

# Agricultural mechanization Policy Updates and Sustainable Agricultural Technology Innovations

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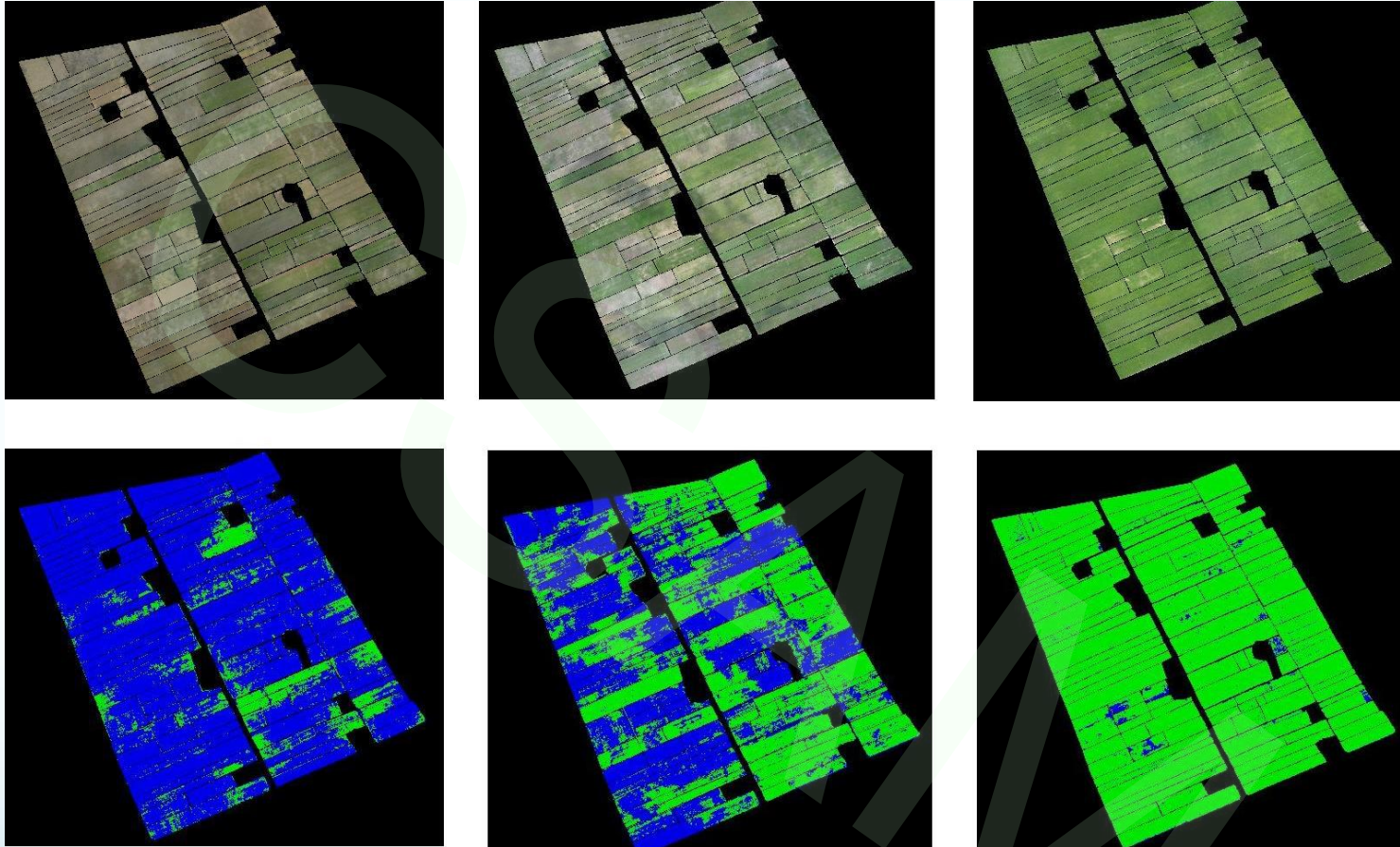
## TECHNOLOGY INNOVATIONS

