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Dear members,

Many of us attended the conference on "Commercialization of Plant Research: The Toolbox" on November 2, 2006 in Pullman. An outline summary by me of information provided at the meeting follows this introduction. I hope you find it useful for reference. If you see any errors in my interpretation of what was presented at the meeting, please let me know so it can be corrected. This conference was sponsored by WSU, WTFRC, and the Washington State Potato commission and hosted by WSURF. Speakers included intellectual property attorneys from San Francisco, a commissioner from the Plant Variety Protection Office (PVPO) and a patent attorney from the US Patent and Trademark Office (USPTO). We also had panels of scientists and growers of fruits, berries, potatoes, and grains.

Please be cautioned that there may be factual error in my notes. Consult a patent attorney for professional advice.

There was not a lot of new information on Intellectual Property (IP) of plants which had not already been heard by our members, but it was all gathered together and briefly discussed at this forum. Plants can be patented under a plant patent, a utility patent or both. Seed or tuber propagated varieties can also be protected through the Plant Variety Protection (PVP) mechanism. Protection in foreign countries varies from country to country and requires patent or other application in each country or region. Notice of intent to patent in numerous foreign countries can be simplified by filing an application with the World Intellectual Property Association under the PCT (Patent Cooperation Treaty). This procedure is accepted by many countries. However, only a few counties issue plant patents. In those other countries filing under UPOV may be required.

Trademarking, of course, offers name recognition protection, as do Certification and Collective Marks. These assist in brand development in the market place. Those brands can be specific, an umbrella mark that covers several types of fruit, or a company mark. However, great care must be exercised to avoid losing a name because it becomes generic or misused by others. Trademark protection is limited by country borders.

The litigation attorney gave some practical advice on applying for or protecting one's mark or patent. Before applying ask three questions:

a. Is it worth the cost of registration?
b. Will registration alone be adequate protection (Will the mark be respected)?

c. If not, do I have the resources and willingness to suffer any consequences of litigation?

Besides the outline of the information provided about patents and trademarks at the meeting, I've also included summaries of presentations by Bruce Barritt of WSU-TFREC and Jim Calissi, formerly of PICO on current trends in tree fruit IP..

Calissi believes strongly in opportunities provided by aggressive IP management. He contends that a good variety could create a 100 million dollar royalty stream over the life of a patent and trademark.

Hope you find this helpful,

Bill Howell
NNII Executive Manager

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I. Forms of plant protection (used by a country to encourage the development of new varieties):

A. US Plant Variety Protection
- Sexually (seed) reproduced plants
- Tuber propagated plants
- F1 Hybrids

B. Plant Patents

- Asexually reproduced plants

C. Utility patents
- Sexually reproducing plants
- Genetically engineered plants

A. <u>Plant Variety Protection Act</u>

1. Protection

i. Provides protection to those that breed, develop or discover new varieties
ii. Longevity is for 25 years for trees and vines from date of certificate issuance
iii. PVP rights exclude others from:
   a. Selling, marketing, reproducing etc. the variety or its harvested materials
   b. Conditioning or stocking the variety
   c. Offering the variety for sale
   d. Exporting or importing the variety
   e. Using it in breeding to produce hybrids
   f. Using it to develop varieties that require repeated use of protected variety
   g. Using harvested materials
iv. Exemptions
   a. Farmers can save seed for their own use
   b. Can be used by others in plant breeding or research

2. Requirements

i. Eligibility limited to:
   a. Sexually (seed) reproduced (perhaps a genetically uniform seed propagated rootstock)
   b. Tuber propagated
   c. F1 hybrids
   d. Obviously, PVP protection is seldom used for asexually propagated crops like tree fruits.
   e. Variety new (available for less than 1 year in the USA) and distinct from all others
   f. Uniform and stable

3. Application Process

i. Provide history
ii. Distinctness statement
iii. Objective (scientific and morphologic description)
iv. Additional descriptions
v. Basis for ownership
vi. 3000 seed with greater 85+% germination
vii. Fees total $5,150
viii. Usually about 2 years but varies from 1 to 4 years.
ix. Can option that the seed only be sold as certified

4. Infringement & Enforcement

i. Litigation is rarely required as PVP commissioners hear and rule on disputes.

B. Plant Patent

1. Protection

i. Protects a new and distinct cultivar (and its clones) and all of its parts.
ii. 20 years is the term of protection from the date of application
iii. Owner has right to exclude others from asexually reproducing the plant and from using, offering for sale, or selling a plant so reproduced or any of its parts throughout the USA or from importing the plant or any of its parts into the USA.

