

Agricultural mechanization Policy Updates and Sustainable Agricultural Technology Innovations

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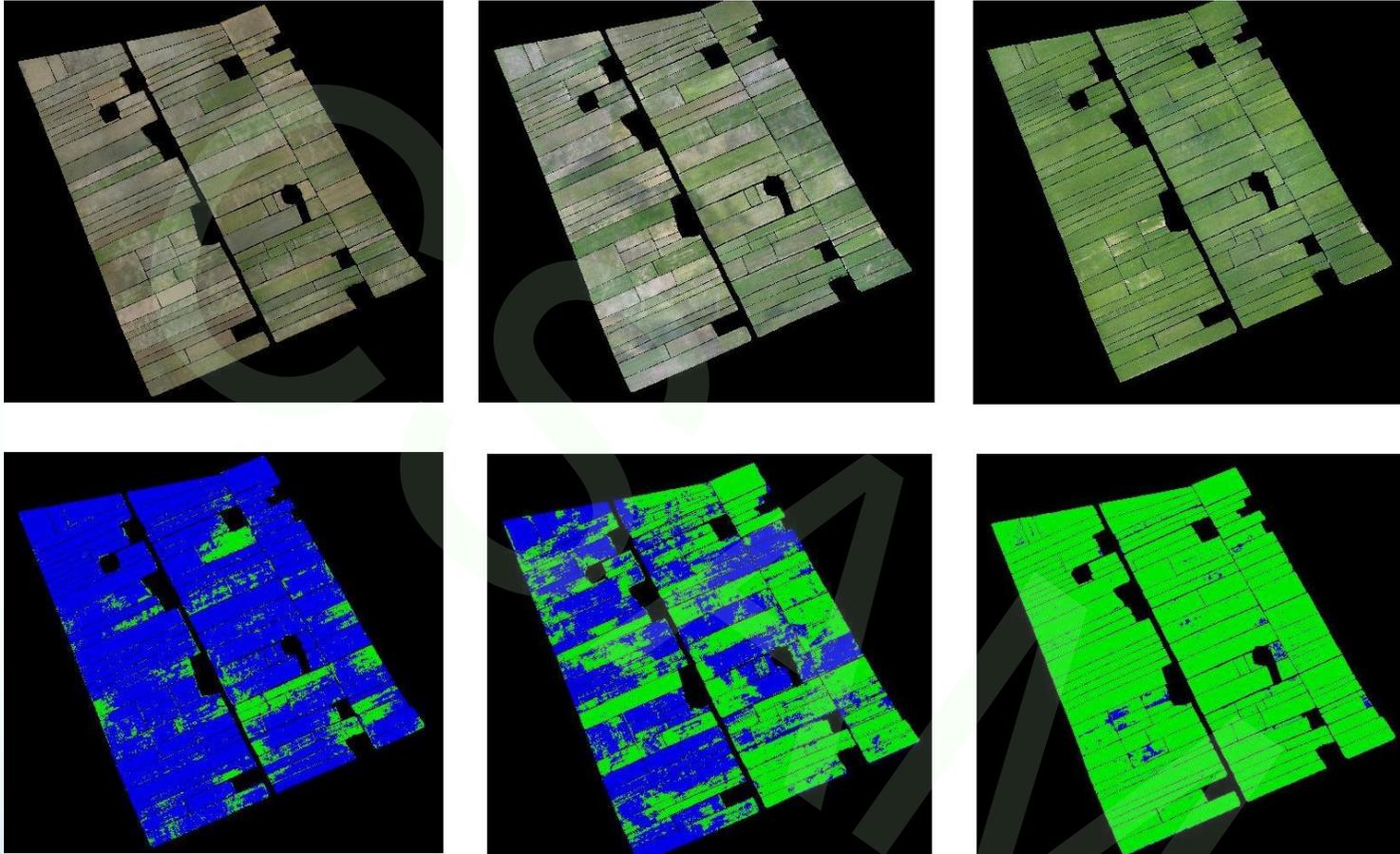
TECHNOLOGY INNOVATIONS

- 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

PRECISION FARMING



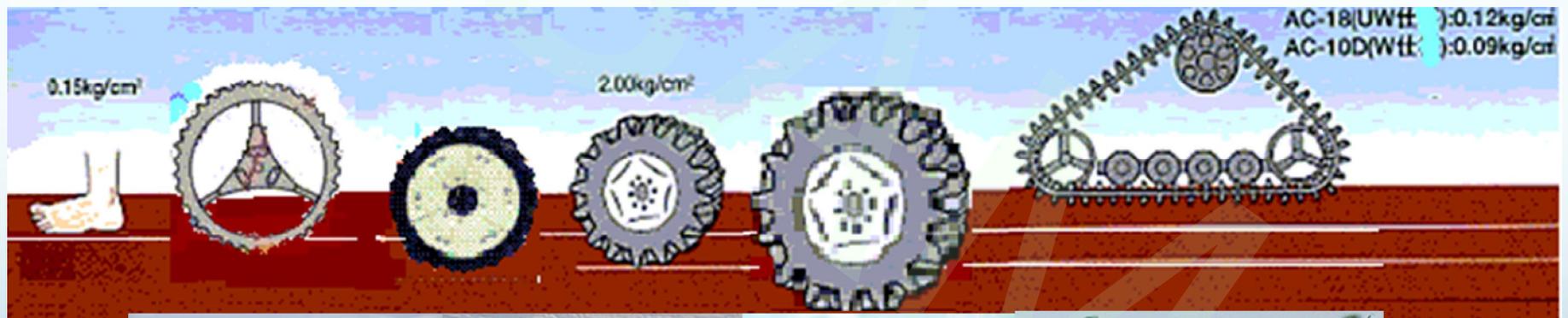
Rice crop growth monitoring using unmanned aerial vehicle (UAV) system and image processing techniques

