, and it adopted the pre-war German patent practice as its model.

The idea of industrial patents on plants met with double resistance, however. Several European governments thought that it threatened the farm economy by giving industry too much power over the seed supply. A West German minister of agriculture is quoted as fearing that the rural population would be "reduced to begging".⁷ Patent experts, represented by AIPPI,⁸ saw another threat: to the credibility of patents. Plants are living and evolving organisms and therefore cannot be exhaustively described in the way required by a patent – well enough to allow someone else to "repeat the invention" exactly. Thus patents on plants would require far-reaching exemptions from normal patent criteria. ASSINSEL had to settle for a *sui generis*⁹ IPR system, and jointly with the French government it initiated the negotiating process that was to result in the UPOV Convention of 1961.

This first version of UPOV PVP was more like a copyright than a patent. The scope of the monopoly was limited, but so were the criteria for protection.

- The owner had the right to control commercial propagation and marketing, but no other uses. Farmers were free to save seed for their own use for as long as

3 For this and in general for a more detailed account of the lobbying and political games leading up to the UPOV convention 1961, see Robin Pistorius and Jeroen van Wijk, *The Exploitation of Plant Genetic Information*, University of Amsterdam, 1999, especially pp. 44–51 and 77–85.

4 It has never been proved that hybrids have inherently higher yield. Many independent scholars question the whole idea, and seed industry sources sometimes admit that the "built-in plant variety protection" is the real attraction. See GRAIN, "Hybrid rice in China – A great yield forward?", *Seedling*, January 2007. Available at www.grain.org/seedling_files/seed-07-01-2-en.pdf

5 For more on the PPA and in general for the history of plant IPRs in the US, see Cary Fowler, *Unnatural Selection. Technology, Politics, Law and the Rationalisation of Plant Evolution*, Uppsala University, 1993.

6 ASSINSEL is the International Association of Plant Breeders (acronym from the French name). The organisation merged in 2002 with the International Seed Trade Federation (FIS) to create what is now called the International Seed Federation, ISF. Website at www.worldseed.org

7 Stephen A. Bent, "History and Portents for Intellectual Property Rights in Agricultural Innovation", *Patent Protection of Plant-Related Innovations: Facts and Issues*, ISF Seminar, Copenhagen, 1–2 June 2006. A CD with the seminar papers can be ordered from the International Seed Federation secretariat at isf@worldseed.org

8 AIPPI, the International Association for the Protection of Intellectual Property (acronym from the French name), www.aippi.org

9 An IPR system is called *sui generis* (Latin for "of its own kind") when it is designed for a specific type of product, rather than general in scope like patents or copyright.



they wished, and use the harvest without restriction.

- There were no rights over the genetic content of the variety. Other breeders could freely use a protected variety to develop their own material.
- There was no novelty requirement. As long as the variety was “distinct, uniform and stable” it could be protected.
- There was no requirement to prove invention. A pure discovery could also be protected.

UPOV 1991

Ironically, UPOV PVP had just barely come into practical use before it faced competition from the solution that the seed industry had wanted in the first place – patents on plants. In 1980, the US Supreme Court ruled that there was nothing to stop patents on any kind of living organisms. Europe and other developed countries rapidly followed suit. Why this sudden change of mind? The usual explanation is that genetic engineering and other biotechnologies had by then made it possible to meet the patent criteria with living organisms. But a gene transfer does not give much more predictable or repeatable results than a sexual crossing, and exhaustive description is still impossible. The description requirement is routinely replaced by the deposition of a sample of the organism in a gene bank. In reality, it was probably the much greater lobbying power of the industries behind genetic engineering – the same transnationals that dominate pharmaceuticals and chemicals – that made the difference. Not only were they many times larger than the conventional seed companies, but genetic engineering was also perceived by governments as a crucial technology for future international competitiveness.

The rapid entry into plant breeding of large corporations armed with both genetic engineering and patents caused near-panic among conventional seed companies. One of their coping strategies was to demand a radical strengthening of UPOV PVP, to make it more comparable and competitive with patents. The original 1961 Convention had been left substantially unchanged through two minor revisions in 1972 and 1978. With UPOV 1991, the conventional breeders got a dramatically expanded monopoly right which goes far beyond seed multiplication and in several respects is very close to a patent.¹⁰

- Farm-saved seed is no longer automatically allowed. Only as an optional exception can a government legalise seed saving for the farmer’s own use – and even then the seed company has the right to a royalty payment.
- The monopoly also extends to the harvest, and optionally even to products made from the harvest. If a royalty has not been paid on the seed, the variety owner can demand payment from the final consumer of the harvest.
- Other breeders are still allowed to use protected varieties for breeding, but if a new variety is “essentially derived” from an existing one, it does not qualify for a PVP of its own. This rule was introduced specifically to block genetic engineering companies from getting new PVP protection on varieties just because they added a single gene.
- There is now a novelty requirement.
- Double protection (PVP plus patents) is now allowed.
- The minimum term of protection is increased to 20–25 years (previously 15–18).
- All plant species must be covered (previously only a minimum of any 24 species).

