

**Intellectual Property Protection
for Plants in U.S.**

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Krista Sankarshona
Attorney at Law
Office of Policy and International Affairs

UNITED STATES
PATENT AND TRADEMARK OFFICE
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Why New Plant Varieties?



“feeding a world population
of 9.1 billion people in 2050



would require raising overall
food production by some 70
percent between 2005/07
and 2050.”

FAO: High –Level Expert Forum 2009-
“Global agriculture toward 2050”



Why New Plant Varieties?

- Food security
- Adverse environment conditions-climate change
- Quality foods
- Renewable energy-bio fuels
- Storage, transport, distribution concerns
- Consumers' needs-fruit, vegetables, ornamentals
- Trade and economic growth



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Why IP Protection for New Plant Varieties?

- Incentivize investment in plant breeding and new variety development
- Encourage private sector participation and public-private cooperation
- Increase numbers of new/improved varieties
- Provide access to quality seeds/planting materials to farmers
- Encourage sharing of information and genetic materials
- Promote businesses and trade



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Intellectual Property Protection for Plants in the U.S.

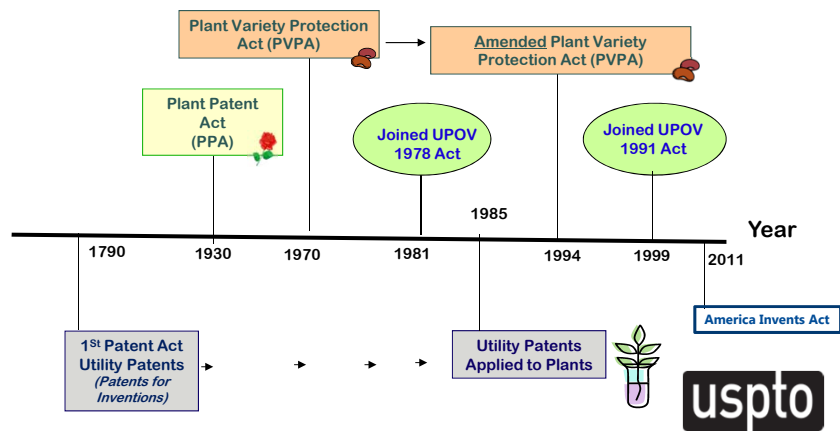
1. Plant Variety Protection
2. Plant Patents
3. Utility Patents

Trade Secret, Contract, Technological protection (hybrids)



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Long History of Plant Protection



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IP Protection for Plants in U.S.

U.S. Patent and Trademark Office
(USPTO)

Plant Variety Protection Office
(PVPO)

- **Plant Patent (PPA-1930)**

- Asexually reproduced plants



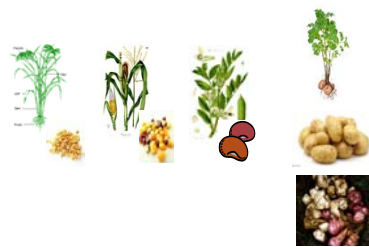
- **Utility Patent**

- All technologies



- **Plant Variety Protection (PVPA)**

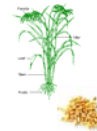
- Seed reproduced varieties
- Edible tubers



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Plant Variety Protection Act (PVPA)



- Plant Variety Protection Office (PVPO), U.S. Department of Agriculture
- Encourages development of new varieties of sexually reproduced plants
- Provides protection to those who breed, or discover and develop them
- Applies to plants:
 - Sexually (seed) reproduced
 - Tuber propagated
 - F1 hybrids

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To Be Eligible for PVP a Variety Must Be:



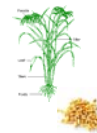
- **New** (sold for less than 1 year in the US or less than 4 years in a foreign country)
- clearly **Distinct** from all other varieties
- **Uniform** (all plants look alike)
- **Stable** (reproduces true to type)
- **Variety Name**

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Other Requirements



- **Deposit of Propagation Material**
 - Seeds or in vitro samples (for potatoes)
 - Stored at the USDA National Center for Genetic Resources Preservation (NCGRP)
 - Available only with applicant's permission through PVPO
 - Publicly available after certificate expires.

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Other Requirements



☐ FEES

- \$5, 150 TOTAL
 - \$4,382 for filing & examination
 - \$768 for issuance
- No maintenance fees.



