RED SORREL PRODUCTION

PRESENTERS:
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Deputy PAM RADA-St Andrew.  Agri. Ext. Officer  RADA-ST. Andrew
Background

- Native from the East Indies
- Recorded in Jamaica in 1707
- Scientific Name: *Hibisus sabdariffa*.
- Common Name: Roselle, Jamaican Sorrel, Queensland Jelly Plant, Sour sour, Lemon Bush and Florida.
MAJOR SORREL PRODUCING PARISH

- Clarendon *over 160ha annually*
- Manchester
- St. Elizabeth
- St Catherine
- St Thomas
Cultivars of Red Sorrel
1. TRADITIONAL

- Tall (up to 2m) and sprawling
- Red stem with Large fruits
- Average yield of 1kg/plant
- Reaping over a 4-5wks period
- Exporters choice
2. Manchester Black

- Grows to a height of over 2m
- Black stem with fruits being large and deep dark brown to blackish in colour
- Average yield of 1.2-1.5kg/plant
- Reaping over a 4-5wks period
- Processors choice
3. BASHMENT

- Shortest growing to a height of 1.75m-2m with few branches.
- Flowering starts 8wks after planting.
- Small fruits but 2\textsuperscript{nd} heaviest to the Manchester black.
- Fruits are dark red to brown in colour.
- Average yield of 2.2-2.4kg/plant.
- Reaping takes place over 8wks period.
- Processors and exporters choice.
ECOLOGY

Climatic condition:
- tropical crop
- Susceptible to damage from frost & fog
- Prefer abundant sunshine

Rainfall Condition:
Prefer rainfall of 1500-2000mm/yr

Elevation:
Best on elevation from sea level to 600m

Soil:
Prefer sandy loam to Humus soil with pH 4.5-8.0
LAND PREPARATION

- Remove all weeds and debris.
- Land must be ploughed and refine up to 20cm deep.
- Furrowing and ridges should be established.
PLANTING & SPACING

- Dig holes 1m along and between rows
- Place seeds (If not planting by seedlings) at 1cm in dept and cover lightly with soils.
- Time of planting:
  - Traditional Red: May -August
  - Manchester Black: April-June
  - Bashment: All year round
Seeds germinate within 3-7 days

N.B. The seeds of the Bashment cultivar experience HARDSEEDINESS

Solutions:
- Soak seed in hot water for 5min
- Expose seeds to heat (60-70°C) for 1-2hrs
- Impact of seeds against a hard surface.
FERTILIZATION

- Initially a Soil analysis is recommended.
- A general recommendation is 8 bags fertilizer (11:22:22) per hectare, applied at planting or by 2 weeks after germination.
Pest 
&
 Diseases
What is IPM?

IPM is a safe approach to pest control in Jamaica. It uses a mixture of ways (Integrated) to prevent crop damage and protect man, helpful creatures and the environment (soil, water, air, other creatures) (Management).
HOW DOES IPM WORK?

- In IPM, farmers use a better understanding of nature (soil, water, climate, creatures, plants) to make it easy for crops to flourish but hard for pests.
- Harmful pesticides are used ONLY WHEN NEEDED.
- As a result, crops produce better, pest problems are fewer and the environment gets healthier.
TYPES OF PRACTICES

- Cultural
- Biological
- Chemical
CULTURAL PRACTICES

Normal field work is used to make field conditions best for the crop and worst for pests.

- Site selection
- Preparing land early and properly.
- Using pest-free planting material.
- Spacing to reduce overcrowding and disease build-up.
- Checking fields weekly for problems (scouting).
- Feeding plants for early, healthy growth.
- Early removal of sick plants from fields.
- Crop rotation.
- Reaping on time to escape pest damage.
- Reaping with care to reduce bruises and rots.
In nature, many creatures kill pests.
The three types of beneficials (Natural enemies) are:
- Parasites
- Predators
- Pathogens.
OTHER BIOLOGICAL CONTROL

- Resistant Variety
- Biorationals eg pheromones, BT
CHEMICAL CONTROL

- Pesticides are made to kill pests. Most pesticides will also kill or harm other living things.
- Some are very poisonous; others less dangerous to man, beneficials and the environment.
- Botanical insecticides are made from plants. Some are safer and still quite effective against pests.
MAJOR PEST OF RED SORREL

