2012

Intellectual Property and TRC Research

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26th April Is World Intellectual Property Day!

In 2012 visionary innovators are being celebrated

‘Long-lasting IP must be result of creativity and innovation activities’

www.wipo.int/ip-outreach/en/ipday/2012/
Module Outline

• Importance of intellectual property and of intangible assets
• Types of intellectual property rights & IP protection
• Branding & examples of IP for tropical root crops
• Issues in IP value capture with particular reference to Tropical Root Crops
• IP identification exercises
Learning Outcomes

• On completion of the module participants will be:
  – Aware of the concept of IP and how it applies to TRC research
  – Able to evaluate opportunities for exploiting research results
  – Able to identify challenges and tensions associated with IP value capture
Why Is It Important To Know About Intellectual Property?

- Scientists create intellectual property (IP) from their research
- IP not just about science
  - Branding can create economically valuable IP
- You need to know about IP exploitation
  - What the benefits are, and
  - Whether and how to access such rights, and capture value, particularly for TRC
  - At the outset of the creative process
Importance of Knowledge

• Knowledge is the major factor of production in the 21st century
  – ‘Knowledge economy’
• Access to and generation of knowledge is at centre of the IP system
• A functioning and supportive IP regime is important for economic development
Importance of Intangible Assets

- Companies’ success no longer depends upon production assets but on non-material, intangible assets
- In 1982, 62% of market value of top 500 companies attributable to their tangible assets
- By 1998 only 15% of their assets were tangible while 85% were intangible
  - patents, trade secrets, trade marks, brands = IP
Issues in Registering IP Rights

• Intellectual property not a preserve of the rich
• IP can be created or owned by anyone BUT problems exist in registration in many countries
• Most patent applications made in Africa Caribbean and Pacific states are by non-residents
  – Foreign multinational companies protecting their IPR in their target market
ACP Patent Applications

• In Nigeria, 99% of patent applications are made on behalf of brand owners in Europe, USA and Asia.
  – South Africa accounts for <10%
• In the Caribbean few nationals apply for patents
  – Less than 2%
  – Most applicants are MNC pharmaceutical companies
“Technology is the only way for Africa to get rich ... We don’t have a proper infrastructure and we can’t compete in manufacturing ... But if you put me behind a PC and tell me to write software for a Chinese customer, then I can compete brain for brain with anyone trying to do the same thing in the US”.

Herbert Chinnery-Hesse, founder of Ghana’s SOFTtribe company
What is Intellectual Property?

• An intangible form of property arising out of people’s inherent creativity, thoughts, imagination, ideas and need to solve problems

• Property needs to be protected
  - Rights obtained by creators of asset
  - Acknowledges ownership
  - Rewards efforts and investment
What is Intellectual Property Protection?

• Laws granted by each country for property protection
  – Protects tangible expression of ideas
• Assigns exclusive right to stop others using property
• Protection normally for a finite period
• Fees required to keep protected
• On expiry of protection ownership moves to public domain
Two Groups of IPs

• Industrial Property

• Copyrights and related rights
Copyrights (And Related Rights)

• Covers:
  – Literary works (novels, journal articles)
  – Artistic works (art, sculpture)
  – Computer software (Windows)
  – Performance of artists (Opera)
  – Rights of phonogram producers (EMI)

• Applies over lifetime of owner + 50-70 years

• In some cases, automatic right
  – Covered by the Berne Convention for the Protection of Literacy and Artistic Works (1886 and revisions)
## Industrial Property and What is Protected

