

# USING TECHNICAL AND SCIENTIFIC INFORMATION TO IMPROVE STORAGE OF AGRICULTURAL PRODUCTS: The Example of Bananas in Uganda

Presented at WIPO Meeting on Developing the TISC Project-23<sup>rd</sup> February, 2015, Accra, Ghana

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African Role Model in Modernizing African Food Systems-awarded by IFAD, SU, UP, MSU & MUK. (2013)



# Summary

- This presentation highlights the importance of patents and the legal requirements of commercialization of a patented product.
- Patents can become a source of revenue to the inventor, and in the case of commercialization patents give a higher bargaining power for licensing to industry and individuals either exclusively or non-exclusively for the market.
- The FRAVASEMA project was awarded a patent in 2009 under the Patents Statute(1991) of the Republic of Uganda. This project was also been given the US Food and Drug Administration Certificate as in 2010.
- The patent and certificate have legally enabled the enterprise to expand and put its product on market and currently the product is being consumed in 12 States of the United States.
- A patent may comprise of a number of subjects like; mechanical devices and articles of manufacture, processes/methods, chemical compositions/compounds, isolated and characterized molecules, genetic organisms/gene sequences, computer programs and/as improvements to the innovation.
- Here, the patented method of processing a long-shelf cooking bananas is being commercialized as industrial product ,licensed on a non-exclusive basis.

# INTRODUCTION

**The innovation is about:**

- **Banana Value Chain(BVC) in East Africa,**
- **Technical information includes IP and IP asset,**
- **Scientific information and innovations are from academia to public, private sector in partnerships for agribusiness through commercialization of Intellectual Property Asset among other goods and services in the BVC.**

- In order for the patent to be awarded to FRAVASEMA, the project needed three things which included; bio - innovative methods, a scientific and technological approach, and biotechnology claims.
- Inactivation of enzymes in peeled bananas, a bioreactor for biogas production, fermentative yeasts for primary and secondary fermentation in wine and vinegar were the bio - innovations.
- The main technological approach was inactivation of oxidation enzymes in the bananas, their preservation with a few ppm of food grade salt(sodium metabisulphite) and ultimately prolonging the shelf- life of the peeled bananas for away markets. The technology had to reduce the bulk of *matooke*(peels and stalks) during Transportation by 40%, delivering only 60% to final consumer.

# Agribusiness Incubator Consortium

- **Afribanana Products (ABP) is a company limited by guarantee that resulted from research in science, technology and innovations (STI) with Kyambogo University as its lead institution. It has been formed with support from Universities, Business and Research in Agricultural Innovations (UniBRAIN), which is an initiative of FARA, PanAAC, ASARECA, ANAFE, ICRISAT- ABI,CCARDESA, CORAF/WECAERD as partners at African Union level. ABP operates on the principle of public, private partnership (P-P-P) as a consortium business incubator based on University, Research institute, and Private Sector collaboration. The ABP main proposition is to enable universities, business and agricultural research institutions to commercialize agricultural technologies and produce graduates with entrepreneurial and business skills through agribusiness incubator partnerships**

# Scientific Information Used

- This business Incubator on Banana Value Chain has so far successfully established: Biotechnological applications in; (a) primary fermentation of banana wine;(b) secondary fermentation of vinegar;(c) spoilage enzyme inactivation in fresh vacuum sealed *matooke*(FREVAHEMA)-a Patented Product(IP Asset);(d) bio-reactor biogas production and (e) TC banana(disease-free) seedlings. The patented product of fresh peeled bananas has a shelf –life of 6 months in deep-frozen conditions and is an export to United States of America with Food and Drug Administration (USFDA) Certificate of registration. Other ABP technologies in production which operate as enterprises include biodegradable shoppers' bags, banana textiles and crafts, charcoal briquettes, biogas from food waste, enriched animal feeds formulations; dietetic menus and grasshopper (edible *nseene*)formulated biscuits. Other potentially produced product results include banana juice, syrup as sugar, packaging edible insects using natural sterile banana fibre and affordable sanitary pads for rural school girls.