Another major development also started in the 1980s – the negotiation of the WTO TRIPS agreement, which would become the vehicle for expanding plant IPRs into the developing world. TRIPS made it mandatory for governments to

¹⁰ The different versions of the UPOV convention can be found under Publications at www.upov.int



Box 1 Farm-saved seed – a US\$7-billion booty

How much of the world's crop area is sown to farm-saved seed (FSS)? For most countries there are no official statistics, but rough estimates can often be made by comparing the sales of certified seed of a crop with the total area under cultivation with that crop. Figures compiled by GRAIN indicate that most developing countries still mainly depend on FSS – in particular regions with a large peasant farming sector, such as South Asia and sub-Saharan Africa, where typically 80–90% of planting materials are produced on-farm.

What is less well-known is that many rich and middle-income countries also still use considerable amounts of FSS. The International Seed Federation (ISF) in 2005 circulated a questionnaire to its seed company members, which yielded estimates from 18 mostly developed countries.¹ Typical figures were in the 20–40% range, but for some crops and countries they were much higher. Several of the major cereal producing countries – Argentina, Australia and Canada – reported FSS figures from 65% all the way up to 95%. Another notable country was Poland – a recent EU member and the largest agricultural power in Europe after France – where FSS was reported at around 90% for all major crops except oilseed rape.

So, although figures are uncertain, there is no doubt that FSS represents huge value – or, from the the seed industry viewpoint, a multi-billion-dollar booty. On the basis of its own estimates, the ISF Secretary-General claimed in 2005 that for just the 18 countries surveyed, FSS represented an “average loss” to the seed trade of almost US\$7 billion annually (calculated on the basis of an average seed value of \$73 per hectare and an area under cultivation of 95 million hectares).² Expressed differently (and more correctly), that would be the average extra business which seed companies could monopolise if FSS was made illegal. Multiply that figure a few times – because the actual worldwide area that is each year seeded with FSS is probably more than 1 billion hectares – and you may get a sense of just how far the seed industry is prepared to go to corner that market.

1 The complete results of the ISF survey are not published, but the summary figures for all surveyed countries, as presented to the 2005 ISF Congress, can be found inside the following presentation by a representative of the Canadian Seed Trade Association: Bill Leask, “Intellectual Property in the Seed Industry. Tools Available and Their Effect on Investment”, *Public Institutions and Management of Intellectual Property Rights*, Canadian Agriculture Innovation Research Network, Toronto, 13–14 December 2005. Available at <http://tinyurl.com/26lbqe>

2 Bernard Le Buanec, “Enforcement of Plant Breeders' Rights. Opinion of the International Seed Federation, *Meeting on Enforcement of Plant Breeders' Rights*, UPOV/ENFORCEMENT/05/3, Geneva, 25 October 2005. Not published on the UPOV website, but kindly made available to GRAIN by Mr Le Buanec and accessible at http://www.grain.org/brl_files/ueisf.pdf

provide some kind of IPR protection for plants – by patents or a *sui generis* system or both. Although neither PVP nor UPOV are explicitly mentioned in WTO texts, the TRIPS agreement has caused a large number of developing countries to adopt UPOV-like PVP systems over the past decade, for lack of a better alternative. Most want to avoid patents on plants. They could develop their own national *sui generis* systems from scratch, but that is a very resource-consuming task compared to adopting a ready-made solution off the shelf. Many of these countries have also become UPOV members, usually as a result of bilateral pressure from the USA, EU or other developed countries (see Box 3 on page 10). Before TRIPS, UPOV was a very small organisation with two dozen members, all of them developed countries except South Africa. Since 1994, the membership has more than doubled, and the great majority of the new additions are developing or transition-economy countries, which now make up close to half the membership.¹¹

Next UPOV

With UPOV 1991 thus well on its way to becoming a global standard, rather than only a club for rich countries, the seed industry lobby is beginning to formulate its demands for the next UPOV revision. The contours are still very vague. So far this is only a more or less internal discussion in industry fora, with probably informal lobbying of selected governments. So a formal negotiation is still some time away, and a finished deal can at least not be expected before UPOV's 50th anniversary in 2011. But there is no doubt about the general direction. This will be the final attack on the remaining “spaces” (as seen by farmers and researchers) or “loopholes” (as seen by the industry) in the PVP system, to make it virtually indistinguishable from a patent. If successful, it will certainly spell the end of farm-saved seed, probably the end of free access to PVP-protected material for plant breeding, and a general tightening of the ropes with longer terms, stricter enforcement and wider scope of monopoly rights.

