

# Up dates on Sustainable Agricultural Mechanization Technology

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# General Information

- “ Population: 20.8 million
- “ Main Agricultural crops – Paddy, Maize, Onion, Potato, grain legumes, Fruits and vegetable
- “ Cash crops: tea, Rubber, Coconut and spices

# Performance of main commodities

- “ Paddy: Excess production, looking for export avenue, need quality improvement
- “ Maize: self sufficient, use imported seeds, development of competitive local hybrid seeds is very urgent
- “ Onion: majority of the requirement imported, focused on self reliance in near future
- “ Grain legumes: becoming self sufficient
- “ Vegetable: export
- “ Fruits: Sector needs improvement
- “ Chili: majority imported

# Agriculture in Economy

- “ Declining trend in contribution of the agricultural sector to the GDP about 28% in the early 1980s to about 12% in 2012
- “ The trend has gone so far that agriculture's proportional contribution to Sri Lanka's GDP is now one of the lowest in South Asia.
- “ Even in rural households average income derived from non-farm activities to be more than twice as high (56%) as earnings from all farming activities is (23%).

# Agricultural Mechanization

- “ Average land holding size is about 1 ha
- “ Majority of paddy farming lands are with small fragmented fields
- “ However paddy cultivation system is almost fully mechanized except bund reconditioning and plant establishment.
- “ There is a scope to mechanize maize cultivation as the second major crop
- “ Grain legume cultivation, vegetable sector and fruit production sector are not mechanized

# Machinery Supply Chain

- “ Very few machinery are locally produced like water pumps, sprayers, seeders and hand tools
- “ Majority is imported
- “ However supply of machinery is not regulated
- “ Inferior quality machinery inflows to the country
- “ Local production also not supported by unfavorable trade policy and small local market

# Agricultural Mechanization

- “ Government identified mechanization is very essential component in food production drive
- “ Purchasing power of individual farmer is very poor
- “ Private machinery hiring facilities in operation
- “ Charges are not reasonable, production cost not reduced
- “ Regulation of hiring system is essential

# Research & Development of Farm Mechanization

“ Farm Mechanization Research Centre and Institute of Post harvest Technology are responsible for Research & Development. Testing & Evaluation activities also carried out by those Institutes. However testing is not yet mandatory requirement.

# Problems Faced by Farmers

Quality issues due to free imports and lower efficiency of machines

Higher cost Due to long supply chain and indirect taxes

High cost of spares and poor operational knowledge

Low farm gate price of Produce and Low buying power of M/C

The need for drying of grains and storage during harvesting season

# Regulatory System of farm Machinery Imports

“ Recently a Cabinet memorandum is presented to the parliament to issue ‘import permits’ only for the quality assured machinery by any recognized institute. If any machinery performance is effected by local conditions it has to be tested and certified by Farm Mechanization Research Centre, Sri Lanka.

# Farm Mechanization Act

“ In order to protect farm machinery suppliers, farm machinery producers, farm machinery service providers, farmers and other stakeholders a farm machinery act is being drafted and will be implemented in the future with necessary regulations.

# Paddy Cultivation

- “ Most of the operations are mechanized
- “ Least mechanized areas
  - Bund cleaning and plastering
  - Plant establishment and weed management
  - Small scale seed paddy processing
  - Drying & Storage

# Annual Sales of Major Farm Machinery in the Country

Year	2 wheel Tractors	4 Wheel Tractors	Combine Harvesters	Sprayers	Trans planters
2011/12	14445	7184	2160	26093	n/a
12/13	9664	5141	1099	6240	23
13/14 Aug	2783	1479	N/a	N/A	87

# Bund cleaning and plastering



“ Technology is available and has to be introduced in collaboration with the private sector

# Plant Establishment



“ Manually operated machines are not productive and power operated direct seeding and transplanting machines to be introduced.



“ Preliminary trials have been conducted and looks promising



# Weed Management



” Design and testing of two models has been completed and can be released after fine tuning. Available machines in other countries are very expensive.



# Small Scale Seed Paddy Processing



“ Already introduced machines designed by FMRC and supplied by FMRC cooperate manufactures are with low capacity. Scaling up the machine to have moderate capacity is being done.



# Introduction of Laser leveling techniques



“ If land leveling is done with the use of laser guided land leveler both in lowland and highland about 20% - 30% water can be saved and also crop growing will be in uniform. The laser guider has to be imported and preliminary trials will be conducted.

# OFC cultivation- Seeding



“ Specially in commercial scale maize cultivation high capacity, reliable maize planter is an urgent need. Imported machinery are not reliable and it was found that the missing hills are very high. Two types of maize planters cum fertilizer applicator is being tested and will be ready for dissemination

# Irrigation



“ Very high capacity (more than 20,000 l/min.) four wheel tractor powered axial flow type water pump has been developed. It has very good demand in the Eastern Province. A number of manufacturers in that province were already trained. It consumed very low fuel per liter of water.

# Mechanical Weed Control Systems



” To minimize the use of chemical weedicides series of mini cultivators have been introduced in up country and also in maize fields.



# Locally developed Primary Processing machines



High Capacity Maize Sheller



Finger Millet Thresher



Groundnut de-coating machine

# Promising Technology

- “ Paddy cultivation
  - land leveling, bund plastering ,drying & storage
  
- “ Vegetable cultivation
  - Planting, harvesting
  
- “ Fruit cultivation
  - Harvesting, tree pruning, de-hydration, Wild animal repeller

# Proposals For Sustainable Agriculture Mechanization

- “ Publish tested and certified machinery Brands Products and manufacturers in CSAM web page.
- “ Give publicity on precision agriculture Mechanization and productive indigenous methods adopted in the region.
- “ Bench Mark Agriculture process costs based on value of produce for the region.
- “ Promote Low cost IT systems for Farm Machinery extension work and for educating on precision agriculture.

**Thank You!**