Farm Mechanization for Sustainable Agriculture

Country Report – Sri Lanka

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Introduction

- Agricultural based economy
- Agriculture plays a dominant role in economy
- Contribution of agriculture to the economy has been declining
- The main reason is the traditional system involved in food production.

General Information

Area: 65,610 km²

Average Temperature

Lowlands: Average between 22° C - 33° C

Central Highlands: Average between 7° C - 21° C

Main Crops

Paddy
Vegetables
Fruits
Coconut
Tea
Rubber
Minor export crops

Average Annual Rainfall – 1900 millimeters

Economic & Social Importance of Agriculture

- Higher GDP contribution (20.1%)
- Land utilization – 1.4 mil.ha
- Employments- less than 30%
- Food security
- Source of calories

Institutions involved in Agriculture Research & Development

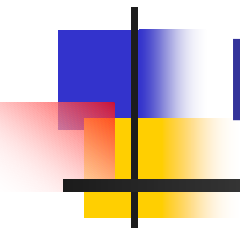
- Department of Agriculture (Includes Mechanization, FMRC)
- Tea Research Institute
- Rubber Research Institute
- Coconut Research Institute
- Export Agriculture Department
- Sugarcane Research Institute
- IPHT (Includes Mechanization)
- National Engineering Research and Development Centre.

Private sector involvement in Agriculture

- Supply of inputs- Machinery, Fertilizer, Agro-chemicals, Seeds and Planting materials
- Credit facilities – Private banks
- Purchasing & distribution
- On farm research- few private companies

Agricultural Engineering Research & Development

- Farm Mechanization research Centre (FMRC), Maha Illuppallama,
- Institute of Post Harvest Technology (IPHT), Anuradhapura,
- National Engineering Research & Development Centre (NERDC), Ekala,
- Farm Mechanization Training Centre (FMTC), Anuradhapura



Research Thrust Area

Conservation Agriculture

- Minimum damage to the soil and environment
- Practicing minimum tillage or no-till farming
- Use of low fuel consumed and low emission engines
- Use of micro irrigation systems to preserve water and increase water use efficiency

Food Chain Management

- The losses in rice sector is about 25% and in vegetable and fruits about 40%
- Use of appropriate Post Harvest Technology to Prevent the deterioration in quality due to adoption of improper post harvest handling,

Food Chain Management....

- Value addition in food processing to prevent the nutritional losses and thereby increase the nutritional states of the country.
- Improve farm level storage and preservation facilities
- Face the global trend

Renewable Energy and Bio-fuels

- Wind Energy
  - Used only for pumping water
  - Not much popular
  - Solar Energy
  - Wind Energy
- Solar Energy
  - Used to dry food commodities
  - Scientific dehydration of perishable food needs further attention
  - High initial cost
- Bio – fuels
  - R & D is being done to extract Bio – Fuel for industrial and agricultural use

Agro Based Enterprise Development

- Establishment of linkages between producers, processors, dealers, exporters and government institutions
- Collaborations with provincial councils, NGOs, business community and other relevant interest groups
- Collection of information on crop production, processing and marketing for dissemination to potential users
- Keeping clients informed on services provided by the DOA
- Establishment of a database on commodity prices.

Food Security

- Farmer as well as farming has to be changed to succeed strategies directed towards achieving food security
- Steps have been taken collect information on various aspects

Problems in Rice Cultivation

- Total Farmer families - 1,800,000
- Families depend on rice cultivation - 800,000
- 80% of these families are still in subsistence level
- High production cost
- Low profit margin

Measures to Increase Profit Margin in Rice Cultivation

- Reduce input cost (labour, machinery, agro-chemicals, fertilizer etc)
- Increase labour and land productivity
- Increase cropping intensity
- Increase yield through timely cultivation, high yielding varieties, proper land preparation, increasing fertilizer efficiency
- Reduce pre & post harvest losses and increase quality of production
- Make maximum use of seasonal rain falls

Proposal to establish machinery hiring centers

- Problems to own the machinery
  - Poor purchasing power
  - Seasonal usage of machinery
  - Lack of infrastructural facilities
  - Difficulty in obtaining financial facilities
  - Many machines are single purpose
  - Lack of after sales services

Proposal to establish machinery hiring centers....