11 Membership figures at www.upov.int under About UPOV



12 Richard L. McConnell, “Developing Genetic Resources for the Future – the Long Look”, *Protection of Intellectual Property and Access to Plant Genetic Resources*, ISF International Seminar, Berlin 27–28 May 2004. A CD with the seminar papers can be ordered from the International Seed Federation secretariat at isf@worldseed.org. McConnell’s Pioneer colleague, Germplasm Security Coordinator Stephen Smith, had already delivered a very similar message at a UPOV meeting the previous year: Stephen Smith, “Dissemination of Biotechnology into Agriculture”, *WIPO–UPOV Symposium on Intellectual Property Rights in Plant Biotechnology*, WIPO–UPOV/SYM/03/3, Geneva, 24 October 2003. Available at <http://tinyurl.com/253bp2>

13 American Seed Trade Association, *Position Statement on Intellectual Property Rights for the Seed Industry*, 15 July 2004. Available at www.amseed.com/newsDetail.asp?id=97

14 See for example Claude Grand, “Does the enforcement system meet the needs of the breeders?”, *Enforcement of Plant Variety Rights in the Community*, Seminar of the Community Plant Variety Office, Brussels, 4–5 October 2005. Available at <http://tinyurl.com/ytn5d9> or Judith Blokland, “Do the legal tools meet the needs of the breeders”, *Regional Seminar on Enforcement of Plant Variety Rights*, Community Plant Variety Office, Warsaw, 11–12 May 2006. Available at <http://tinyurl.com/28bvcg>. Both call for elimination of all rights to save seed on-farm in Europe.

15 For the views of the Intellectual Property Manager of Limagrain, the largest Europe-based seed company, see Pierre Roger, “A Professional European View on Intellectual Property for Plant-Related Innovations”, *Patent Protection of Plant-Related Innovations: Facts and Issues*, ISF Seminar, Copenhagen, 1–2 June 2006. A CD with the seminar papers can be ordered from the International Seed Federation secretariat at isf@worldseed.org

To understand the current discussion, it is important to realise how drastically the industry structure has changed since the 1980s. The discussions which led up to UPOV 1991 were characterised by polarisation. On one side stood the large pharmaceutical and chemicals corporations, mostly US-based, which were newcomers to plant breeding, heavily into genetic engineering and completely focused on patents. On the other side stood the conventional seed industry, strongest in Europe and organised in much smaller companies, which saw itself as defending conventional breeding against the onslaught of both genetic engineering and patents.

Today, polarisation has given way to consolidation. Much of the conventional seed industry has been bought up by the transnationals or has entered into cooperation agreements with them. Typically, nationally or regionally based conventional seed companies are now taking on a role as distribution channels for the large transnational players, who need the market know-how and goodwill that the old names in the business can provide. Likewise, their portfolios of regionally adapted varieties are highly attractive as carriers for the engineered genes developed by the transnationals.

In other words, this time a strengthening of UPOV is a common interest of the whole seed industry, large and small, conventional or not. On the surface, there are still cultural differences between the European tradition, defending the PVP system as a “balanced solution”, and the North American one which regards the choice of IPR system as a purely pragmatic issue and sees no need for “balance”. In practice, however, it is difficult to see anything substantially different in the way European companies use IPRs. They too take out patents whenever they can, and they are sometimes the most eager to remove the “balancing” factors built into the PVP system.

Nevertheless, it is illustrative that the discussion about the next UPOV was kicked off by Pioneer Hi-Bred. Pioneer is the largest conventional seed company in the world, and has dominated the US maize seed market since the 1930s. It is now a subsidiary of the chemicals and genetic engineering giant DuPont – a prime example of the consolidation process. In 2004, Pioneer ex-president Richard McConnell bluntly told an international seed industry audience that it was time to create a “level playing field” and give plant varieties under PVP “parity protection ... with biotech inventions covered by utility patents”. He was also clear about the road to that goal: “industry leadership should identify and implement the steps to achieve that desired state.”¹²

For the US industry, this was not very controversial. The American Seed Trade Association promptly adopted most of the Pioneer proposal as its own.¹³ But many of the Europeans were initially shocked, mainly because McConnell openly questioned what conventional breeders regard as the very core of the UPOV system: free access to protected varieties for further breeding. He specifically proposed that breeders should not be allowed to use any PVP-protected variety in their research programmes until it had been on the market for 10 years. On the other hand, Europeans have been the most eager of all to undermine yet further the other key characteristic of UPOV PVP: the right to use farm-saved seed. Representatives of the European Seed Association have gradually stepped up their attacks on the current rules, and now call for the farm-saved seed exemption to be eliminated altogether.¹⁴ (See Table on page 7.)

After a couple of years of fairly intense discussions, an industry consensus appears to be emerging. There are still differences of detail, especially regarding access for breeding, but in return for getting rid of farm-saved seed, the Europeans are probably willing to go quite far in restricting breeding access.¹⁵ And apart from the two main issues, there is already agreement on a number of other changes to be proposed. What follows here is the picture GRAIN has been able to piece together of what the next UPOV would look like, if and when industry succeeds in achieving its “desired state”.



