

Position on the need to extend the duration of Community Plant Variety Rights for Potatoes

ESA is the voice of the European seed industry, representing the interests of those active in research, breeding, production and marketing of seeds of agricultural, horticultural and ornamental plant species. The ESA Potato Section (SPO) represents more specifically the European potato breeders involved in research, plant breeding, production and marketing of potato varieties.

Legal Framework

According to the Basic Regulation (Council Regulation 2100/94) the duration of the Community Plant Variety Right (CPVR) for most species is 25 years. According to Council Regulation 2470/96 the duration period for potatoes is extended with 5 years to 30 years. The main reasons for this extension were

- ✿ Technical difficulties in potato breeding requiring expenditure of research activities for a long period in comparison to the overwhelming majority of other agricultural crops
- ✿ Experience in the market has shown that a new potato variety reveals its commercial value only in the long term in comparison to crops requiring also long-term research activities
- ✿ Equitable refunding of research activities is only possible at a fairly late stage of protection in comparison to other agricultural crops

Potato production in the European Union under pressure

Table 1 - Potato production in the European Union

	2003	2005	2007	2009	2011	2013	decrease
EU	2.470.800	2.214.800	2.109.300	1.984.000	1.862.300	1.646.000	-33%

(Source: Eurostat)

In the past decade potato consumption and production in the European Union has decreased with more than 800.000 hectares from 2.5 million hectares to 1.6 million hectares which is 33% of the acreage. It is estimated that almost 70% of this area is planted with Farm Saved Seed potatoes and therefore only 30 % with certified seed potatoes. The production of certified seed potatoes is carried out on approximately 110.000 hectares in mainly Denmark, Germany, France, the Netherlands, Poland and the UK.

A consequence of the decreased potato consumption and production is that the possibility for a return on investment of private potato breeders is decreasing.

Concentration of private potato breeding programs in Europe

Table 2 - Overview of the existing potato breeding programs in the world

Continent		Nr of countries	Private		Institutes	Total	Total
						(abs)	(%)
Europe (EU28)		28	150	96%	21	171	81%
Europe (ex-USSR)		3	0		4	4	2%
North America		2	2	1%	12	14	6%
South America		7	4	2%	20	24	10%
Africa		1	0		1	1	0%
Oceania		2	1	1%	1	2	1%
Total	(abs)	46	157		92	249	
	(%)		63%		37%		

(Source: ESA)

Most of the existing potato breeding programs in the world are situated in the European Union (83%) and in South America (10%). Of the estimated 249 programs 157 are carried out by commercial breeding companies (63%) and 92 are conducted by Universities of Institutes (37%). From the 157 private breeding companies active in potato breeding 150 are situated in the European Union (96%). The vast majority of these private potato breeding companies fall in the category micro enterprise (Less than 2 million Euro turnover and 10 employees). The concentration of private breeding activities in Europe is due to historical and climatological reasons. The moderate conditions in the North-Western part of Europe are in particular suitable for the production of (seed) potatoes of good quality. In addition the possibilities for protection of new potato varieties by Plant Breeders Rights (both Nationally and on Community level) have played an important role in the establishment and further development of potato plant breeding in this part of the world.

A change to the Basic Regulation is needed to safeguard the leading position of micro sized private potato breeding companies in Europe and to assure the contribution of these companies to the increase of biodiversity.

More than 4500 potato varieties listed in the World Catalogue of Potato Varieties

According to the 2009/2010 edition of the world catalogue of varieties 4572 varieties have been listed until now in the world; of 3571 of these varieties the breeder is known.

Table 3 – Number of known potato varieties in the world.

Continent	Number of potato varieties
Europe	2620
North-America	299
South-America	107
Africa	37
Asia	65
Australia	17
Total	3571

(Source: World Catalogue of Potato Varieties)

