CHALLENGES FOR RICE PRODUCTION TECHNOLOGY TRANSFER AND ADOPTION

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Sri Lanka

• Location
  North latitude; 5° -10°
  East longitude; 79° -81°

• Climate
  Tropical

• Topography
  Central part - mountainous with complex topography
  Remainder - nearly flat to undulating

strongly affect the winds, seasonal rainfall, temperature, relative humidity and other climatic elements
Where we are in the world
• **Mean annual Rainfall**
  - Varies 900 mm to 5000 mm
  - Multiple origin (monsoonal, convectional)
    March-April - 1st inter monsoonal
    May-September –South West monsoonal
    October-November - 2nd inter monsoonal
    November-February-North East monsoon

• **Mean annual temperature**
  - 27°C -16°C
Rice cultivation in Sri Lanka

- **Two seasons**
  - Yala (May - August)
  - Maha (November - February)

- **Occupy 34% (1 million ha) of total cultivated area**
  (Yala 0.4 million ha, Maha 0.6 million ha)
Rice Consumption in Sri Lanka

- Per capita consumption
  116 kg rice/year/person
  (Raw rice, parboiled rice, rice flour, value added products)
- Produce 3.1 million tons /year (rough rice)
- Provides - 45% total calories
  - 40 % total protein requirement
Extent of paddy 2010
### Present status of rice cultivation

<table>
<thead>
<tr>
<th>Year</th>
<th>Sawn extent (ha)</th>
<th>Net harvested extent (ha)</th>
<th>Production (mt)</th>
<th>Average yield (Kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>729,808</td>
<td>618,872</td>
<td>2,239,369</td>
<td>3,618</td>
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<tr>
<td>1998</td>
<td>848,267</td>
<td>740,389</td>
<td>2,692,335</td>
<td>3,636</td>
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<tr>
<td>1999</td>
<td>892,053</td>
<td>779,449</td>
<td>2,857,113</td>
<td>3,666</td>
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<tr>
<td>2000</td>
<td>877,994</td>
<td>741,651</td>
<td>2,859,891</td>
<td>3,856</td>
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<tr>
<td>2001</td>
<td>798,260</td>
<td>681,546</td>
<td>2,695,076</td>
<td>3,954</td>
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<tr>
<td>2002</td>
<td>852,529</td>
<td>733,621</td>
<td>2,859,467</td>
<td>3,898</td>
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<td>2003</td>
<td>982,617</td>
<td>816,621</td>
<td>3,071,204</td>
<td>3,761</td>
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<tr>
<td>2004</td>
<td>778,542</td>
<td>642,980</td>
<td>2,627,838</td>
<td>4,087</td>
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<tr>
<td>2005</td>
<td>937,181</td>
<td>819,179</td>
<td>3,246,190</td>
<td>3,963</td>
</tr>
<tr>
<td>2006</td>
<td>910,493</td>
<td>807,760</td>
<td>3,341,992</td>
<td>4,137</td>
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<tr>
<td>2007</td>
<td>816,716</td>
<td>713,872</td>
<td>3,131,082</td>
<td>4,386</td>
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<td>2008</td>
<td>1,052,995</td>
<td>925,505</td>
<td>3,875,200</td>
<td>4,187</td>
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<tr>
<td>2009</td>
<td>977,562</td>
<td>842,136</td>
<td>3,651,678</td>
<td>4,336</td>
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<tr>
<td>2010</td>
<td>1,065,280</td>
<td>949,812</td>
<td>4,300,626</td>
<td>4,528</td>
</tr>
</tbody>
</table>
Production and average yield of paddy
1990-2010
### Self sufficiency rate of rice 2005-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Paddy production (mt)</th>
<th>Paddy availability for human consumption (mt)</th>
<th>Total rice availability from domestic source (mt)</th>
<th>Total rice requirement (mt)</th>
<th>Rate of self sufficiency(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>3,246,000</td>
<td>2,953,962</td>
<td>2,058,694</td>
<td>2,045,472</td>
<td>100.65</td>
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<td>2006</td>
<td>3,341,000</td>
<td>3,045,711</td>
<td>2,129,830</td>
<td>2,068,144</td>
<td>102.98</td>
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<tr>
<td>2007</td>
<td>3,131,000</td>
<td>2,856,682</td>
<td>2,009,985</td>
<td>2,081,040</td>
<td>96.59</td>
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<tr>
<td>2008</td>
<td>3,875,000</td>
<td>3,536,269</td>
<td>2,454,663</td>
<td>2,101,840</td>
<td>116.79</td>
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<td>2009</td>
<td>3,652,000</td>
<td>3,331,470</td>
<td>2,415,400</td>
<td>2,249,500</td>
<td>107.37</td>
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<td>2010</td>
<td>4,301,000</td>
<td>3,697,712</td>
<td>2,681,518</td>
<td>2,354,100</td>
<td>113.91</td>
</tr>
</tbody>
</table>
Challenges of technology transfer

