

Attachments

Attachment B1.1-1 Results of Interview Survey in Major Communes/Villages Located in Ream Kon & Por Canal Sub-project Areas (1/3)

Prey Svay Commune (Interview with Commune Office)		Chrey Commune (Interview with Commune Office)		Ream Kon & Por Canal Sub-project		Kear Commune (Interview with Commune Office)	
Early Wet Season Rice	Wet Season Rice	Early Wet Season Rice	Wet Season Rice	Early Wet Season Rice	Wet Season Rice	Early Wet Season Rice	Wet Season Rice
<p>Direct sowing 100%</p> <p>Sowing Mid. Mar. - Early Apr. Harvesting Mid. June - End. June IR 66</p> <p>Variety Limited to 1 - 2% of paddy field</p> <p>Area Not (pumping seldom practiced)</p> <p>Irrigation</p>	<p>Direct sowing 90%</p> <p>Sowing Early June - Mid. July Harvesting End Nov. - Mid. Jan.</p> <p>Variety Somali, Phka Khmey, sticky rice (common) Improved: Phka Rumduol, CAR 4, 6, 9 Local: Chong baaal, Mek Tun, Kp. Puoy, Neang Khom</p> <p>Yield level 2.0 t/ha</p> <p>Irrigation Status Nearly rainfed conditions</p> <p>Area: entire paddy fields in commune</p>	<p>Direct sowing 97%</p> <p>Sowing Mid. Apr. - Mid. Apr. Harvesting End June - Early July Sen Pidao, Phka Mullis, IR 66</p> <p>Variety About 20% of paddy fields in commune</p> <p>Area Mostly by pumping; in case of much rain, by gravity</p> <p>Irrigation</p> <p>Yield level 4 - 5 t/ha (???)</p>	<p>Transplanting > 80%</p> <p>Sowing Mid. July - Mid. Aug. Transplanting Mid. Aug. - End Aug./Mid. Sep. Harvesting Mid. Dec. - Mid. Jan</p> <p>Variety Improved: Rieng Chey, CAR 9, Phka Rumchang Local: Kp. Puoy, Neang Khom</p> <p>Local varieties occupy 60 to 65% of total</p> <p>Yield level 2.8 - 3.0 t/ha (sun dried 2.5 - 2.7 t/ha)</p> <p>Irrigation Status Nearly rainfed conditions</p>	<p>Direct sowing 70%</p> <p>Sowing Mid. Apr. - Early/Mid. May Harvesting End July - Mid. Aug. Sen Pidao, Ayu (75 days)</p> <p>Variety 10 to 15% of paddy fields in commune</p> <p>Area Mostly by pumping; 3 to 4 times/season (no pumping in 2008)</p> <p>Irrigation</p> <p>Yield level 3 - 4 t/ha (sun dried 2.7 - 3.6 t/ha)</p>	<p>Transplanting 60%</p> <p>Sowing Early June - Mid. July Transplanting Early Aug. - Mid. Sep. Harvesting Mid. Dec. - Mid. Jan.</p> <p>Variety Common: CAR 4, Kp. Puoy, Phka Khmey Rieng Chey, Sroy Sov, Chan Vang Pdiv</p> <p>Yield level 1.5 - 2.5 t/ha</p> <p>Irrigation Status Nearly rainfed conditions</p> <p>Area: entire paddy fields in commune</p>	<p>Direct sowing 100%</p> <p>Sowing Mid. Dec. - End. Dec. Harvesting End Mar. - Early Apr. Variety: IR 66, Sen Pidao</p> <p>Cultivation after receding of water in wet season</p> <p>Irrigation Pumping</p> <p>Area About 10ha in commune (outside of the Project Area)</p>	<p>Direct sowing 100%</p> <p>Sowing Mid. Dec. - End. Dec. Harvesting End Mar. - Early Apr. Variety: IR 66, Sen Pidao</p> <p>Cultivation after receding of water in wet season</p> <p>Irrigation Pumping</p> <p>Area About 10ha in commune (outside of the Project Area)</p>
<p>No cropping of rice</p>	<p>Wet season rice single cropping: almost 100%</p> <p>Early wet season rice - wet season rice: 1 - 2%</p>	<p>Wet season rice close to canal</p> <p>Wet season rice - dry season rice: 20% (250 - 300ha)</p> <p>In low lying paddy fields (after receding of water) (250 - 300ha in commune; outside of project area)</p> <p>Wet season rice single cropping: 60%</p> <p>Negligibly limited</p>	<p>Wet season rice - wet season rice: 20%</p> <p>In paddy fields close to canal</p> <p>Wet season rice - dry season rice: 20% (250 - 300ha)</p> <p>In low lying paddy fields (after receding of water) (250 - 300ha in commune; outside of project area)</p> <p>Wet season rice single cropping: 60%</p> <p>Negligibly limited</p>	<p>Wet season rice - wet season rice: 10 - 15%</p> <p>In paddy fields close to canal</p> <p>Wet season rice single cropping: 85 - 90%</p> <p>Wet season rice - dry season rice: 10ha</p>	<p>Wet season rice - wet season rice: 10 - 15%</p> <p>In paddy fields close to canal</p> <p>Wet season rice single cropping: 85 - 90%</p> <p>Wet season rice - dry season rice: 10ha</p>	<p>Other crops grown in paddy fields</p> <p>Reasons not cropping in early wet season in paddy fields - Traditionally no crops other than rice grown</p>	<p>Other crops grown in paddy fields</p> <p>Reasons not cropping in early wet season in paddy fields - Traditionally no crops other than rice grown</p>
<p>Other Crops in Paddy Field</p>	<p>Watermelon, cucumber, guard, pumpkin, corn, string beans, mungbeans</p> <p>Cropping Season Early Apr. - Mid./End Nov. - Road construction (only)</p>	<p>String beans, cucumber, leaf vegetables</p> <p>Area: very limited (3 to 5 ha in commune; at home garden)</p>	<p>String beans, cucumber, leaf vegetables</p> <p>Area: very limited (3 to 5 ha in commune; at home garden)</p>	<p>Mungbeans (3 - 4ha in commune, Kear Muoy village/R.K.)</p> <p>Cropping Season: Mid./End Apr. - Early/Mid. June</p> <p>Cucumber, leaf vegetable in Ream Kon village</p> <p>In dry season after paddy (0.5 to 1ha)</p> <p>Chili (mostly), cucumber, leaf vegetable, corn, mungbeans, pumpkin, watermelon</p>	<p>Mungbeans (3 - 4ha in commune, Kear Muoy village/R.K.)</p> <p>Cropping Season: Mid./End Apr. - Early/Mid. June</p> <p>Cucumber, leaf vegetable in Ream Kon village</p> <p>In dry season after paddy (0.5 to 1ha)</p> <p>Chili (mostly), cucumber, leaf vegetable, corn, mungbeans, pumpkin, watermelon</p>	<p>Other Crops in Paddy Field</p>	<p>Other Crops in Paddy Field</p>
<p>Crops Grown in Upland Fields</p>	<p>Watermelon, cucumber, guard, pumpkin, corn, string beans, mungbeans</p> <p>Cropping Season Early Apr. - Mid./End Nov. - Road construction (only)</p>	<p>String beans, cucumber, leaf vegetables</p> <p>Area: very limited (3 to 5 ha in commune; at home garden)</p>	<p>String beans, cucumber, leaf vegetables</p> <p>Area: very limited (3 to 5 ha in commune; at home garden)</p>	<p>Chili (mostly), cucumber, leaf vegetable, corn, mungbeans, pumpkin, watermelon</p>	<p>Chili (mostly), cucumber, leaf vegetable, corn, mungbeans, pumpkin, watermelon</p>	<p>Crops Grown in Upland Fields</p>	<p>Crops Grown in Upland Fields</p>
<p>NCCD in 2008</p>	<p>Prevaling Marketing Channel</p>	<p>NCCD in 2008</p>	<p>NCCD in 2008</p>	<p>NCCD in 2008</p>	<p>NCCD in 2008</p>	<p>NCCD in 2008</p>	<p>NCCD in 2008</p>
<p>Prevaling Marketing Channel</p>	<p>Paddy: sell to collector in village</p>	<p>Prevaling Marketing Channel</p>	<p>Prevaling Marketing Channel</p>	<p>Paddy: sell to collectors in village</p>	<p>Paddy: sell to collectors in village</p>	<p>Paddy: sell to collectors in village</p>	<p>Paddy: sell to collectors in village</p>