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PVP Rights Granted



- Term: 20 years (25 years for trees or vines) from issuance of the certificate
- Rights to exclude others from
 - Selling or marketing
 - Conditioning or stocking
 - Offering for sale or reproducing
 - Importing or exporting
 - Using the variety to produce (as distinguished from develop) a hybrid or different variety
- Rights extended to
 - Plant parts (flowers and fruit) are protected
 - Essentially derived plants are protected



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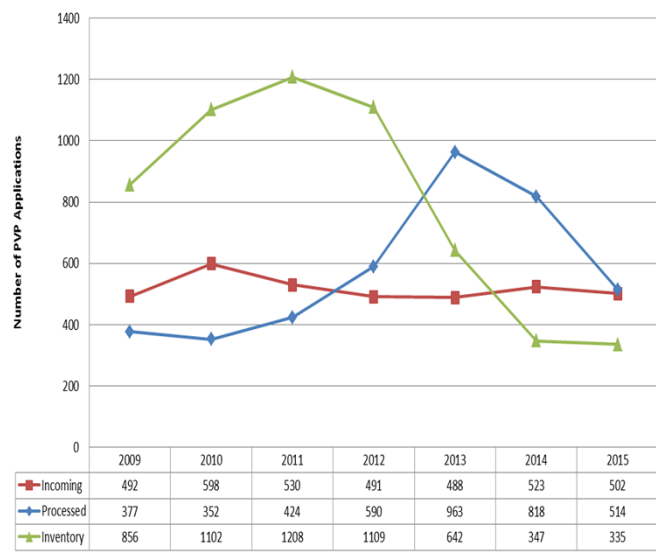
PVPO Databases – Feb. 2013

PVPO Species Databases	Number of Records (Varieties)	PVPO Species Databases	Number of Records
Alfalfa	1,530	Pea	2759
Barley	3214	Pepper	1398
Bean	2784 (Garden bean), 1585 (Dry bean)	Potato	737
Bluegrass	1,086	Rapeseed	1772
Corn	3585	Rice	712
Cotton	2803	Ryegrass	2548
Fescue	732 (Fine fescue), 983 (tall fescue)	Sorghum	3423
Lettuce	2682	Soybean	4289
Melon	745	Tomato	3195
Oat	1339	Watermelon	971
Onion	1721	Wheat	4411

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PVP Application Incoming, Processing and Inventory by Fiscal Year

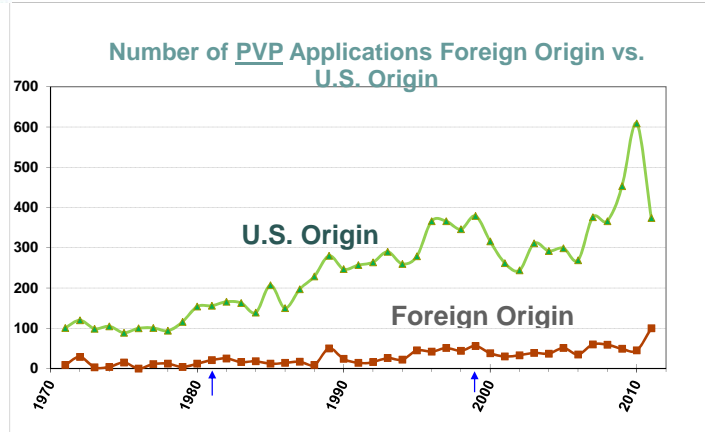


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New Plant Varieties



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Overall PVP Statistics (since 1970)

Total Applications Received	13,203
Total Certificates Issued	10,711
Certificates in force	7,048
Total applications not issued (abandoned, withdrawn, denied)	1,751
Applications in Progress (include those 1) not examined, 2) recommended for PVP but not issued, or 3) somewhere in the examination process)	741



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PATENTS



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Basic Patentability Requirements

- Patent eligible subject matter : Process, Machine, Manufacture, or Composition of Matter
 - Judicial Exceptions (patent ineligible) : Laws of nature, physical phenomena and abstract ideas
- Claims must be novel and non-obvious to one of ordinary skill the art
- There must be sufficient written description
- Claims must be enabled
- Claims language must be definite



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Plant Patent

- Plant Patent Act, 1930 (35 U.S.C. §§ 161-164)
- Requirements: plant is new, distinct, **asexually reproduced** + basic patentability standards
 - Utility
 - Non-obviousness
 - Written Description (relaxed)
 - Variety denomination



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Plant Patent

- Asexually reproduced:

rooting, cuttings, grafting, budding, division, slips, layering, bulbs, rhizomes, runners, corms, tissue culture, etc.

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Plant Patent



- One claim
- Representative of claim: "A petunia plant substantially as described and illustrated in the specification herein."



