GOING FURTHER IN THE OIL PALM BUSINESS WITH FASSB
INTRODUCTION FASSB

FELDA AGRICULTURAL SERVICES SDN BHD

Subsidiary
Provide High Quality Agricultural Inputs & Services

Private Limited,
Company Act 1965

History

Agricultural Research Division (Sept 68)
FELDA Research Centre (Feb 72)
Perbadanan Khidmat Pertanian Felda (1 Jan 78)
Felda Agricultural Services Sdn Bhd (3 Aug 95)

Shareholders

FGV (Felda Holdings Bhd) (76.90%)
Koperasi Permodalan Felda Bhd (23.10%)

Capital
Paid Up : RM 65,000,000
Authorized : RM100,000,000
To provide technical support to all of Felda’s agricultural undertakings through:

- Supply of planting materials
- Supply of rat baits & other agriculture products
- Provide estate support services eg. laboratory services, agronomic advisory visits, etc

To support R&D activities carried out by FGV R&D S/B & FGVAT S/B
Research Centers

PUSAT PENYELIDIKAN PERTANIAN TUN RAZAK

Established : 1968
Activities: oil palm breeding, agronomy, crop protection, rubber, sugarcane & other strategic crops & sustainability

FGV Biotechnology Centre

Established : 2006
Activities: tissue culture, molecular and bioinformatics
Capacity:
1.5 million oil palm ramets & 1.0 million banana ramets
Floor space: 5100 m²
Manpower : 200 persons

Officiation by Tun Razak

Officiation by YAB PM in 2007

STRICTLY CONFIDENTIAL
PRODUCTION OF OIL PALM PLANTING MATERIALS

**EXPERIENCES**

- **46 years** in oil palm breeding
- Seed producer since 1970.

**CURRENT**

- Major seed producers in Malaysia
- Supply **43%** annual requirement for Malaysia
- Strong R&D backing
Total national seed production for 2015: 50.14 million (sources MPOB)

Over the past 10 years Felda Yangambi has become an iconic oil palm seeds brand.
2004-2016 YANGAMBI SEEDS
MARKET SHARE (%)

Percentage of Market Share (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Malaysia</th>
<th>FASSB</th>
<th>Percentage of Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>87.24</td>
<td>23.2</td>
<td>27%</td>
</tr>
<tr>
<td>2009</td>
<td>86.42</td>
<td>25.6</td>
<td>30%</td>
</tr>
<tr>
<td>2010</td>
<td>76.50</td>
<td>24.6</td>
<td>32%</td>
</tr>
<tr>
<td>2011</td>
<td>70.96</td>
<td>26.1</td>
<td>37%</td>
</tr>
<tr>
<td>2012</td>
<td>75.20</td>
<td>26.5</td>
<td>35%</td>
</tr>
<tr>
<td>2013</td>
<td>64.00</td>
<td>23.8</td>
<td>37%</td>
</tr>
<tr>
<td>2014</td>
<td>57.43</td>
<td>24.1</td>
<td>42%</td>
</tr>
<tr>
<td>2015</td>
<td>58.93</td>
<td>25.3</td>
<td>43%</td>
</tr>
<tr>
<td>2016</td>
<td>50.14</td>
<td>21.5</td>
<td>43%</td>
</tr>
</tbody>
</table>
Planting Materials
Introduction
Milestone FGV Breeding

1967-start

Taib Andak, Johore (Kulai LDS)
- Dura mother palms planted in Stage 4A, (1st Regional Station & seed production lab)
- No. of mother palms utilised 635 palms in (Block 1-9).

1969
- PPPTR, Tekam, Pahang
  - Setting up of 2nd Regional Station (in Pahang :861,98 Ha)
  - Mother palm utilized at present: 5,693 palms
  - First DxP/T trial in PPPTR: Trial S was planted in January 1969 in Phase 1 (Site 1: 60,7 Ha). Planting distance 29’x29’

1978
- Kuala Lumpur
  - Felda Research Department function taken over by Felda Agricultural Services Corporation (PKPF). Head quarters in KL.

1995
- Kuala Lumpur
  - PKPF changed to Felda Agricultural Services Corporation (FASSB)

2001
- Kota Gelanggi, Pahang
  - The discovery of ML161 (Trial 1 KG5)

2012
- Kuala Lumpur
  - Felda Global Ventures Research & Development Sdn Bhd (FGVRD)
Seed Garden and Production station
FGV OIL PALM
PLANTING MATERIALS PROGRESS

