

# **On-going Activities in Agro-Processing at Food & Agricultural Research and Extension institute (FAREI)**



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**Food and Agricultural Research  
and Extension Institute**

# Content of Presentation

- **Introduction to FAREI & the Agro-Processing Unit**
- **Objectives**
- **On-going work at various department.**
  - **The Research Department.**
  - **The Training Department**
- **Training modules being delivered.**
- **Technology transferred to enterprises**
- **Way Forward**



# **Food & Agricultural Research and Extension Institute (FAREI)**

- **FAREI operates under the aegis of the Ministry of Agro Industry and Food Security.**
- **The Institute has the responsibility to:**
  - **conduct research in non-sugar crops, livestock and agro-forestry sectors**
  - **provide an extension service to farmers in Mauritius including its outer islands.**
- **FAREI is managed by a Chief Executive Officer who is also the Accounting Officer.**
- **Its management team comprises of three Assistant Directors.**



# Aim & Objectives

**In line with Government policy that is to increase agricultural production, reduce our dependency on imported processed products and promote agri-businesses our aim and objectives are to:**

- **Develop products and effect a timely technology transfer through a client focus and participatory approach.**
- **Develop Training modules to train entrepreneurs.**
- **Upgrade Food enterprises being set up.**
- **Encourage large scale growers to embark in value addition of their excess produce.**



# Aim & Objectives

- Encourage entrepreneurs to develop new or upgrade their products to create market opportunities.
- Acquaint prospective agro processors with latest technologies, semi industrial processing equipment and processing norms (quality & hygiene) to upgrade their production and enable them to target hyper and super markets and export markets as well.
- Guide entrepreneurs in setting up of their enterprises and take advantage of all incentives/schemes being provided by the Government.



# The Agro-Processing Unit at FAREI

## ➤ **Research Department :**

- Research and development of products.
- Projects funded by Mauritius Research Council and other International Research Institutions

## ➤ **Agro Processing Training Department:**

- (i) **Agro Processing Training Centre** involved in giving support to agro-entrepreneurs through product development and training
- (ii) **Agro Processing Resource Centre (Incubator)** offers opportunity to entrepreneurs
  - to use agro-processing equipment to produce their products to test the market prior to setting up their own enterprises.
  - Technology transfer to upgrade and develop new products to planters and entrepreneurs already in business to create new market opportunities

# Agro-Processing Training Centre

The training sessions in several modules are delivered at the Agro Processing Training Centre, Farmer Training School, Convent Road, Wooton, Republic of Mauritius.



## **Agro Processing Training Centre**

- **Established in 2004.**
- **8 to 10 training sessions are being conducted out annually.**
- **25 participants at one session.**
- **2600 people mostly women have followed the training .**
- **Almost all them are carrying out the activity of value addition to agricultural produce at households.**
- **We have a record of 350 of them have started small enterprises.**
- **We have a high demand for such training especially from unemployed people.**

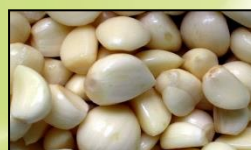




# Agro-Processing Training Centre

Training offered are registered at the Mauritius Qualification Authority (MQA)

- **Type of training offered:** Part time short training sessions that enable a person to start an agro processing enterprise.
- **Qualification Required:** No Academic qualification but able to read and write (creole, French & English) to take notes.
- **Level of the training sessions:** Award Certificate of attendance.
- **Field of Training:** Processing of agricultural produce fruits, vegetables, onion, garlic, tomatoes, chillies, ginger etc



# Agro-Processing Training Centre

## Techniques of processing –

- Sterilisation of glass jars
- Pasteurisation of products
- Use of citric acid and ascorbic acid.
- Sodium metabisulphite for pre-treatments purposes only.
- **In line with the Food Act our products are considered to be 100% natural products no preservatives added.**

**FAREI**  
Tomato Jam

Ingredients :  
Tomato, sugar,  
pectin  
Ingrédients :  
Tomate, sucre,  
pectine

Exhibit not for sale

100%  
Natural

Net Weight .....  
4 697400 030004  
No Preservative  
Keep refrigerated  
after opening  
Best Before .....

AGRO-PROCESSING CENTRE - Wooton- Tel: (+230) 670 9650

Ingredients :  
Chilli, lemon vinegar,  
oil, garlic, salt

Exhibit not for sale

**FAREI**

100%  
Natural

**Chilli & Lemon Paste**

Food and Agricultural  
Research &  
Extension Institute  
Net Weight .....  
No Preservative  
Keep refrigerated after  
opening  
Best Before .....

