



# Cambodia Climate-Resilient Rice Commercialization Sector Development Program: Crop Survey for Rice- SDP Evaluation

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# Introduction

## **Objectives of the Survey:**

- To determine the number of farmers who adopted the water-saving technology using Laser Land Leveling methods and the constraints of adopting laser land leveling methods;
- To determine the extent by which the farmers use commercial seeds from input suppliers and the constraints of using commercial seeds;
- To determine how many farmers seek technical advice from the input suppliers.

## **Main Project Indicators Investigated:**

1. At least 70% of farmers (disaggregated by sex) in target provinces use commercial seed every 2 years by 2021. The 2012 baseline data indicate that 10% of the farmers use commercial seeds.
2. Post-harvest losses will reduce from 15% of crop yield in 2012 to 10% of crop yield by 2021.
3. At least 50% of farmers in target provinces (disaggregated by sex) obtain technical advice through trained input suppliers by 2021. The 2012 baseline data for this indicator is 10%.
4. At least 30% of farmers (disaggregated by sex) have leveled their paddy fields by 2021. The 2012 baseline data for this indicator is 5%.

## **COVERAGE AND RESPONDENTS**

- Coverage of the Survey: Battambang, Kampong Thom, and Prey Veng
- Groups of Respondents: (1) the individual farmers; (2) Agricultural Cooperatives; and (3) Input Suppliers

# Highlights of the Results

## **AGRICULTURAL COOPERATIVES**

- The agriculture cooperatives are involved in trading of paddy rice, selling rice seeds and agriculture inputs, provide credit among others.
- There is almost equal number of female members in the agriculture cooperatives
- There are more men employed in agricultural cooperatives compared to women at a ratio of 2:1
- Most of the committee members (93%) of the agricultural cooperatives received leadership training but only 3.3% received training on seed production.

## **PADDY RICE AND RICE SEED PRODUCTION AND TRADING**

- Only 21.2% of the respondents engaged in rice seed production
- Women significantly contributed to the labor force in seed production: constituting from 53.6% to 55.1% of the workforce.
- There are few seed producers in the community making access to commercial seeds difficult for the farmers.
- The most common variety produced by farmers for sale: Sen Kroob and Phka Rumdol (3-4 MT/Ha per production; total production of about 7-10 T/Ha/year)
- Cooperatives produced mostly Phka Rumdol.
- Two-thirds of the respondents participated in seed production training and 27% of those attended are women, provided mostly by Rice-SDP
- Problems encountered in paddy rice production: (1) high prices of commercial seeds and (2) difficulty in finding the source of rice seeds (3) Some varieties are reportedly not suitable for the site and require high agricultural inputs.

<b>Land Ownership (Hectares Owned and No. of Farmers,%)</b>	
▪ Owned	2.64 Ha. (97.4%)
▪ Leased	3.38 Ha. (41.3%)
▪ Borrowed for Free	2.92 Ha. (5.3%)
▪ Crop Sharing	0.94 Ha. (1.3%)
Ave. Area (Ha.)	4.14 Ha.
<b>Paddy Fields Owned</b>	
▪ <0.5 Ha.	6.6%
▪ 0.5-1 Ha.	9.8%
▪ 1-1.5 Ha.	10.1%
▪ 1.5-2.5 Ha.	20.6%
▪ 2.5-5 Ha.	29.1%
▪ 5-10 Ha.	17.2%
▪ 10-15 Ha.	4.2%
▪ 15-25 Ha.	1.6%
▪ >25 Ha.	0.8%
<b>Cultivated Paddy (No. of Farmers)</b>	
▪ Dry Season	49.5%
▪ Early Wet Season	34.1%
▪ Wet Season	73.5%