Attachment B1.1-1 Results of Interview Survey in Major Communes/Villages Located in Ream Kon & Por Canal Sub-project Areas (2/3)

Ta Loas Commune (Interview with Commune Office)		Angkroing Village, Chrey Commune (Interview with village chief)		Kor Village, Prey Svay Commune (Interview with village chief)	
Ream Kon & Por Canal Sub-project		Ream Kon Sub-project		Ream Kon Sub-project	
Early Wet Season Rice	Direct sowing 100% Sowing Mid. Apr. - End Apr Harvesting Mid. July - End July Variety IR 66, Sen Pidao Area 573ha/4,111ha (14% in 2008) Irrigation Pumping: 2 times/season Yield level 7 - 8 hrs/ha/time; φ 8cm 2 - 3 t/ha	Early Wet Season Rice	Direct sowing 100% Sowing Mid. Mar. - Early Apr. Harvesting Early July - Mid. July Variety Sen Pidao, IR 66, Rumpu Area 270ha/1,242ha (22%) Irrigation Pumping 2 to 3 times/season Yield level 4 hrs /time/ha; R. 13,000/hr 2.0 - 2.5 t/ha	Early Wet Season Rice	Direct sowing 100% Sowing Early Apr. - Mid. Apr. Harvesting Mid. July - End July Variety Sen Pidao, IR 66 Area 30ha/893ha (3%) Irrigation Pumping 4 to 5 times x 2 hrs/season/ha Yield level 2.5 - 3.0t/ha If water is enough, will do transplanting
Wet Season Rice	Direct sowing 60% Sowing Early June - Mid. July Transplanting End July - Mid/End Sep. Harvesting End Dec. - Mid/End Jan. Variety Common: Kp. Puoy Neang Khon, Neang Mine, Sen Chey Yield level Direct: 2 - 3t/ha; transplant: 4 t/ha (???) Irrigation Status Nearly rainfed conditions Area: entire paddy fields in commune 4 - 5ha (???) in commune; outside of project area	Wet Season Rice	Transplanting 70% Sowing Early June - Early July Transplanting End July - Mid. Sep. Harvesting Early Jan. - Mid. Feb. Variety Common: Somali, Year Sor CAR 4, CAR 9 Yield level 2.0 - 2.5 t/ha Irrigation Status Nearly rainfed conditions Area: entire paddy fields in village	Wet Season Rice	Transplanting 50% Sowing Early June - Mid. July Transplanting Mid. July - Mid. Sep. Harvesting End Nov. - Mid. Jan. Variety Common: Somali, CAR 6 Kp. Puoy, Strov Sor, Neang Khon, Kong Mich etc. Yield level Direct: 1.5t/ha; transplant: 2.5 - 3.0 t/ha Irrigation Status Nearly rainfed conditions Area: entire paddy fields in village
Dry Season Rice		Dry Season Rice	Direct sowing 100% Sowing Mid. Nov. - Early Dec. Harvesting Mid. Feb. - End Feb. Variety: Rumpu (most common), IR 66, Sen Pidao Cultivation after receding of water in wet season Yield level 2.2 t/ha Irrigation Pumping, 1 pump/7-10days Area About 20 - 30ha outside of project area	Dry Season Rice	No cropping of rice
Cropping Pattern	Early wet season rice - wet season rice: 14% In paddy fields close to canal Wet season rice single cropping: 86% Wet season rice - dry season rice: 4 - 5ha	Cropping Pattern	Early wet season rice - wet season rice: 20% In paddy fields close to canal Wet season rice single cropping: 80% Early wet season rice - dry season rice: 20 - 30ha	Cropping Pattern	Wet season rice single cropping: 97% Early wet season rice - wet season rice: 30ha (3%) In paddy fields close to canal
Other Crops in Paddy Field	No other crops than rice in paddy fields			Reasons for Practicing Direct Sowing	- Water shortage for transplanting - If enough rain or water, do transplant
Crops Grown in Upland Fields	Cucumber, gourd, pumpkin, string beans, mungbeans, leaf vegetables				
NCCD in 2008	- Road rehabilitation				
Prevailing Marketing Channel	Paddy: sell to collectors in village				

Attachment B1.1-1 Results of Interview Survey in Major Communes/Villages Located in Ream Kon & Por Canal Sub-project Areas (3/3)

Poul Muoy Village, Kear Commune (Interview with village chief)		Ream Kon Sub-project		Ream Kon & Por Canal Sub-project		Balkan District (Interview with DAO)	
Pou Pir Village, Kear Commune (Interview with village chief)		Por Canal Sub-project		Ream Kon & Por Canal Sub-project		Balkan District (Interview with DAO)	
Early Wet Season Rice	Direct sowing 100% Sowing Early Apr. - End Apr. Harvesting Mid. July - End July Variety Sen Pidao, IR 66, Rumpu Area 82ha/195ha (42%) Irrigation Pumping 4 to 5 times/season 3 hrs/time/ha; R. 15,000/hr (φ 15cm) Yield level 3.0t/ha	Early Wet Season Rice	Direct sowing 100% Sowing Mid. Apr. - End Apr. Harvesting Mid. July - Early Aug. Variety IR Area 50% of fields owned by villagers (100 ha/200ha of paddy fields owned) Irrigation Pumping Yield level 2.5 - 3.0t/ha	Early Wet Season Rice	Direct sowing Sowing Early Apr. - End Apr. Harvesting End July - Early Aug. Variety Sen Pidao, IR 66, Rumpu Area 1,700 to 2,000ha in district Por Canal: 1,300 - 1,600ha (about 80% of Por Canal area) Ream Kon: 400ha Gravity & pumping Yield level 3.5 - 4.0 t/ha	Early Wet Season Rice	Direct sowing Sowing Early Apr. - End Apr. Harvesting End July - Early Aug. Variety Sen Pidao, IR 66, Rumpu Area 1,700 to 2,000ha in district Por Canal: 1,300 - 1,600ha (about 80% of Por Canal area) Ream Kon: 400ha Gravity & pumping Yield level 3.5 - 4.0 t/ha
Wet Season Rice	Transplanting 50 - 60% Sowing Early July - End July Transplanting Early Aug. - Mid. Sep. Harvesting End Dec. - Mid/End Jan. Variety Common: Sen Chey, Kp. Puoy CAR 8, CAR 6, Neang Khon Yield level Direct: 1.5 - 2.0t/ha; transplant: 3.0 t/ha Irrigation Status Nearly rainfed conditions Area: entire paddy fields in village	Wet Season Rice	Transplanting 70% Sowing Early June - Mid. July Transplanting End July - Mid. Sep. Harvesting End Dec. - Early Feb. Variety Common: Kp. Puoy, Srov Sor Riang Chey, Mek Thun, Ceak Sanlek Yield level transplant: 3.0 - 3.5t/ha (dried 2.7 - 3.2) Irrigation Status Nearly rainfed conditions Area: entire paddy fields in village	Wet Season Rice Double Cropped Field	Transplanting: mostly Sowing Mid. June - Mid. July Transplanting Mid. Aug. - Mid. Sep. Harvesting Mid. Nov. - End Dec. Variety CAR 4 (m/l), CAR 6 (m/l), Riang Chey (m/l), Neang Khon (l), Kp. Puoy (l), CAR 8, CAR 13 Yield level 3.5 - 4.0 t/ha (???) Irrigation Status No pumping in wet season Area: double cropped paddy fields in Por Canal/Ream Kon	Wet Season Rice	Transplanting: mostly Sowing Mid. June - Mid. July Transplanting Mid. Aug. - Mid. Sep. Harvesting Mid. Nov. - End Dec. Variety CAR 4 (m/l), CAR 6 (m/l), Riang Chey (m/l), Neang Khon (l), Kp. Puoy (l), CAR 8, CAR 13 Yield level 3.5 - 4.0 t/ha (???) Irrigation Status No pumping in wet season Area: double cropped paddy fields in Por Canal/Ream Kon
Dry Season Rice	No cropping of rice	Dry Season Rice	Negligibly limited	Wet Season Rice Single Cropped Field	Transplanting: 30% Sowing Mid. June - Early July Transplanting Mid. Aug. - Mid. Sep. Harvesting Mid. Nov. - Mid. Jan. Yield level 2.5 - 3.0t/ha Direct sowing: 70% Sowing Mid. May - End July Harvesting Mid. Nov. - Mid. Jan. Yield level 2.0t/ha	Wet Season Rice	Transplanting: 30% Sowing Mid. June - Early July Transplanting Mid. Aug. - Mid. Sep. Harvesting Mid. Nov. - Mid. Jan. Yield level 2.5 - 3.0t/ha Direct sowing: 70% Sowing Mid. May - End July Harvesting Mid. Nov. - Mid. Jan. Yield level 2.0t/ha
Cropping Pattern	Wet season rice single cropping: 60% Early wet season rice - wet season rice: 82ha (40%) In paddy fields close to canal	Cropping Pattern	Estimated very roughly Wet season rice single cropping: 50% Early wet season rice - wet season rice: 50% In paddy fields close to canal	Dry Season Rice	Direct sowing 100% Sowing Early Dec. - Mid. Dec. Harvesting Mid. Mar. - End Mar. Variety: IR 66 Irrigation Pumping Area 502 ha in 2007 in district	Dry Season Rice	Direct sowing 100% Sowing Early Dec. - Mid. Dec. Harvesting Mid. Mar. - End Mar. Variety: IR 66 Irrigation Pumping Area 502 ha in 2007 in district
		Other Crops in Paddy Field	Other Crops in Paddy Field	Other Crops in Paddy Field	Mungbeans, cucumber, watermelon Cropping Season: Early Apr. - Mid. June/Early July Area: limited, 50ha in district	Other Crops in Paddy Field	Mungbeans, cucumber, watermelon Cropping Season: Early Apr. - Mid. June/Early July Area: limited, 50ha in district