<table>
<thead>
<tr>
<th>Type of Industrial Property</th>
<th>Protection Offered</th>
<th>Length of Protection</th>
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</thead>
<tbody>
<tr>
<td>Patents</td>
<td>Inventions (what makes things work)</td>
<td>20 years</td>
</tr>
<tr>
<td>Trademarks</td>
<td>Signs that distinguishes goods &amp; services in the market place</td>
<td>10 years</td>
</tr>
<tr>
<td>Industrial design</td>
<td>Appearance of product or logo</td>
<td>10-15 years</td>
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<tr>
<td>Plant variety protection</td>
<td>New plant varieties and seeds</td>
<td>15 years</td>
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<tr>
<td>Geographical indicators</td>
<td>Agricultural produce where quality, reputation is attributed to specific geographic region</td>
<td>Indefinite</td>
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<tr>
<td>Utility models</td>
<td>Incremental inventions</td>
<td>10 years</td>
</tr>
<tr>
<td>Trade secrets</td>
<td>Information (processes, ingredients)</td>
<td>Indefinite</td>
</tr>
<tr>
<td>Traditional knowledge</td>
<td>Genetic resources, traditional knowledge &amp; expressions of folklore</td>
<td>Varies</td>
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Conditions for Patenting

- **Novelty**
  Not disclosed by anyone & anywhere in the world

- **Inventive Step**
  Not obvious to all and already known

- **Industrial Applicability**
  Be useful with some application in industry
  Must make a technical contribution
Patented Plant
‘Blue Hawaii’ Patented 2008

Colocasia esculenta 'Blue Hawaii' PP 20,003
(Blue Hawaii Elephant Ear) ornamental plant
Registered Trade Mark

Idaho® potatoes
Trademarks, Trade Secrets, Copyright And Patents Protect Brands

- Product name
- Logo
- Slogan/strap line
- Design of the product and/or packaging
- Distinctive colours of product or packaging
- Advertisement copy/script of commercial
- Look and feel of retail location or point of sale
- Distinctive sounds & smells associated with product
- Music that accompanies the ad campaign
- Content created on a website
Importance of Branding For Customer Loyalty

- Distinctive & attractive brands vital for companies to maintain profitability, market share or customer loyalty
- Customer loyalty plus prominent position in market are key ingredients to success
- Brands greet us from morning to night; part of our daily routine
  - Comfort and reassure us with their presence.
  - Like good friends we instantly recognise them
  - They remind us of our childhood
Brands

• Brand – name, term, design, symbol, colour that identifies a seller’s good or service
• Used to establish market share by convincing buyers that branded product offers a level of satisfaction not provided by generic product
• Creativity is key to developing strong, appealing brand image
Branding and Intangible Value

- Intangible value of products has overtaken physical value as main source of income.
- Commodity represents very small portion of brand value.
- When Philip Morris paid US$12.9 bn to buy Kraft in 1988 only US$1.3bn (10%) of that price was value of physical assets i.e. food production and packaging facilities.
- Kraft also had an IP portfolio i.e. technological know-how, brands, trademarks, trade secrets, licences, patents.
Brand Positioning

• Creation of desirable, distinctive image for a brand that has strong appeal for customers in a target market segment
• Bespoke marketing mix programmes needed for target markets
• Includes promotional mix, packaging & design
Protecting a Brand

• Protection can apply to names, short verbal descriptions, visual symbols.

• A tangible product’s name and/or symbol is a trademark. Includes:
  – Words, designs, numerals, colours, smells, shape of goods or packaging

• A business name is a word mark.

• You establish and protect rights to exclusive use of any unique trademark by registering and using it.
  – USE IT OR LOSE IT
Naming A Product is Part of IP

• Choose a word or combination of words that tell people about product’s character
  “Salty Dog: the hand-cooked crisps that bites back”

• Get a feel for product’s personality then give it a name that fits

• Can make up new word that has no prior meaning
  – Hovis (*Hominum vis*)
  – Google (googol)

Mortimer *et al*, 2009
Brands and Fresh Produce

- Branding more common in food processing sector than in fresh produce sector
- Branded fresh fruits: bananas, pineapple & citrus: Chiquita, Dole, Sunquist
- Vegetables: cocktail tomatoes
- Successful branding emphasises qualitative attributes
  - Taste or nutritive characteristics
- Many supermarkets promote fresh produce as own produce, not branded, as part of competitive retail differentiation
Pink Lady Apples

