

# Plant Breeding

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# Variety protection

## 1) Plant variety protection

Important exemptions

Problems and solutions

## 2) Patents

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# Why variety protection ?

1. Seed is both product and a means of production
2. Breeder has no biological exclusivity on the production of seed
3. Return of investments of plant breeding

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# Three systems to protect varieties against counterfeit

1. Simply **prevent** multiplication, e.g. because a variety is sterile or does not produce viable seeds (remember TPS);
2. Guarantee that the **characteristics of a variety get lost upon multiplication** (as is the case with hybrids);
3. Provide a system of **legal protection**.

1) and 2) offer a **biological protection**. Biological protection is not always an option: think about vegetatively propagated crops (as e.g. potatoe, rose, .....). In these cases a legal protection is needed. Plant breeders' right deals with this option.

# UPOV

- UPOV (Union pour la Protection des Obtentions Végétales).

See [http://www.upov.int/fr/about/upov\\_convention.htm](http://www.upov.int/fr/about/upov_convention.htm).

27 April 2012: 70 members (China, USA, EU, Russia, CN, Argentina,.....)

UPOV Conferences	Operative
1961	1968
1972	1977
1978	1981
1991	1998

Variety protecting laws are **national** laws, i.e. they protect varieties on the national territory: a variety protected by the Belgian law, is protected in Belgium, but not abroad.

So seed companies, trading seed abroad, have to look for protection in each country they do business with, which is costly, time consuming and inefficient.

That is why the EU took the initiative to develop a Community Plant Breeders' Right.

It is very much inspired by the 1991 UPOV Act.

See Council Regulation (EC) no 2100/94 of 27 July **1994**.

See also

[http://www.cpvo.eu.int/documents/articles/Elsevier\\_article\\_2005.pdf](http://www.cpvo.eu.int/documents/articles/Elsevier_article_2005.pdf)

(consulted 05.11.2008)

## EU vs USA

In Europe, plant varieties can be protected by plant breeders' right only and cannot be protected by patents.

In the USA three different systems are possible: two are specific for plants, the third simply is the patent right !

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# USA

- a) The **Plant Patent Act (PPA, 1930)** protects **vegetatively propagated plants** (with exception of plants that are propagated by tubers -as potato-) with a **plant patent !**  
The law has been created under pressure of breeders of ornamental crops.
- b) In **1970** the **Plant Variety Protection Act (PVPA)** was voted: it offers protection to varieties of **sexually reproduced plants**. This is not a patent act and it resembles the UPOV-legislation.
- c) **Utility patent**



# Headlines in the Community Plant Variety Protection

Article 13 stipulates that the breeder who owns plant breeders' right for a variety is entitled to the following actions:

1. Production or reproduction (multiplication)
2. Conditioning for the purpose of propagation
3. Selling or other marketing
4. Exporting
5. Importing
6. Stocking for any purposes mentioned in above items

Plant breeders' rights comprises the ***products of the multiplication***.  
What does this mean ?

Example 1.

A *tree-nurseryman* buys 1 single protected rose and multiplies it without permission of the breeder. After a few years of multiplications he sells thousands of rose plants (still without permission of the breeder who is unaware of this activity).

All of this are **illegal** operations. Legally the tree-nurseryman has to declare to the breeder how many roses he propagated vegetatively; the breeder visits the fields, counts the plants and sends the tree-nurseryman an invoice asking for his **royalty** being xxx euro/multiplied plant.

The royalty usually is layed down in a contract which is signed upon the purchase of the initial rose plant.

Suppose a *rose grower X* grows thousands of roses illegally (i.e. the tree-nurseryman from which he bought the plants, has not payed royalties). The grower sells the roses to an auction. If the breeder finds out that X is selling roses (which he can, by checking the supply to the auction), he is authorized to visit him and ask him to prove that he bought legally produced roses. In absence of the proof, the breeder goes to court and claims the royalty covering the number of plants that were used to produce the auctioned roses.

## Example 2.

A fruit grower buys a single apple tree, multiplies it on its own farm, plants a complete orchard with this variety, all without declaration to the breeder. If he starts selling [apples](#), the breeder may claim his rights before the court.

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## Essentially derived varieties

Under PVP everybody may use all varieties in breeding programmes (breeders' exemption).....

The UPOV 1991 Act and the Community Plant Variety Protection offer a solution for “**essentially derived varieties (EDV's)**” provided the initial variety itself was not ‘essentially derived variety’.

An ‘essentially derived variety’ is a variety that has been issued from a protected variety and that is not distinct from the original variety with the exception of one or a few very remarkable traits.

