Agricultural mechanization Policy Updates and Sustainable Agricultural Technology Innovations

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TECHNOLOGY INNOVATIONS

• PRECISION FARMING
  • Reduce inputs (fertilizer, pesticide etc)

• FARM MACHINERIES
  • 2 half and 4 half track tractors & combine (overcome hard pan issues in padi fields)
  • Row seeders used as opposed to broadcasting reduces indiscriminate use of additional fertilizer, weedicide and pesticide

• WATER REUSE
  • On going studies – climate change?

• EARLY WARNING SYSTEM (EWS)
  • A component of pest and disease management towards sustainable agriculture
OTHERS

• AEROBIC RICE
  • To address issue of climate change
  • Row seeder for aerobic rice fields has been developed

• BREEDING
  • New pest and disease resistance varieties, towards reducing agric inputs
Rice crop growth monitoring using unmanned aerial vehicle (UAV) system and image processing techniques
Hard Pan Issues

1) Machines damage the hard pan
2) Weakness in Irrigation and Drainage System
Traction System
Projects Related to Mechanization on Hard Pans
Hard Pan Areas
Half and Full Track Tractor
Quad-Track (4 Half-Track) Tractor

Ground clearance: 76cm (normal tractor 60cm)
Overall width: 2.38 (Front)
                        2.17 (Rear)
Track gauge (center to center width)
Front-1.8m, Rear-1.6m
Turning angle -43 degrees
Functional Tests

Tested on tarmac, dry paddy field and soft soil
Functional test in Soft Soil
Proposed Water Recycling System in MARDI Seberang Perai

Proposed recycling pond

Proposed water gate

Water gate (upgrade)

Supply line

Canal/Drain

Bund & Drain

Paddy Plot

Paddy Plot

Proposed culvert

340 m

96 m x 82 m x 4 m

Water source (pond)

Feed line

Water sink

Drain

Farm road

Proposed pump house

260 m

Proposed water gate (upgrade)
Project site – Tail water recovery system
Project site
Before excavation

Project site
Excavation in progress
POLICY UPDATES

Taskforce

- A technical working group consist of several agricultural agencies have been formed to carry out AFMAP*

- Interim committee:
  - The Secretariat;
  - Finance committee;
  - Monitoring and Implementation committee;
  - Research and Development committee;
  - Human Capital Development committee;

*Agro-Food Mechanization and Automation Plan (AFMAP)
Research and Development Committee

Chairman:
- Deputy Director General (Research) MARDI

Members:
- Department of Agriculture (DOA)
- Department of Fisheries (DOF)
- Department of Veterinarian Services (DVS)
- Farmers Organization Authority Malaysia (LPP)
- Kemubu Agricultural Development Area (KADA)
- Muda Agricultural Development Area (MADA)
- Agricultural Irrigation and Drainage Division (BPSP)
TOR for AFMAP R&D Committee

- Technology prospecting and developing new technology;
- Monitor commercialization status of technology developed by the government agencies under MOA and the university in collaboration with private sector;
- Recommends budget requirement of R&D activities and local verification trials
- Acknowledges the financing requirement by successful inventions for financial support by financial institution or government funds
- Evaluate and endorse the testing of agricultural machinery by appointed tester from this committee; and
- Prepare progress report to PEMANDU committee.

*PEMANDU: Performance Management Delivery Unit*
Action Plan for AFMAP R&D Committee

- To increase the usage of mechanization and automation means in agricultural and food industry, via Local Verification Trial process.

- To participate in ANTAM program organized by the CSAM, via establishment of Malaysia Agricultural Machinery Testing Center.
Malaysia Agricultural Machinery Testing Center

- Objectives
  - To develop national standard criteria
  - To establish testing and evaluation code and procedure
  - To strengthen the research in agricultural machinery testing locally
  - To become the reference center in local agricultural machinery industry
Testing Center Development

- Project duration 2013–2014
  - Test-rig and Test-code for:
    - Granular boom distributor coefficient variation test
    - Half-track development test
    - Axial flow combines harvester grain loss test

- Project duration 2015–2016
  - Test-rig and Test-code for:
    - Reconditioned tractor power test
    - Roll over protective structure (ROPS) test
Summary

- Malaysia’s Ministry of Agriculture is in full support of promoting mechanization in local agricultural industry as reflected in the 3rd National Agricultural Policy and Agro-Food Mechanization and Automation Plan (AFMAP)

- Under AFMAP, a taskforce consisting several agricultural agencies has been appointed. MARDI is to lead the R&D committee.

- The two main programs under the R&D committee are the ‘Local Verification Trial’ and ‘Agricultural Machinery Testing Center’