Cambodia Perspective on Rice Production and Mechanization in Cambodia

The Regional Seminar on Rice Production & Mechanization

12-13 December, 2011
Sanya, China

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Background

- Location: SEA and bordered with Vietnam, Laos and Thailand
- Total area: 181,035km²
- Total population: 14 millions (51% are women)
- Population by Urban - Rural residence
  - Urban = 3 millions
  - Rural = 11 millions
Agricultural situation in Cambodia

• Agriculture dominates the economy of Cambodia, contributing 29% (2010) of the gross domestic product (GDP);
• Rice is the most important crop in terms of production and significance to Cambodian population and occupies approximately 90% of the total available cultivated land;
• Agriculture also employs around 80% of the rural population and provides the main source of income in rural areas;
• The utilization of agricultural mechanization in Cambodia is limited due to low purchasing power of most small holding farmers; high cost of agricultural machinery; lack of agricultural credit; lack of well-trained operators and mechanics for agricultural machinery;
• However, the agricultural mechanization is progressively developed in the last few years.
Contribution of Agriculture in GDP in 2010

- Services: 43.0%
- Agriculture: 29.0%
- Industry: 28.0%
Composition of sub-sector in Agriculture in 2010

- Crops: 53.8%
- Fishery: 27.3%
- Livestock: 12.8%
- Forestry: 6.1%
Rice Production status for the last 5 years (2006-2010)

<table>
<thead>
<tr>
<th>Year</th>
<th>Area ('000 ha)</th>
<th>Yield (kg/ha)</th>
<th>Production ('000 t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2541</td>
<td>2490</td>
<td>6264</td>
</tr>
<tr>
<td>2007</td>
<td>2585</td>
<td>2620</td>
<td>6727</td>
</tr>
<tr>
<td>2008</td>
<td>2615</td>
<td>2746</td>
<td>7175</td>
</tr>
<tr>
<td>2009</td>
<td>2720</td>
<td>2836</td>
<td>7585</td>
</tr>
<tr>
<td>2010</td>
<td>2795</td>
<td>2970</td>
<td>8250</td>
</tr>
</tbody>
</table>
Paddy & White Rice surplus in the last 5 years (2006-2010)

- Production (‘000MT)
- Paddy (+ ‘000MT)
- Rice (+ ‘000MT)
Challenges on high yielding rice varieties for food security

• Cambodia is just only emphasis on **Plant Breeding Program** to develop varieties of major agricultural crops for high yielding and good quality;

• Hybrid rice technology is not yet fully applied in Cambodia research program, due to farmers are not adopted to this technology;

• Irrigation schemes are not sufficient enough for rice field and natural disaster also effected to the rice production, therefore farmers are hesitated to apply hybrid rice in their rice fields;

• Limited budget from the Government to support the research programs and also lack of private investment in rice seed research and seed production program.
Cambodia Perspective on high yielding rice varieties for food security

1. Promotion of Paddy Production and Rice Export through enhancement of the rice productivity, especially “rice intensification” & “diversification”;
2. Determine the number of prioritized high yielding rice varieties as a target for promotion of production and utilization extension;
3. Strengthen and increase institutional & technical capacity of Cambodia Agricultural Research & Development Institute, research stations, and development centers;
4. Improve extension service at sub-national level, and
5. Support the establishment of farmer organizations through strengthening the capacity of farmers and ag cooperative.
Agricultural mechanization condition in Cambodia

Total of plowing areas by farm machinery from 2001 to 2010

Note: The total of plowing area is approximately 3 million hectares/year
### Statistical data on Farm Machinery and equipment from 2001 to 2011

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Combine harvesters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>325</td>
<td>395</td>
<td>430</td>
<td>836</td>
<td>947</td>
</tr>
<tr>
<td>2</td>
<td>Tractors</td>
<td>3,072</td>
<td>3293</td>
<td>3310</td>
<td>3857</td>
<td>4166</td>
<td>4247</td>
<td>4475</td>
<td>4611</td>
<td>5495</td>
<td>6200</td>
</tr>
<tr>
<td>3</td>
<td>Thresher Machines</td>
<td>3780</td>
<td>4199</td>
<td>4967</td>
<td>6220</td>
<td>7338</td>
<td>7795</td>
<td>8036</td>
<td>8237</td>
<td>13,798</td>
<td>14,390</td>
</tr>
<tr>
<td>4</td>
<td>Hand Tractors</td>
<td>8789</td>
<td>9782</td>
<td>13,693</td>
<td>20,279</td>
<td>26,504</td>
<td>29,706</td>
<td>34,639</td>
<td>38,912</td>
<td>53,220</td>
<td>66,548</td>
</tr>
<tr>
<td>5</td>
<td>Milling Machines</td>
<td>30,542</td>
<td>31,507</td>
<td>32,945</td>
<td>36,531</td>
<td>38,606</td>
<td>38,618</td>
<td>38,680</td>
<td>39,429</td>
<td>47,620</td>
<td>48,217</td>
</tr>
<tr>
<td>6</td>
<td>Engine water pumps</td>
<td>64,406</td>
<td>82,622</td>
<td>99,875</td>
<td>106,569</td>
<td>120,968</td>
<td>127,610</td>
<td>131,702</td>
<td>136,061</td>
<td>164,974</td>
<td>166,633</td>
</tr>
</tbody>
</table>
The challenges of Ag Mechanization in Cambodia