• Result of a cross between Golden Delicious and Lady Williams apples
• Varietal name is Cripps Pink; Pink Lady® is a brand name
• Apple is marketed using its distinctive pink colour, fizzy flavour and crispy crunch
• Variety is owned & licensed by Dept of Agriculture & Food, Western Australia and has Plant Breeders’ Rights in multiple countries.
• APAL, the apex industry body for Australian apples and pear growers owns and manages the IP in the trademark Pink Lady®, registered in >70 countries
• ~8% share (by value) of apple sales
• One of the most recognisable fresh produce brands
• Marketers use brand & its intangible characteristics to differentiate itself in the minds of target audiences:
  – Women in their 20s & 30s
• Its competitors behave like apple varieties
• Recent consumer research has effectiveness
  – Consumers’ spontaneous recall of Pink Lady® as top of mind has doubled since 2006

www.pamlloyd.com/case-study-pink-lady-apples
Geographical Indication
Sweet Potato, Aljezur, Faro, Portugal

• Aljezur is largest producer of sweet potatoes in Portugal
• Sweet potatoes grown there classified with status of Geographical Indication (GI)
  – GI allows producers of agri-food products with special characteristics linked to their origin to effectively patent the product name
Protection of New Plant Varieties

• New plants may not comply with patent criteria
• Plant Breeders’ Rights (PBR) protect work of plant breeders who develop new varieties
  – Also known as Plant Variety Protection (PVP)
• PBR enable breeders to charge royalties for protected varieties
  – Royalties provide means for plant breeding companies to fund their work
  – PBR entitle the holder to prevent anyone propagating material without authority
International Union for Protection of New Plant Varieties (UPOV)

- Intergovernmental organisation
- Established by the International Convention for the Protection of New Varieties of Plants
- Objective is to protect new varieties of plants via registration of IP right
- Currently only 3 ACP states are members of UPOV
  - Kenya, Trinidad & Tobago and South Africa.
UPOV

• Conditions to meet:
  – New variety
  – Distinctiveness
  – Uniformity
  – Stability
UPOV Exemptions

• Breeders’ exemption
  – Research exemption to patent
• Farmers’ privilege (1978) convention
  – Debate over farmers’ rights to replant from purchased (protected) seed
  – Limitations on what they can do – not supposed to sell to other farmers
• Mutations and discoveries protectable
  – Important for breeders
IP Issues For Research Scientists

• Need to be familiar with the State-of-the Art
• Who are the key players in the field
  – Who patents
• Understand the ‘Commons’ area for which you can have fair use/research exemption
• Need to understand licensing
  – How best to commercialise invention
Why You May Miss Out On Funding: No Progress Beyond The State Of The Art

‘Proposal does not explain the state-of-the-art worldwide, only their own state-of-the-art.’

‘Proposal refers to an outdated state-of-the-art.’

Proposal does not explain the advantages of their solution compared to other, existing approaches.’

‘Company X already has a similar device/process on the market; why is the proposed one better?’

‘There is no clear comparison between the proposal objective and the (potentially well identified) state-of-the art.’

Source: Corn (2010)
Possible Types of IP for Tropical Root & Tuber Crops

- Patents
- Plant Breeders’ Rights
- Geographical indicators
- Trade marks
- Trade secrets

- Copyright
  - Journals, CD-ROMs, Protocols, manuals, commercials, etc.
IP in Tropical Root and Tuber Crops Cont

• Very few patents
  – Mostly in value addition/processing
• Public funding-public good
• Involvement of the CGIAR system in development of germplasm
Research and IP in TRC

- Research focus on:
  - Increasing productivity (yields, pest and diseases,
  - Post-harvest handling, marketing) and
  - Improving crop nutrient content
- Usually undertaken for the common good
  - To improve food security and human nutrition
- Largely funded from public resources
  - National governments
  - International donors
IP in TRC cont.