Table UPOV's gradual encroachment

	UPOV 1961/1978	UPOV 1991	Next UPOV?
Coverage species	Optional, minimum any 24 species	Must cover all plant species	Must cover all plant species
Coverage uses	Propagating material	All plant material Optionally products	All plant material and products
Period of protection	15–18 years	20–25 years	25–30 years
Use for breeding	Always allowed	Always allowed, but no new PVP for “essentially derived varieties”	No use until after 10 years, then only with registration and royalty to owner
Use farm-saved seed	Always allowed	Allowed only as optional exception and only if royalty paid on seed	Never allowed
Application procedure	Separate for each country	Separate for each country	One international application for all countries
Double protection with patents	No	Yes	Yes

- *Farm-saved seed.* Saving seed of protected varieties is likely to be prohibited altogether. Just like a patent, a PVP will give the owner an unlimited right to control all uses of the variety. The current option for governments to allow farm-saved seed as a national exception will disappear. In theory, there will still be an option for farmers to make licensing agreements with variety owners, just as there is under patent law. In practice it is very unlikely that seed companies will give up their acquired right to control all seed growing and thus maximise their profits. (See also Box 1, about the total value of farm-saved seed, on page 5.)

If the industry does not succeed in persuading governments to ban seed saving altogether, the fallback alternative is to make governments responsible for royalty collection and make non-payment a criminal offence. Especially in Europe, seed companies are already pressuring governments to strengthen national legislation for enforcement of licence payments (see Box 2 on page 8).

- *Access for breeding.* The current right to access PVP-protected material for breeding will probably disappear. First, there will be a period of at least 10 years when no breeding use at all is allowed, just as with a patent. Then there will be a limited right to access, comparable to what in patent law is called a compulsory licence. Each access will have to be registered and a licence fee paid to the variety owner. Today, a breeder can simply buy commercial seed of a protected variety for use in a breeding programme without even informing the variety owner. This will no longer be possible.

- *Seed deposit system.* In order to implement the restrictions on access, a seed deposit system will be created where samples are made available by variety owners, just as in the patent system. Only seed which is accessed from a depository according to a formal procedure and with a licence agreement will be legal to use for further breeding.

- *All products covered.* The rights on the plant variety will be extended to cover all products made from the variety, so that a variety owner will be able to collect royalties from the end user – such as the brewing or baking industry – if they have not been paid by the grower. This is currently an option that can be implemented in national PVP legislations.

- *International application system.* An international system will be created for filing a single PVP application valid in all UPOV member states. A similar system already exists for patent applications – the Patent Cooperation Treaty (PCT), administered by the World Intellectual Property Organisation (WIPO).¹⁶

¹⁶ For information about the PCT, see www.wipo.int/pct/en/index.html



Box 2 Enforcing royalty collection on farm-saved seed

While a complete ban on farm-saved seed is the seed industry's long-term goal, the complementary short-term strategy is codenamed "enforcement". In practice, it mostly boils down to royalty collection. UPOV 1991 gives breeders the right to demand a royalty on all farm-saved seed, but does not say how it is to be collected. So by default, it was left to the industry to organise this through contractual agreements.

In a number of European countries, for example the UK, Germany, the Czech Republic and Sweden, private collecting agencies have been set up by seed companies, which collect royalties directly from farmers and/or seed cleaners – usually based on agreements with farmers' organisations.¹ In France, a private but government-sanctioned system of "mandatory voluntary contributions"² has been in place since 2001 on all bread wheat delivered to grain elevators, regardless of what seed was used. This "seed tax" is partly reimbursed to farmers who bought certified seed, while those who used farm-saved seed get nothing back at all. Eighty-five per cent of the money thus collected goes directly to the seed industry, supposedly to fund research. Although hotly contested, this system may soon be extended to all crops and all farmers as France starts implementing UPOV 1991.³ In Australia, there is increasing use of so-called End Point Royalties (EPR). As in France, these are collected by the grain buyers, but unlike in the French system they usually replace normal seed royalties altogether; that is, they cover both certified seed and farm-saved seed under the same rules.⁴

But this is far from enough for the industry. Led by the European Seed Association, it is mounting an increasingly aggressive campaign demanding stronger "enforcement". They complain that even in Europe there are still countries where they have not been able to reach agreements about a collection system. Where collection arrangements are in place, the complaint is instead that these are not effective enough and do not cover all crops. In addition, industry is upset that the legality of the collection systems has been challenged. German farmers have brought several cases to the European Court of Justice, which has ruled that a private collecting agency does not have the right to demand information from farmers or seed processors unless they have evidence that protected varieties are actually being saved on the farm.⁵ Likewise, the French system has been challenged in court cases, some of which are still not settled.

