

**Workshop Title:**

Dynamics of Proprietary Seed

**Speakers:**

Laurie McKenzie, PNW Research and Education Associate, Organic Seed Alliance &

Michael Mazourek, Cornell University

**Executive Summary:**

The speakers outlined the different types of property protection that seed breeders can obtain for new plant varieties they produce. They explained their views on the accessibility of seed for the public, and how their programs seek to ensure that this remains possible. The speaker outlined the breeding process as well as certain licences one requires to grow seed, and how their program does not require royalties from their producers, but would encourage growers to provide them to ensure the longevity of their programs.

**Main Notes:**

Beginning with Laurie McKenzie

- In the US there are 3 types of intellectual property protection that breeders can obtain for new plant varieties
  - Plant variety Protection (PVP) – seed and tubers
  - Plant Patents – asexually propagated plants except for tubers
  - Utility Patents – for any type of plant showing utility
- Plant Breeder's Rights
  - A new variety must be:

- New – not been commercialized from more than 1 year in country of protection
  - Distinct – differs from all other known varieties by one or more important botanical characteristic
  - Uniform – characteristics are consistent from plant to plant within variety
  - Missed one
- Plant Variety Protection Act from 1970
  - Sexually reproduced plants, tuber propagated plants, F1 hybrids
    - 20 years protection
    - Anyone can save and replant seed
    - Cannot sell or share without permission
    - Can be used for research
    - Can be used as a parent for breeding
    - 3000-5000\$ to obtain
  - Created as an alternative to utility patents in large part to protect resources
- Utility Patent
  - Diamond v. Chakrabarty (1980) allows patenting of life
    - Important take home: Opened door for patenting of biological things, considering them as inventions.
  - No farmers or Breeders exemptions – seeds cannot be saved or used for breeding

- No research allowed
- Can patent both varieties and traits
- ~\$50 000
- Licence (Contract)
  - Written by owning entity
    - Can be written however they want – inclusive or exclusive
    - Ex: Bag tag – licence agreement on bag that if you open, you agree to whatever is written such as: cannot reproduce, save seeds, harvest for sale without inspection by our company, etc.
  - Exclusive agreement
  - Material Transfer Agreement
    - Governs trade of research materials between two organizations when the recipient intends to use it for own research
  - Open Source Seed Initiative
    - Pledge saying that you have the freedom to use these OSSI – Pledge seeds. In return, you pledge not to restrict others use of these seeds or derivatives by patents, etc.
- Most to least restrictive:
  - Utility patent, Contracts, Plant Variety Protection, Trademark, Open Source Seed Initiative
    - Ex: Who Gets Kissed? Sweet Corn
      - New collaborative method for profit sharing model for public sweet corn growers (only one to two right now)

- Long-term shared royalty, split between three parties of 10%
- Ex: Abundant Bloomsdale Spinach
  - Collaboratively bred
  - OSSI pledged
  - No licence or other protection
  - 8% Royalty
- Material Transfer Agreement
  - The speakers company agreement: This is research material, breeding material. But if you want to grow it, save it and share it, come back and tell us.
- We believe at OSA:
  - Seed genetics need to be accessible
  - Diversity is viable for success
  - Collaboration leads to enhancement
  - Breeders should be compensated for time and expense
  - Farmers need to be educated
  - Creative funding and new models are needed

Michael Mazourek

- Formality in Well-Intentioned Partnerships

- Documentation prevents misunderstanding
- Stability of non-profit seeds ensured
- Values and roles of seeds established
- Opinions are speakers own, sharing rom his perspective in USA.
- Public/Private Dynamic
  - Beginning of 20<sup>th</sup> C, open-pollinated seeds are saved for planting
  - Hybrids became available
    - Lead to intellectual property
  - Seed companies begin in house breeding
  - 1970 PVP expands ownership
  - 80's Biotech attraction increases
  - Industry consolidation leads to market focus
  - Organic restores value to quality
  - Resurgence of small seed companies
  - Little in-house breeding creates demand for locally adapted open-pollinated seed
  - Public plant breeders should leave a legacy
    - Train others
    - Publish methods
    - Create seeds that can be utilized
  - Obligation to safeguard those resources
    - Abide by regulations