• TRC germplasm obtained from CGIAR centres
  e.g. IITA, CIAT, CIP

• Comes with a Material Transfer Agreements (MTA) for local validation
  – Intended to support improved farmer livelihoods and national income
  – No patenting possible of resultant varieties
Issues in IP in TRC Cont

• TRC mostly propagated vegetatively
  – Makes control over ownership of material plant and capturing IP value developed via research much more complex.

• Communities have significant contribution to variety development
  – Controversial for only one person to own.
Gluten-Free Cassava Flour

- American Key Food Products (AKFP) patent application for production process of King Lion brand premium gluten-free cassava flour.
- Pilot production at factory in Brazil.
- Process using whole root to produce fine, soft flour
  - Retains protein and fibre
  - Mimics the structure, texture and taste of wheat flour.
- Patent application
  ‘covers various aspects of the manufacturing process, including particular milling and drying procedures, as well as the resulting flour itself’
Methods for Cooking Sweet Potato Products

• Awarded to Walter J. V. et al, of North Carolina State University in 2001 (Patent number 6197363)

• Relates to

‘A process for converting sweet potato into convenient and nutritional finished products for consumers and the food industry’
Cooked Sweet Potato Products
Patented Aspects

‘Cooked, pureed sweet potato is combined with approximately 25% dry matter, such as potato flakes or starch, and gelling agents, sugar, calcium and water are added.

The mixture can be spread or injected into a rectangular mould or extruded and cut into bite-sized pieces, strips, wafers or patties, then frozen and packed for distribution.

Products made using the invention also contain a high degree of beta-carotene to meet or exceed the recommended daily allowance (RDA).’
IPR Examples In TRC

Frozen sweet potato patties, Probably produced after licensing payment made to patent owner on cooked sweet potato products
Pat Sesahaye, employed as a government sweet potato breeder, develops a new potato variety that is not only rich in protein but in fats, oils & minerals.

It also produces a sweet, milky juice that can be extracted and drank. She has perfected the process of extraction of the juice.

While doing some experiments in her kitchen she has developed a process to convert potato peel into a plastic material that can be used in various applications.
Exercise

IP Ownership

- How many IPRs can you identify?
- Who owns the IPR in each case?
- What should she do to ensure protection of the IP?
IP Ownership Aspects

• Creator of IP-first principle
  – Especially where there is no written contract/employment

• Employer
  – if done as duty by employee
  – employee uses the employer’s resources

• Belongs to customer that paid for contracted research
IP Ownership Aspects cont

• Development not done with employer’s resources

• A former employee may be liable to prosecution if
  – S/he is engaged in production of goods or services same or similar to those of his former employer
    • Particularly if this is done within a short period of leaving employment
  – Reveals secrets of former employer
    • Unfair competition laws
How Can You Check To See If Your Invention Is New?

• Carry out a search of published patents and other documents, such as trade journals, before applying
  – Avoid a lot of costly effort in IP development

• Can be done at national patent office and
• On-line
How Can You Check To See If Your Invention Is New? Cont

Free patents online is a searchable website to get details of patents registered with different patent offices

http://www.freepatentsonline.com/search.html
How Can You Check To See If Your Invention Is New? Cont

Google Patents also provides details of patents registered with different patent offices

http://www.google.com/patents
WIPO PATENTSCOPE Portal

• Access to full patent information
• For scientists in the LCD countries
  – Those in the ACP
  – Reduce “re-inventing of the wheel”

www.wipo.int/patentscope/search/en
WIPO: State-of-the-Art Support

• Key mandate of the World Intellectual Property Organization is to offer technical assistance to developing countries

• Includes access to & use of technological information contained in patent documents

• Patent Information Services (WPIS) handles individual requests for patent information

• WIPO offers on-line training material
  www.wipo.int/academy/en
Applying For A Patent