Attachment B1.1-2. Prevailing Cropping Calendar in Paddy Fields in Sub-project Areas (1/3)

Sub-project	Location	Crops	Practice	Month												Cropped Area/Remarks			
				Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.		Mar.	Apr.	
Ream Kon	Prey Svay Com. (RK only)	Early Wet Season Rice	Sowing															Direct sowing 100%	
		Wet Season Rice	Harvest															Limited to 1 to 2% of paddy field in commune	
	Chrey Com. (RK & PC)	Early Wet Season Rice	Sowing																Entire paddy fields cropped in the season
		Wet Season Rice	Harvest																Direct sowing 96%
	Kear Commune (RK & PC)	Early Wet Season Rice	Sowing																Entire paddy fields cropped in the season
		Wet Season Rice	Harvest																Direct sowing 97%
	Ta Loas Com. (RK & PC)	Early Wet Season Rice	Sowing																About 20% of paddy fields in commune
		Wet Season Rice	Harvest																Transplanting > 80%
	Angkroing Village (RK only)	Early Wet Season Rice	Sowing																Entire paddy fields cropped in the season
		Wet Season Rice	Harvest																Transplanting > 80%
Kor Village (RK only)	Early Wet Season Rice	Sowing																Direct sowing 100%	
	Wet Season Rice	Harvest																About 10ha in commune	
Poul Muoy Village (RK only)	Early Wet Season Rice	Sowing																3 - 4ha in Ream Kon sub-project area	
	Wet Season Rice	Harvest																About 10ha in commune	
Ream Kon/Por Canal Area (source: DAO)	Early Wet Season Rice	Sowing																Direct sowing 100%	
	Wet Season Rice	Harvest																573ha/4,11ha (14%) of paddy fields	
Kor Village (RK only)	Early Wet Season Rice	Sowing																Direct sowing 60%	
	Wet Season Rice	Harvest																Entire paddy fields cropped in the season	
Poul Muoy Village (RK only)	Early Wet Season Rice	Sowing																Direct sowing 100%	
	Wet Season Rice	Harvest																270ha/1,242ha (22%) paddy fields in village	
Ream Kon/Por Canal Area (source: DAO)	Early Wet Season Rice	Sowing																Transplanting 70%	
	Wet Season Rice	Harvest																Entire paddy fields cropped in the season	
Kor Village (RK only)	Early Wet Season Rice	Sowing																Direct sowing 100%	
	Wet Season Rice	Harvest																Receding rice; outside of sub-project area	
Poul Muoy Village (RK only)	Early Wet Season Rice	Sowing																Direct sowing 100%	
	Wet Season Rice	Harvest																30ha/893ha (3%) of paddy fields in village	
Ream Kon/Por Canal Area (source: DAO)	Early Wet Season Rice	Sowing																Transplanting 50%	
	Wet Season Rice	Harvest																Entire paddy fields in village	
Kor Village (RK only)	Early Wet Season Rice	Sowing																Direct sowing 100%	
	Wet Season Rice	Harvest																82ha/195ha (42%) of paddy fields in village	
Poul Muoy Village (RK only)	Early Wet Season Rice	Sowing																Transplanting 50 - 60%	
	Wet Season Rice	Harvest																Entire paddy fields cropped in the season	
Ream Kon/Por Canal Area (source: DAO)	Early Wet Season Rice	Sowing																Direct sowing	
	Wet Season Rice	Harvest																Ream kon 400ha & Por Canal 1,700-2,000ha	
Kor Village (RK only)	Early Wet Season Rice	Sowing																In double cropped fields	
	Wet Season Rice	Harvest																Transplanting mostly	
Poul Muoy Village (RK only)	Early Wet Season Rice	Sowing																In single cropped fields	
	Wet Season Rice	Harvest																Transplanting 30%	
Ream Kon/Por Canal Area (source: DAO)	Early Wet Season Rice	Sowing																Direct sowing 70%	
	Wet Season Rice	Harvest																Transplanting 70%	

Attachment B1.1-2. Prevailing Cropping Calendar in Paddy Fields in Sub-project Areas (2/3)

Sub-project	Location	Crops	Practice	Month												Cropped Area/Remarks		
				Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.		Mar.	Apr.
Por Canal	Chrey Com. (RK & PC)	Early Wet Season Rice	Sowing															Direct sowing 97% About 20% of paddy fields in commune
		Wet Season Rice	Harvest															
		Rice (transplanting)	Planting															
		Dry Season Rice	Harvest															
	Kear Commune (RK & PC)	Early Wet Season Rice	Sowing															Direct sowing 95 - 97% About 20% of paddy fields in commune Outside of sub-project area
		Wet Season Rice	Harvest															
		Rice (transplanting)	Planting															
		Dry Season Rice	Harvest															
		Early Wet Season Rice	Sowing															
		Wet Season Rice	Harvest															
Ta Loas Com. (RK & PC)	Early Wet Season Rice	Sowing															Direct sowing 100% About 10ha in commune 573ha/4,111ha (14%) of paddy fields Direct sowing 60% Entire paddy fields cropped in the season	
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																
	Dry Season Rice	Harvest																
	Early Wet Season Rice	Sowing																
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																
	Dry Season Rice	Harvest																
	Early Wet Season Rice	Sowing																
	Wet Season Rice	Harvest																
Pou Pir Village (PC only)	Early Wet Season Rice	Sowing															Direct sowing 100% About 50% of paddy fields owned by villagers Transplanting 70% Entire paddy fields cropped in the season	
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																
	Dry Season Rice	Harvest																
	Early Wet Season Rice	Sowing																
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																
	Dry Season Rice	Harvest																
	Early Wet Season Rice	Sowing																
	Wet Season Rice	Harvest																
Dammak Ampil	Chong Com. (WT & DA)	Sowing															Transplanting 90% of paddy fields Direct sowing 10% of paddy fields Transplanting 90% of dry season rice 55ha in 2008 in commune Direct sowing 10% of dry season rice Transplanting 100% of paddy fields Transplanting postponed if shortage of rain Transplanting 100% of paddy fields Entire paddy fields in commune Transplanting 100% 5 - 10ha in commune 100 - 120ha in commune Transplanting 100% of paddy fields Entire paddy fields in commune Transplanting 100% About 300ha in commune 44ha in commune 2nd year after introduction	
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																
	Dry Season Rice	Harvest																
	Wet Season Rice	Sowing																
	Rice (transplanting)	Planting																
	Dry Season Rice	Harvest																
	Wet Season Rice	Sowing																
	Rice (transplanting)	Planting																
	Dry Season Rice	Harvest																
Dammak Ampil Village	Wet Season Rice	Sowing															Transplanting 100% of paddy fields Transplanting postponed if shortage of rain Transplanting 100% of paddy fields Entire paddy fields in commune Transplanting 100% 5 - 10ha in commune 100 - 120ha in commune Transplanting 100% of paddy fields Entire paddy fields in commune Transplanting 100% About 300ha in commune 44ha in commune 2nd year after introduction	
	Rice (transplanting)	Planting																
	Wet Season Rice	Harvest																
	Rice	Sowing																
	Wet Season Rice	Planting																
	Rice (transplanting)	Harvest																
	Wet Season Rice	Sowing																
	Rice	Planting																
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																
Rumlech Com. (outside of sub-project area)	Wet Season Rice	Sowing															Transplanting 100% of paddy fields Entire paddy fields in commune Transplanting 100% 5 - 10ha in commune 100 - 120ha in commune Transplanting 100% of paddy fields Entire paddy fields in commune Transplanting 100% About 300ha in commune 44ha in commune 2nd year after introduction	
	Rice (transplanting)	Planting																
	Wet Season Rice	Harvest																
	Rice	Sowing																
	Wet Season Rice	Planting																
	Rice (transplanting)	Harvest																
	Wet Season Rice	Sowing																
	Rice	Planting																
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																
Khnat Totueng Com. (outside of sub-project area)	Wet Season Rice	Sowing															Transplanting 100% of paddy fields Entire paddy fields in commune Transplanting 100% About 300ha in commune 44ha in commune 2nd year after introduction	
	Rice (transplanting)	Planting																
	Wet Season Rice	Harvest																
	Rice	Sowing																
	Wet Season Rice	Planting																
	Rice (transplanting)	Harvest																
	Wet Season Rice	Sowing																
	Rice	Planting																
	Wet Season Rice	Harvest																
	Rice (transplanting)	Planting																