- Weeds
- Thrips
- Root Knot Nematodes
- Army worm
THRIPs

- Very small
- Infest fruits
- Major problem to the export market

Control
- IPM
- Appropriate insecticide (eg. Aecis or Diazinon).
ROOT KNOT NEMATODE

- Small worms living inside the roots
- Can reduce the yield of the plants

Control

IPM (crop rotation)
Use of nematicide.
ARMY WORM

- Affects the Leaf of the plant

Control:

- IPM
- Treat with BT insecticide
MAJOR DISEASES OF RED SORREL

- Powdery Mildew
- Leaf Spot
- *Phytophthora* Foot rot
POWDERY MILDEW

- Fungal Disease affecting the leaves of the plant.
- Sign: leaves appear whit in colour

Control:
- IPM (cultural practices)
- Use appropriate fungicide. (eg Champion or Kocide)
LEAF SPOT

- Fungal disease
- Appears in a circular pattern and can result in leaf drop.

Control:

= IPM
= use of appropriate fungicide (e.g., Sancozeb)
PHYTHOPTERA FOOT ROT

- Soil Bourne Fungus affecting the root of the plant and is able to survive for years.
- Sign: =Black lesion girdling the stem above the soil line.
  =Wilting
  =Death of the plant

Control:
=IPM (proper water and soil mgnt, crop rotation, clean seed and field selection)
=Use systemic fungicide.
Normal Root

Infected Root
Harvesting

- Major challenge in sorrel production
- Clip fruits individually from the plant.
- The use of an umbrella’s main vein is use to easily separate the seed from the calyx.
- Store Calyx properly and move to market as quickly as possible.
# COST OF PRODUCTION

## Cost of production for one Hectare of Red Sorrel production

<table>
<thead>
<tr>
<th>Labour Operation</th>
<th>Unit</th>
<th>No. of units</th>
<th>Cost/unit ($)</th>
<th>Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Prep. (Clearing, Ploughing, refinding)</td>
<td>hectare</td>
<td>1</td>
<td>30000</td>
<td>30000</td>
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<tr>
<td>Furrowing (tractor)</td>
<td>hectare</td>
<td>1</td>
<td>5000</td>
<td>5000</td>
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<tr>
<td>Planting</td>
<td>Manday</td>
<td>4</td>
<td>1500</td>
<td>6000</td>
</tr>
<tr>
<td>Fertilize</td>
<td>Manday</td>
<td>2</td>
<td>1500</td>
<td>3000</td>
</tr>
<tr>
<td>Weed and Moulding</td>
<td>Manday</td>
<td>15</td>
<td>1500</td>
<td>22500</td>
</tr>
<tr>
<td>Harvesting and Stripping</td>
<td>Kg</td>
<td>24000</td>
<td>44</td>
<td>1056000</td>
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**SUB-TOTAL** $1,122,500.00

<table>
<thead>
<tr>
<th>Material inputs</th>
<th>Unit</th>
<th>No. of units</th>
<th>Cost/unit ($)</th>
<th>Total ($)</th>
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</thead>
<tbody>
<tr>
<td>Seeds</td>
<td>qrt</td>
<td>7</td>
<td>1500</td>
<td>10500</td>
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<tr>
<td>Herbicide</td>
<td>Gallon</td>
<td>1</td>
<td>2800</td>
<td>2800</td>
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<tr>
<td>Fertilizer 11:22:22</td>
<td>50kg</td>
<td>8</td>
<td>4000</td>
<td>32000</td>
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**SUB-TOTAL** $45,300.00

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<th>Other Cost</th>
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<tr>
<td>contingency</td>
<td>10% Labour &amp; Material</td>
<td></td>
<td>116780</td>
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<tr>
<td>Tools</td>
<td>5% Material</td>
<td></td>
<td>2265</td>
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<tr>
<td>land Charges</td>
<td>10000/hectare/year</td>
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<td>10000</td>
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**SUB-TOTAL** $129,045.00

**TOTAL** $1,296,845.00

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<th>Assumption</th>
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<tr>
<td>Marketable yield</td>
<td>24000kg</td>
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<td>Market Price per kg</td>
<td>$150/kg</td>
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<tr>
<td>Income</td>
<td>$3,600,000.00</td>
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<td>C.O.P.</td>
<td>$54.04/kg</td>
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