AGRO-PROCESSING CENTRE - Wooton- Tel: (+230) 670 9650

# Agro-Processing Training Centre

## Target group:

- People interested in agro-processing.
- Those already in agro-processing businesses.
- Unemployed graduates, men & women.
- Planters
- Members of Cooperatives.
- Members of organisations such as National Women Entrepreneur Council, Nation Women Council, SMEDA....
- Ministry Gender Equality, Child Development & Family Protection, Ministry of Cooperatives.
- Rodrigues



# Training Modules & Contents

**No. of Training Modules - 10**

**Training sessions - 30% Theory and 70% Practical**

**Content at all modules:**

- **Basic principles & techniques in food processing and preservation.**
- **Micro-organisms, food spoilage and food poisoning**
- **Hygiene and disinfection.**
  - **Personal and food hygiene**
  - **Products and method for cleaning and disinfection**
  - **Identify sources of contamination and their control.**
  - **Code of hygienic practices for food handlers.**
- **General view on concept of HACCP.**
  - **Principle for identification of hazards and their control.**



# Training Modules & Contents

- **Harvest and post harvest of fruits and vegetables**
- **Packaging & labelling.**
- **Food Act Issues**
- **Permits**
- **Building requirements**
- **Record Keeping**
- **Calculation of cost of product to determine profit**
- **Planning and Management of Production and Finance**
- **Entrepreneur Development skills**
- **Customer care**



# Training Module – (1) Chips making

Duration – 3 full days from 9.00 to 15.00

**Bread Fruit**



**Potatoes**



**Bananes**



**Sweet potatoes**



**Taro**



**Cassava**



# Training Module – Chips making

- A variety of chips at the market



- Flavoured Chips with cheese, chicken, garlic and paprika.



# Training Module - (2) Preservation with Sugar

Duration – 6 full days from 9.00 to 15.00

## Fruit Paste



## Jam, Jelly & Marmalade



## Juice, syrup & nectar



## Crystallized Fruits





# Training Module – (3) Pickling of vegetables & Fruits

Duration– 6 full days ( 9.00 – 15.00)

## Pickles with oil & spices



## Vinegar Pickles



## Sauces, Ketchup, Paste & Chutney



## Pickles in oil & spices



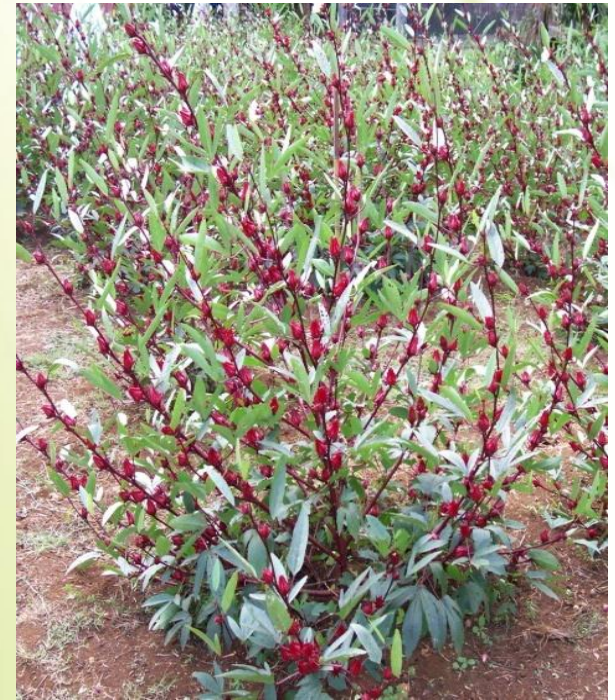
## Sweet & sour



# Training Module –(4) Value Addition to Roselle (Hibiscus sabdariffa/ Oseille Rouge) Duration – 4 full days ( 9.00 – 15.00

## Products from Roselles :

- Pickles
- Frozen
- Dehydrated
- Powder
- Jam & Jelly
- Juice & Nectar
- Crystallized
- Fruit Paste
- Sweet & Sour Pickle



