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Gender Mainstreaming in Sustainable Agricultural Mechanization

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Designing gender-responsive technologies and empowering women engineers
Case of Thailand

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Agricultural mechanization assessment in term of energy

Relationship between energy input and crop production output in Thailand

Contribution of different energy inputs resources in crop production in Thailand
• Most of agricultural machineries was developed in the Central plain region then move to the other regions.

• Mechanization adoption started from the Central plain region was the applied to the other regions.

• Thai-made rice combine harvester is a very good model for the development of mechanization of big and high price machineries.
• Mechanization play importance role and more crucial
• Agri. labor available is crucial factor for development and expandable used of Agri. machineries
• Agri. labor available for all countries sharply decrease trend
• Agri. Labor of Thailand is only about 29% the total labor force
• Aging society is the new big problem faced
Farm operation and activities
(case for cassava)

Land preparation
- Primary tillage
- Secondary tillage
- Furrowing or seed bed preparation

Planting
- Manual planting
- Seed stock preparation
- Planting
- Cassava planter
- Inspection and re-planting for some un-plant

Crop care
- Weed control
- Fertilizer application
- Irrigation
- Pesticide and insecticide control

Harvesting
- Stem cutting
- Manual pull/digging
- Collecting
- Cutting off tuber
- Convey to the truck

Transport to selling place
Harvesting system of cassava

1. Manual harvesting system
   - Stem cutting
   - Pulling or lift up
   - Collecting rhizome

2. Harvesting system by using of cassava digger
   - Using cassava digger

3. Harvesting system using of semi-automatic cassava digger
   - Decrease labor requirement
     - 60% from system #1
     - 24% from system #1
   - Cost reduction about 14%

4. Cut off tuber
5. Convey to truck and transport
Europe and USA

Thailand

Using system of agricultural machineries

1. Own machinery
2. Own + custom hiring
3. Custom hiring
4. Machinery Pool

Machinery sharing (interest to adopt)
Designing gender-responsive technologies

- Thailand mostly develop the implements/equipment except power tiller and corn/rice combine harvester.
- Machinery was designed based on work, not based on gender.
- Gender responsive based on specific stage of the food value chains.
- Women should be for:
  - Not hard work of farm operations and activities.
  - Management and business aspect.
  - Post-harvest.
  - Value addition.

agricultural land preparation; seeding and planting; weed control; integrated pest management; precise fertilizer application; irrigation; harvesting; preparation for storage; value addition; and transport.
Empowering women engineers

• Empowering of men and women of Thai engineer
  • mostly equal
  • Some very high performance
• A little different in physical body, skill and mentality

Dr. dares kittiyopas
President of Thai Agricultural Engineering Society and many positions as well as works done
Source of women agri. technicians and engineers

• Technician: Vocational level
  • Agricultural and technology colleges
  • Technical colleges

• Engineer: University level
  • Bacheller degree
    • from 14 universities about 40-60 students/university-year
    • Male : Female ratio about 70:30
  • Master degree
    • From 7 universities 5-10 students/university-year
    • Male : Female ratio about 80:20
  • Doctoral degree
    • From 7 universities 3-5 students/university-year
    • Male : Female ratio about 80:20
• Up skill for specific training or studies
• Collaboration work with men engineers
• Enhance work for suitable women ability and physical body
  • Data relevant
  • Digital relevant
  • Smart farm
  • Control
  • Robotic in agriculture
  • Etc.
Thank you for your attention