no patents on seeds

Background information:

Opposition against Monsanto patent EP2134870 on the selection of soybeans

In February 2014, the European Patent Office in Munich (EPO) granted a patent to Monsanto on screening and selecting soybean plants adapted to various climate zones (EP2134870). The plants supposedly have higher yields in different environmental conditions. The plants concerned are wild and cultivated species from Asia and Australia. According to the patent, more than 250 plants from "exotic" species were screened for variations in climate adaption potential and variations in the period of time needed until maturity and harvesting. Monsanto has gained a monopoly with this patent on the future usage of hundreds of natural DNA sequence variations in the conventional breeding of soybeans.

1. Some background on the patent

The title of the patent is "Utility of SNP Markers associated with major soybean plant maturity and growth habit genomic regions". SNP are so-called single nucleotide polymorphism, which are known as natural variations of genetic conditions within the plant species. The SNP markers can be used in marker assisted selection for screening for specific genetic conditions. The SNPs described in the patent are related to adaption of plants to various climate zones. These genetic traits are of interest for plant breeding because they can be decisive for the time needed until maturity and harvesting. Amongst others, the SNPs can be used to breed soybeans adapted to conditions of climate change.

The descriptions in the patent clearly reveal that this is a case of intentional biopiracy. There is a suggestion that the genetic base of soybeans grown in the US can be expanded by crossing with species from other origins. The species that were screened were found originally in Asia and Australia, and designated just as "exotic" to hide the way they were accessed:

> "Soybean varieties grown in the United States have a narrow genetic base. (…) The genetic base of cultivated soybean could be widened through the use of exotic species. In addition, exotic species may possess such key traits as disease and stress resistance."

It remains completely unclear whether the plants from species originating from the Asia-Pacific region were accessed by sampling from the centers of origin or by material transfer from national, or international gene banks or obtained from private collections. There is considerable doubt about whether access was legal at all. The patent concerns around 20 species taken from around 250 plants screened for relevant genetic conditions:

> "the selected plant is from the group consisting of members of the genus Glycine, more specifically from the group consisting of Glycine arenaria, Glycine argyrea, Glycine canescens, Glycine clandestine, Glycine curvata, Glycine cyrtoloba, Glycine falcate, Glycine latifolia, Glycine latrobeana, Glycine max, Glycine microphylla, Glycine pescadrensis, Glycine pindanica, Glycine rubiginosa, Glycine soja, Glycine sp., Glycine stenophita, Glycine tabacina, and Glycine tomentella."

Monsanto is claiming a monopoly on the usage of several hundred genetic markers listed in the patent for selection of soybean plants as their invention:

> Claim 1: A method of screening and selecting a soybean plant or soybean seed for maturity group association comprising: (a) assaying genomic nucleic acids of said soybean plant or soybean seed for the presence of a genomic maturity marker genetically linked to a genomic region, wherein said genomic region is associated with a plant maturity group (…)

2. Some legal background

According to the text of the European Patent Convention, EPC, patents on plants and animals are mostly excluded from patentability. Article 53 (b) reads:

> "European patents shall not be granted in respect of:
> (b) plant or animal varieties or essentially biological processes for the production of plants or animals; this provision shall not apply to microbiological processes or the products thereof."

This patent concerns "essentially biological processes for the production of plants". It is not directed at genetic engineering, it does not cover plants and seeds, but processes for breeding and the usage of genetic traits detected in natural diversity.

Currently, the EPO interprets Art 53 (b) in such a way that no patents can be granted on processes for crossing of plants and subsequent selection of plants. However methods for selection could be regarded as being patentable. In a new interpretation of the current provisions, the Administrative Council of the EPO, in 2017 adopted a text which is supposed to strengthen the prohibition under Article 53 (b) but in fact might open up new legal loopholes: While the previous text defined essentially biological processes as processes that consist of "crossing or selection", the new text allows patents on processes for selection and only excludes processes that are a combination of crossing and selection.

As a result, the prohibition can be easily circumvented and companies such as Monsanto can gain broad monopolies on the most basic prerequisite in plant breeding - the usage of natural genetic diversity. Patents like this can be used to control all subsequent steps of the breeding process. In addition, they can have a so-called chilling effect even without any further action being taken by Monsanto: Other breeders might very well avoid any further breeding in this context to ensure that they do not infringe this very broad patent.

The upcoming decision of the EPO will be the first made on the basis of this new interpretation. *No Patents on Seeds!* is demanding that all processes used in conventional breeding such as crossing or selection are excluded under patent law. Companies should not be allowed to hamper or block access to biological diversity needed for plant and animal breeding and agricultural production in Europe as well as in the developing countries.