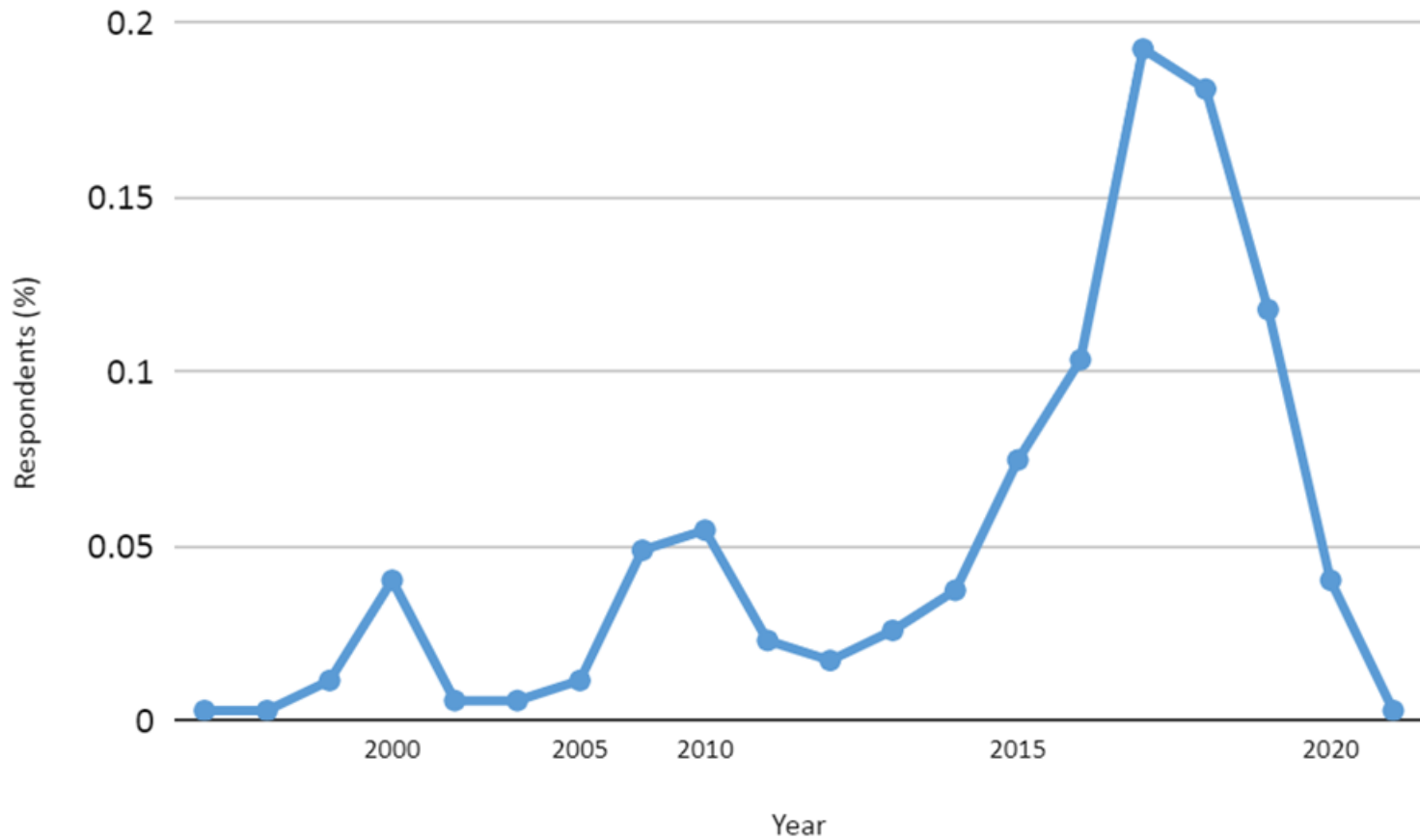


## LAND LEVELING:

- There are 50.8% of farmers that attended the laser and modern land leveling method
  - ✓ tenurial condition of the land (some farmers are only leasing or renting the land)
- More than half of the respondents signified to do laser land leveling voluntarily.
  - ✓ limited area
  - ✓ lack of information about the technology
- Almost the same proportion of female and male farmers are willing to do voluntary laser land leveling.
  - ✓ absence of service provider
- 64.4% of those who do laser Land Leveling employ contractors. Out of these, only 4.1% of the companies are headed by women
- Constraints of Laser Land Leveling
  - ✓ limited capital
  - ✓ expensive or high cost of the technology
- Reasons why some respondents are not willing to do voluntary laser land Leveling: (1) limited capital (54.3%), (2) high cost of laser land leveling (30.4%); and (3) do not own the land they till (2.9%).