What the ESA proposes is essentially that governments should take over the main responsibility for collecting and delivering the royalties and make non-payment a criminal offence. Not only should they give breeders a legal right to demand information from farmers on what seed they are using, they should also send "official inspection agencies to carry out spot checks" and "make use of national certification agencies on the collection of data on the use of FSS".⁶ While at it, they should also change legislation so that the present reduced royalty rate for FSS is raised to the same level as for commercial seed production, and the present European exemption for small farmers is abolished.⁷

While these demands are directed to European governments and the European Commission, the International Seed Federation has requested UPOV to review all national PVP legislations and "propose appropriate legal remedies for the effective enforcement of breeders' rights" – threatening that breeders will otherwise stop using the UPOV system and look for "other legal mechanisms to protect their intellectual property".⁸

Perhaps surprisingly, the US seed industry is much less vocal on this issue, despite the fact that US PVP still allows FSS for all crops, without any royalty payments. The explanation is that they have been able to eliminate FSS in most major US crops by other means: in maize through hybrid seed, which has been completely dominant since the 1960s; and in maize, soybean and cotton (mainly but not only varieties bred by genetic engineering) through patents in combination with grower contracts, so-called "seed wrap contracts". The only major crop without hybrids, patents or contracts is wheat, where private interests are small because public sector varieties have two-thirds of the market.⁹

1 For an introduction to the UK system, see www.fairplay.org.uk/site/index.html. For a presentation of the Czech system, see Vojtech Dukát, "Farm saved seed in the Czech Republic", *Regional Seminar on Enforcement of Plant Variety Rights*, Community Plant Variety Office, Warsaw, 11–12 May 2006. Available at <http://tinyurl.com/26d4ey>

2 Yes, this is actually the term – "cotisation volontaire obligatoire" in French. Orwell would have been proud.

3 France adopted UPOV 1991 in February 2006. However the implementation law, which was approved by the Senate, has been blocked in the National Assembly due to social mobilisations and opposition. The draft implementation law proposes that CVO-type contracts between breeders and "the most representative farmers' organisations" be imposed on all farmers as implementation of the derogation for farm-saved seed. For a brief report on the debate, see Yannick Groult, "Quel statut pour les variétés végétales ?", *La Terre*, Saint Denis, 23 August 2006, available at http://www.laterre.fr/IMG/pdf/LT_HEB_3223_p10-11.pdf. For further updates (in French), see the websites of the Réseau Semences Paysannes (<http://www.semencespaysannes.org>) and the Confédération Paysanne (<http://www.confederationpaysanne.fr>).

4 The Australian seed company PlantTech provides an introduction to EPR at www.planttech.com.au/epr_faqs.php

5 For a summary of the German court cases with links to decisions, see Dietrich Buschmann *et al.*, *Thesis paper: legal cases on reproduction (seed multiplication)*, available at www.gmo-free-regions.org/Downloads/WS_B1_miersch.pdf

6 Grand (2005); details given in footnote 14 on page 6.

7 Orlando de Ponti, *European view of Intellectual Property Rights for the Protection of Products and Processes of Plant Breeding*, National Council of Commercial Plant Breeders, 2004. Available at www.nccpb.org/ppts/deponti-pres.ppt

8 Le Buanec (2005); details given in footnote 2 to Box 1 on page 5.

9 For a brief overview of the US seed market and links to further references see Jorge Fernandez-Cornejo and David Schimmelpfennig, "Have Seed Industry Changes Affected Research Effort?", *Amber Waves*, US Department of Agriculture Economic Research Service, February 2004. Available at www.ers.usda.gov/AmberWaves/February04/Features/HaveSeed.htm



- *Longer terms of protection.* An increase to at least 25–30 years is probable. These are the terms now used for the EU Community PVP. Industry is already complaining that they are too short for certain crops.¹⁷
- *Stricter criteria for essentially derived varieties (EDVs).* Industry is asking in general terms for stronger rights over EDVs and more effective enforcement, and in specific terms for a reversal of the burden of proof, meaning that the alleged EDV breeder would have to prove his innocence, rather than the accuser having to prove guilt.¹⁸

Any future for plant variety protection?

If UPOV PVP is revised to the point of being almost impossible to distinguish from an industrial patent, what is the point of having a separate system at all? Will it simply disappear or merge into the patent system? Some apparently think – or wish – so.

A recent paper by two leading US experts in plant IPRs argues that PVP is already an obsolete system and should be laid to rest, or at least completely redesigned from the bottom up.¹⁹ Much of their argument rests on the idea that plant varieties are no longer a relevant category in the era of genetic engineering, that they will increasingly be reduced to a kind of distribution package for genetically engineered traits, which will be the only thing valuable enough to warrant IPR protection. That is a ridiculous exaggeration of the value of adding a single gene or two to a variety with an evolutionary history of hundreds or thousands of years, and like many other predictions from the genetech industry it is bound to be proved wrong. Plant varieties are a problematic concept for other reasons – in particular because they artificially arrest evolution at an arbitrary point of “stability” – but there are no serious reasons to think they are about to go extinct.

