

World Café on the Impact of PVP

What is the impact of plant variety protection in biological diversity?

Office of the Union - UPOV

Train-the-Trainer Course on Plant Variety Protection under the UPOV Convention

UPOV Headquarters, Geneva - May 13, 2016

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Summary:

PVP system will **increase biodiversity** by encouraging the:

- breeding of new varieties that become new genetic resources
- introduction of new genes from new sources (e.g. other species) to breed new varieties
- exchange of breeding material to create new varieties

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Summary (cont.)

PVP system will **encourage conserving genetic resources** by:

- offering incentives for breeders (including farmers that start breeding) to conserve gene pool for further breeding
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Summary (cont.)

PVP system is **a part of the cycle of sustainable use of genetic resources**:

Genebank - genetic resources – breeding – new varieties
– genebank

- Both breeders and farmers contribute to conserve biodiversity
- Risk of losing traditional variety is low

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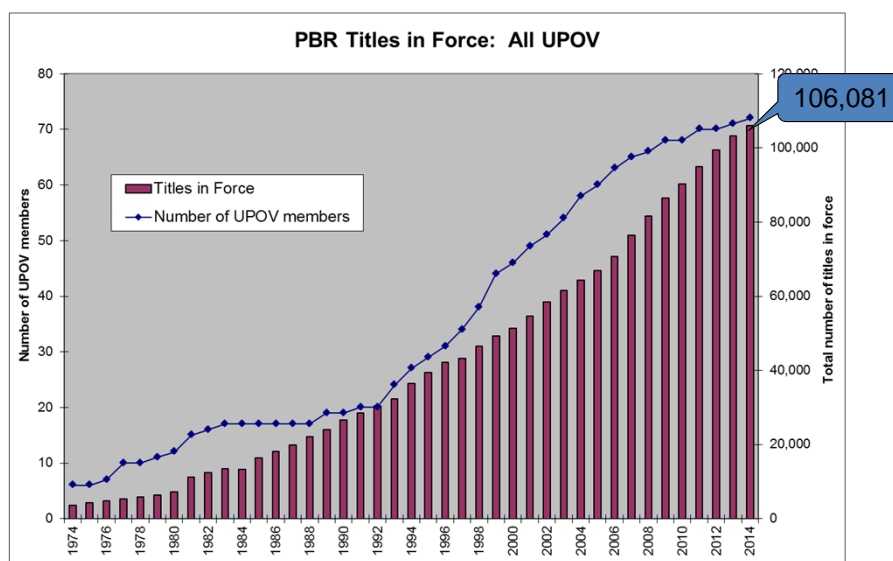
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Plant variety protection statistics



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Breeder's Exemption



Kenya



Box 16

A French bean researcher working at the Moi University developed a successful commercial variety "Line 10" (right) on the basis of the variety "Amy" introduced from the Netherlands. Amy was granted a provisional protection title in Kenya on July 26, 1999. An application for protection for "Line 10" has been filed.

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Improved Varieties

Hot pepper

Development of disease resistant variety



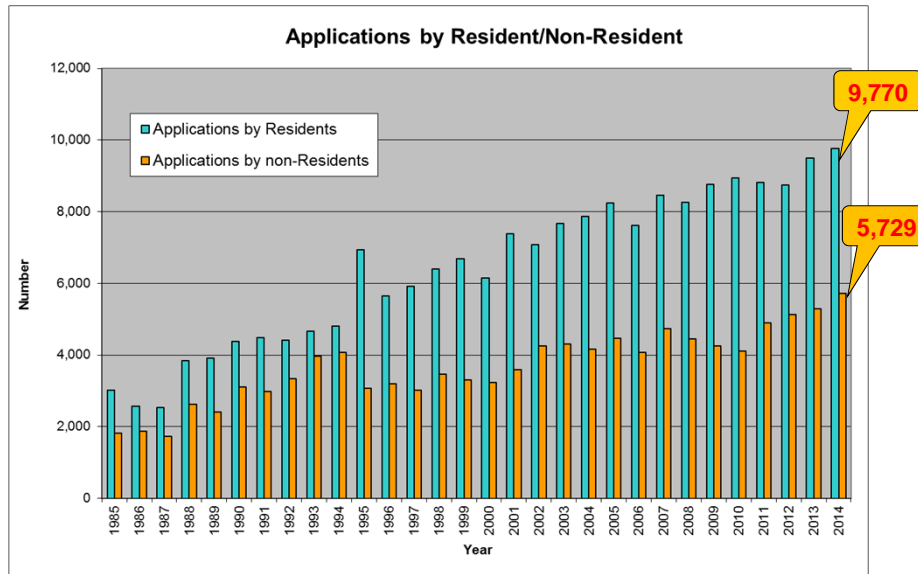
Dok-Ya-Cheong-Cheong
Resistant to phytophthora blight/virus