‘Essentially derived varieties’ may be “created” e.g. by mutation. In fruit orchards, “sports” are spotted regularly. Sports may e.g. differ from the original tree in one characteristic, e.g. fruits that are larger, or have a more intense colour,.... Breeders are of the opinion that the grower did not do any intellectual effort to create a new variety: “it was just *discovered in an existing and protected variety*”.

***It is up to holder of the initial right to claim the rights on the essentially derived variety.***

# Breeders' exemption

- ***Allows all plant breeders to use whatever protected variety in breeding programmes without permission of the breeder of the protected variety.*** Remember this is not the case in the Patent Right ! ***So, Plant Breeders' Right does not restrict the use of genetic material for breeding purposes.***
- There is an important restriction: **repeated use** of a protected variety is not allowed. E.g. one can not use repeatedly a protected inbred line to create a new hybrid, e.g. by crossing the protected line with an own inbred line. But the protected line may be used as a crossing parent in order to produce a new series of RIL's.
- Protected varieties can always be used for private, non commercial actions, e.g. for research.

# Agriculture exemption or farmers' privilege

Farmers' privilege is the privilege for farmers to use part of the harvested produce in order to install the next crop: such seeds are called "**farm saved seeds**".

The privilege is a recognition of the historical selection farmers have practised for centuries. Without the efforts and intelligence of our ancestors, crops would not be what they are today. Plant breeding has improved crops substantially during the previous 150 years, but it could use excellent starting material created by farmers.

**In the Community Plant Variety Protection the use of farm saved seeds is prohibited but exemptions are made for a series of crops and for small farms.**

## Farmers' privilege in the EU

**Fodder crops:** chickpea, yellow lupine, lucerne, pea, faba bean, *Trifolium alexandrinum*, *Trifolium resupinatum*, and only in Portugal: *Lolium multiflorum*.

**Cereals:** oat, barley, rice, rye, triticale, bread wheat, durum wheat, spelt, *Phalaris canariensis*

**Potatoe, oil crops and fiber crops:** oil seed rape, rape seed, linseed (not fiber flax !)

In these crops, the production of farm saved seed is permitted, but the breeder is entitled to claim “**half a royalty**”. Again an exemption: small farms are exempted from paying.



# How the “half the royalty” is collected

## German positivism

In 2003 the **German** farmers’ union (DBV=Deutschen Bauernverband) agreed with the union of German breeders (BDP=Bundesverband Deutscher Pflanzenzüchter) to retrieve the royalties on farm saved seed. The farmer has a choice: he may pay either to the breeder or to the BDP. Farmers are supposed to communicate voluntarily the use of farm saved seed. If they can prove that at least 60% of the seed-grain is certified (80% for potatoe) no royalties have to be paid. Acting like this, the **BDP hopes to stimulate the use of certified seed and simultaneously to avoid costly administrative procedures to retrieve their royalties.**

However, although DBV agreed with this system, quite a number of farmers “forget” to declare their information.....

# How the “**half the royalty**” is collected **French creativity**

SICASOV (Société des Obtenteurs) and the farmers' unions made an agreement for ***bread wheat***.

GNIS (Groupement National Interprofessionnel des Semences).

