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

Plant Variety Protection Awareness Program Myanmar December 5, 2016

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#### **Why New Plant Varieties?**

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



"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."

#### **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



#### **Why IP Protection for New Plant Varieties?**



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



## 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)



#### U.S. Long History of Plant-IP Protection



#### **IP Protection for Plants in U.S.**

U.S. Patent and Trademark Office (USPTO)

**Plant Variety Protection Office** (PVPO)

- Plant Patent
  - Asexually reproduced plants







> All technologies





- Plant Variety Protection **Certificate** 
  - Seed reproduced varieties
  - **Edible tubers**





## Plant Variety Protection Act (PVPA)

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



## 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



## **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.





### **Other Requirements**

#### 

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



## **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 <u>produce</u> (as distinguished from develop) a hybrid or different variety
- Rights extended to
  - Plant parts (flowers and fruit)
  - Essentially derived plants





12







#### **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	<ul><li>732 (Fine fescue),</li><li>983 (tall fescue)</li></ul>	Sorghum	3423
Lettuce	2682	Soybean	4289
Melon	745	Tomato	3195
Oat	1339	Watermelon	971
Onion	1721	Wheat	4411

# **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
<b>Applications in Progress</b> (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



#### **Basic Patentability Requirements**

- Patent <u>eligible subject</u> matter (35 U.S.C. § 101) : Process, Machine, Manufacture, or Composition of Matter
  - Judicial Exceptions (patent ineligible) : Laws of nature, physical phenomena and abstract ideas
- Claims must be <u>novel</u> and <u>non-obvious</u> to one of ordinary skill the art (35 U.S.C. § 102 & 103)
- There must be <u>sufficient written description</u> (35 U.S.C. §112, ¶1)
- Claims must be <u>enabled</u> (35 U.S.C. §112, ¶1)
- Claims language must be <u>definite</u> (35 U.S.C. §112, ¶2)





# PLANT PATENTS Asexually Reproduced Plants





#### **Plant Patent**



- Plant Patent Act, 1930 (35 U.S.C. §§ 161-164)
- Requirements:
  - new, distinct, asexually reproduced
    - Utility
    - Non-obviousness
    - Written Description (relaxed)
  - Variety name
  - Fees



Plant Patents are administered by the USPTO



#### **Plant Patent**



- Asexually reproduced:
  - rooting, cuttings, grafting, budding, division, slips, layering, bulbs, rhizomes, runners, corms, tissue culture, etc.
- Material deposit not required





#### **Plant Patent ?**







Bamboo Plant



















#### **Plant Patent**



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





23



#### **Plant Patent**

- Term: 20 years 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
- <u>No</u> maintenance fee







#### **Granted Plant Patents**

#### All years, up to 2014

Total 18,076

Top 3 Foreign Countries	
Netherlands	3,095
Germany	2,154
Japan	918
Examples of Asia Countries	
India	51
Thailand	38
Indonesia	26
Chinese Taipei	18
South Korea	11
China	9

## **UTILITY PATENTS**



#### The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The tille and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this 5,860,492

United States Patent

Grants to the perios(1) having title to this potent he right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forthe below, subject to the payment of maintenance fees as provided by Ian.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grains of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this pattern is needy years from the U.S. filing date, subject to any standary extension. If the application contains a specificreference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 165(c), the term of the pattern it sweety years from the date on which the earliest application was filed, subject to any standary extension.

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## **Utility Patents**



- Patentability requirements: utility, new, non-obviousness, written description, enablement, best mode
- Material deposit may be required
- Fees
- 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.



#### **Utility Patent**

- Term: 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.
- Maintenance fee required





#### **Number of Plant Utility Patents Issued**



Note: The data above was obtained from the USPTO's PALM system, and reflects plant utility patents issued during these years for the following USPC class and subclasses:

- 435/410-431, 453, 468-470
- 800/260-323.3

#### **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 nutrients

#### **Benefits of New Varieties**

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



# **Questions?**

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