Phytophthora blight (Fungal disease):
- above : **Resistant variety**
- below: **Susceptible variety**

Chang Hyun Kim, Second World Seed Conference

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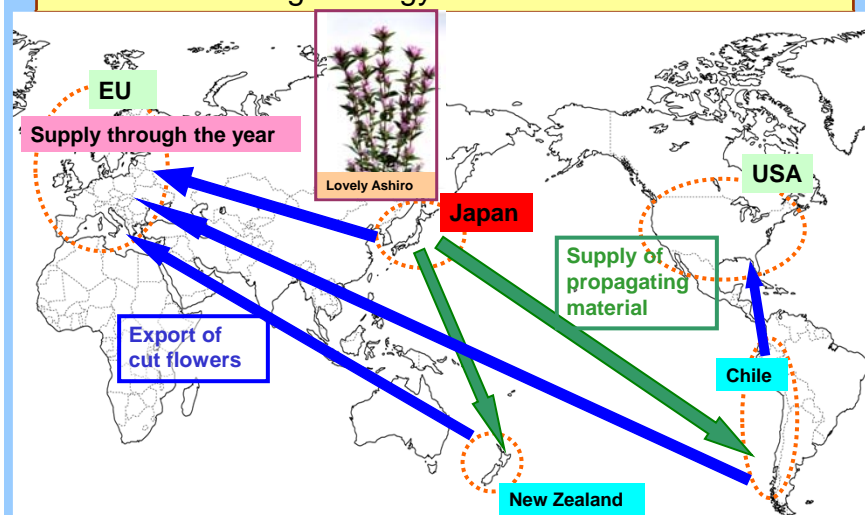
Plant variety protection statistics



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International Market Development

World Branding Strategy of "Ashiro" based on PBR



Yasunori Ebihara, International Symposium (Seoul, August 2009)

**GENETIC DIVERSITY IN AGRICULTURE:
TEMPORAL FLUX, SUSTAINABLE PRODUCTIVITY AND FOOD SECURITY
(GEDIFLUX)**

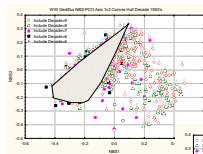
- Project to determine any changes to genetic diversity in past 50 years: barley, wheat, maize, and potato
- Over 500 European winter wheat varieties originating from 1940's through to 2000 from ten northern European countries.

An EU funded project carried out by the following:

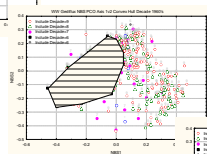
F Leigh¹, E Chiapparino¹, P Donini¹, M Ganal⁴, J Guillard², S Hamrit³, M Heckenberger³, X-Q Huang⁵, M van Kaauwen⁸, E Kochieva⁸, R Koebner⁶, J R Law¹, V Lea¹, V Le Clercz², T van der Lee⁸, G van der Linden⁸, L Malysheva⁵, A E Melchinger³, S Orford⁶, D O'Sullivan¹, J C Reif³, M Röder⁵, A Schulman⁷, B Vosman⁸, C van der Wiel⁸, M Wolf⁴, D Zhang², J C Reeves¹

1NIAB, 2GEVES, 3University of Hohenheim, 4TraitGenetics GmbH, 5Institut für Pflanzengenetik und Kulturpflanzenforschung (IPK), 6John Innes Centre, 7University of Helsinki (UH) and MTT Agrifood Research Finland, 8Plant Research International (PRI).