1) Technological challenges

2) Socio economic challenges

2) Policy issues
Technological Challenges

1) Technology transfer problem.
   - Poor extension network
     (one officer covers 10-15 villages, less subject matter specialist, poor research extension linkage)
   - Only government sector involves
     Technology transfer through media less effective
   - Less use of internet
     - Language problems
     - High technology not applicable
2) Problems of selecting suitable technology
   - Diversity of agro climate → agro ecological zones 46
   - Variable soil conditions within short distance → major Soil types 13
   - Three different rice eco systems → major irrigation, minor irrigation, rain fed
   - Land form and land size
   - Unpredictable climatic changes

3) No enough feedback from farmers about the appropriateness of the introduced technology
Agro Ecological Zones of Sri Lanka
Socio-economic challenges

1) High cost of production
   Rs. 14-16/= per kg
   - labor cost 55%
   - farm power 22%
   - tradable inputs 23%

2) Land ownership problems
   Tenant farmers
   - use less inputs
   - minimum technology

3) Land fragmentation
   Land holding size decreasing (mechanization difficulties)
   Paddy land use for other purposes
4) Water issues
   Less water for rice, priority for consumption, hydropower generation industries

5) Labor shortage
   New generation deviate from agriculture, particularly rice farming

6) Seasonal production
   - Processing and harvesting mechanization needed (less machine)
   - Less drying and storage facilities and knowledge
   - Price of paddy decline during peak production
7) Problems of mechanization

- Economical level of farmer-machine ownership
- No proper operator training
- Less spare parts availability
- Less repair shops for agricultural machineries
- Less suitability of machine to local conditions
- Low credit facilities to buy machines
Policy issues

- Fertilizer subsidy Rs.28 billion
- Production increases
- Minimum ceiling price
- No proper export marketing channel for excess production
- Customer oriented rice marketing
- No quality assessment of agriculture machinery at the importation
Steps to overcome challenges

1) Strengthening the extension network
   - New recruitment of officers- Sinhala, Tamil adult farmer education

2) Inorganic Fertilizer subsidies
   - Encouraging organic fertilizer use – straw burning banded
   - Yield based fertilizer recommendations

3) Breeding of suitable varieties
   - High yielding, high grain quality, salinity tolerant, short age varieties
4) Reduce the wheat flour consumption
   Increased the rice flour consumption (Wheat flour price increased, rice based product availability increased)

5) Steps to control the farm gate price
   (fix price for paddy at harvesting, paddy marketing board, large scale paddy stores)

6) Government low interest credit facilities
   (farming, paddy marketing and processing)

7) Tenant farmer act, Wetland act
7) Steps to farm mechanization

- Law tariff on farm machinery import
- Proposed farm machinery act
- Credit facilities for local machinery manufacturers
- Straitening the farmer organization
  - To buy required farm machinery
- Farm machinery donation
  - North, East
THANK YOU