2. Requirements

i. "Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent…."
ii. Must disclose technology used to develop said clone in the patent paperwork
iii. Plant is new and distinct
iv. Asexually propagated
v. If "discovered" must have been found in cultivated area
vi. No prior art or disclosure more than one year prior to filing.

3. Application Process

i. Specifications shall enable others skilled in the art to repeat the process or invention
ii. Must convey that the applicant invented the subject matter
iii. The scope of claim must be defined
iv. Written description
v. Can use a provisional application
    a. Low cost method to establish early filing date
    b. Disclosure not initially required
    c. Must file for patent within 1 year to secure early file date claim
vi. Prior disclosure may preclude patentability, as will disclosure or use by others before invention by applicant.
    a. grace period following disclosure or sale is 1 year in USA

4. Infringement & Enforcement

i. Atmospheric – The customers and competitors respect the mark just because it is registered
ii. Promote – Aggressively educate and encourage respect for the mark
iii. Litigation
    a. US District Court
    b. International Trade Commission – for imported infringed products
        - Expensive, speedy
        - Broad injunctive relief
        - Customs enforces the injunction

C. Utility Patent

1. Protection

i. 20 years from date of filing
ii. Excludes others from making, using, selling, offering for sale, and importing the claimed invention.
iii. Owner can exclude others from making, using, selling, offering for sale, or importing the claimed invention.
iv. Possible to protect:
    a. Varieties with a novel trait (like disease resistance)
    b. Plant parts (like pollen, plant organs or tissue, ovules, tissue or cell cultures, seeds, fruit.
    c. Methods of producing or using plants
    d. Can cover genetic engineering associated techniques and products
    e. Molecular plant development
        1) Transformations with specific nucleotides
        2) Novel plant transformation
        3) Novel plant cell and tissue culture
        4) Plant regulatory elements like promoters and transcriptional elements
        5) Expression vectors
        6) Transgenic plants with novel phenotype
        7) Products produced from such plants

2. Requirements

i. Patented item must be useful and novel
ii. Must apply within 1 year of disclosure

3. Application Process

i. Specifications shall enable others skilled in the art to repeat the process or invention
ii. Must convey that the applicant invented the subject matter
iii. The scope of claim must be defined
iv. Written description
v. Can use a provisional utility application
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Further guidance from the US Patent Office can be obtained at their web site at www.uspto.gov .
A search of US Patents is available at www.uspto.gov/patft/index.html .

5. Example of multiple type claims that can be made using a utility patent

i. Utility patent claim example for a heat resistant broccoli:
    a. Seed Deposit Claim
        1) A broccoli seed designated 393-2-19 and having ATTCC (American Type Culture Collection) Accession Number 203533.9
        2) A broccoli plant having all the phenotypic characteristics of a plant produced from the seed of claim 1.
        3) A seed from the plant of claim 2.

    b. Trait Claims
        1) A broccoli plant or plant parts of said plant wherein said plant comprises:
            - A center head having a diameter of 3 to 10 inches at maturity when said plant is exposed to a maximum daily temperature of 90 100F for 5 consecutive days during bud development phase of said plant, wherein said plant exhibits no heat stress symptoms including one of more of the following: non-uniform beads; brown, yellow, light-green or purple colored heads; flat heads; bracts; rapid fracturing of the head, “cateye”, and hollow stems.”

        2) Reason for trait claims
            - Significantly broader that seed deposit claims
            - Covers other varieties developed similarly but later

        3) Obtaining trait claims
            - Requires broader terms for invention (ex mildew resistant plant)
            - Requires describing a large number of varieties with similar characteristics
            - Application must be written strategically
            - Attorney and breeders should be in good communication
    c. Breeding Claims – methods used to develop the broccoli

d. Other novel methods used to develop new varieties can be patented.

II. Filing for Proprietary rights in Foreign Countries

A. Counties - Not all countries provide plant patent protection. Those that do include:

USA	Guatemala
Australia	Bahrain
Korea	Morocco
Singapore	Oman

European Union (but excludes patents to individual varieties)

B. UPOV - Others may offer protection through a system such as the International Union for Protection of New Plant Varieties (UPOV)

C. Prior art or disclosure is limited to (affected by patent application in any country):

6 months – Japan and Singapore
Zero time – European Union

D. Filing patent and UPOV applications as affected by international agreements between countries:

1. Paris Convention priority
   i. File in each country within one year of filing for a USA patent
2. Patent Cooperation Treaty (PCT)
   i. Single application designating all countries that are part of the treaty
      - Helps maintain priority internationally, but there is no international patent so each of those must be prosecuted in each national or regional office
   ii. Allows filing with up to 127 countries
   iii. Delays expenses associated with translations, filing fees and local legal services
   iv. Further information on PCT procedures can be obtained at the PCT help desk at 571-272-4300.