There is one very simple reason why the seed industry will almost certainly want to keep the PVP system, and that is its character of “objective” rather than “prospective” protection²⁰ – in ordinary language, you can always get a PVP on a variety, whether it is an improvement or not. All you need to show is that it is sufficiently new, distinct, uniform and stable. There is no requirement to prove any “inventive step” or future “utility”, as there is with patents. In fact, it is still possible under UPOV 1991 to register pure discoveries for PVP, provided some minimal development has taken place. Most plants registered for PVP would be unlikely to meet the criteria for patent protection. So given that the next UPOV will offer very nearly the same level of monopoly rights as patents, but without the tougher criteria, the industry would have to be crazy to turn it down.

Another compelling reason for the industry to hang on to UPOV is that many developing countries are likely to continue rejecting the patenting of plants, even though bilateral pressure is applied in free trade agreements to force them to adopt it. In those cases, a patent-look-alike PVP might be a monopoly saver for the seed industry.

But above all, it is wrong thinking altogether to assume that there is an either/or situation between PVP and patents. Even though some parts of the seed industry still try to hard-sell UPOV as the “good cop” compared to “bad cop” patents, it should be obvious by now that, just like in the movies, the two cops are actually working as a team. PVP and patents are complementary, not mutually exclusive. In the US – as well as in Japan, Korea, Australia, and a few developing countries – a plant variety can even be protected simultaneously by PVP and patent. In Europe it is not possible to patent a variety, but the ban is easily and routinely circumvented by applying PVP to the variety and a patent to, for example, “a plant of species x with the gene y”.

And it does not stop at double protection either. A very knowledgeable source claims – with great pride – that under US law it is now theoretically possible to have up to seven different forms of legal protection for the same plant variety:

17 See for example Grand (2005) and Blokland (2006); details given in footnote 14 on page 6.

18 See for example *Essential Derivation. Information and Guidance to Breeders*, International Seed Federation, June 2005. Available at <http://tinyurl.com/2fsvs8> American Seed Trade Association (2004), details given in footnote 13 on page 6; and McConnell (2004), details given in footnote 12 on page 6.

19 Mark D. Janis and Stephen Smith, *Obsolescence in Intellectual Property Regimes*, University of Iowa Legal Studies Research Paper 05-48, Iowa City, April 2006. Available at ssrn.com/abstract=897728 (free registration necessary for download).

20 Bent (2006); details given in footnote 7 on page 3.



Box 3 “Whatever we can get away with”

The seed industry is constantly on the lookout for new legal means to strengthen its monopolies, with equally constant support from governments. Here's just a snapshot of some recent items, large and small.

- **Patents on conventional breeding** It is not only genetically engineered plants that are protected by patents. In the US, there are now over 2,600 patents on non-GE plants.¹ In Europe, an opposition case in the European Patent Office is soon expected to decide whether patents will be allowed on plants produced by marker-assisted selection (MAS), where conventional breeding is guided by the use of molecular markers. While two large seed companies, Limagrain and Syngenta, have opposed one such patent, it is widely believed that they expect to lose, thereby creating a clear precedent for themselves to use patents on similar products.²
- **Monopoly on non-protected hybrid parent lines** Parent lines of hybrids are often kept as trade secrets and therefore not available for further breeding. Maize breeding firms especially are now complaining about “self-hunters” who identify self-pollinated plants of each of the two parent lines in maize fields, which can then be used to recreate the hybrid. In a bag, there are always a few individual seeds that are not the product of hybridisation but carry the genetic setup of the parents. They are often easily spotted because of very different growth patterns. “Self-hunting” is a perfectly legal practice as there is no IPR protection on the parent lines and the trade secret has been voluntarily given up by including self-pollinated seed in the bags of hybrid seed. In a recent position paper, the international seed industry organisation nevertheless argues that the hybrid owner should have a “moral” right to stop third-party use of those plants.³
- **“Non-exhausted” rights** In a widely publicised campaign, Monsanto is demanding that European importers of Argentine soya beans pay royalties to them, because no royalties were paid on the seed in Argentina. The legal basis is contested, but Monsanto might have found a way to extend radically the reach of a patent.⁴
- **Bilateral pressure on other UPOV members** During recent negotiations on regulatory issues, the European Commission put pressure on the Japanese government to limit its use of the exemption on farm-saved seed – even though this is entirely a decision for the individual UPOV member state.⁵
- **Seed laws** Legislation which makes the sale of uncertified and/or unregistered seed illegal is one of the oldest legal means of supporting the seed industry against competition from farmer-bred seeds. Such laws are currently being introduced or strengthened in a number of places such as Turkey, Iran, Afghanistan, India, various states in the US, the West Africa region, etc.⁶ Seed laws generally make it illegal to sell any variety that is not distinct, uniform and stable – the same criteria that must be met to get a PVP title.
- **Compensation for delay in GE crop approval** In Europe, the approval process for genetically engineered crops is longer than for conventional seed because of health and environmental risks. This means that the effective life-span of patents becomes shorter. Industry organisations are now demanding a special extension of patent terms, called supplementary patent certificates, as compensation.⁷
- **Cultivation contracts** A genetically engineered starch potato owned by chemical transnational BASF will be grown under a new type of contract where the farmer never becomes the owner of the crop. Planting material of the potato, which BASF hopes will become the first GE crop to be authorised in the EU after the long “moratorium”, will be sold only to starch companies, which in turn will sign cultivation contracts with their growers. Growers will no longer sell the crop, only the cultivation service.⁸
- **UPOV and patents through bilaterals** TRIPS does not require WTO member states to have either patent or UPOV PVP protection for plant varieties, only some kind of “effective *sui generis* system”. But many recent bilateral trade and investment agreements, negotiated outside the WTO between industrialised and developing countries, include provisions that require either patents on plants or UPOV membership or both.⁹ For example, recently concluded free trade agreements (FTAs) between the United States and almost half a dozen Latin American countries require all parties to join UPOV and make “all reasonable efforts” to allow patents on plants.¹⁰ The agreements also state that this policy shift must be never be reversed. Agreements with Singapore, Morocco and Jordan went further and included animal patents as well. The European Union and European Free Trade Association (EFTA) have also been pushing UPOV membership through their bilateral FTAs with southern countries.¹¹ Most developing countries that have joined UPOV in the past few years have done so not because of the WTO but because of these bilateral FTAs.
- **First amendment protection for genetic engineering** In a presentation at an international seed industry seminar, a senior legal counsel of Pioneer Hi-Bred suggested that the first amendment – the clause in the US Constitution which guarantees freedom of expression – could potentially be used if the government tried to limit the right of genetech companies to pursue whatever kind of plant breeding they like. This could perhaps have been written off as pure fantasy if the speaker had not been Edmund Sease, the lawyer who successfully represented Pioneer in the recent Supreme Court case that reconfirmed and strengthened the legality of patents on life.¹²