Attachment B1.1-2. Prevailing Cropping Calendar in Paddy Fields in Sub-project Areas (3/3)

Sub-project	Location	Crops	Practice	Month												Cropped Area/Remarks			
				Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.		Mar.	Apr.	
Wat Chre	Boeung Com. (WC)	Wet Season Rice	Sowing															Transplanting 100% Entire paddy fields in commune	
		Rice (transplanting)	Planting																
		Watermelon, cucumber, pumpkin	Harvest																
		Watermelon, cucumber, pumpkin	Harvest																
Wat Loung	Tropeang Chong Com. (WT & DA)	Wet Season Rice	Sowing															Transplanting 90% of paddy fields Direct sowing 10% of paddy fields	
		Rice (transplanting)	Planting																
	Saam Preah (WT & DA)	Wet Season Rice	Sowing															Transplanting 90% of paddy fields Direct sowing 10% of paddy fields	
		Rice (transplanting)	Planting																
	Wat Loung	Dry Season Rice	Sowing																Transplanting 100% of paddy fields in village 10ha in commune
		Rice (transplanting)	Planting																
Wat Loung Village (WT)	Vegetables	Harvest																Watermelon, cucumber, gourd, pumpkin About 60ha in commune	
	Wet Season Rice	Sowing																	
Dannak Ampil/Wat Loung/Wat Chre Area (source: DAO)	Wat Loung Village (WT)	Wet Season Rice	Sowing															Transplanting 100% of paddy fields in village Entire paddy fields cropped in the season	
		Rice (transplanting)	Planting																
	Wat Chre Area (source: DAO)	Wet Season Rice	Sowing															In double cropped fields Direct sowing limited Early, medium & late variety Early variety	
		Rice (double cropped)	Planting																
	Wat Chre Area (source: DAO)	Dry Season Rice	Sowing															Early variety	
		Rice (transplanting)	Planting																
	Wat Chre Area (source: DAO)	Dry Season Rice	Harvest															Entire paddy fields Late transplanting in higher fields ± 25ha in commune in 2008	
		Rice (transplanting)	Harvest																
	Lum Hach	Popel Com.	Wet Season Rice	Sowing															Entire paddy fields Late transplanting in higher fields
		Popel Com.	Rice (transplanting)	Planting															
Lum Hach Area (source: DAO)	Anchanth Rung Com.	Wet Season Rice	Sowing															Entire paddy fields Late transplanting in higher fields No irrigated area 30 - 40ha in commune	
		Rice (transplanting)	Planting																
	Phsar Com.	Wet Season Rice	Sowing															Entire paddy fields Late transplanting in higher fields No irrigated area Outside of the Project Area	
		Rice (transplanting)	Planting																
Lum Hach Area (source: DAO)	Lum Hach Area (source: DAO)	Wet Season Rice	Sowing															Source: DAO Borbo Entire paddy fields Currently no dry season rice In sandy soils	
		Rice (transplanting)	Planting																
	Lum Hach Area (source: DAO)	Watermelon	Planting															watermelon	
		Watermelon	Harvest																

Attachment B1.1-3 Results of Socio-economic Survey: Ream: Kon (1/3)

1. Design of Sample Survey

Sample Number 40 farmers	No. of villages 7 villages	Survey method Interview survey by enumerators
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2. Farming Constraints and Improvement

2-1. Farming Constraints (agronomic & farm management)

Question What are serious agronomic & farm management constraints for farming ? (select plural answer)

Farming constraint (agronomic/farm management)	Degree of Constraints												Total Score	Rating
	Most Serious Score: 4			2nd Serious Score: 3			3rd Serious Score: 2			4th Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Low yield of crops (paddy)	14	35	56	3	9	9	5	19	10	4	22	4	79	1
Crop losses due to pest & disease	3	8	12	4	13	12	3	11	6	0	0	0	30	3
Weed problem	5	13	20	1	3	3	3	11	6	1	6	1	30	3
Crop losses due to wild animal	5	13	20	3	9	9	0	0	0	0	0	0	29	
Difficulty for hiring draft animal/machinery	2	5	8	1	3	3	0	0	0	1	6	1	12	
Labor shortage	0	0	0	4	13	12	3	11	6	0	0	0	18	
Insufficient extension services	3	8	12	5	16	15	3	11	6	0	0	0	33	2
Shortage of farming capital	0	0	0	2	6	6	0	0	0	2	11	2	8	
Difficulty for obtaining quality seeds	3	8	12	2	6	6	2	7	4	0	0	0	22	
Difficulty for purchasing fertilizers	0	0	0	2	6	6	0	0	0	3	17	3	9	
Expensive farm inputs	1	3	4	1	3	3	1	4	2	1	6	1	10	
Poor soil conditions	0	0	0	1	3	3	6	22	12	4	22	4	19	
Marketing problems of products	0	0	0	1	3	3	0	0	0	0	0	0	3	
Lack of farm credit	0	0	0	0	0	0	0	0	0	2	11.11	2	2	
Others	4	10	16	2	6	6	1	4	2	0	0	0	24	
Total	40	100	160	32	100	96	27	100	54	18	100	18	328	

2-2. Farming Constraints (physical)

Question What are serious physical constraints for farming ? (select plural answer)

Farming Constraints/Physical (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water shortage in wet season	30	75	90	2	6	4	0	0	0	94	1
Irrigation water shortage in dry season	3	8	9	15	45	30	2	10	2	41	2
Inundation/flooding	2	5	6	4	12	8	3	14	3	17	
Drainage problem	1	3	3	8	24	16	10	48	10	29	3
Lack of farm road	0	0	0	0	0	0	1	5	1	1	
Lack of transportation means	0	0	0	1	3	2	3	14	3	5	
Leveling problem of paddy field	1	3	3	0	0	0	0	0	0	3	
Others	3	8	9	3	9	6	2	9.524	2	17	
Total	40	100	120	33	100	66	21	100	21	207	