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

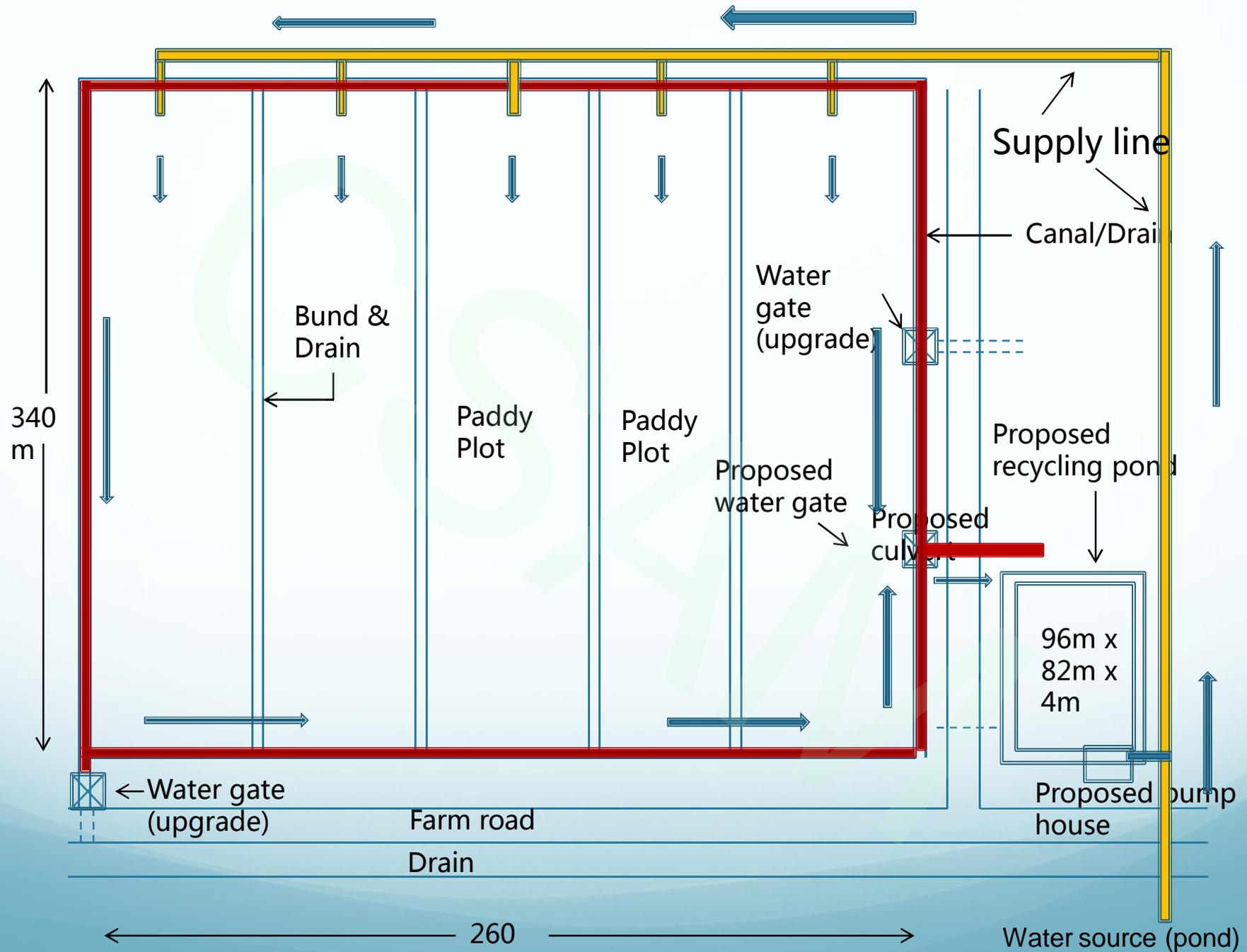


Tested on tarmac, dry paddy field and soft soil

Functional test in Soft Soil



Proposed Water Recycling System in MARDI Seberang Perai



Project site – Tail water recovery system





Project site
Before excavation



Project site
Excavation in progress

POLICY UPDATES

Taskforceí

- 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**