Agricultural Research Service
Office of Technology Transfer

The Role of Plant Variety Protection in Technology Transfer and Public-Private Partnerships

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Road Map

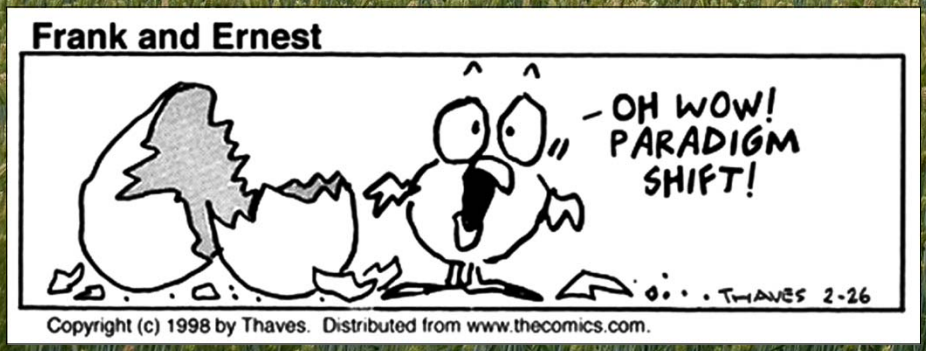
- Providing the Context
- Reasons for Protecting Varieties
- Questions to Consider
- Types of Variety Protection in the US
- Some Examples of Commercialization Models
- Some Examples of TT of Protected Varieties
- Q & A


ARS Mission
• Conduct research to develop and transfer solutions to agricultural problems of high national priority and provide information access and dissemination


Technology Transfer Culture at ARS
• Transfer of technology is primary objective, not income.
• Facilitate research partnerships and adoption of research outcomes for the benefit of the U.S. public.
• Protect intellectual property primarily if it enhances technology transfer
• Enhance U.S. economic development, global competition, and sustainable economic security

ARS & University scientists have a long & successful history of developing enhanced germplasm & finished cultivars that are transfer through public release.

Sometimes public release may not be the most appropriate mechanism to transfer the technology



Reasons for protecting varieties

- **Facilitates technology transfer**
  - ✓ **Tool to assure broader use**
  - ✓ **Incentive for investments by private sector**
- **Control genetic identity & purity of the variety**
- **Generate revenue for the breeding program**
- **Protect U.S. industry against "unfair" foreign competition**

Questions to Consider

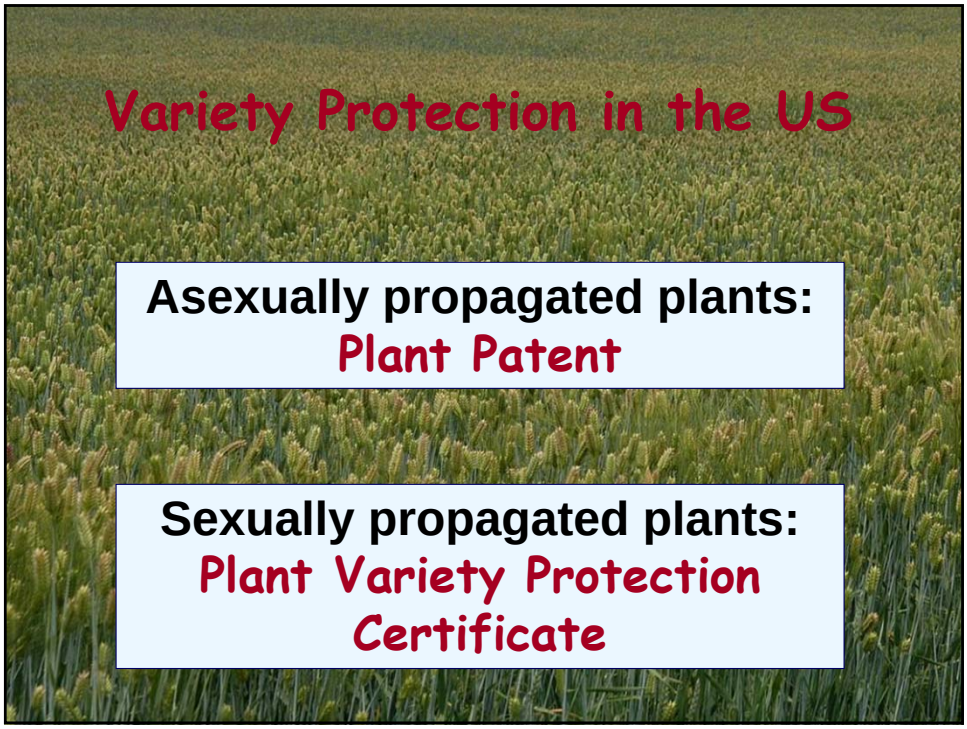
- How is the cultivar different from and/or better than the closest currently available cultivar?
- Is there current commercial interest in marketing and producing the cultivar for sale or a high probability of commercialization in the future?
- Is the potential market for the cultivar of sufficient size to warrant protection?

Questions to Consider (cont'd)

- Would protection likely play a significant role in making the cultivar available to growers and consumers beyond what could be achieved through public release?
- Is protection needed to maintain genetic identity or to assure the appropriate maintenance of unique traits? For seed propagated crops, what class of seed is required?