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Mature Oil Yield (T/HA)</th>
<th>Mean Mature Yield (T/HA)</th>
<th>OER*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980s</td>
<td>27.18</td>
<td>22.2</td>
<td>6.31</td>
</tr>
<tr>
<td>1990s</td>
<td>29.66</td>
<td>24.9</td>
<td>7.39</td>
</tr>
<tr>
<td>2000s</td>
<td>29.83</td>
<td>26.3</td>
<td>7.86</td>
</tr>
<tr>
<td>2010s</td>
<td>30.12</td>
<td>27.1</td>
<td>8.13</td>
</tr>
</tbody>
</table>

La Me / AVROS / Yangambi

33%
DxP Felda Yangambi ML 161
No.1 oil palm seed planting material in Malaysia

This planting material is coming from crossing of Dura Deli Group x Pisifera Yangambi family ML161

The true name of this material is DxP Felda Yangambi ML161 due to the father palm family name. And, in this proposal, we rename as **DxP Felda ML161**

The planting material has been released in Malaysia since 2002

More than 331 million seeds from this material is already distributed (98.8% domestic and 1.2% export)
The Appearance of DxP Felda Yangambi ML161
**TENERA SELECTION CRITERIA:**

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>SNI (INDONESIA)</th>
<th>SIRIM (MALAYSIA)</th>
<th>FELDA ML161</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh Fruit Bunch per palm per year</td>
<td>≥ 175kg/palm/yr</td>
<td>Min. 170 kg/palm/yr</td>
<td>182.5 -210.1 kg/palm/yr</td>
</tr>
<tr>
<td>Palm Product (CPO + PKO)</td>
<td>≥ 6 ton/Ha/yr</td>
<td>N.A.</td>
<td>8.13 ton/Ha/yr</td>
</tr>
<tr>
<td>OER (O/B x 0.855)</td>
<td>≥ 23%</td>
<td>N.A.</td>
<td>25.5 %</td>
</tr>
<tr>
<td>O/B %</td>
<td>N.A.</td>
<td>Min. 25%</td>
<td>29.8 %</td>
</tr>
<tr>
<td>K/B %</td>
<td>N.A.</td>
<td>Min. 3%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Height Increment (After 6 YOP)</td>
<td>≤ 80cm/yr</td>
<td>N.A.</td>
<td>56cm</td>
</tr>
</tbody>
</table>
### Description of Variety: DxP FELDA ML 161

<table>
<thead>
<tr>
<th>YIELD POTENTIAL</th>
<th>ML161</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>12 months after planting</td>
</tr>
<tr>
<td>Harvest</td>
<td>28 months after planting</td>
</tr>
<tr>
<td>The average number of bunches</td>
<td>12 (σ=0.9)</td>
</tr>
<tr>
<td>The average weight of bunches</td>
<td>17.4 (σ=0.6)</td>
</tr>
<tr>
<td>The average production of FFB</td>
<td>204.9 (σ=13.2) / 27.87t/ha</td>
</tr>
<tr>
<td>Bunches weight</td>
<td>11.8 (σ=3.0)</td>
</tr>
<tr>
<td>Kernels per fruit</td>
<td>0.8 (σ=0.3)</td>
</tr>
<tr>
<td>Mesocarp content per fruit</td>
<td>84.6 (σ=4.4)</td>
</tr>
<tr>
<td>Oil content per mesocarp</td>
<td>77.7 (σ=2.7)</td>
</tr>
<tr>
<td>Industrial yield CPO</td>
<td>26% (OER)</td>
</tr>
<tr>
<td>Palm kernel yield</td>
<td>4.1% (KER)</td>
</tr>
<tr>
<td>Potential production of CPO</td>
<td>8.4 ton/ha</td>
</tr>
<tr>
<td>Potential production of PKO</td>
<td>1.3 ton/ha</td>
</tr>
<tr>
<td>Palm height PKO</td>
<td>498.7 cm</td>
</tr>
<tr>
<td>Palm Height increment</td>
<td>0.56m (σ=0.05)</td>
</tr>
<tr>
<td>Frond length</td>
<td>5.86 (σ=0.5)</td>
</tr>
</tbody>
</table>
FGV Seed Production Unit (SPU)
Quality & Security
Seeds Quality

• All Dura & Pisifera palms released to SPU must fulfilled stringent MS157:2005 quality standard
• All procedures are Audited by SIRIM
• The entire process is closely monitored and licensed by MPOB
• All seeds produced are compliance with DOA Phyto-sanitation process
Seeds Security

- Each individual seed is laser printed
- Each consignment are barcoded (traceability)
- Special printer to produce FGV hologram on each consignment
- Seed delivery security system
FGV Seed Delivery Security System (FSDSS)
Each seed is laser printed with our company name (FGV)

FGV Seed Security System and bar-coded sticker to enhance traceability / quality / security in each consignment to customers
AGRICULTURAL PRODUCTS & SERVICES
PEST CONTROL PRODUCTS

- **BUTIK G2**
  - Second generation rodenticide
  - A.i: Bromodialone (0.005%)