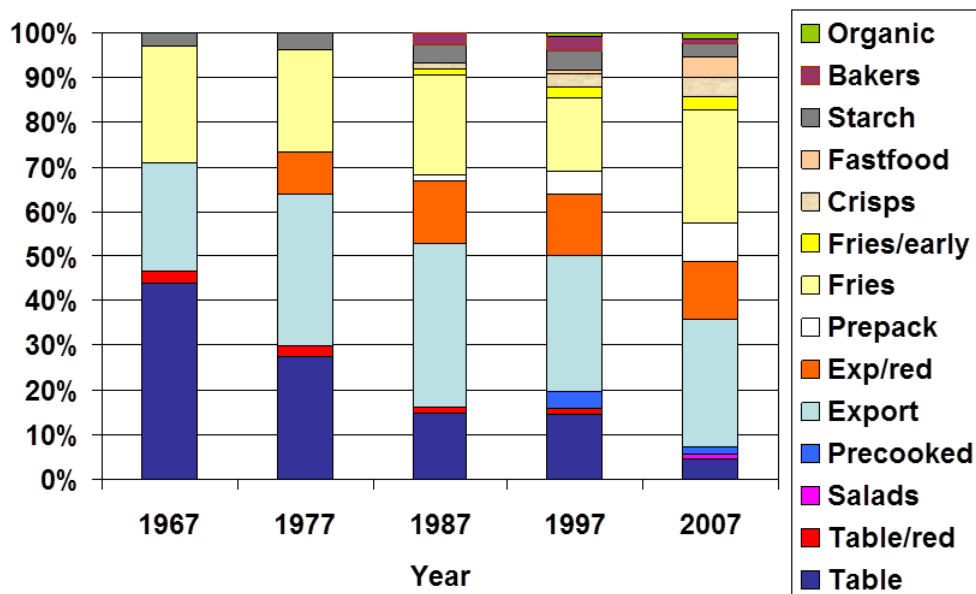
As 95% of the potato breeding companies are located in the EU28 also the vast majority of the known potato varieties have their origin in this part of the world. More than 1100 potato varieties are listed on the European Common Catalogue. Each year some 100 new varieties are added to the Common Catalogue thus increasing biodiversity.

Increased market segmentation

In the past 40 years the potato market has been increasingly segmented. An example of this segmentation is provided in table 4 in relation to the situation in the Netherlands.

Table 4 – Segmentation of the potato market in the Netherlands

Division over market segments of varieties that together make up 80 percent of the Dutch seed potato area



(Source: ESA)

The number of different market segments has increased from 5 in 1967 to 14 in 2007.

For each of these segments special breeding programs have been set up to develop adapted potato varieties meeting the specific technical requirements for these different market segments.

Consequently potato breeding companies have to select a larger number of varieties than in the past with on average smaller volumes per variety. In the Netherlands the number of varieties that make up 80% of the market has increased from 15 in 1967 until 80 in 2007. At the same time the number of varieties with less than 1 hectare of multiplication has increased from less than 50 in 1967 to more than 200 in 2007.

Low multiplication rate and slow commercial acceptance of new varieties (time to market)

Potato is a tetraploid crop (4x=48) which is multiplied vegetatively.

Table 5 – Comparison - multiplication rates

Species	Sowing density (kg/ha)	Average yield (kg/ha)	Multiplication rate
Wheat	150 - 250	6500 - 9000	26 - 60
Maize	15 – 30	3000	100 – 200
Potatoes	1500-5000	20000-30000	4 - 20

(Source: ESA to be elaborated upon)

The multiplication rate of potatoes compared to other crops is relative low which means that the time to build up sufficient quantities of plant material is longer.

In combination with a relative long time of commercial acceptance of varieties in the different market segments the period of significant royalty collection in order to get a return on investment is relative late in the lifecycle of a potato variety compared to that period in other agricultural crops.

Table 6 : Life cycle potato varieties

Life cycle potato varieties	Potato (years)	Wheat (years)
breeding	10	8
registration	2	2
building up seed stock	5	2
development	15	3
full marketing	15 - 30	5 - 10

Increased costs and complexity in plant breeding

Due to the increased market segmentation the complexity and investment in plant breeding in potatoes has tripled in the past 30 years.

Table 7 – Number of traits being selected upon in potato breeding

Reference Year	disease traits	agronomic traits	quality traits	total number of traits
1980	6	9	6	21
1990	13	12	9	34
2000	18	18	12	49
2010	28	22	21	70

(Source: ESA)

As a result of the increased market segmentation and complexity of plant breeding the investment into potato plant breeding by private breeding companies in 30 years' time has increased with more than 370%.

Table 8 – Increased investment in potato plant breeding

Reference Year	Investment
1980	100%
1990	172%
2000	257%
2010	373%

(Source: ESA)

Royalty collection and return on investment

As in many self-pollinated agricultural species breeding programs in potatoes are financed out of royalties obtained from license holders involved the production of basic and certified seed as well as from farmers producing Farm Saved Seed.

At present the collected royalties cover approximately 75% of the investment in potato plant breeding. Potato breeding companies currently finance the deficit out of the margins on the sale of certified seed potatoes.

Need for a further extension of the duration of Community Plant variety Rights

The ESA SPO section is of the opinion that the duration period of Community Plant Variety Rights for potatoes needs to be extended to 35 years in order to maintain and further develop the leading role of private potato breeding companies in Europe.

Arguments to justify such an extension are:

- ✿ The relative low multiplication rate in potato
- ✿ The significant decrease in potato production in Europe in the past decade
- ✿ The increased segmentation of the potato market requiring increased investment for adapted varieties of each of these markets and with that
- ✿ The increased costs and complexity in plant breeding
- ✿ The slow acceptance of new varieties
- ✿ To safeguard the contribution to biodiversity of the micro sized private potato breeding companies in Europe
- ✿ To maintain the leading position of micro sized private potato breeding companies in Europe.