# Training Module – (5) Value addition to Bread Fruit

## Duration– 4 full days (9.00 – 15.00)

### Products from Bread Fruits :

➤ Production & utilization of bread fruit Flour

➤ Pickles

➤ Frozen

➤ Chips & crisps

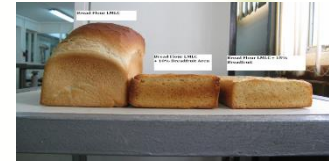
➤ In brine

➤ In syrup

➤ Jam

➤ Frozen snacks

➤ Dehydrated chips



# Training Module – (6) Value addition to Tomatoes

Duration– 4 full days ( 9.00 – 15.00)

## Products from tomatoes:

### Ketchup & variety of Sauce



### Pickles



### Whole peeled tomatoes in Purée



### Nectar



### Jam



### Frozen



### In Syrup



### In Brine



### Tomato Paste



### Crystallized



### Powdered



### Dehydrated In Olive Oil



# Training Module – (7) Production of Heathy Preserves from Vegetables & Fruits

Duration– 6 full days ( 9.00 – 15.00)

## Healthy Preserves :

- Oil free Pickles
- Low sugar or sugar free Jam, jelly & marmalade
- Dehydrated Fruits & Nuts
- Vegetable & fruit juices no sugar added
- Canning of fruits & vegetables in glass jars
- Fruit bars & leather sugar free



# Training Module –(8) Minimally Processed Vegetables & Fruits

Duration– 4 full days ( 9.00 – 15.00)

## Minimally Processed Products:

- Ready to prepare cut vegetables.
- Ready to eat fruits
- Chilled Fruit salad.
- Chilled Fruits in syrup.
- Seasoned vegetables.
- Salads with dressings.
- Marinated vegetables ready for barbecue or roasting
- Pre-treated fruits for pickling
- Fruit 'Confit'



# Training Module – (9) Value addition to Mushrooms

## Duration– 4 full days ( 9.00 – 15.00)

### Products from Mushrooms:

- Pickles
- Frozen
- In Brine
- In Vinegar
- Dehydrated
- Powder
- A variety of sauce
- Sandwich spread

### Sandwich Spread



### Pickles



### Variety of Sauce



### Frozen



### Ketchup



### Minimally Processed



### In Brine In Vinegar



### Powder



### Dehydrated



# **Training Module –(10)Pickling of Vegetables and Fruits (Advanced Course)**

**Duration– 6 full days ( 9.00 – 15.00)**

**Pickling of Vegetables and Fruits (Advanced Course) is offered to those who have already followed the initial course and have started their enterprises.**

## **Topics Covered:**

- **Technology of bulk storage of raw materials for future use.**
- **Techniques for large scale production.**
- **New types of packaging.**
- **New products development.**
- **New Market opportunities (concept of Halal products)**





# Facilities offered at the Agro- Processing Resource Centre (Incubator)

Access to the facilities of the centre is limited to registered entrepreneurs, growers, and people who have followed training at FAREI.



# Agro-Processing Resource Centre

- Established in 2007.

## *Production*

- 20 - 25 entrepreneurs have been using the facilities offered for production of 50 to 100 units of product to find market annually

## *Transfer of Technology since 2012.*

- 25 to 30 entrepreneurs annually request to up grade their products (packaging, preservation technique).
- 10 -15 entrepreneurs annually request to develop new products



# Agro- Processing Resource Centre

## Agro-processing Equipment

Slicing & Frying



Dehydration



Extraction



Packaging



Quality control



# Agro- Processing Resource Centre

**Grinder sealer**



**Deep Fryer**



**Blender**



**Aluminium pouch**



**Vacuum pack machine**



**Potato Peeler**



# Agro- Processing Resource Centre

**Pasteuriser**



**Blast Chiller & Freezer**



**Continuous Sealer**



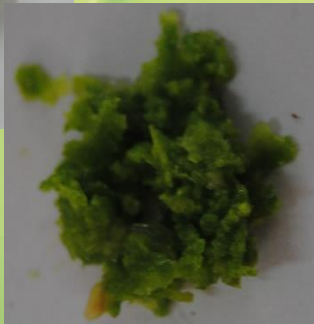
**Autoclave**



# Products Developed & Technology Transfer

## Value addition to combava

- Production of powder from combava leaves and rinds
- Use of powdered Combava leaves & rinds for flavouring of chilli paste, turmeric, curry powders and curry pastes
- Use of fresh combava leaves and rinds for flavouring of products such as jam, pickles, chilli sauce, fruit pastes, chutneys and sweet & sour pickle.