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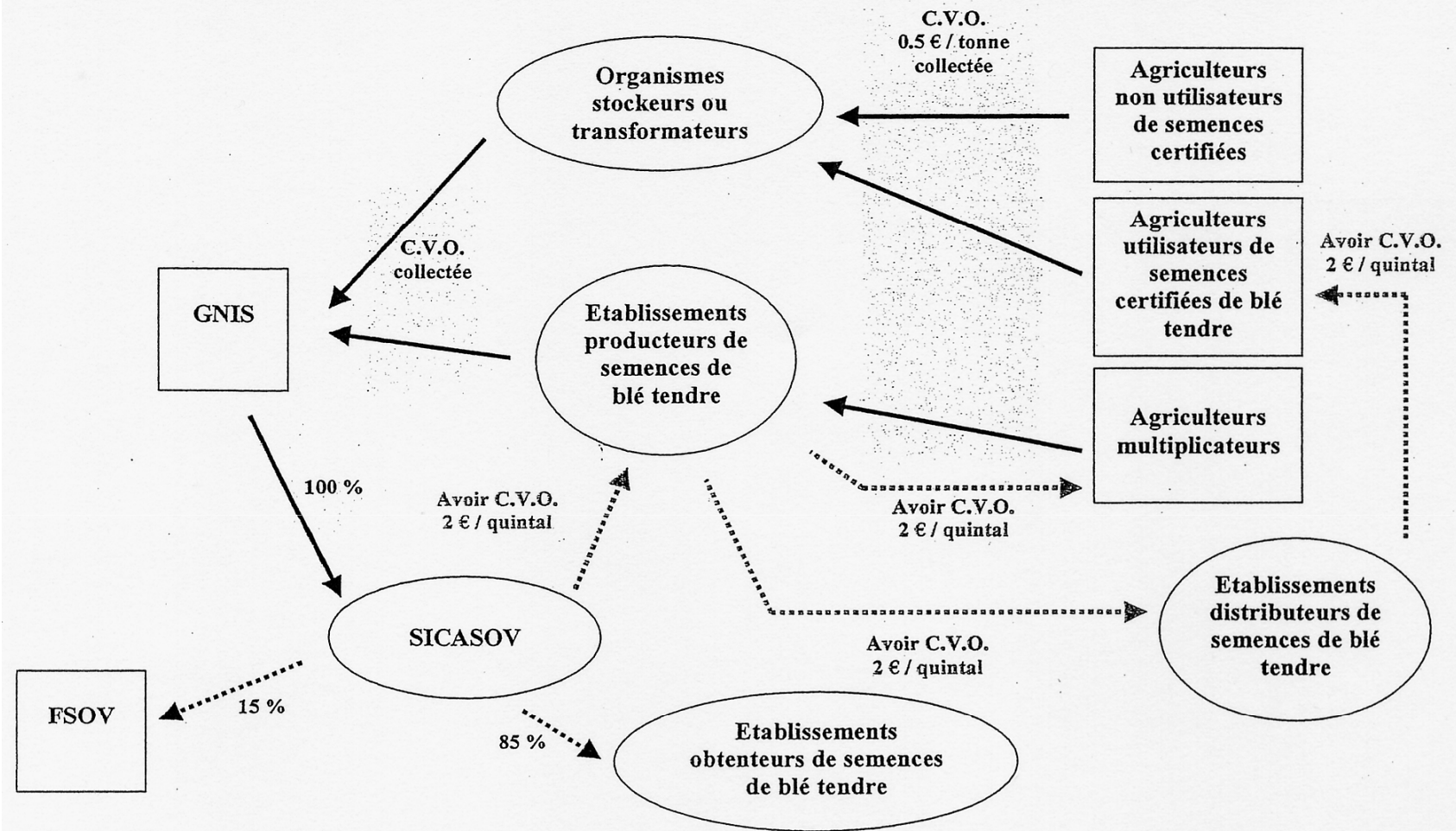


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# Schéma de fonctionnement

# Accord semences de ferme



# Recent developments

Breeders want “Plant variety protection” to become tighter, particularly breeders of vegetatively propagated ornamental crops.

The (beginning of the) end of breeders’ exemption and of farmers’s privilege?

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**DIRECTIVE 98/44/EC OF THE EUROPEAN  
PARLIAMENT AND OF THE COUNCIL  
of 6 July 1998  
on the legal protection of biotechnological inventions**

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## Article 3

1. For the purposes of this Directive, **inventions** which are new, which involve an **inventive step** and which are **susceptible of industrial application** shall be **patentable** even if they concern a product consisting of or containing **biological material or a process by means of which biological material is produced**, processed or used.

2. Biological material which is isolated from its natural environment or produced by means of a technical process may be the subject of an invention even if it previously occurred in nature.

## Article 4

1. The following shall **NOT** be patentable:

(a) plant and animal varieties;

(b) essentially biological processes for the production of plants or animals.

2. Inventions which concern plants or animals shall be patentable if the technical feasibility of the invention is **not confined to a particular plant** or animal variety.

3. Paragraph 1(b) shall be without prejudice to the patentability of inventions which concern a microbiological or other technical process or a product obtained by means of such a process.

## Article 8

The protection conferred by a patent on a biological material possessing specific characteristics as a result of the invention **shall extend to any biological material derived from that biological material through propagation or multiplication** in an identical or divergent form and possessing those same characteristics.

2. The protection conferred by a patent on a process that enables a biological material to be produced possessing specific characteristics as a result of the invention **shall extend to biological material directly obtained through that process and to any other biological material derived from the directly obtained biological material through propagation or multiplication** in an identical or divergent form and possessing those same characteristics.



# The broccoli case

Title: Method for selective increase of the anticarcinogenic glucosinolates in *Brassica* species

Proprietor: Plant Bioscience Ltd

*Glucosinolates are enhanced via MAS*

Patent granted by European Patent Office (is not an EU body), 2002. Appeal: Syngenta, Limagrain: “this is an essentially biological process, is not a biotech invention, no gmo, so it cannot be patented.....”

Enlarged Board of Appeal is highest court within EPO: decision will be final;

**Verdict: patent refused**

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