- Problems on hiring machinery
  - Non availability of machines at close proximity to the farms
  - Lack of awareness on available technology
  - High and varying hiring charges
  - Some machine owners are reluctant to hire their machinery
  - Insufficient machinery to cater the demand

Technology Promoted by Farm Mechanization Research Centre

Machineries for Paddy Cultivation

01. Plant Establishment

Lowland Paddy Seeders

Lowland Seeder

Drum Seeder

Machineries for Paddy Cultivation .....

01. Plant Establishment .....

Paddy Transplanters

Manual Transplanter

Motorized Transplanter

Machineries for Paddy Cultivation .....

02. Weed Control

Manual Weeder

Motorized Weeder

Machineries for Paddy Cultivation .....

03. Irrigation

Axial Flow Water Pump

Machineries for Paddy Cultivation .....

04. Harvesting & Threshing

Reaper Attachment

Combine Harvester Attachment

High Capacity Thresher for 12 hp Power Tiller

Machineries for Paddy Cultivation .....

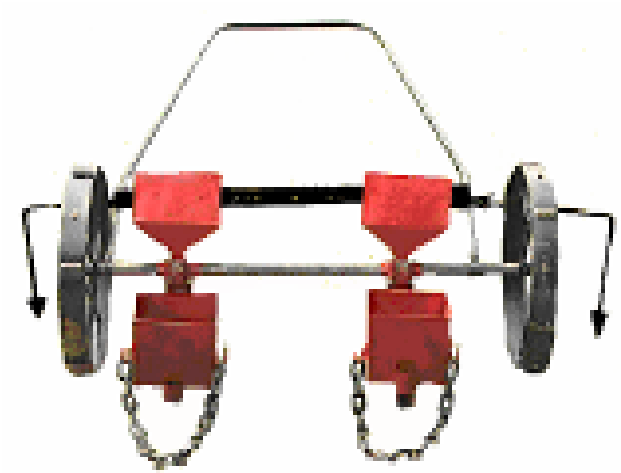
05. Seed Processing

Mini Seed Cleaner

Machineries for Other Field Crop Cultivation

01. Plant Establishment

Highland Seeders



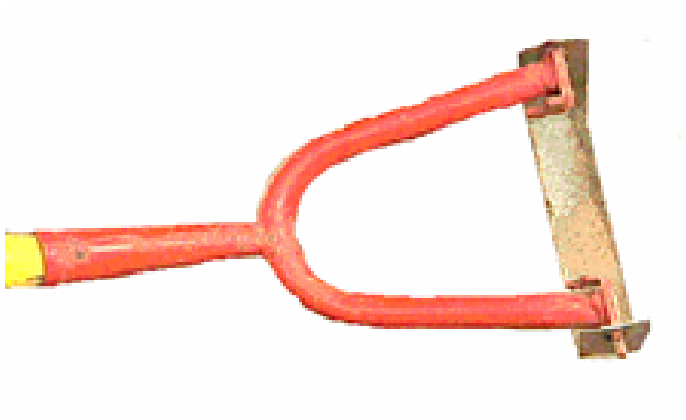
Manual Highland Seeder

Two wheel tractor coupled seeder

Seeder for small seeds

Machineries for Other Field Crop Cultivation .....

02. Mechanical Weeder



Swing Blade Type Weeder

(Swiss Hoe)

Machineries for Other Field Crop Cultivation .....

03. Harvesting & Processing

Groundnut Sheller
(Manual)

Groundnut Sheller
(Motorized)

Machineries for Other Field Crop Cultivation .....