Questions to Consider (cont'd)

- Is foreign protection needed?
- Have key stakeholders, such as commodity groups, growers, university partners, seed companies, and nurseries, been consulted about protection of the cultivar?
- If co-owned, what is the co-owner's opinion?


Variety Protection in the US
Asexually propagated plants:
Plant Patent
Sexually propagated plants:
Plant Variety Protection
Certificate


Utility Patent
35 U.S. Code § 101
• Particular traits
• Plant parts, components or products
• Plant breeding methodologies

Utility Patents on Breeding Methods

- US 20130276173 A1 Compositions and methods of plant breeding using high density marker information
- US 20090136938 A1 Methods for sequence-directed molecular breeding
- US 20140115736 A1 Hybrid seed potato breeding

Plant Patent Act (PPA)
35 U.S. Code § 161

- Variety must be new and distinct, including sports, mutants, hybrids, & newly found seedlings
- Excludes others from asexually reproducing or selling or using
- Allows use as parent in breeding new varieties

Plant & Utility Patents

U.S. Dept. Commerce-
U.S. Patent & Trademark Office

http://www.uspto.gov/web/offices/pac/plant

Plant Variety Protection

U.S. Dept. Agriculture-
Agricultural Marketing Service

http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3002796

Plant Variety Protection Act (PVPA)

7 U.S. Code § 2321

- Variety must be new, distinct, uniform & stable (Article 5-9 of the UPOV Convention)
- Excludes others from sexually reproducing, selling, importing, exporting or producing a hybrid or different variety
- Allows the restriction of seed sales to a class of certified seed
- Allows use as parent in breeding new distinct varieties


TT & Partnerships: USDA and Universities
• Many USDA plant breeders are co-located on University campuses. Long-standing arrangement between USDA and University for USDA plant breeders to utilize University infrastructure and resources.
• Historically, many USDA and University plant breeding programs are coupled where USDA primarily does germplasm enhancement and the University primarily does cultivar development.
• USDA no longer does seed increase or plant indexing and relies on University Foundation Seed Services (produces breeder / foundation seed) and Foundation Plant Services (produces disease-tested plant propagation material).


TT & Partnerships: USDA and Universities
• Co-owned Cultivar
Generally, USDA takes the lead in protecting the co-owned cultivar and the University takes the lead in licensing the co-owned cultivar.
• USDA solely owned Cultivar
USDA protects solely owned USDA cultivars. The University MAY take the lead in licensing solely owned USDA cultivars that are developed on their campus. A Federal Register Notice is required.

Interesting Commercialization Models (I)

- USDA and 3 public universities developed many different variety of potato
- All entities are co-owners
- A non-profit entity is in charge of marketing, licensing, industry interaction and royalty collection was established to enhance the impact of this collaborative research

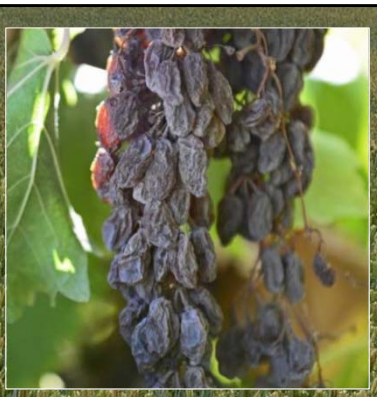
Interesting Commercialization Models (II)

- Partnering with our university partner who partners with a non-profit organization that based on an MOU offers foundation seed services and seed certification services and has actively produced and sold seed
- USDA scientists are co-located with and collaborators of the University
- Non-profit has licensed many of USDA varieties

'Elkton' Chipping Potato

- Resistance to Internal Heat Necrosis
- Suitable for chipping directly from field in southern locations

1. Solely owned by USDA-ARS, further tested under a CRADA, and protected by USDA Plant Variety Protection (PVP).
2. Exclusively licensed to a for profit company.
3. The PVP protects the commercial investment in the production of pathogen-free stock for a small, but very important, segment of potato farmers.



'Sunpreme' Raisin Grape

- Dries on the vine naturally
- Pruning easier than typical grapes
- Raisins larger and fruitier in flavor than classical raisins

1. Solely owned by USDA-ARS and protected by USPTO Plant Patent.
2. Non-exclusively licensed to for profit companies.
3. The USPTO Plant Patent protects the commercial investment to redesign commercial production protocols for raisins.

'Black Pearl' Pepper

- Unique black foliage
- Vigorous upright bushy grow habit
- Round, black fruit maturing red with very hot flavor

1. Solely owned by USDA-ARS, further evaluated under a CRADA, and protected by USDA Plant Variety Protection (PVP).
2. Exclusively licensed to a for profit company.
3. The PVP protects the commercial investment in marketing to consumers a new type of ornamental plant.

'Perpetua' Blueberry

- Unique double-cropping blueberry for mid-summer and late fall
- Small mild and sweet berries

1. Solely owned by USDA, ARS and protected by USPTO Plant Patent.
2. Exclusively licensed to a non-profit institution.
3. The USPTO Plant Patent protects the commercial investment in creating a new paradigm on how commercially produced blueberries are marketed and sold.


Thank you for your kind attention
Questions?