2-3. Marketing constraints

Marketing Constraints (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Unstable market prices of paddy/rice	27	71	81	4	12	8	0	0	0	89	1
Low market prices of paddy/rice	7	18	21	6	18	12	5	25	5	38	2
Limitation of market of paddy/rice	3	8	9	6	18	12	1	5	1	22	3
Unstable market prices of other crops	0	0	0	6	18	12	3	15	3	15	
Low market prices of other crops	0	0	0	2	6	4	0	0	0	4	
Limitation of market of other crops	0	0	0	0	0	0	2	10	2	2	
Unstable market prices of livestock	0	0	0	7	21	14	5	25	5	19	
Low market prices of livestock	0	0	0	1	3	2	3	15	3	5	
Limitation of market of livestock	0	0	0	0	0	0	0	0	0	0	
Lack of or poor farm to market road	1	3	3	1	3	2	1	5	1	6	
Others	0	0	0	1	3	2	0	0	0	2	
Total	38	100	114	34	100	68	20	100	20	202	

2-4. Reasons for limited productivity of crops in the rice field of interviewee (not specific to last year)

Reasons for Limited Productivity (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Drought in wet season	28	72	84	2	6	4	2	7	2	90	1
Water shortage in dry season	4	10	12	14	39	28	3	10	3	43	2
Shortage of farming capital	1	3	3	1	3	2	5	17	5	10	
Poor seed quality	3	8	9	3	8	6	2	7	2	17	
Poor soil	2	5	6	7	19	14	3	10	3	23	3
Limited application of fertilizer	0	0	0	0	0	0	1	3	1	1	
Damages caused by wild animal (rat)	0	0	0	2	6	4	4	13	4	8	
Poor drainage	0	0	0	2	6	4	4	13	4	8	
Flooding/inundation	0	0	0	5	14	10	1	3	1	11	
Inadequate farming technologies	0	0	0	0	0	0	3	10	3	3	
Damages caused by pest & disease	0	0	0	0	0	0	1	3	1	1	
Others	1	3	3	0	0	0	1	3	1	4	
Total	39	100	117	36	100	72	30	100	30	219	

Attachment B1.1-3 Results of Socio-economic Survey: Ream: Kon (2/3)

2-5. Activities/practices to improve rice productivity implemented by the interviewee in the past 3 years (plural answer)

Activities Implemented	No. & Proportion of Respondents Implemented Activities/Practices		Remarks
	No.	%	
Increased fertilization doses	33	28	No. of respondents : 40 Maximum 4 activities selected/respondent Total answers: 117
Application of compost/manure	17	15	
Used quality seed (local variety)	23	20	
Used quality seed (high yielding variety)	19	16	
Constructed of farm pond	2	2	
Started to use water pump for irrigation	9	8	
Improved farming practices	5	4	
Improved post-harvest practices	3	3	
Changed marketing methods	1	1	
Others	5	4	
Total	117	100	

2-6. Necessary activities to improve rice productivity in the field of the interviewee (farming & farm management; plural answer)

Necessary Activities	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 4			2nd Most Required Score: 3			3rd Most Required Score: 2			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Improvement of farming practices	20	50	80	4	10	12	2	8	4	0	0	0	96	1
Use of quality seed (local variety)	5	13	20	13	33	39	0	0	0	4	21	4	63	2
Use of quality seed (high yielding variety)	3	8	12	10	26	30	5	19	10	2	11	2	54	3
Use of adequate doses of fertilizer	5	13	20	4	10	12	9	35	18	4	21	4	54	3
Improved leveling of paddy field	1	3	4	2	5	6	1	4	2	0	0	0	12	
Planting at proper time	3	8	12	2	5	6	3	12	6	3	16	3	27	
Intensive weeding	0	0	0	2	5	6	4	15	8	6	32	6	20	
Formation/strengthening of farmers organization	1	3	4	0	0	0	0	0	0	0	0	0	4	
Others	2	5	8	2	5	6	2	8	4	0	0	0	18	
Total	40	100	160	39	100	117	26	100	52	19	100	19	348	

2-7. Necessary physical works to improve rice productivity in the field of the interviewee (plural answer)

Necessary Physical Works	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water supply for wet season	31	78	93	3	9	6	0	0	0	2	18	2	101	1
Irrigation water supply for dry season	4	10	12	17	50	34	5	18	5	1	9	1	52	2
Mitigation of inundation/flooding	0	0	0	9	26	18	5	18	5	1	9	1	24	
Drainage improvement	3	8	9	3	9	6	15	54	15	5	45	5	35	3
Others	2	5	6	2	6	4	3	11	3	2	18	2	15	
Total	40	100	120	34	100	68	28	100	28	11	100	11	227	

3. Livestock Constraints

Livestock Constraints	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Low productivity	13	33	39	10	32	20	1	4	1	60	2
Shortage of feed	4	10	12	5	16	10	4	17	4	26	3
Low or unstable market prices	1	3	3	1	3	2	2	8	2	7	
Market availability	0	0	0	1	3	2	1	4	1	3	
Losses due to diseases	17	43	51	11	35	22	1	4	1	74	1
Insufficient veterinary services	2	5	6	1	3	2	6	25	6	14	
Insufficient extension services	0	0	0	0	0	0	8	33	8	8	
Difficulty in obtaining good breed	2	5	6	2	6	4	1	4	1	11	
Others	1	3	3	0	0	0	0	0	0	3	
Total	40	100	120	31	100	62	24	100	24	206	

4. Expectations for Improvement

4-1. Farming (agronomic & farm management)

Expectations for Improvement	Degree of Expectation									Total Score	Rating
	Most Expected Score: 3			2nd Most Expected Score: 2			3rd Most Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Productivity improvement of wet season rice	36	90	108	2	5	4	1	3	1	113	1
Productivity improvement of dry season rice	2	5	6	23	59	46	2	7	2	54	2
Productivity improvement of field crops	1	3	3	8	21	16	2	7	2	21	3
Productivity improvement of vegetables	0	0	0	1	3	2	10	33	10	12	
Productivity improvement of livestock/poultry	0	0	0	1	3	2	2	7	2	4	
Increasing livestock holding size & production	1	3	3	4	10	8	8	27	8	19	
Increasing poultry holding size & production	0	0	0	0	0	0	5	17	5	5	
Strengthening/formation of farmers organizations	0	0	0	0	0	0	0	0	0	0	
Improvement of post-harvest operation	0	0	0	0	0	0	0	0	0	0	
Others	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	39	100	78	30	100	30	228	

Attachment B1.1-3 Results of Socio-economic Survey: Ream: Kon (3/3)

4-2. Farming (farming system)

Farming System	Degree of Expectation									Total Score	Rating
	Primarily Intended Score: 3			Secondary Intended Score: 2			Thirdly Intended Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Double cropping of rice	31	78	93	4	12	8	0	0	0	101	1
Stable single cropping of rice	7	18	21	12	36	24	5	28	5	50	2
Multiple farming (crop + livestock etc.)	2	5	6	15	45	30	5	28	5	41	3
Crop diversification	0	0	0	2	6	4	8	44	8	12	
Others	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	33	100	66	18	100	18	204	

4-3. Farming (physical)

Farming (physical)	Degree of Expectation									Total Score	Rating
	Primarily Expected Score: 3			Secondary Expected Score: 2			Thirdly Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Adequate irrigation water supply in wet season	34	85	102	3	9	6	2	7	2	110	1
Adequate irrigation water supply in dry season	4	10	12	19	54	38	0	0	0	50	2
Mitigation of inundation & flooding	2	5	6	7	20	14	6	21	6	26	3
Construction/rehabilitation of farm road	0	0	0	1	3	2	0	0	0	2	
Construction/rehabilitation of farm to market road	0	0	0	0	0	0	0	0	0	0	
Drainage improvement	0	0	0	3	9	6	17	59	17	23	
Leveling of paddy field	0	0	0	0	0	0	1	3	1	1	
Others (specify)	0	0	0	2	6	4	3	10	3	7	
Total	40	100	120	35	100	70	29	100	29	219	