# Other Services - by BVC Incubator

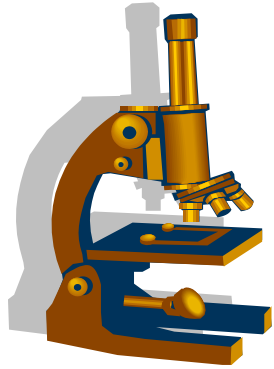
- ABP has embarked on training of post-graduate students in Business Incubator Development and Management as well as supervision of interns and students on industrial attachment in science, technology and innovations and business entrepreneurship skills. Training farmers in post-harvest food handling and processing, including valuable use of food wastes in the banana value chain is an additional major achievement of Afribanana Products Limited.
- ABP main clients are incubatees that basically include small and medium enterprises (SMEs) and start-ups who apply to Incubator Manager for support. So far in year 2014, 18 clients have been identified by ABP and get support in form of “hand-lifting and soft landing” those business angels rather than debentures would offer. ABP offers limited funding support, equipment and machinery for STI activities and ultimately will offer space facility and marketing services. Intellectual Property Rights(IPR) are observed and royalties are paid on non-exclusive licensing approach to patent and other IP asset holders. Further research in scientific innovations increases with more engagement of 2 PhD students’ recruitment and financial support established in the Business Incubator set up.

# Benefits from innovations-ipasset

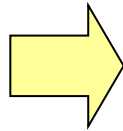
1. FREVASEMA-Over 70 MT exported to USA bringing revenue UGX 1 billion to farmers, etc
2. Biodegradable bags-to replace polythene bags
3. Banana Juice and wine(Refer other paper)
4. Biogas-to reduce on charcoal(deforestation) use
5. Banana textiles and ornamentals-beads, etc
6. Charcoal briquettes,
7. Vinegar from banana waste
8. Enriched animal feeds formulated
9. Edible insects(nsenene) cookies with banana flour
10. TC banana disease-free seedlings against BWD,



# From Laboratory to Market - Innovations



R&D



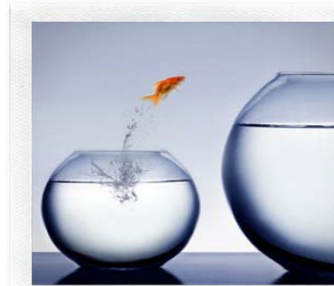
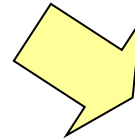
Patent application