• File for a patent in each country where you need protection
  – Normally countries in which the product is to be sold or the process licensed
• First submission of application,
• Second examiners at the patents office scrutinise submission
  – If it meets the criteria for patenting.
• Later wider searchers
  – To find out if patent exists elsewhere
  – Avoid infringing the rights of others.
Applying For A Patent (Cont)

• Final sealing of the patent application once all is confirmed and verified
• Protection for a period (20 years or so).
• WIPO simplified process
  – Filing one single international application
  – With the same effect as filing separate applications in all different countries
  – Reduction in costs for protection as well as processing of the application.
Applying For A Patent (Cont)

- A patent system performs both protection of an invention as well as disclosure of information
  - Others may use it when the patent lapses
  - Technical specification can be accessed to enable a researcher to make improvements to what already exists on the market
- Patent information is not secret even at the time it is under protection
Enforcing IP cont.

- IP owner must look for infringement in the marketplace
- Prove to the courts of law of infringement
- Compensation has to be paid by infringer
Jamaica Blue Mountain Coffee

• Blue Mountain coffee from Jamaica famous as a top-of-the-range coffee

• ‘emperor of coffees, renowned the world over, has a wonderfully mild, graceful flavour with a rich appley bouquet and a perfect union of acidity and body’

• Fetched very high prices

• Name never registered
Exploiting IP

• Patents exploited through:
  – Actual production of goods and services
  – Leasing and licensing by third parties
    • Allowed to use the patent
    • Pay fees and royalties to the patent holder
IPR Regimes in ACP Countries

- Most States have an IP Office
- Responsible for administering IPR system and for advising on technical and policy issues relating to IPR
- Administration of both industrial property and copyright and related rights
  - Register trade marks, industrial designs and geographical indications,
  - Administers copyright and related rights, and the patent system, new plant varieties and layout-designs (topographies) act.
- Websites offer information on patents and plant breeders' rights
Technology Transfer Office (TTO)

- Most universities and many national research organisations now have a TTO
  - Responsible for advising researchers on whether their invention is patentable
  - Commercialise technologies, negotiate licenses with commercial sector
  - Assist entrepreneurs with creation of start-up companies

- UWI now has a Research Development and Knowledge Transfer Office
Concluding Remarks

- Need to consider IPR in the whole TRC value chain
- IPR protection has a financial implication
- Disclosure may be detrimental to IPR
- Consider the rights of others in your IPR issues
Issues in IP Value Capture
Do you know who this is?
George W. Carver, 1864-1943

American scientist, botanist, educator, inventor

Reputation based on his research into and promotion of alternative crops to cotton

Developed over 100 uses for sweet potato including flour and sugar but he refused to patent any of his food product inventions

Believed ‘food products came from a higher power and should not be a source of profit but available to all’

He could have made a lot of money but ‘found happiness being helpful to the world’.
Farmer Plant Breeding, India

- Sebastian Joseph, a farmer from Kerala with his son, developed a method for cross pollinating cardamom to increase seed pod production, from around 30 pods/bush to 120-160 pods.
  - Most cardamon grown now is the *Njallani* variety.
- In spite of developing a ‘wonder’ variety that transformed the industry, Joseph did not make a lot of money from his innovation.
Njallani Cardamon, India

• His innovation was recognised by India’s National Innovation Foundation - he was awarded US$2,250 in 2001
• In 2011 he received a Lifetime Achievement Award from the Indian Spices Board for US$18,152
• The work is not patented
• Source: www.commodityonline.com
Njallani Cardamon, India

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Disease-Resistant Taro Varieties

• In 1990s nearly all taro in Samoa died out due to leaf blight
• Samoan people came to University of Hawai’i (UH) faculty member for help
• Researcher collected taro from Hawai’i and Palau to create new varieties which showed resistance
• UH filed for a plant patent on the 3 strains to prevent other people using them without permission
• Offered a licensing agreement
  – Commercial taro growers would pay US$2/seedling to cover UH costs
  – Growers could use strains for 3 years gratis
  – After that period they would pay 3% of profits
  – No charge for private use
Developing Disease-Resistant TRC