(Notes to Box 3)

- 1 Sease (2006); details given in footnote 21 at the foot of this page.
- 2 The contested patent, filed by a small British company called Plant Bioscience, is EP 1069819. Available through the search function at patentinfo.european-patent-office.org/ For a concise background on MAS and its pros and cons, see *Marker-Assisted Selection. A Briefing Paper*, Center for Food Safety, Washington, June 2006. Available at www.environmentalobservatory.org/library.cfm?refID=88241
- 3 *The Use of Proprietary Parental Lines of Hybrids*, ISF Position Paper, Copenhagen, May 2006. Available at www.worldseed.org/Position_papers/Prop_parental_lines.htm
- 4 For the legal argument, directly from the Monsanto operative, see Michael J. Roth, "Infringement and Enforcement of Patents: A Primer", *ISF Seminar Patent Protection of Plant-Related Innovations: Facts and Issues*, Copenhagen, 1–2 June 2006. A CD with the seminar papers can be ordered from the International Seed Federation secretariat at isf@worldseed.org
- 5 See European Commission, EU Proposals for Regulatory Reform in Japan, 1 November 2006, p. 56. Available at www.mofa.go.jp/region/europe/eu/overview/dereg0612-4.pdf
- 6 See GRAIN's special issue of *Seedling* focused on current changes in seed laws around the world, July 2005: www.grain.org/seedling/?type=45. This issue was produced in English, French and Spanish. Hard copies are available on request from GRAIN.
- 7 See *2006 Report from the Competitiveness in Biotechnology Advisory Group (CBAG)*, European Commission, Brussels, October 2006, p. 37. This method of patent term extension has previously been used in the pharmaceutical field. The actual proposal has not been made available by either Croplife or EuropaBio.
- 8 BASF Plant Science Holding GmbH, *Placing on the Market of the Amylopectin Potato Clone EH92-527-1*. Market Introduction Plan, September 2003. This unpublished document clearly states: "Commercialisation of the seed potatoes on the open market is not intended. BASF Plant Science will sell certified seed potatoes as final product to contracted starch producing companies. (...) From this point on the starch producing company will be owner of all potato material and does not sell it any further. The farmers that cultivate the starch potatoes from these seed potatoes will be under contract for the starch producing company."
- 9 See GRAIN, *Bilateral agreements imposing TRIPS-plus intellectual property rights on biodiversity in developing countries*, September 2005. Available at www.grain.org/rights/?id=68 For further updates, see www.bilaterals.org
- 10 This is under the US–Central America FTA (CAFTA, concluded 2004 with Costa Rica, El Salvador, Nicaragua, Honduras, Guatemala and the Dominican Republic), the US–Peru FTA (concluded 2005), the US–Colombia FTA (concluded 2006) and the US–Panama FTA (concluded 2006).
- 11 The European Free Trade Association (EFTA) is composed of Norway, Switzerland, Iceland and Liechtenstein.
- 12 Put forward by Sease in a panel discussion at the ISF seminar on Patent Protection of Plant-Related Innovations, Copenhagen, 1–2 June 2006.

under federal law a PVP, a utility patent, a plant patent under PPA (if it's an asexually reproduced plant), plus a design patent; and, under various state laws, protection for contractual monopoly claims (seed wrap contracts), trade secret protection, and protection against unfair competition.²¹ While this may not yet be true in many other countries, the trend is no doubt global. It is difficult to discern any principle for the legal strategies of the seed industry other than "whatever we can get away with" – an attitude well-known for decades from the operations of the big pharmaceutical and chemicals corporations. As illustrated by a handful of recent examples (see Box 3 on page 10), the innovativeness is as striking as the ruthlessness. Any sense of "balance" between the rights of breeders and the rights of farmers – or of society at large – is utterly lacking.

