

How to balance PBR and patents in plant breeding programs

Lantmännen perspective

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Patent vs PBR



Patent

Novel

Inventiveness

Technical solution to a problem

Reproducible

PBR



Novel

Distinctiveness

Uniformity

Stability

Name





Trend in
more IP
rights and
use of
patents



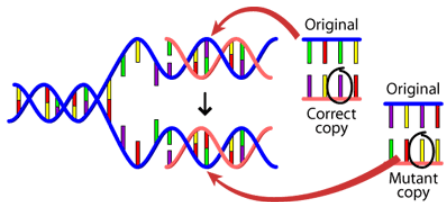


Traits in canola breeding

Trait	Source	Provider	Patent	Agreement	License fee
Low erucic acid	Cultivars Species cross	Public institute	No	No	No
Low glucs	Cultivars Species cross	Public institute	No	No	No
Hybrid restorer	Protoplastfusion Species cross	Public institute	Yes	Yes	Yes
Clearfield®	Mutation	Private company	Yes	Yes	No
Roundup Ready	GMO	Private company	Yes	Yes	No
Omega-3	GMO	Private company	Yes	No	Not available
??	CRISPR/Cas9	??	Yes	??	??



Lantmännens represents the whole value chain



From trait...

... to consumer!



Our Base Is the Value Chain from Field to Fork in Northern Europe

- Lantmännen is an agricultural cooperative and Northern Europe's leading player in agriculture, machinery, bioenergy and food.
- We are owned by 18 000 farmers, have 10 000 employees, operations in some 20 countries, and an annual turnover of Euro 5 billion.



Chairman of the Board:
Per Lindahl



Group President and CEO:
Magnus Kagevik



We breed plants for farmers, industries and consumers – and for the environment

Farmers



Yield
Resistance
Agronomy
Environment

Industry



Quality
Cost of raw material
Processing qualities
Environment

Consumers



Health
Green proteins
Environment
Price



EDV – Essentially Derived Varieties

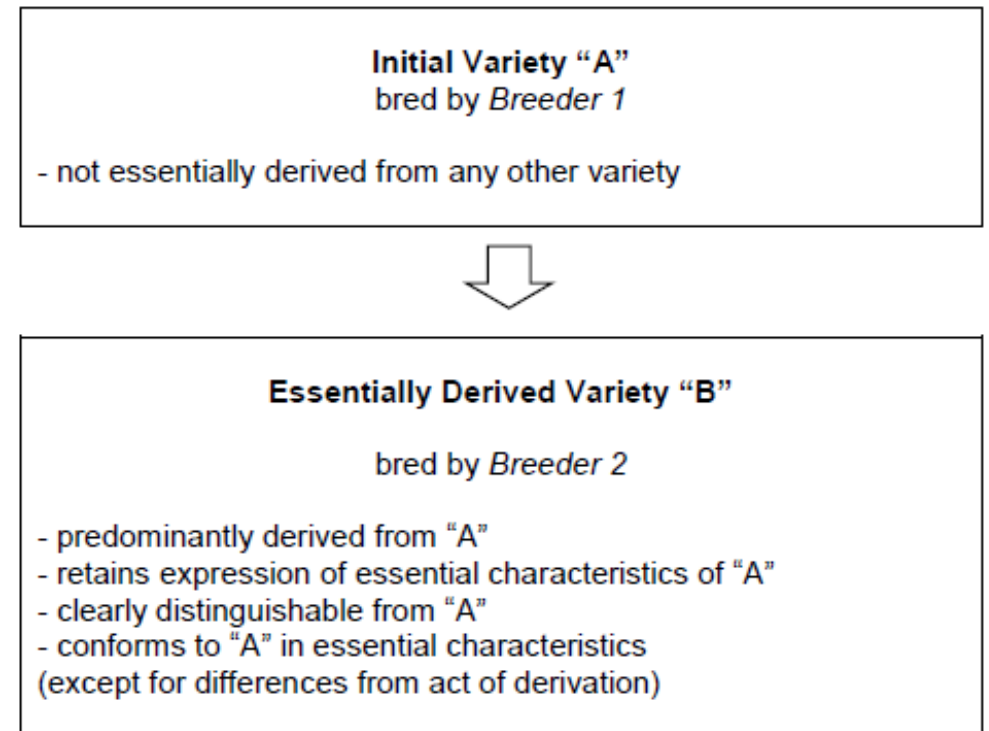
EXPLANATORY NOTES ON ESSENTIALLY DERIVED VARIETIES UNDER THE 1991 ACT OF THE UPOV CONVENTION

Document adopted by the Council
at its thirty-fourth extraordinary session
on April 6, 2017



- Well defined concept in theory, but more difficult in practise
- Few examples in Lantmännen
 - *Armstrong*
- Likely more important in the future

Figure 1: Essentially Derived Variety “B”



Much of Lantmännen's Work on Innovation Is Done in an International Innovation and Research Network



CHALMERS



LUNDS
UNIVERSITET
Lunds Tekniska Högskola

MISTRA
Stiftelsen för miljöstrategisk forskning



TNO innovation
for life



SAHLGRENKA
UNIVERSITETSSJUKHUSET

RI
SE



Linköpings universitet

FORMAS

swedish
nutrition
foundation



AARHUS UNIVERSITY



ttz Bremerhaven

Stiftelsen
Lantbruksforskning

LULEÅ
TEKNISKA
UNIVERSITET



FACULTY OF LIFE SCIENCES
UNIVERSITY OF COPENHAGEN

KAROLINSKA INSTITUTET
Karolinska
Institutet

UPPSALA
UNIVERSITET

Nofima



SLU GROGRUND – Centre for Breeding of Food Crops



SLU Grogrund joins forces from academia and the industry to develop competence to secure access to plant varieties for a sustainable and competitive agricultural and horticultural production throughout Sweden.

- Functional genomics
- Prediction models
- Underutilized crops
- Regional adaptation of crops
- Targeted mutagenesis





How does the use of PBR vs patents affect the trust from farmers and consumers?

Take home message

- UPOV should be the main Intellectual Property system for plants
- Support from farmers, consumers and the society is a prerequisite for long term trust in the UPOV system
- There must be a balance between Breeder's exemption and the return on investment for patents and basic research
- The limited breeding exemption in the EU's unitary patent should be incorporated in the national legislation in all EU countries
- Mutations created through random (contrary to targeted) mutagenesis should not be patentable
- The concept of “essentially biological processes” is very important
- Screening segregating offspring and developing markers is standard knowledge and should not be patentable
- It is difficult for Small and Medium Enterprises to compete with Big Business when they have to navigate in a patent environment



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