E. Web sites

b) Information on some foreign patents can be viewed at:
European Union - www.espacenet.com/access/index.en.htm
Japan – www.ipdl.ncipi.go.jp/homepg_e.ipdl

c) Other PCT and Patent sources of information web site:
PCT home page – www.uspto.gov/go/pct
PCT newsletter, applicant's guide, etc on the World Intellectual Property Organization's web site – www.wipo.int/pct/en/index.html

GAO advice for small businesses seeking foreign patents - www.gao.gov
WIPO's small and medium sized enterprises division – www.wipo.int/sme/en

III. Forms of Name and Symbol Protection for Use in Marketing

A. Generic names
B. Trademarks
C. Certificates
D. Collectives
E. Geographic indicators

A. Generic names

1. Are used in non-proprietary situations and convey no rights
2. Designations or variety names such as car, elevator, Gala apple are not proprietary in themselves.
3. Should be used by anyone making reference to new invention or variety
4. Must be used in patent or PVP application
5. When patent or PVP rights expire, must be used by competitors to use or sell the new variety
6. Varietal designations are generic designations in plant variety context
7. Previously used varietal designations can be viewed on a CD-Rom offered at the UPOV website (http://www.upov.int)
8. Are not entitled to trademark protection

B. Trademarks

Any term, design, symbol or distinctive packaging (trade dress) used to commercialize a product and to indicate the brand or source of the product, but not the kind or type of the product. They can only be used by the mark's owner or his licensees. Properly used trademarks are enforceable forever.

1. Types:
    i. House or company mark
    ii. Umbrella mark (covering several plant varieties)
    iii. Variety-specific mark

2. Protect the Mark
    i. In marketing, the mark must be used together with generic name to ensure the trademark does not become the generic descriptor.
    ii. Guard against and take action against infringement
    iii. Suggested use in print
        a. Do not use the mark as a noun.
        b. Use in association with the ^{TM} or ® symbol
        c. Consider inserting the word "Brand" after trademark and before generic designation.
        d. Use suggestive or fanciful terms but not descriptive ones
        e. Avoid descriptors like sweet, gold, American – these can be used in similar names by the competition without infringing the mark.
        f. Misdescriptive marks can not be registered, especially geographic ones, like the term "American" for items grown outside this country

g. Use distinctive lettering to set off from surrounding text

iv. Do not use in patent application

v. Ensure distributors, retailers, licensees and downstream sellers are required by contract to appropriately display brand to purchasers.

vi. The mark must be protected from misuse or its proprietary nature will be lost.

vii. Record mark with US Customs, so they will seize infringing goods.

viii. Register the trademark in all relevant countries.

C. <u>Certification Marks</u>

i. Any word, name, symbol, device or other designation, or a combination of such designations that is distinctive of goods or services.

ii. It is certified by a person but products sold under the certified mark are produced and marketed by others.

iii. Types

i. Geographic

a. The "Grown in Idaho" mark of the Idaho Potato Commission

b. "Fresh From The Florida Sunshine Tree" symbol

ii. Quality (material, mode, quality, accuracy or other definition of someone's goods and services).

a. Certified Arborist

iii. Organizations such as unions

a. UFCW – produced by United Food and Commercial Workers International Union

4. Differs from a trademark in that the owner cannot use it.
5. Does not distinguish products for those offered by others, instead it certifies the origin, qualities or other features of the products. Any entity meeting those standards is entitled to use the mark.
6. Owner must enforce the standards

D. <u>Collective Marks</u> - A service mark used by members of a cooperative, an association, or other collective group

1. Types:

i. Collective trademark or service mark

Example: "Brown eggs are local eggs, and local eggs are fresh" is a collective mark of the New England Brown Egg Council.

ii. Collective membership mark is solely used to indicate membership in the organized collective group. It does not identify or distinguish goods or services.

Example: The symbol with text "Tree Farm" indicates membership in the American Tree Farm System of the American Forest Institute.