4-4. Agricultural support services

Agricultural Support Required	Degree of Necessity of Support									Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Field Extension services (demonstration / field guidance)	30	75	90	6	15	12	2	6	2	104	1
Provision of quality seed	4	10	12	22	55	44	3	9	3	59	2
Farmer training (technical & host-harvest operation)	1	3	3	8	20	16	14	41	14	33	3
Farmer training (organization, marketing, farm management)	1	3		1	3	2	4	12	4	6	
Support to organize farmers	1	3		0	0	0	3	9	3	3	
Provision of market information	0	0	0	0	0	0	0	0	0	0	
Provision of farm credit	1	3		1	3	2	4	12	4	6	
Provision of fertilizer	2	5	6	2	5	4	4	12	4	14	
Others (specify)		0		0	0	0	0	0	0	0	
Total	40	100	120	40	100	120	34	100	102	306	

Attachment B1.1-4 Results of Interview Survey with Rice Millers in & around the Sub-project Area

Name	Items	Moung Ruessei District: Ream Kont & Por Canal Rehabilitation Sub-projects	Tong Pheap
Location	Rizerite Ly Seng Hong	Moung Commune; established 1991	Moung Commune; established 1999
Milling Capacity	Paddy 2.0 ton/hr (large scale mill) (machine Viet Nam made)	Paddy 2.0 ton/hr (large scale mill)	Paddy 2.5 ton/hr (large scale mill) (machine Viet Nam made)
Annual Marketing Volume	200 ~ 300 ton rice Marketing volume of paddy more than rice	600 ~ 700 ton rice	2,000 ton rice
Operation Period	2 ~ 3 months per year - Depending on rice market price: - when high -- mill & when low -- sell paddy - Annually operating (half day operation)	3 months	8 months
Procurement of Paddy		Mostly from village collectors Partly from farmers	Farmer & village collector (almost same volume) Nov./Dec.: procurement of wet paddy, the mill has drying yard, but size is limited
Marketing of Rice/Paddy	Rice: Phnom Penh (pay in bill) Paddy: Viet Nam buyers come to the mill (pay in cash)	Rice: Phnom Penh Paddy: Viet Nam buyers come to the mill	Rice (mostly): Phnom Penh Paddy (limited): Thailand/Viet Nam buyers come to the mill
Paddy Mortgage Services	Handling 400 ton/year under mortgage system In case of taking out, storage charge 4% of paddy stored	Not provided	60 ~ 100 ton paddy/year Storage capacity: 1,000 ton Storage charge: 3% of paddy Additional storage charge in case of taking-out: - R. 10,000/ton (about 1% of paddy price)
Other Services to Farmers	Not provided	Not provided	Not provided Some collector providing services to ensure paddy collection
Problems	- Price competition with Viet Nam buyers - Capital not enough to buy in bulk after harvest & store - Payment by wholesaler 2 ~ 3 months bill	- Competition with Viet Nam buyers - No problem with market destination - When rice price good, Viet Nam buyers come to village	Price fluctuation
Price Information		Quality of rice Good: Mulis, Phka Rumduol Medium: Phka Khney Low: other local varieties (mix) Sen Pidao = mix; IR = R. 100/kg lower than mix	June 20, 2008 Mulis: paddy R. 1,300/kg, rice: R. 2,900/kg Phka Khney: paddy R. 1,200/kg, rice: R. 2,600/kg Mix: paddy R. 1,080/kg, rice: R. 2,200/kg
Paddy Price in 2007	After harvest Somali: R. 1,000/kg (1,200~ 1,300/kg in June 2008); Sen Pidao R. 600 ~ 700/kg IR: R. 100/kg lower than Sen Pidao	Price difference After harvest: mix -- R. 800/kg Off season: mix -- R. 1,200/kg R. 200/kg higher for good quality variety	After harvest Somali: R. 860/kg, P. Khney: R. 780/kg; Mix: R. 700/kg Sen Pidao: R. 750/kg; IR: R. 670/kg (Aug. 2007)
Other Information		- Viet Nam buyer come to village - Thai buyers procure at border, mostly high quality paddy (local variety)	Quality check: color change - r3ejected broken rice - lower price wet paddy - lower price

Source: Interview survey by the JICA Study Team

Attachment B1.1-5 Results of Questionnaire Survey: Farming Practices Etc.: Ream Kon (1/4)

A. Farming Practices

A-1. Reason for fallow of rice field in Dry Season

Response (plural alternatives)	n	%
Labor shortage	0	0
Working capital shortage	1	5
Water shortage	21	95
Total	22	100

A-3. Reasons for selection of rice variety

Response (plural alternatives)	n	%
High productivity	11	28
Suitable to soil	6	15
Short term	5	13
Easy to grow	5	13
Average yield	4	10
Suitable to Climate	3	8
Softish and Good taste	2	5
Others	4	10
Respondents	40	-

A-4. Seed sources: rice

Response (one alternative)	n	%
Own products	28	74
Exchange with others	4	11
Certified seed purchased	2	5
Others	4	11
Total	38	100

A-6. Seed sources: vegetables

Response (one alternative)	n	%
Own products	19	86
Exchange with others	2	9
Commercial seed procured at local market	1	5
Total	22	100

A-8. Land preparation method

Response (one alternative)	n	%
Draft animal	10	25
Machinery	30	75
Manual	0	0
Total	40	100

A-10. Age of seedling of rice (wet season)

Response (one alternative)	Age of Seeding
N	34
Mean	44 days
Minimum	30 days
Maximum	50 days

A-12. Fertilization Volume: Urea (unit: kg/ha)

Item	Kg/ha
N	39
Mean	105
STD	96
Minimum	0
Maximum	400

A-14. Fertilizer (Compost/Manure)

Item	Kg/ha
N	40
Mean	36
STD	340
Minimum	0
Maximum	166

A-16. Cleaning (method)

Response	n	%
Engine winnower	14	70
Manual winnower	0	0
Manual without winnower	6	30
Total	20	100

A-2. Rice variety: rainy season

Response (plural alternative)	n	%
Sen Chey	8	20
Kampingpouy	6	15
CAR 54	6	15
CAR 4	4	10
Riang Chey	3	8
Neang Mign	3	8
IR	2	5
CAR 9	2	5
Kraham	1	3
Rumpe	1	3
Leak Sanleok	1	3
Beikilo	1	3
CAR 6	1	3
Haprammouy (56)	1	3
Respondents	40	-

A-5. Seed sources: upland crops

Response (one alternative)	n	%
Own products	19	83
Exchange with others	2	9
Certified seed purchased	2	9
Total	23	100

A-7. Seed replacement of rice

Response (one alternative)	n	%
Once per 3 croppings	18	72
Once per 4 - 6 croppings	1	4
Once > 6 croppings	6	24
Total	25	100

A-9. No. of plants/hill (wet season): rice

Response (one alternative)	No./Hill
N	35
Mean	4.6
Minimum	3
Maximum	10

A-11. Transplanting method: rainy season

Response (one alternative)	n	%
Regular planting	30	86
Random planting	5	14
Total	35	100

A-13. Fertilization Volume: DAP (unit: kg/ha)

Item	Kg/ha
N	40
Mean	38
STD	65
Minimum	0
Maximum	300

A-15. Threshing (method)

Response	n	%
Engine thresher	38	95
Pedal thresher	1	3
Manual threshing	1	3
Total	40	100

A-17. Drying (method)

Response	n	%
Sun drying	39	100
Dryer	0	0
Total	39	100

Attachment B1.1-5 Results of Questionnaire Survey: Farming Practices Etc.: Ream Kon (2/4)

B. Farm Input Supply

B-1. Procurement of certified seed

Response (one alternative)	n	%
Easy	24	62
Difficult	13	33
Not possible	2	5
Total	39	100

B-2. Procurement of wanted seed

Response (one alternative)	n	%
Easy	29	74
Difficult	8	21
Not possible	2	5
Total	39	100

B-3. Seed supply timing

Response (one alternative)	n	%
In time	28	72
Delayed	4	10
Not obtained	7	18
Total	39	100

B-4. Quality seed price

Response (one alternative)	n	%
Too expensive	6	15
Acceptable	12	31
Not purchased	21	54
Total	39	100

B-5. Procurement of wanted fertilizer

Response (one alternative)	n	%
Easy	38	97
Difficult	0	0
Not possible	1	3
Total	39	100

B-6. Fertilizer supply timing

Response (one alternative)	n	%
In time	37	95
Delayed	1	3
Not obtained	1	3
Total	39	100