## USE OF COMMERCIAL RICE SEEDS

- Broadcasting is the most common method of growing rice among the respondents (89.2%)
- Broadcasting method needs around 150-200 kg/ha, but for farmers who are using the transplanting method use only 25-50 kg/ha of seeds.
- There are 74.9% (30.4% are women) who adopted commercial seeds which is higher than the target of having 70% adopting commercial seeds.
- About a quarter of the respondents did not change their seeds or adopt commercial seeds.
- For those who adopted commercial seeds, 67.5% changed their seeds every 2 years.
- Constraints in adopting commercial seeds: (1) high cost of seeds (2) difficulty of finding or availing commercial seeds
- Varieties commonly bought by the farmers are Sen Kroob (41.3%), OM 4900 (33.6%), Phka Rumdol (26.2%).



**Year the Farmers Started Changing Seeds**

## FERTILIZER AND FARM INPUTS

- There are 91.7% of the input suppliers who attended training on agriculture production
- The training are on (1) use and management of agriculture chemicals, (2) laws and regulations in the selling of agriculture inputs, (3) storage and handling of agriculture inputs, (4) registration of agricultural chemicals and (5) types or kinds of agriculture inputs.
- Majority of the farmers (72.2%) seek advice from input suppliers on several aspects of agriculture production, particularly on the use of fertilizers, and out of this,
  - 65% got advice from trained input suppliers – this exceeded the target indicator of the project (i.e., 50% farmers receiving advice from trained input suppliers).
  - Most of the farmers received guidance three times or more on fertilizer utilization.
  - Majority of the farmers (54.6%) complied with the technical methods on fertilizer application and 71.2% of those who received the explanation or guides reported that they used the fertilizers efficiently

## WEEDS, PEST AND DISEASE CONTROL PRACTICES

- The farmers used a combination of chemical and mechanical method in suppressing grasses during land preparation and maintenance phase of the rice field.
- Most farmers use chemical pesticides (77.0%), manual weeding (61.4%), trampling (11.1%), and using mechanical weeders (2.6%).
- The farmers sourced their pesticides from shops and input suppliers (59.8%) and the market (50.8%).
- Most of the farmers (83.8%) used pesticides based on technical guidance from the government (PDAFF) (64.6%) and 29.1% of the farmers received advice from Input Suppliers.

## RICE POST-HARVEST OPERATION AND MANAGEMENT

- Combine harvesters is commonly used by the farmers in rice harvesting.
- Most of the respondents (80.4%) used combine harvesters against 19.6% who use the conventional method
- Sun-drying is commonly used for drying rice (79%) and 13% of the farmers reported that they immediately sell their rice right after harvest.
- Before the training, the highest contribution of post-harvest loss in the conventional harvesting method is generated during drying (3.90%), transporting (3.20%), and stocking (3.01%).
- The post-harvest losses significantly reduced to 1.57%, 1.23%, and 1.22% respectively after the farmers attended training on post-harvest.
- The combine harvester contributes a significant amount of losses.
- The loss from combine harvester operation has reduced by close to 50% after the farmers and the operators attended post-harvest training (14.13% before the training and reduced to 12.76% after the training).
- The current level of the post-harvest loss is still higher compared to the target post-harvest loss of 10%.