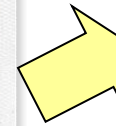
Licensing



Commercialization



Start-up/ Spin-off



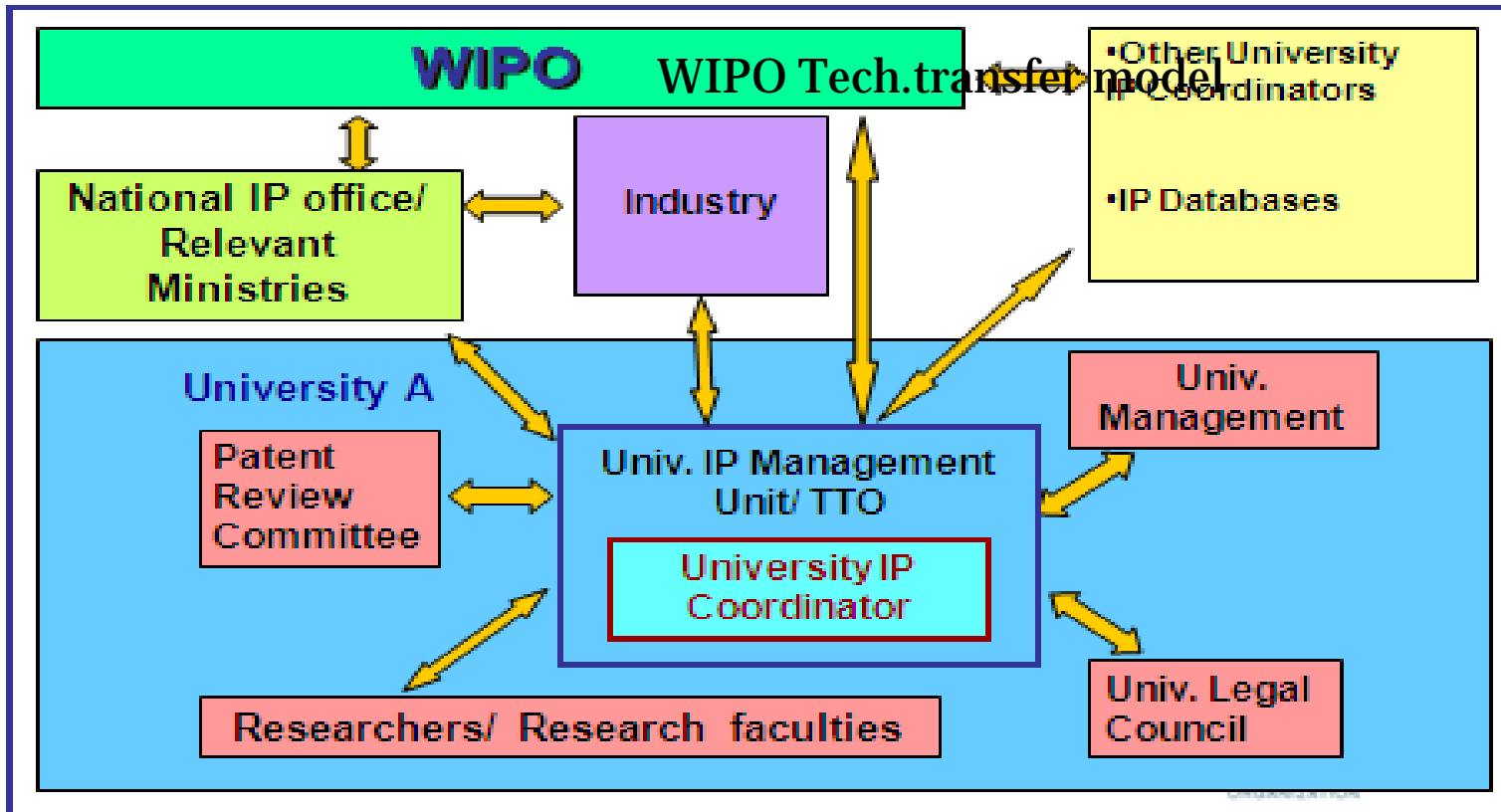
## Technology Transfer

CREATION

PROTECTION

EXPLOITATION

# WIPO University Initiative Infrastructure



# Applying WIPO University Initiative

- **KYU works with UIRI, UNCST, NARO, MUST**
  - **University IP & Tech Transfer Coordination**
  - **University Legal Office engagement-MOU**
  - **Industry-Private Sector Partnership**
  - **IP Policy in development**
  - **P-P-Partnership in licensing patented technology**
  - **Liaison with National IP Office-URSB**
  - **University involvement in IP management**
  - **Further research facilities-creation of Incubator/Innovation Centre and Science/Industrial Park**



THE PATENTS STATUTE, 1991



# Certificate of Grant of Patent

In accordance with section 22 (1) of the Patents Statute, 1991, it is hereby certified

having the No. UP./P./07./00001..... has been granted to:

Name: .....  
GEORGE WILLIAM BYARUGABA - BAZIRAKE

Address: .....  
KYAMBOGO UNIVERSITY P.O.BOX 7181 KAMPALA

On the ..... 23rd ..... day of ..... October 2009 ..... one thousand n



# Afri Banana Products Ltd (ABP)



2014

## CERTIFICATE OF REGISTRATION

This certifies that  
**Afri-Banana Products (ABP) Ltd.**  
Uganda Industrial Research Institute  
Kampala, 256  
Uganda

is registered with the U.S. Food and Drug Administration pursuant to the Federal Food Drug and Cosmetic Act, as amended by the Bioterrorism Act of 2002 and the FDA Food Safety Modernization Act, such registration having been verified as currently effective on the date hereof by Registrar Corp.

U.S. FDA Registration No.: **18635519406**  
U.S. Agent for FDA: **Registrar Corp**  
Communications: **144 Research Drive, Hampton, Virginia, 23666, USA**  
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*This certificate affirms that the above stated facility is registered with the U.S. Food and Drug Administration pursuant to the Federal Food Drug and Cosmetic Act, as amended by the Bioterrorism Act of 2002 and the FDA Food Safety Modernization Act, such registration having been verified as effective by Registrar Corp as of the date hereof and Registrar Corp will confirm that such registration remains effective upon request and presentation of this certificate until December 31, 2015, unless such registration has been terminated after issuance of this certificate. Registrar Corp makes no other representations or warranties, nor does this certificate make any representation or warranties to any person or entity other than the named certificate holder, for whose benefit it is issued. Registrar Corp assumes no liability to any person or entity in connection with the foregoing. The U.S. Food and Drug Administration does not issue a certificate of registration, nor does the U.S. Food and Drug Administration recognize a certificate of registration. Registrar Corp is not affiliated with the U.S. Food and Drug Administration.*

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**OPEN**



# Primary fermentation





# Bio-innovation



# Bio-innovation



# Technical innovations







Bio





# innovations







# Afri Banana Products Ltd (ABP)



DR. G.W Bazirake explaining ABP Products to the President of Uganda



# Afri Banana Products Ltd (ABP)



ABP wins a trophy at UMA Trade Fair