B-7. Fertilizer price

Response (one alternative)	n	%
Too expensive	28	72
Acceptable	8	21
Not purchased	3	8
Total	39	100

C. Post-harvest

C-1. Rice milling cost (bran received by interviewee)

Item	Riel/ton
N	37
Mean	63,595
STD	
Minimum	5,000
Maximum	140,000

C-2. Paddy storage (king of container used)

Response (one alternative)	n	%
Bag	10	25
Bamboo basket	5	13
Wooden box	25	63
Others	0	0
Total	40	100

C-3. Paddy (Maximum storage period; month)

Item	No.	%
0 - 6 months	35	87.5
7 - 12 months	5	12.5
Total	40	100

C-4. Rice (kind of container)

Response (one alternative)	n	%
Bag	40	36
Bamboo basket	0	0
Wooden box	0	0
Others	0	0
Total	40	100

C-5. Rice (Maximum storage period; month)

Item	Month
N	40
Mean	1.3
Minimum	1
Maximum	5

C-6. Roughly estimated total losses (% of production)

	%
N	-
Mean	-
Minimum	-
Maximum	-

C-7. Most dominant loss of paddy

Response (one alternative)	n	%
During harvesting	10	25
At threshing,	25	63
At drying	3	8
At cleaning	1	3
At storage	0	0
At other time	1	3
Total	40	100

C-8. Second dominant loss

Response (one alternative)	n	%
During harvesting	13	33
At threshing,	9	23
At drying	4	10
At cleaning	1	3
At storage	0	0
At other time	13	33
Total	40	100

Attachment B1.1-5 Results of Questionnaire Survey: Farming Practices Etc.: Ream Kon (3/4)

D. Marketing

D-1. Sold product

Response (one alternative)	n	%
Field dried paddy	14	42
Sun dried paddy	17	52
Milled rice	2	6
Total	33	100

proportion to total marketing volume

D-3. Marketing of vegetable

Response	n	%
Market in village	33	92
Market in commune center	3	8
Market in district center	0	0
Collector/middleman	0	0
Other (specify)	0	0
Total	36	100

D-5. Marketing of livestock

Response	n	%
Market in village	20	57
Market in commune center	5	14
Market in district center	4	11
Collector/middleman	6	17
Other (specify)	0	0
Total	35	100

E. Food Supply Conditions

E-1. Food supply condition (rice)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	30	75
Own harvest/ product is just enough to the household demand	3	8
Purchased (or exchanged) to meet the household demand	3	8
Insufficient	4	10
Total	40	100

E-3. Food supply condition (other cereals)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	8
Own harvest/ product is just enough to the household demand	6	25
Purchased (or exchanged) to meet the household demand	11	46
Insufficient	5	21
Total	24	100

E-5. Food supply condition (roots and tuber crops)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	3	14
Own harvest/ product is just enough to the household demand	2	9
Purchased (or exchanged) to meet the household demand	13	59
Insufficient	4	18
Total	22	100

E-7. Food supply condition (beans)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	3	14
Own harvest/ product is just enough to the household demand	0	0
Purchased (or exchanged) to meet the household demand	15	68
Insufficient	4	18
Total	22	100

D-2. Market Destination of Paddy

Response	n	%
Rice miller in village	13	41
Rice miller in commune center	2	6
Rice miller in district center	5	16
Collector/middleman	12	38
Local market	0	0
Total	32	100

D-4. Marketing of field crops

Response	n	%
Market in village	18	46
Market in commune center	8	21
Market in district center	6	15
Collector/middleman	7	18
Other (specify)	0	0
Total	39	100

D-6. Marketing of other product (fish)

Response	n	%
Market in village	22	69
Market in commune center	4	13
Market in district center	3	9
Other (specify)	3	9
Total	32	100

E-2. Food supply condition (vegetables)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	8	27
Own harvest/ product is just enough to the household demand	8	27
Purchased (or exchanged) to meet the household demand	10	33
Insufficient	4	13
Total	30	100

E-4. Food supply condition (meat)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	7
Own harvest/ product is just enough to the household demand	1	4
Purchased (or exchanged) to meet the household demand	20	74
Insufficient	4	15
Total	27	100

E-6. Food condition (fish)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	5	20
Own harvest/ product is just enough to the household demand	0	0
Purchased (or exchanged) to meet the household demand	16	64
Insufficient	4	16
Total	25	100

E-8. Rice purchased in last year (kg)

	kg/farm
N	4
Proportion to sample farmers (40)	10%
Mean (per respondent)	14
Minimum	0
Maximum	554

Attachment B1.1-5 Results of Questionnaire Survey: Farming Practices Etc. : Ream Kon (4/4)

F. Extension Services

F-1. Visit of extension worker

Response (one alternative)	n	%
One per < week	2	6
Once per 2 weeks-1 month	7	21
Seldom visited	24	73
Total	33	100

F-3. Are you satisfied with current extension services

Response (one alternative)	n	%
Satisfied	25	76
Not satisfied	3	9
No service provided	5	15
Total	33	100

F-2. Technical capability of extension workers

Response (one alternative)	n	%
Sufficient	18	55
Not sufficient	10	30
No service provided	5	15
Total	33	100

F-4. What kind of extension services are you needed

Response (specified)	n	%
Technical training & technical guidance	10	31
Demonstrat	7	22
Text book need	5	16
Fertilizer application & compost	3	9
visit of extension staff	3	9
Seed/farm input supply	4	13
Total	32	100

Totals exceed 100% due to multiple responses

G. Farm Credit

G-1. Access to farm credit

Response (one alternative)	n	%
Easy	15	58
Difficult	2	8
Not provided	9	35
Total	26	100

G-2. Timing of provision

Response (one alternative)	n	%
In time	14	54
Delayed	2	8
Not provided	10	38
Total	26	100

G-3. Amount of credit

Response (one alternative)	n	%
Sufficient	14	54
Not sufficient	3	12
Not provided	9	35
Total	26	100

G-4. Procedures for credit application

Response (one alternative)	n	%
Easy	3	12
Difficult	12	46
Not possible	11	42
Total	26	100

Attachment B1.2-1 Results of Socio-economic Survey: Por Canal (1/3)

1. Design of Sample Survey

Sample Number 40 farmers	No. of villages 7 villages	Survey method Interview survey by enumerators
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2. Farming Constraints and Improvement

2-1. Farming Constraints (agronomic & farm management)

Question What are serious agronomic & farm management constraints for farming ? (select plural answer)

Farming constraint (agronomic/farm management)	Degree of Constraints												Total Score	Rating
	Most Serious Score: 4			2nd Serious Score: 3			3rd Serious Score: 2			4th Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Low yield of crops (paddy)	15	38	60	4	11	12	4	11	8	0	0	0	80	1
Crop losses due to pest & disease	2	5	8	3	8	9	3	8	6	2	11	2	25	
Weed problem	3	8	12	6	16	18	6	16	12	1	6	1	43	2
Crop losses due to wild animal	1	3	4	5	14	15	5	14	10	1	6	1	30	
Difficulty for hiring draft animal/machinery	1	3	4	2	5	6	2	5	4	0	0	0	14	
Labor shortage	1	3	4	3	8	9	3	8	6	0	0	0	19	
Insufficient extension services	2	5	8	3	8	9	3	8	6	0	0	0	23	
Shortage of farming capital	1	3	4	1	3	3	1	3	2	2	11	2	11	
Difficulty for obtaining quality seeds	0	0	0	5	14	15	5	14	10	2	11	2	27	
Difficulty for purchasing fertilizers	0	0	0	1	3	3	1	3	2	1	6	1	6	
Expensive farm inputs	4	10	16	0	0	0	0	0	0	1	6	1	17	
Poor soil conditions	2	5	8	0	0	0	0	0	0	6	33	6	14	
Marketing problems of products	0	0	0	1	3	3	1	3	2	1	6	1	6	
Lack of farm credit	0	0	0	1	3	3	1	3	2	0	0	0	5	
Others	8	20	32	2	5	6	2	5	4	1	6	1	43	2
Total	40	100	160	37	100	111	37	100	74	18	100	18	363	

2-2. Farming Constraints (physical)

Question What are serious physical constraints for farming ? (select plural answer)