E. <u>Geographic Indication</u>

1. Identifies a good as originating in a specific territory or region where the quality, reputation or other characteristic is attributable to the region, like:
    i. Tequila
    ii. Champagne
    iii. Scotch
    iv. Roquefort.
2. Protected by the World Trade Organization
3. In the USA they are usually registered as certification trademarks and is usually administered by a governmental body or one operating with governmental authorization.

IV. Litigation

A. Know what you intend to accomplish by litigation

1. Get a head start on market share?
2. Get lost profits
3. Exclude competition
4. Get royalties

B. Use other methods of encouraging compliance:

1. Atmospheric (Warnings, advertisement, etc)
2. Promote IP education

C. Where can you sue?

1. US District courts have jurisdiction over enforcement of US patents, trademarks, and PVP certificates
2. International Trade Commission has oversight over importations
    i. Can make speedy decisions
    ii. Has broad injunctive relief provided by Customs Service
    iii. Can provide single proceedings against multiple adversaries
    iv. Good technical and legal expertise that might elude a jury.

D. If you proceed with litigation:

1. Plaintiff
    i. Do due diligence and investigate issues
    ii. Consider customer impact
    iii. Double check your own IP
    iv. Hire experts
    v. Be prepared for counterclaims/retaliatory cases
    vi. Line up key fact witnesses
2. Defendant
    i. Immediately start long lead time tasks (experts, 3rd party discovery, analysis of defense)
    ii. Consider counterclaims to invalidate patent or countersue with your IP.
    iii. Has plaintiff sued or threatened anyone else who might help build your defense?

V. Bruce Barritt – Comments and Vision

A. Apples are unique in the fruit market

1. They are purchased by variety unlike strawberries, cherries and peaches
2. Newer varieties are being branded and controlled, such as:
    i. Pink Lady ® Brand, Cripps Pink variety
    ii. Jazz® Brand, Sci Fresh variety

B. Present apple variety development organizations:

1. Universities (WSU, University of Minnesota, Cornell University)
2. Government organizations (Ag Canada, HortResearch-NZ, INRA-France)
3. Private companies
    i. Nurseries
    ii. Production Companies
4. Individuals

C. Apple production - past / future

No restrictions on growing and selling a variety	→	Restriction on all phases imposed by IP owner
Patent protection, tree royalty income, & limited branding	→	Patented protected, tree and fruit royalty income, trademarking & branding.
No limits on production	→	Managed product inventory limiting growers, acreages and locations
No limits on who packs, stores and sells	→	Approved packers only
Little fruit quality standards or enforcement	→	Quality assurance
Little variety marketing, multiple sellers & global sales	→	Single marketer (in USA) with marketing plan, international restrictions

D. Apple variety management organizations / licensees

1. Dedicated management companies (ENZA-NZ, PICO-BC, Prevar-NZ).
2. Vertically integrated companies
    i. Stemilt Growers – Pinata
    ii. McDougal & Sons - Ambrosia
    iii. Pepin Heights Orchards – MN1914
    iv. Pomanjou France – HoneyCrunch
3. Marketing companies
4. Nurseries – International Fruit Obtention, France and Consorzio Italiano Vivaisti

E. Considerations in commercializing WSU apples

1. Evaluate each variety's potential
2. Maximize IP values with patents, licensing fees & trademarks
3. Should variety be licensed domestically, internationally or both?
4. Don't allow any licensee to sit on development of a variety.
5. Benefit all participants from producer to consumer, including WSU
6. Provide fair opportunity for all Washington producers to participate
7. Select licensee with good business strategy, including inventory control, quality assurance, and marketing
8. Acknowledge breeding project funding sources: State taxpayers, WSU, WTFRC, other gifts and grants.

VI. Jim Calissi, formerly of PICO – Comments and Vision

A. Gaining Competitive Advantage through IP Protection

1. What is IP?
- i. Knowledge, know-how, discovery
- ii. Usually bundled as a piece of technology
- iii. Protected by patents and trademarks

2. Patents and trademarks are important in knowledge based economy for:
- i. Economic growth
- ii. Industry benefits
  - a. Inducement for creating new items for sale
  - b. Getting competitive advantage
  - c. Improving net revenues
- iii. Varies by country
- iv. Must use and must prevent infringement and unauthorized use

3. What is necessary to use IP
- i. Absorptive capacity of organization
- ii. Tacit knowledge
- iii. Supply Chains – how a new piece of IP gets from research to consumer