Robbing farmers and stifling innovation

What would be the consequences if seed companies succeeded once again in imposing their IPR agenda on UPOV member governments? The immediate effects are obvious. Banning farm-saved seed means an enormous value transfer from farmers to corporations. It would be especially destructive because for the first time a change in PVP rules would have a direct effect on large numbers of farmers in developing countries and poor transition economies. This is about outlawing an important part of a farmer's livelihood and culture, not only in Europe and the USA but also in places like Bolivia, Moldova, Uzbekistan and Vietnam, for no better reason than to increase the profits of Du Pont, Bayer, Syngenta, and Monsanto.

Maybe poorer countries will have some "balancing" influence at UPOV as their membership grows, but we can be sure that the seed industry will do whatever they can to prevent it. In a telling episode during the IPR seminar at the June 2006 congress of the International Seed Federation, one of the very few developing

21 Edmund J. Sease, "Protections Available For Plants Under United States Laws, Both Federal and State", *Patent Protection of Plant-Related Innovations: Facts and Issues*, ISF Seminar, Copenhagen, 1–2 June 2006. A CD with the seminar papers can be ordered from the International Seed Federation secretariat at

isf@worldseed.org


Edmund Sease was the main legal counsel for Pioneer Hi-Bred in the recent Supreme Court case which reconfirmed and considerably strengthened the legal basis for patenting plants and other living organisms in the USA (*JEM Ag Supply vs Pioneer Hi-Bred*). Regarding design patents, he admits that there is as yet no legal precedent showing that they could be used for plants, but notes that as the JEM decision qualified a plant as "an article of manufacture" for the purpose of utility patents, why would it be different for the purpose of design patents?



country delegates, representing the Seed Trade Association of Kenya, took the floor in an open discussion. He did so to argue the importance of farm-saved seed for developing countries, and to demand that ISF acknowledge and support this. He was brusquely called to order by the ISF Secretary-General, who snapped that this was completely out of the question.

The long-term consequences are equally serious but more insidious. The history of the seed industry provides an instructive example of how increasing IPR protection creates not an incentive but a barrier to innovation and development. The big strides in yield and resistance improvement during the 20th century were made before IPR protection was available to plant breeders, and while much of the variety development was done in the public sector. And in any case, these big strides were mainly due to the one-off effect of selecting and combining the best traits from thousands of farmer varieties, locally selected over centuries – it was more a windfall than a product of patient and systematic research.

Since then scientific plant breeding has delivered nothing comparable. We have seen that in many cases individual farmers can match – or beat – the performance of present commercial varieties by simple on-farm selection. The seed industry has every reason to fear competition from farm-saved seed, not as they claim because it threatens innovation, but because it exposes their lack of it. Commercial breeding is increasingly making itself irrelevant to the real-world concerns of farming. Its current focus on unsustainable single-gene traits in the best cases, and outright dangerous genetic experiments in the worst, threatens to leave agriculture very badly prepared for the great challenges of the near future, such as climate change and the need to wean ourselves off our dependence on fossil fuels.

Constantly strengthened IPRs have become, as for so many other stagnant industries, the seed industry's primary defence against competition.²² This process has now gone so far that even very conventional analysts are starting to notice how the consolidation of the seed industry is reducing research and development.²³ Both the attack on farm-saved seed and the proposed near-elimination of free access to varieties for plant breeding exemplify the same trend. Unable to produce value through innovation, the industry is trying instead both to grab the last remaining segment of the seed market from farmers, and to increase its earnings on existing varieties by blocking research access and thereby intentionally obstructing progress in breeding. 

22 For a general background on IPRs as an anti-competitive tool, with examples mainly from the pharmaceutical and entertainment industries, see Peter Drahos and John Braithwaite, *Information Feudalism. Who Owns the Knowledge Economy?*, Earthscan, London, 2002.

23 David E. Schimmelpfennig *et al.*, *The impact of seed industry concentration on innovation: a study of U.S. biotech market leaders*, Economic Research Service, US Department of Agriculture, Washington, 2004. Available at ssrn.com/abstract=365600 (free registration required for download). Schimmelpfennig and colleagues have primarily documented how industry consolidation leads to a decrease in genetech research, which may be a good thing, but nevertheless illustrates the point.