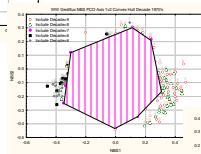
11



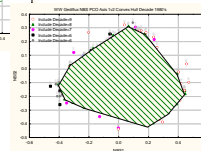
Pre 1960s



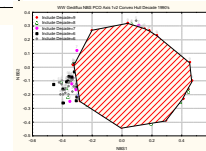
1960 - 1970



1970 - 1980



1980 - 1990



1990 - 2000

Principle Coordinate Analysis (PCO) was deemed the best graphical representation of the data

Convex hulls then show the extent of divergence

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GENETIC DIVERSITY IN AGRICULTURE: TEMPORAL FLUX, SUSTAINABLE PRODUCTIVITY AND FOOD SECURITY (GEDIFLUX)

- No significant loss in wheat genetic diversity
[...]

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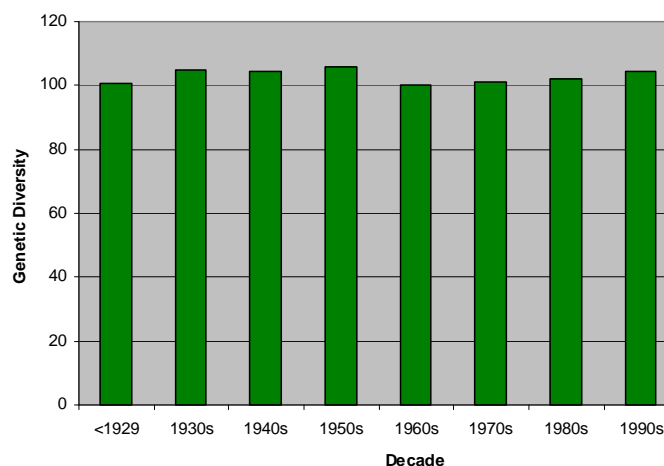
GENETIC DIVERSITY TRENDS IN TWENTIETH CENTURY CROP CULTIVARS: **A**
META ANALYSIS

- Meta analysis of 44 published papers
- **Barley, Flax, Maize, Oat, Pea, Rice, Soybean, Wheat**
- Argentina, Brazil, Bulgaria, Canada, Central Europe, China, Czech Republic & Slovakia, Developing countries, Europe, France, Italy, Italy & Spain, Nordic countries, Nordic & Baltic countries, Serbia, Siberia, Spain, Republic of Korea, Russian Federation, UK, UK & Europe, USA, Yugoslavia

Genetic diversity trends in twentieth century crop cultivars: a meta analysis
Mark van de Wouw • Theo van Hintum • Chris Kik • Rob van Treuren • Bert Visser
Theor Appl Genet (2010) 120:1241–1252

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Fig. 1 (B) Crop Genetic Diversity in the Twentieth Century based on a Weighted Meta Analysis of 44 Publications



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GENETIC DIVERSITY TRENDS IN TWENTIETH CENTURY CROP CULTIVARS: A META ANALYSIS

Abstract

[...] The meta analysis demonstrated that overall in the long run **no substantial reduction in the regional diversity of crop varieties** released by plant breeders has taken place. A significant reduction of 6% in diversity in the 1960s as compared with the diversity in the 1950s was observed. Indications are that after the 1960s and 1970s breeders have been able to again increase the diversity in released varieties. Thus, a **gradual narrowing of the genetic base of the varieties released by breeders could not be observed**. Separate analyses for wheat and the group of other field crops and separate analyses on the basis of regions all showed similar trends in diversity.

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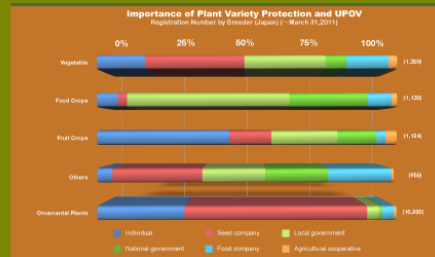
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BREEDER

The person who bred, or discovered and developed, a variety

Who can protect a plant variety?

There are no restrictions on who can be considered to be a breeder under the UPOV system: a breeder might be an individual, a farmer, a researcher, a public institute, a private company etc.



Japan Registration Case Study
(click to see full view)