- Preserve public nature
- Pedigree Breeding Process
  - Idea – Cross pollination – F1 Hybrid (shared with growers) – F2 selection – F3-F5 Evaluations (shared with key growers) – F6 Replicated Trial (shared with growers) – F8 (broad distribution)
- Searching for Seed
  - Breeding company vs. distributor info
    - Websites for good info
  - Potential to make inquiry to breeder about using seed
  - Document acquisition of new seeds
    - Keep a record of where you are acquiring new seed
    - Important if you have to demonstrate where you got your seed from
    - To remake cross, know where to go back to
  - Utility patent
    - Can cover traits and seed form plant
    - Plants propagated by seed
  - Bag tags
    - Depends on the tag
  - Plant Variety Protection
    - Commercial reproduction of seed restricted
- MTA: Material Transfer Agreement
  - Speaker often shares around 600 seed samples with home gardeners, produce growers, and seed companies each year

- These are free
- Only request the signing of MTA first
- Intent is for it to be a positive way to preserve a public seed source
  - Link to MTA provided in the slides
- Seed is a free sample
- Recipient may not:
  - Patent or restrict use
  - Go into commercial production without a licence
  - Distribute seed, but should direct them to speaker for the seed
- Licence
  - Speakers initiative tries to do all non-exclusive licences
  - Exceptions occur when a company has sponsored the research, but even then the exclusivity expires after about 5 years
  - Licences pays a royalty on seed sales
    - 10% normally
    - 80% of this royalty is returned to speakers breeding program for future improvements
- The speaker's university is progressive
  - Royalties support and stabilize the speakers breeding program as well as keeping the seeds in the public domain
  - Speaker attempts to display integrity with royalty
    - Does not bag tag anything, PVP anything, etc.
    - Seeds are out there for legacy

## Question period for both

- What do you feel is happening in terms of influence of private companies funding universities?
  - Speaker (Mazourek):
    - Must be balance. Insight to the process is important to see other dimensions. If done appropriately, it can be positive. Does it work with our projects to lead to public benefit? Can people build off it? Is it for the companies gain? Is it going to help us move forward?
  - Speaker (McKenzie):
    - Risk of university losing control. Ex: Dean of a University explained that Monsanto funds them and they wish they didn't have to be.
    - Fighting currently for setting apart seeds because of how important it is for the public in their goals
    - There are a lot of challenges in universities in this area
- What about time frame? How long should we be worried about keeping this public?
  - Speaker (Mazourek):
    - Basically, how to give back. For example, got an email asking if they are making profits, do they owe speaker's research program a royalty, and there is a lot that is honour system relationship based
    - Seed comes from somewhere. There's interest in respecting where the seed comes from. Some have the intent to give back.
  - Speaker (McKenzie):



- A lot of different patents last for 20 years, so gut reaction is 10 years seem like a good amount of time. It takes 5-9 years to create a variety. If you were to give back in the way that you could for 10 years, that seems appropriate to speaker
- How many varieties do you work on breeding at one time?
  - Speaker (Mazourek):
    - Hard to know because there's a lot. It depends on speaker's capacity as well as the students. There's probably 50 potential new things in the field at one time
- How do you both feel individually about new GMO technology in the future?
  - Speaker (Mazourek):
    - The challenge is to understand the complexity of plant breeding. There's tens of thousands of genes in play.
    - Everything we do is compatible with organic seed. There is serendipity involved. For speaker, does not want to limit self in discovery, but wants to work through the breeding process that has got us here
    - Focus on positive side of recognizing new technology and being innovated
    - It can be hard to know if patents are there and hard to understand them. It's a good opportunity for people that are familiar with legal claims to help out. Right now, it is a gray area and an unknown. We

would appreciate the help in finding things that are free and not restricted.

- Speaker (McKenzie):
  - Speaker thinks there needs to be more gray, rather than black and white when it comes to GMO. The major issue is that the use has been to sell chemicals, not the honourable uses.
  - There are good uses of organics, for example the protection of varieties
  - Cisgenic moves genes between same species that has interesting potential. Transgenic and GMO probably won't come into Organics.
  - The organic market is very small compared to Organic, which means Monsanto has said they are not interested in it because it's too small
  - There should be more discussion. It's not all good, not all bad. It's how we decide to use it.
  - You cannot search patents in the US website, which makes it difficult. It would be great for someone to create that resource