**Technology transferred through a training module of 5 full days to 25 beneficiaries of Switch Africa Green Project at Rodrigues**



# Products Developed & Technology Transfer

**Pre-cooked Ready to eat vegetables with a shelf life of 6 weeks kept at chilled at 4°C**



➤ **Technology transferred to Down to Earth Co. Ltd.**



# Products Developed & Technology Transfer

- Chilli & Coconut paste/sauce
- Chilli & groundnut paste/sauce



- Chilli with fruits (pineapple, orange and apple) sauce and paste



**Technology transferred to Prajo Enterprise Ltd.**



# Products Developed & Technology Transferred

- Passion fruit peel as a source of natural pectin for preparation of jam and jellies, fruit paste



- Grape fruit (white variety) peel as a source of pectin for preparation of marmalade from citrus fruits.

**Technology transferred to PNC Foodstuff Ltd and at training in Rodrigues**



# Products Developed & Technology Transfer

Sugar- based fruit purée to be incorporated in ice creams:

- Strawberry
- Banana
- Pineapple
- Mango
- Orange



- **Technology transferred to Iceland Co. Ltd.**
- **The products can also be used in pastries.**

# Products Developed & Technology Transferred

## Value addition to Moringa

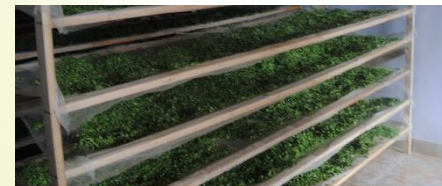
Utilisation of fresh, dehydrated and powdered moringa leaves in Food preparations to enrich them with iron



Technology transferred through a training module of 4 full days to 25 beneficiaries of Switch Africa Green Project at Rodrigues



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# Products Developed on Request - Garlic Products

**1. Garlic pickled in oil & spices**



**2. Garlic pickled in Brine**



**3. Garlic Paste**



**4. Garlic & Ginger Paste**



**5. Garlic Paste with herbs**



**6. Dehydrated Garlic Flakes**



**7. Garlic Powder**



**8. Chopped Garlic in Brine**



# Products Developed on Request - Garlic Products

## 9. Garlic Pickled in Turmeric



## 10. Garlic & Chilli Pickle



## 11. Garlic Sauce



## 12. Garlic & Chilli Sauce



## 13. Garlic & Tomato Sauce



# Products Developed on Request - Garlic Products

Technology transferred to Mr Manoj Goonia large scale garlic grower/ entrepreneur from Maurised Co. Ltd.

Marketed at super markets under the Brand Name - 'L'Ail Pays'

- Garlic Pickle
- Garlic in Brine
- Garlic Paste
- Garlic with herbs
- Garlic & Ginger paste



# Nu nouvo Baz – Micro enterprise

## A Corporate Social Responsibility (CSR) Project for poverty alleviation



# Pestle & Mortar Co. Ltd. – Produces taro and process them into a snack called ‘gateaux arouilles’





# Access to our Services

## *Training*

- Through application forms available at all stations, sub officers of FAREI
- For groups, organisations, Ministries, Cooperatives through a letter to the Chief Executive Officer, FAREI, Reduit or
- e-mail: farei@intnet.mu

## *Facilities Offered at the APRC*

- Contact Officers of the Agro Processing Centre at Wooton for advanced booking.
- letter to the Chief Executive Officer of FAREI.

***Cost of Training* - A nominal registration fee of about Euro 20**

**The fee to use facilities offered at the APRC is according to production.**

# Way Forward

- **Upgrading the Agro-Processing Unit with line production equipment and new packaging.**
- **Technology to develop new products and upgrade products being developed with innovative packaging and technology.**
- **Build up on Sensory Evaluation**
- **Upgrade small scale enterprises to medium scale enterprises.**
- **Introduction of 'Bio-Products' at local the market.**

**A survey amongst member countries of QualiReg to see on technologies available on product development from fruits and vegetables to avail ourselves in collaboration with enterprises with these through the Technology Diffusion Scheme.**

**Technology Diffusion Scheme provides a loan of up to Rs 1million (about 25,000 Euro) to entrepreneurs who wish to have technology from abroad. 90% as grant and if it will be carried out in collaboration with FAREI the loan will turn into a grant no reimbursement.**

**Thank You for attention  
Have a Nice Stay in Mauritius  
and  
Wish you a very fruitful Outcome of  
the Workshop**