B. Historical IP in fruit industry

1. Cultivars released to industry and nurseries for testing
2. Testing results determine those to be released – may or may not be patented
3. Product development and sales by nurseries
4. Tree royalties collected by nurseries for return to research institute
5. Suppliers gain better net revenues due to improved grades or higher yields
6. Works well for improvements in IP such as redder mutations or improved yields.
7. Does not work well for distinctive IP
   - i. Does not allow long term gain from distinctive property
   - ii. Often leads eventually to new product failure

8. Common examples of current and previous protection:
   - i. Skeena
     - a. Patented
     - b. Worldwide release
     - c. Unrestricted access through licensed nurseries
   - ii. Brookfield Gala
     - a. Patented worldwide
     - b. Red mutation of Gala
     - c. Tree purchase from Nurseries licensed to sell this selection

iii. Ambrosia
    a. Distinctive
    b. Originally an open release but little interest
    c. Place in managed program and acreage is increasing substantially!!!
    d. Only a few companies outside of Canada licensed to supply Ambrosia

C. Why is the historical IP not working?

i. Ag and Food supply chains have a high degree of product failure
ii. Food manufactures do more development of new products than retailers
iii. Access to retailers requires brand equity founded in structural & relational embededness

D. Solutions:

1. Introduction new IP requiring:
    i. Process to reduce new product failure
    ii. Ability for suppliers to build on current structures and relationships

2. New concepts of IP introduction
    i. Trademark Programs
        a. Reduces risk of product failure
        b. Allows suppliers to introduce new products into the market
        c. Retailer's new product lines are supported by suppliers
        d. Creates more dynamic supply chain than simple tree patent process
        e. Can return higher profits to suppliers
        f. Potentially greater royalties returned to breeding program and producers
        g. Retailers have potential exclusivity

3. Examples of advanced IP in tree fruits:
    i. Pink Lady® branding of Cripps Pink apples
        a. Logo
        b. Fees collected fruit, trees sales, etc. for promotion
        c. Supplier provides retailer with promotional package
    ii. Kiku®
        a. Fuji apple with distinctive appearance and flavor components
        b. Strict nursery and supplier procedures
        c. Kiku works with retailers to attain differentiation
        d. Customer buys Kiku, not Fuji
        e. Strong communication program

    iii. Jazz®
        a. New distinct apple cultivar
        b. Managed Program
        c. Network of producers & handlers established

d. One marketing organization
e. Limited participants outside New Zealand
f. Profit potential for participants

iv. Staccato Cherry
    a. Latest ripening cherry available for high late season prices
    b. Developed by Ag Canada for Canadian growers
    c. Conflict between Canadian growers and others in competing areas needed resolution, so created a managed program to:
        1) Allow limited plantings in Northern Hemisphere outside of Canada
        2) Southern hemisphere alliances
        3) Exclusive production and marketing areas/timings
        4) Marketing exclusive except for Canadians
        5) Non-Canadian suppliers invest in their own exclusive markets
        6) Opportunity for Canadians to build foreign market alliances
        7) Allows Canadian farmers to benefit from host nation breeding program
        8) Better foreign IP protection and management with exclusive production rights

v. Stardust Cherries
    a. Branded name for a series of similar appearing blush type cherries
    b. Ripen at different times
    c. Allows supplies for 6 – 8 weeks

4. Organizational Models

i. Government/University in house
ii. Private company – Kiku
iii. Farmer organization – PICO
iv. Combination – Prevar

5. Developing a dynamic supply chain

i. Communication
ii. Vision & Strategy – foreseeing opportunities & avoiding problems
iii. Leadership

6. Future

i. Multi-national/institutional breeding programs
ii. Retailers & importers owning IP & licensing suppliers
iii. IP companies managing more than one research institute

VII. Use of Molecular techniques in developing new crop varieties:

1. **Barritt** – use molecular markers to quickly screen for disease resistance, storage, and fruit and horticultural characteristics

2. **Jim Cook** – New varieties have potential for improving nutrition and to help prevent and cure diseases

3. **John Browse** –
    i. Increase and decrease select fatty acids in fruit for health purposes:
        a. 16:0 carbon fatty acid molecules lead to heart attacks
        b. 18:3 used for paints (linolinic acid)
        c. 18:2 used for margarine
        d. 18:1 good oil for human nutrition (like olive oil) and for diesel
        e. 12:0 used in soap
        f. Polyunsaturated fats are good brain food

4. **Rachel Cravens & Michael Ward** – use of molecular techniques in varietal improvements have led to much new case law. Court judgments in this arena are still shaping the law