03. Harvesting & Processing .....

Onion Seed Processing Machine

Pulse Splitting Machine

Multi Crop Thresher

Machineries for Horticultural Crops

01. Pruning Tools

For tall trees

For Lime

Machineries for Horticultural Crops ……

1. Fruit Harvesting Tools

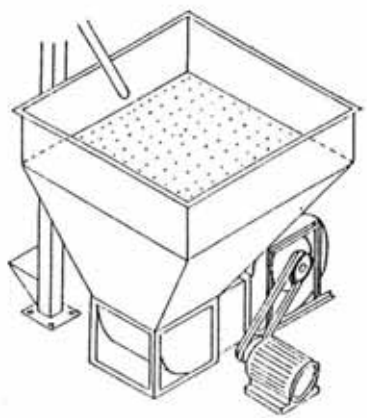
Hook Type
Fruit Harvester

Castle Type
Fruit Harvester

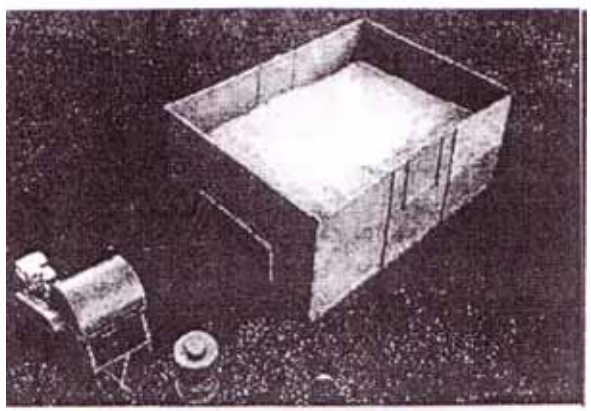
Technology Promoted by Institute of Post Harvest Technology

01. Dryers

BATCH TYPE FLUIDIZED BED DRYER



THE IRRI DR- 1 BATCH DRYER

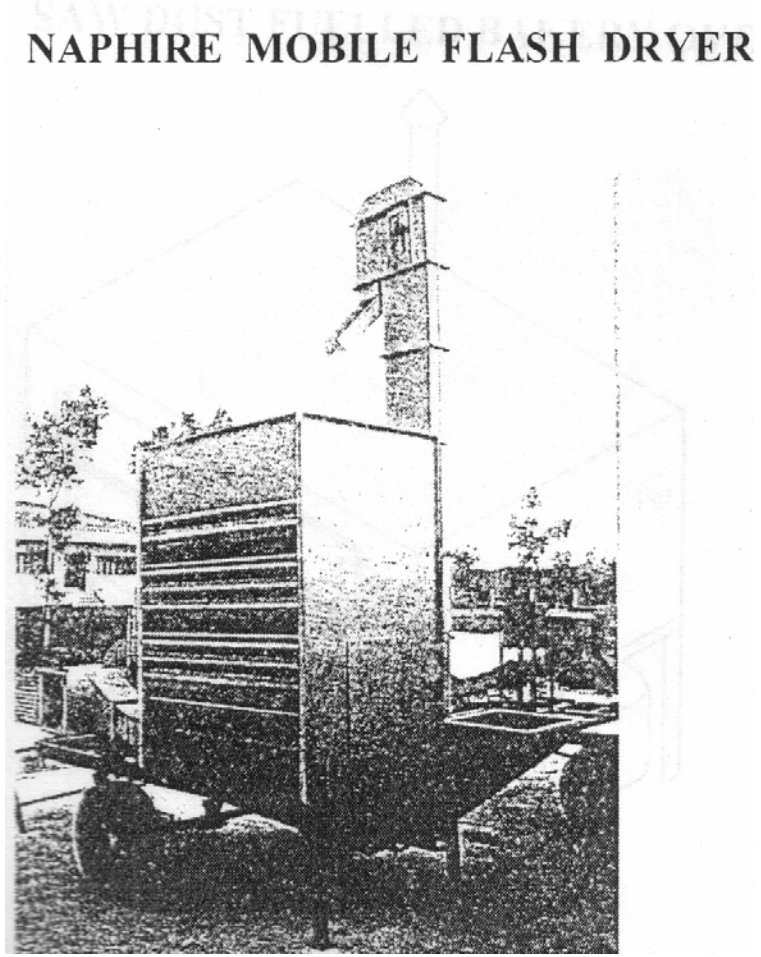


Low cost dryer for grains

Technology Promoted by Institute of Post Harvest Technology .....