## Factors Affecting Improvement of Yield (t/Ha.)

- ❑ Used Multiple and Binary Logistic Regression
- ❑ Binary Logistic Regression Determines whether the factors affect the two outcome possibilities: (1) Increase in Yield or (2) No Increase in Yield using the average yield in the Baseline as benchmark
- ❑ The Multiple Regression assess the influence of different factors on the Yield of Rice
- ❑ Other factors may have influence on the yield but could hardly be analyzed by the current available datasets: (1) Distance from the irrigation water (can be determined spatially/using GIS); (2) The tenorial arrangements may influence the yield; (3) Yield may differ from variety the use of rice variety.

## Post Report Analysis: Factors Affecting Improvement of Yield (t/Ha.)

	Wet Seasons		Dry Season		Early Wet Season	
	Binary Logistic	Multiple Regression	Binary Logistic	Multiple Regression	Binary Logistic	Multiple Regression
<b>Threshold (tons/Ha.)</b>	2.44		4.67		3.04	
<b>Factors</b>						
▪ Sex of HH Head	-	-	-	-	-	-
▪ Do Land Leveling	-	-	-	Direct Influence	-	Moderate Direct Influence
▪ Use Modern Land Leveling	Moderate Direct Influence	Moderate Direct Influence	-	-	-	-
▪ Use Commercial Seeds	Moderate Direct Influence	Direct Influence	-	-	Direct Influence	Moderate Direct Influence
▪ Use of Fertilizers	-	-	-	Direct Influence	*	*
▪ Aggregate Area (Has.)	Direct Influence	Direct Influence	Direct Influence	Direct Influence	-	-
▪ No. of Lots	-	Negative Influence	Moderate Direct Influence	Direct Influence	Direct Influence	-



**CONCLUSION****Summary of the target outputs and the achievement of the project:**

	<b>Targets:</b>	<b>Achievements:</b>
<b>Promoting Land Leveling to the Farmers</b>	<ul style="list-style-type: none"> <li>▪ At least 30% of farmers (disaggregated by sex) have leveled their paddy fields by 2021</li> <li>▪ The 2012 baseline data for this indicator is 5%.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Target is achieved</li> <li>▪ MT&gt;BL</li> <li>▪ 88.4% of the farmers (9.8% women) adopted the modern land leveling method</li> <li>▪ Some of them used a combination of both laser land leveling and machinery methods.</li> <li>▪ All in all, there are 22.2% of farmers (2.1% women) use laser land leveling and 73.3% (7.9% women) use mechanical leveling methods.</li> </ul>
<b>Promoting Commercial Seeds to the Farmers</b>	<ul style="list-style-type: none"> <li>▪ At least 70% of farmers (disaggregated by sex) in target provinces uses commercial seed every 2 years by 2020</li> <li>▪ The 2012 baseline data indicate that 10% of the farmers use commercial seeds.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Target is achieved (i.e. 74.9% &gt; 70% target)</li> <li>▪ MT &gt; BL</li> <li>▪ There were 74.9% (30.4% women) who adopted commercial seeds</li> <li>▪ 67.5% of farmers (26.7% women) changed seeds for at least 2 years.</li> </ul>
<b>Providing Technical Advice to the Farmers from Trained Input Suppliers.</b>	<ul style="list-style-type: none"> <li>▪ At least 50% of farmers in target provinces (disaggregated by sex) obtain technical advice through trained input suppliers by 2020</li> <li>▪ The 2012 baseline data for this indicator is 10%)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Target is achieved (i.e. 65%&gt;50% Target)</li> <li>▪ 65% of the farmers (27.8% women) seek advice from trained input suppliers received advice from trained input suppliers.</li> </ul>
<b>Reducing Post Harvest Losses</b>	<ul style="list-style-type: none"> <li>▪ Post-harvest losses will reduce from 15% of crop yield in 2012 to 10% of crop yield by 2020.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Target slightly missed the target</li> <li>▪ The total post-harvest losses of the farmers stood at 12.31% which is higher than the target of 10%</li> <li>▪ Contribution of the Combine Harvester to overall losses = 60.89%</li> </ul>

**Thank You**