- Structure of the Provincial Office of agricultural engineering is still weak;
- Inadequate skilled workforce at both national and provincial level;
- Most of workshops for repairing and maintenance of farm machinery and equipment are inactive;
- Limited annual budget allocated for the implementation of activities fails the nationwide coverage;
- External support and cooperation with development partners is still missing;
- Wide gap in cooperation with private sector dealing with farm machinery.
The positive points of Ag Mechanization in Cambodia

- National policy and strategy in place as a milestone;
- Clear structure and mandate;
- Support from the Ministry of Agriculture, Forestry and Fisheries;
- Good cooperation with other line departments under the Ministry of Agriculture, Forestry and Fisheries;
- Academic institutions providing services in agricultural mechanization from short-term certificate courses to graduated degrees;
- Annual budget allocation from the Government to implement its activities.
Orientation of Agricultural Mechanization Development in Cambodia

Main Objectives

- Increase in Labor productivity
- Increase in Land productivity
- Decrease in Costs of production
Orientation of Agricultural Mechanization Development in Cambodia - continued

Pre Harvest Technology

- Good Seed
- Quality Rice
- Market Understanding
- Crop Management
- Water Management
- Timely Threshing
- Safe Storage
- Improved Drying

Post Harvest Technology

- Engineering and Ag. Land Reform/Consolidation
- Bio-Technology

Mechanization in both pre and post harvest technology will increase rice production in Cambodia
Agricultural Mechanization Development Strategic planning in Cambodia

**Goal:**
We are committed toward contributing to poverty reduction, ensuring food security and adapting to climate change.

**4 main objectives are considered and addressed:**
1. Enabling access to Mechanization;
2. Develop broad-based skills and strengthen capacity in agricultural mechanization;
3. Commercialization of agriculture through mechanized farming; and
4. Improving policy, legal and regulatory environment for agricultural mechanization.
The Development of an organizational chart of Dept of Agricultural Engineering in Cambodia

Department’s leaders

Office of Adm. & Personnel
Office of Pre Harvest Tech.

Office of Planning, Accounting and Int. Cooperation
Office of Engineering & ALR

Office of Training & Community Development
Office of Post Harvest Tech.

Kbal Po Ag. Eng. Center
Toul Samrong Ag. Eng. Center

Provincial Office of Agricultural Engineering

6 offices at central level
2 offices at Takeo and Battambang
The projected linkages from the Dept of Ag Engineering to the community agricultural mechanization workshop in Cambodia

Dept of Ag Engineering/GDA

Regional Ag Eng Development Center

Provincial Ag Eng Office A

Provincial Ag Eng Office B

Provincial Ag Eng Office C

Variety of Eq & Machines trials

Provide technical support and advice

Provide tech support and monitoring

COMMUNITY WORKSHOP
Ag Organizations/CBOs/Farmers in the villages

Other Depts / projects/Privates

Credit institutions
Local made farm machinery & equipment
Farmer congress on farm machinery & equipment
Research & Demo of farm machinery & equipment
Field day on farm machinery & equipment
Field day on farm machinery & equipment
Expo of farm machinery & equipment
Partnership & Cooperation
1. Report of Agricultural Engineering activities in 2011
2. Report on UNAPCAEM Governing Council Meeting (06/12/2111); and
3. Other topics to be discussed
Prospective activities for 2012

- Strengthen the organization of the Provincial Offices of Agricultural Engineering;
- Conduct in-depth data collection on the use of agricultural machinery and equipment;
- Prepare laws, regulations and guidelines for the improvement of agricultural machinery;
- Research and develop most suitable implements equipped with hand tractors and tractors;
- Train and promote technical knowledge of farm machineries to farmers;
- Make technical documents available in both Cambodian and English;
- Organize events, at national and provincial levels, where end-users/farmers, distributors and artisans/manufacturers can meet together to share experiences and updated information.
Prospective activities for 2011- continued

- Organize workshops to update and upgrade farmers and artisans/mechanics who are enthusiastic about the creation/innovation and modification of farm machinery and equipment;
- Coordinate and cooperate with development partners, NGOs, partners, NGOs, and private sector to make the agricultural mechanization sector kept pace with the Govt’s strategy on the promotion of rice export;
- Organize farm machinery expo in cooperation with private sector and development partners at national and provincial levels.
Thank you for your kind attention