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Plant Patent



- 20 year term from date of filing
- Right to **exclude** others from making, using, selling, offering for sale and importing the plant, or any of its parts
- Protects a **single plant and asexual progeny**
- No maintenance fee



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Plant Patent ?



✓ Grape Plant



✓ Bamboo Plant



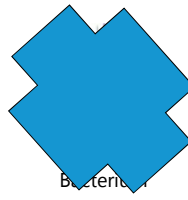
✓ Tulip Plant



✓ Algae



✓ Mushroom



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Utility Patent



- Patentability requirements: utility, new, non-obviousness, written description, enablement, best mode
- Possible to protect a class of varieties with specific traits, plant parts, and methods of producing or using plants
- 20 years from date of filing
- Right to exclude others from making, using, selling, offering for sale, and importing the claimed invention in the U.S.

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Utility Patents



Possible to protect:

- Modified plant genes, proteins, products
- Transgenic plants
- Class of varieties with specific traits
- Plant variety
- Plant parts-cells, tissues, etc.
- Methods of producing or using plants/varieties
- Etc.



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Commercial Agricultural Products Examples

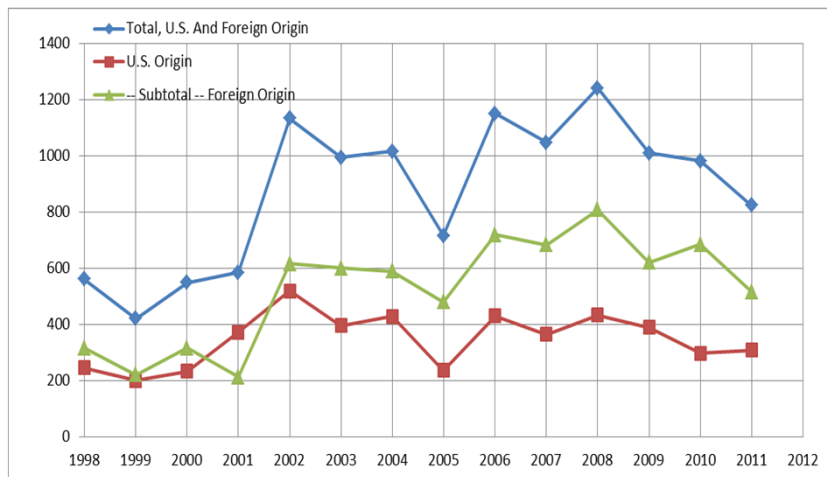


Product	Genetic Modification	Purpose
soybean, corn	herbicide tolerance	improve weed control
cotton, corn	insect resistance	reduce insecticide use
oilseed rape	heat stability	improve processing quality, permit new food uses for healthier oils
corn, sunflower, soybean, rice	improved nutrition	increase essential amino acids, vitamins, and

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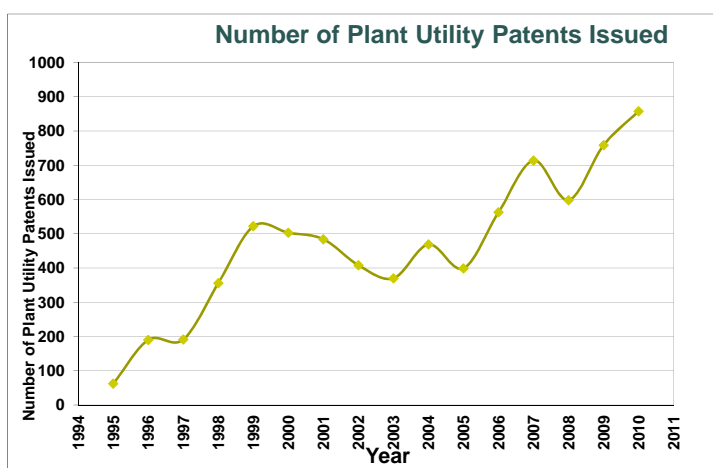
New Plant Varieties



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New Plant Varieties and Technologies



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Benefits of New Varieties

- Improve yield and crop productivity
- Provide alternative renewable energy
- Increase farmers' income
- Ensure food security
- Respond to climate change
- Improve health and nutrition
- Expand trade and economic growth

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Questions?

- <http://www.uspto.gov/web/offices/pac/plant/index.html>
- <http://www.uspto.gov/web/offices/pac/utility/utility.htm>
- <http://www.ams.usda.gov/PVPO>



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QUESTIONS?