- The patenting of taro varieties resulted in a series of protests by Native Hawaiian groups concerned about the cultural, environmental and economic aspects of taro research.
- *Kalo* (taro) is sacred in Hawaiian culture.
- Wakea, the sky father & Ho’ohokukalani, gave birth to *Haloa*, who grew into Kalo, the first taro plant.
- Their second born was man, whose destiny was to care for *Haloa*.
- Taking care of *kalo*, Hawaiians prospered.
Developing Disease-Resistant TRC

• Land and water given by the gods were managed by their chiefs for the benefit of all
• Land ownership concept introduced by Western settlers and business in 1848
• Hawaiians refer ‘the Mahele’ when land as gift from the gods turned into private property
• Hawaiians saw the patenting of taro strains as a second ‘Mahele’ as it removed taro from the collective care of Hawaiians and gave ownership to UH
The End Of The Story

• In 2006 UH filed a ‘terminal disclaimer’ for the 3 patents
• UH can no longer make claims on these patents
• Taros are once again free for everyone to use
• UH no longer collecting licensing revenue
Group Discussion: IPR Research Ethics & IPR

• Today agricultural research scientists are not always able to ignore sources of research funding and requests to address a certain problem.

• Research institutes and universities are under pressure to patent their research.

How would you address a similar issue to the taro research problem?
IP Exercise

Early Career Researcher & IP protection
1. You are a PhD student and have just finished your thesis, which contains an idea for storing OFSP flour to retain its beta carotene level for 9 months. You decide there might be commercial potential for this flour so you ask your supervisor what you should do next.

Your supervisor advises you to consider getting IP protection and perhaps writing to some food manufacturers to see if they would be interested. You think this would be a good idea so you make an appointment with your university’s Technology Transfer Office (TTO).

Before you get started, which type of IP should first be considered?

a) Trademark  

b) Patent  

c) Industrial Design
2. At the meeting with the TTO the TT manager considers your research and informs you that it may be possible to get a patent. What would you expect her to say next?

a) “I like this idea, let me get the forms.”

b) “This looks interesting. I would like to do some searches to see what has already been patented”.

c) “I like this idea. Have you written this up somewhere, say, as a paper?”
3. In completing the application form the TTO manager notices you have made your invention made known to the university press officer and that the press officer has written a news article to be distributed to national and trade newspapers.

What would you expect her reaction to be?

a. “That’s good news! It will be good for you and help our application”.

b. “I will ring the press officer to see if this has been published yet. If not, I will get it stopped.”
4. When you next meet the TTO manager she informs you that in undertaking some searches she has found a number of similar patents plus a couple of articles in the trade press. What would you expect her recommendation to be?"
"Patent applications are costly. It is best to abandon the application at this stage."

a. “We had better review the patents and articles.”

b. “Let us make an application anyway.”
5. At the next meeting the TTO manager informs you that fortunately the press officer has not released the information and she has told the press officer to put the release on hold until a patent application is made.

What would you expect the TTO manager to suggest as the next step?

a. “We’d better make an application immediately.”

b. “I’ll do a search to see what has already been published.”
6. You continue to tell the TTO manager that you have not told anyone about this. The TTO manager is pleased about this and tells you not to inform anyone of your ideas until a patent application has been made.

What you would expect the manager to suggest as the next step?

a. “We’d better make an application immediately.”

b. “I’ll do a search to see what has already been published.”
7. The TTO manager, along with your help, has found all the documents, both previous patents granted and applications and has made a patent application to the IP office. The IP office examines your patent application and decides it is valid. A patent grant is then issued.

What would you expect the TTO manager to suggest as the next move?

a. “Well done. I will file this away”
b. “Let’s see if we can licence this.”
Learning More

• IP Armour game

www.ipo.gov.uk/whyuse/armour.htm