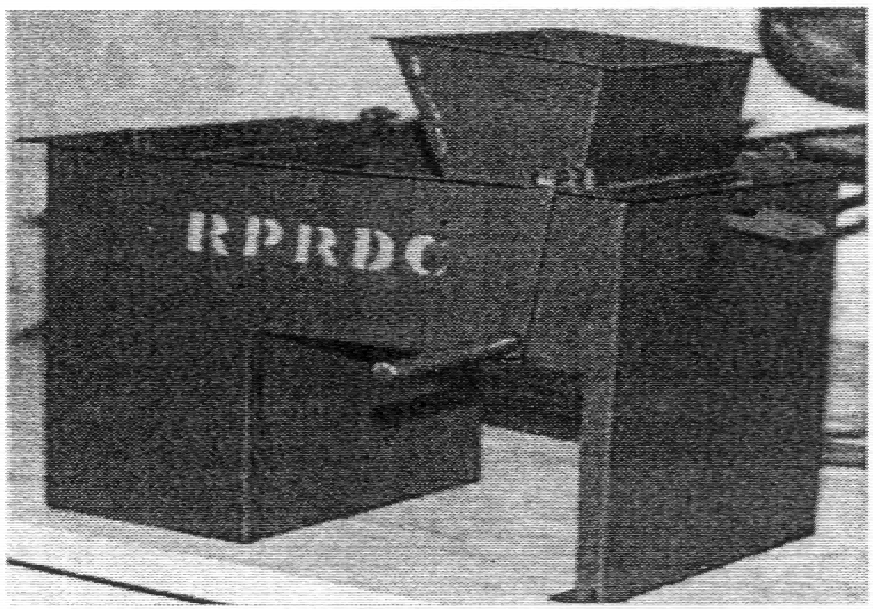
01. Dryers .....

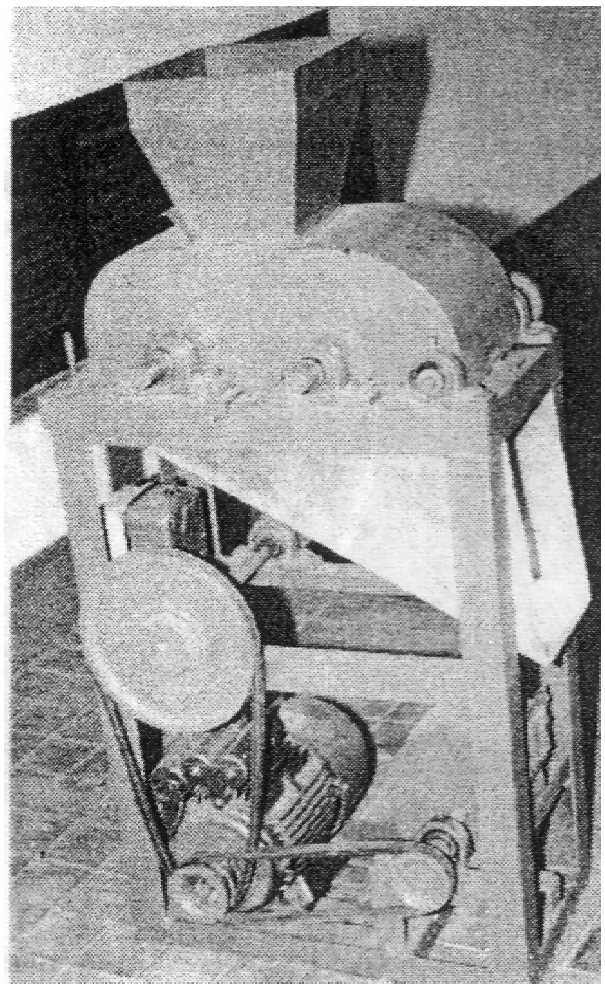
Solar Assisted Biomass fired dryer for dehydration of Agricultural Products



Technology Promoted by Institute of Post Harvest Technology .....

02. Rice Flaking Machine





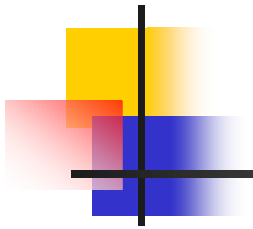
03. Rice De-stoner for Domestic Use

Technology Promoted by Private Sector

01. Battery Operated Knapsack Type Sprayer
02. Neem Seed Solution Extractor

Agricultural Policy

Recently the Government decided to promote organic farming in order to protect the environment by providing subsidies for all inputs. The Government has also started a scheme for granting duty free concession for the importation of new machinery utilizing advanced technology to utilize environmental protection and industrial pollution management.



Thank You!