- **BUTIK S**
  - 1st generation rodenticide
  - A.i: Clorophacinone (0.005%)
  - More potent than warfarin

- **ORY – X**
  - Biological control of RB
  - Highly pathogenic to RB, attack all stage
  - A.i: Metarhizium anisopliae
  - Cost saving compared to conventional control using chemical
  - Residue up to 24 months after treatment in the field
- Biodegradable material cut to a suitable size for placement around the palm, rubber or timber
- Made of paper pulp & cotton mix
- Last up to 2 years

**Benefit of Using Felda Mulch:**
- Reduce Fertilizer Cost up to 20%
- Promote better growth (15% better than w/o)
- Increase early yield up to 18%
- Reduce Weeding Cost up to 30%
- Avoid Chemical Toxicity to the palm
- Avoid fertilizer run off
Benefits:

- Promote development of **functional roots hairs**
- Improve **plant growth & yield**
- Improve **nutrient uptake** efficiency

- Highly recommended to apply AMF at nursery stage
- Rate: 50g/seedling
- Spore counts: >200 spores/10g
• Precise fertilizer measurement
  • Perfect fertilizer spread
  • Easy to calibrate
  • Ergonomic design
TEKAM ORGANICS
8:8:6:2 + TE

- Organic Matter, EFB based
- Reduce fertilizer round
- Contains Zeolite for soil enhancer
- Suitable for all type of plants!

ORGANIC MATTER CONTENT: 50 – 55%
ORGANIC SOURCE: EFB COMPOST
MOISTURE CONTENT: <15%
C:N RATIO: 1:1 - 1:2

Another Quality Product From:
FELDA AGRICULTURAL SERVICES SDN. BHD. (353791-M)
A subsidiary company of FELDA Global Ventures Holdings Berhad
14th Floor, Menara FELDA, Platinum Park, No 11 Persiaran KLCC, 50088 Kuala Lumpur, Malaysia
Email: fasslomarketing@feldaglobal.com Tel.: +603-2859 0000 Fax.: +603-2859 1700
Importance of *TEKAM Organics Fertilizer*(TOF)

- Only 2 manuring rounds for main nursery stage.
- Containing >50% organic matter
- Help to stabilize soil pH in improving the microbial activity.
- Containing important trace elements such as Cu, Zn, Mn and Fe.
- Contain zeolite as soil binding component.
- Equipped with beneficial microbes; *Bacillus Subtilis* & *Bacillus Thuringiensis*, *Bacillus Cereus*.
Destructive measurement

Root comparison
TEKAM Organics: Nutrient Retain

MN 12 BULAN

MN 13 BULAN
New Products

A Potent Biocontrol Agent for Ganoderma

PalmaShield

A Potent Biocontrol Agent for Ganoderma

PalmaShield contains Trichoderma asperellum M103. It is a potent biocontrol agent against Ganoderma Basal Stem Rot (BSR) disease in oil palm.

Benefits
• Protects oil palm from Ganoderma BSR disease;
• Enhances vegetative growth;
• Helps soil amendments;
• Improves nutrient uptake ability;
• Boosts soil decomposition and biodegradation.

Mode of Action

PalmaShield Effectiveness

Assessment of Basal Stem Rot Disease in OP Seedlings treated with PalmaShield after 6 months Ganoderma artificial inoculation.

Application Method

Storage Recommendation
• Store at room temperature, or below SDPC;
• Product expiry: 6 months from manufacturing date;
• Avoid direct contact with chemical fertilizer.
SERVICES PROVIDED TO THE INDUSTRY

✓ Agronomic Advisory Services
✓ Analytical Lab
✓ Replanting Blueprint
✓ Training Packages
<table>
<thead>
<tr>
<th>PACKAGE</th>
<th>SERVICES</th>
</tr>
</thead>
</table>
| Package 1 (Full package) | A. Agronomic Visits & Fertilizer Recommendations  
B. Sampling  
C. Foliar Analysis (6 Parameter)  
Soil Analysis (8 Parameter) |
| Package 2 | A. Agronomic Visits & Fertilizer Recommendations (Sampling by Customer)  
B. Foliar Analysis (6 Parameter)  
Soil Analysis (8 Parameter) |
| Package 3 | A. Agronomic Visits & Fertilizer Recommendations  
(Foliar and soil sampling by customer and the analysis results are given in two weeks time before the visit) |
| Package 4 | A. Agronomic Visits (Subject to a minimum charge of RM2500) |
| Package 5 | A. Foliar Sampling Analysis (6 Parameter)  
B. Soil Sampling Analysis (8 Parameter) |
Gabonese Nationals Training Program
Back to Basics Workshop & Field Tour
One Stop Oil Palm solutions!
For further inquiry please contact:

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