Intellectual Property Protection for Plants in U.S.

Plant Variety Protection Awareness Program
Myanmar
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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

- **Plant Patent Act (PPA)**
- **Plant Variety Protection Act (PVPA)**
- **Amended Plant Variety Protection Act (PVPA)**
- **Joined UPOV 1978 Act**
- **Joined UPOV 1991 Act**
- **1st Patent Act Utility Patents (Patents for Inventions)**
- **Utility Patents Applied to Plants**
- **America Invents Act**
IP Protection for Plants in U.S.

**U.S. Patent and Trademark Office (USPTO)**

- **Plant Patent**
  - Asexually reproduced plants

- **Utility Patent**
  - All technologies

**Plant Variety Protection Office (PVPO)**

- **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:
  - Sexually (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

Fees

- $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 produce (as distinguished from develop) a hybrid or different variety

• Rights extended to
  – Plant parts (flowers and fruit)
  – Essentially derived plants
# PVPO Databases – Feb. 2013

<table>
<thead>
<tr>
<th>PVPO Species Databases</th>
<th>Number of Records (Varieties)</th>
<th>PVPO Species Databases</th>
<th>Number of Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa</td>
<td>1,530</td>
<td>Pea</td>
<td>2759</td>
</tr>
<tr>
<td>Barley</td>
<td>3214</td>
<td>Pepper</td>
<td>1398</td>
</tr>
<tr>
<td>Bean</td>
<td>2784 (Garden bean), 1585 (Dry bean)</td>
<td>Potato</td>
<td>737</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>1,086</td>
<td>Rapeseed</td>
<td>1772</td>
</tr>
<tr>
<td>Corn</td>
<td>3585</td>
<td>Rice</td>
<td>712</td>
</tr>
<tr>
<td>Cotton</td>
<td>2803</td>
<td>Ryegrass</td>
<td>2548</td>
</tr>
<tr>
<td>Fescue</td>
<td>732 (Fine fescue), 983 (tall fescue)</td>
<td>Sorghum</td>
<td>3423</td>
</tr>
<tr>
<td>Lettuce</td>
<td>2682</td>
<td>Soybean</td>
<td>4289</td>
</tr>
<tr>
<td>Melon</td>
<td>745</td>
<td>Tomato</td>
<td>3195</td>
</tr>
<tr>
<td>Oat</td>
<td>1339</td>
<td>Watermelon</td>
<td>971</td>
</tr>
<tr>
<td>Onion</td>
<td>1721</td>
<td>Wheat</td>
<td>4411</td>
</tr>
</tbody>
</table>
# Overall PVP Statistics (since 1970)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Applications Received</td>
<td>13,203</td>
</tr>
<tr>
<td>Total Certificates Issued</td>
<td>10,711</td>
</tr>
<tr>
<td>Certificates in force</td>
<td>7,048</td>
</tr>
<tr>
<td>Total applications not issued (abandoned, withdrawn, denied)</td>
<td>1,751</td>
</tr>
<tr>
<td>Applications in Progress (include those 1) not examined, 2) recommended for PVP but not issued, or 3) somewhere in the examination process)</td>
<td>741</td>
</tr>
</tbody>
</table>
PATENTS
Basic Patentability Requirements

  - Judicial Exceptions (patent ineligible): Laws of nature, physical phenomena and abstract ideas
- Claims must be **novel** and **non-obvious** to one of ordinary skill in the art (35 U.S.C. § 102 & 103)
- There must be **sufficient written description** (35 U.S.C. §112, ¶1)
- Claims must be **enabled** (35 U.S.C. §112, ¶1)
- Claims language must be **definite** (35 U.S.C. §112, ¶2)
PLANT PATENTS
Asexually Reproduced Plants
Plant Patent


• Requirements:
  • new, distinct, asexually reproduced
    • Utility
    • Non-obviousness
    • Written Description (relaxed)

• Variety name

• Fees
Plant Patent

• Asexually reproduced:
  – rooting, cuttings, grafting, budding, division, slips, layering, bulbs, rhizomes, runners, corms, tissue culture, etc.

• Material deposit not required
Plant Patent?

- Grape Plant
- Bamboo Plant
- Tulip Plant
- Algae
- Mushroom
- Bacterium
One claim

Representative of claim: “A petunia plant substantially as described and illustrated in the specification herein.”
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
- No maintenance fee
# Granted Plant Patents

## All years, up to 2014

Total 18,076

<table>
<thead>
<tr>
<th>Top 3 Foreign Countries</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>3,095</td>
</tr>
<tr>
<td>Germany</td>
<td>2,154</td>
</tr>
<tr>
<td>Japan</td>
<td>918</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examples of Asia Countries</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>51</td>
</tr>
<tr>
<td>Thailand</td>
<td>38</td>
</tr>
<tr>
<td>Indonesia</td>
<td>26</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>18</td>
</tr>
<tr>
<td>South Korea</td>
<td>11</td>
</tr>
<tr>
<td>China</td>
<td>9</td>
</tr>
</tbody>
</table>
The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and brief 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

United States Patent

Gives to the present showing title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America as importing the invention into the United States of America for the term as forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1909, the term of this patent is the longer of seventeen years from the date of grant 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, 1909, the term of this patent is twenty years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

Margeret V. Burnet

Assistant Commissioner of Patents and Trademarks
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
New Plant Varieties and Technologies

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

<table>
<thead>
<tr>
<th>Product</th>
<th>Genetic Modification</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>soybean, corn</td>
<td>herbicide tolerance</td>
<td>improve weed control</td>
</tr>
<tr>
<td>cotton, corn</td>
<td>insect resistance</td>
<td>reduce insecticide use</td>
</tr>
<tr>
<td>oilseed rape</td>
<td>heat stability</td>
<td>improve processing quality, permit new food uses for healthier oils</td>
</tr>
<tr>
<td>corn, sunflower, soybean, rice</td>
<td>improved nutrition</td>
<td>increase essential amino acids, vitamins, and nutrients</td>
</tr>
</tbody>
</table>
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
Questions?

- http://www.uspto.gov/web/offices/pac/utility/utility.htm