- 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

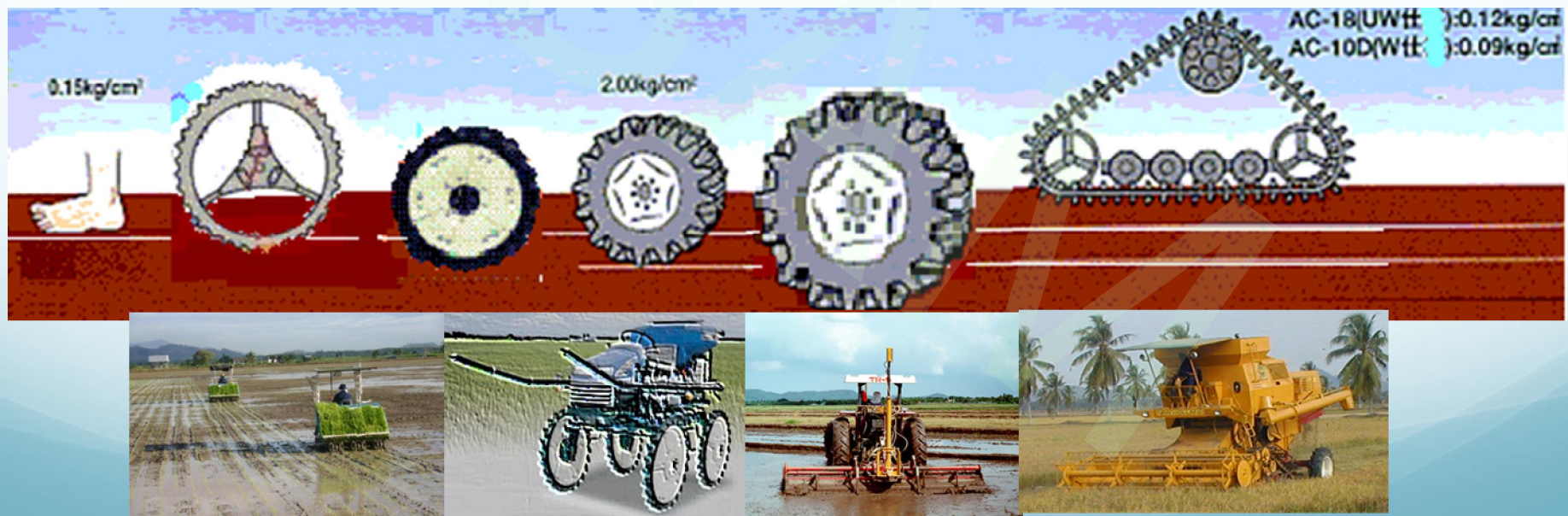
# Hard Pan Issues

- 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



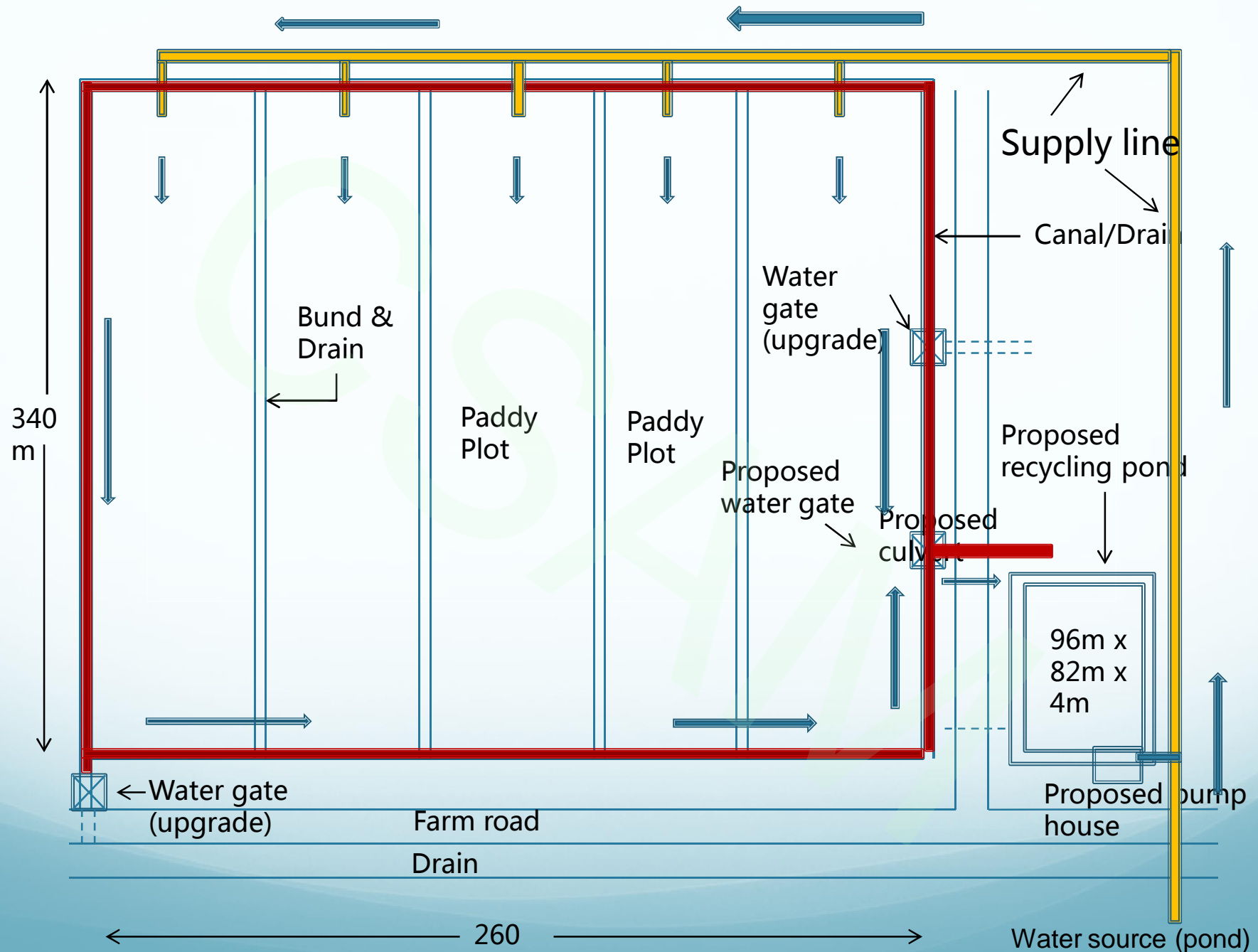
Tested on tarmac, dry paddy field and soft soil



# Functional test in Soft Soil



# Proposed Water Recycling System in MARDI Seberang Perai





# Project site – Tail water recovery system



Malaysian Agricultural R & D Inst.



Ministry of Agriculture & Agro-based Industry

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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 **3<sup>rd</sup> 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**