Farming Constraints/Physical (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water shortage in wet season	28	70	84	3	9	6	0	0	0	90	1
Irrigation water shortage in dry season	4	10	12	11	31	22	1	5	1	35	3
Inundation/flooding	1	3	3	4	11	8	3	14	3	14	
Drainage problem	3	8	9	10	29	20	7	32	7	36	2
Lack of farm road	0	0	0	3	9	6	4	18	4	10	
Lack of transportation means	1	3	3	0	0	0	5	23	5	8	
Leveling problem of paddy field	0	0	0	1	3	2	2	9	2	4	
Others	3	8	9	3	9	6	0	0	0	15	
Total	40	100	120	35	100	70	22	100	22	212	

2-3. Marketing constraints

Marketing Constraints (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Unstable market prices of paddy/rice	31	82	93	2	7	4	1	5	1	98	1
Low market prices of paddy/rice	3	8	9	6	21	12	4	20	4	25	2
Limitation of market of paddy/rice	1	3	3	6	21	12	1	5	1	16	
Unstable market prices of other crops	1	3	3	5	17	10	4	20	4	17	
Low market prices of other crops	0	0	0	0	0	0	3	15	3	3	
Limitation of market of other crops	0	0	0	1	3	2	0	0	0	2	
Unstable market prices of livestock	1	3	3	7	24	14	3	15	3	20	3
Low market prices of livestock	0	0	0	1	3	2	3	15	3	5	
Limitation of market of livestock	0	0	0	0	0	0	0	0	0	0	
Lack of or poor farm to market road	0	0	0	1	3	2	1	5	1	3	
Others	1	3	3	0	0	0	0	0	0	3	
Total	38	100	114	29	100	58	20	100	20	192	

2-4. Reasons for limited productivity of crops in the rice field of interviewee (not specific to last year)

Reasons for Limited Productivity (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Drought in wet season	27	68	81	3	8	6	1	4	1	88	1
Water shortage in dry season	1	3	3	10	27	20	0	0	0	23	2
Shortage of farming capital	1	3	3	3	8	6	3	11	3	12	
Poor seed quality	4	10	12	3	8	6	1	4	1	19	
Poor soil	2	5	6	7	19	14	3	11	3	23	2
Limited application of fertilizer	1	3	3	0	0	0	3	11	3	6	
Damages caused by wild animal (rat)	1	3	3	4	11	8	4	14	4	15	
Poor drainage	1	3	3	1	3	2	4	14.29	4	9	
Flooding/inundation	0	0	0	3	8	6	2	7.143	2	8	
Inadequate farming technologies	0	0	0	2	5	4	3	10.71	3	7	
Damages caused by pest & disease	0	0	0	1	3	2	3	10.71	3	5	
Others	2	5	6	0	0	0	1	4	1	7	
Total	40	100	120	37	100	74	28	100	28	222	

Attachment B1.2-1 Results of Socio-economic Survey: Por Canal (2/3)

2-5. Activities/practices to improve rice productivity implemented by the interviewee in the past 3 years (plural answer)

Activities Implemented	No. & Proportion of Respondents Implemented Activities/Practices		Remarks
	No.	%	
Increased fertilization doses	30	25	No. of respondents : 40 Maximum 4 activities selected/respondent Total answers: 118
Application of compost/manure	20	17	
Used quality seed (local variety)	16	14	
Used quality seed (high yielding variety)	20	17	
Constructed of farm pond	0	0	
Started to use water pump for irrigation	13	11	
Improved farming practices	7	6	
Improved post-harvest practices	5	4	
Changed marketing methods	4	3	
Others	3	3	
Total	118	100	

2-6. Necessary activities to improve rice productivity in the field of the interviewee (farming & farm management; plural answer)

Necessary Activities	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 4			2nd Most Required Score: 3			3rd Most Required Score: 2			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Improvement of farming practices	15	38	60	6	15	18	3	11	6	0	0	0	84	1
Use of quality seed (local variety)	6	15	24	11	28	33	1	4	2	4	25	4	63	2
Use of quality seed (high yielding variety)	5	13	20	8	20	24	2	7	4	1	6	1	49	
Use of adequate doses of fertilizer	6	15	24	6	15	18	7	26	14	4	25	4	60	3
Improved leveling of paddy field	0	0	0	1	3	3	2	7	4	0	0	0	7	
Planting at proper time	4	10	16	3	8	9	1	4	2	4	25	4	31	
Intensive weeding	0	0	0	4	10	12	8	30	16	2	13	2	30	
Formation/strengthening of farmers organization	1	3	4	0	0	0	1	4	2	1	6	1	7	
Others	3	8	12	1	2.5	3	2	7	4	0	0	0	19	
Total	40	100	160	40	100	120	27	100	54	16	100	16	350	

2-7. Necessary physical works to improve rice productivity in the field of the interviewee (plural answer)

Necessary Physical Works	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water supply for wet season	32	80	96	6	16	12	2	11	2	0	0	0	110	1
Irrigation water supply for dry season	4	10	12	14	38	28	2	11	2	1	13	1	43	2
Mitigation of inundation/flooding	1	3	3	4	11	8	2	11	2	1	13	1	14	
Drainage improvement	2	5	6	9	24	18	10	53	10	4	50	4	38	3
Others	1	3	3	4	11	8	3	16	3	2	25	2	16	
Total	40	100	120	37	100	74	19	100	19	8	100	8	221	

3. Livestock Constraints

Livestock Constraints	Degree of Constraints												Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1							
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Low productivity	11	28	33	10	29	20	2	10	2				55	2
Shortage of feed	3	8	9	6	18	12	2	10	2				23	3
Low or unstable market prices	2	5	6	3	9	6	1	5	1				13	
Market availability	0	0	0	1	3	2	0	0	0				2	
Losses due to diseases	20	51	60	10	29	20	3	14	3				83	1
Insufficient veterinary services	2	5	6	4	12	8	6	29	6				20	
Insufficient extension services	1	3	3	0	0	0	7	33	7				10	
Difficulty in obtaining good breed	0	0	0	0	0	0	0	0	0				0	
Others	0	0	0	0	0	0	0	0	0				0	
Total	39	100	117	34	100	68	21	100	21				206	

4. Expectations for Improvement

4-1. Farming (agronomic & farm management)

Expectations for Improvement	Degree of Expectation												Total Score	Rating
	Most Expected Score: 3			2nd Most Expected Score: 2			3rd Most Expected Score: 1							
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Productivity improvement of wet season rice	36	90	108	2	5	4	0	0	0				112	1
Productivity improvement of dry season rice	2	5	6	15	39	30	2	7	2				38	2
Productivity improvement of field crops	1	3	3	8	21	16	5	17	5				24	3
Productivity improvement of vegetables	0	0	0	3	8	6	3	10	3				9	
Productivity improvement of livestock/poultry	0	0	0	0	0	0	4	14	4				4	
Increasing livestock holding size & production	0	0	0	6	16	12	6	21	6				18	
Increasing poultry holding size & production	0	0	0	1	3	2	5	17	5				7	
Strengthening/formation of farmers organizations	0	0	0	3	8	6	1	3	1				7	
Improvement of post-harvest operation	0	0	0	0	0	0	2	7	2				2	
Others	1	3	3	0	0	0	1	3	1				4	
Total	40	100	120	38	100	76	29	100	29				225	

Attachment B1.2-1 Results of Socio-economic Survey: Por Canal (3/3)

4-2. Farming (farming system)

Farming System	Degree of Expectation									Total Score	Rating
	Primarily Intended Score: 3			Secondary Intended Score: 2			Thirdly Intended Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Double cropping of rice	30	75	90	3	9	6	0	0	0	96	1
Stable single cropping of rice	5	13	15	14	41	28	3	16	3	46	3
Multiple farming (crop + livestock etc.)	5	13	15	16	47	32	2	11	2	49	2
Crop diversification	0	0	0	1	3	2	14	74	14	16	
Others	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	34	100	68	19	100	19	207	

4-3. Farming (physical)

Farming (physical)	Degree of Expectation									Total Score	Rating
	Primarily Expected Score: 3			Secondary Expected Score: 2			Thirdly Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Adequate irrigation water supply in wet season	35	88	105	1	3	2	1	4	1	108	1
Adequate irrigation water supply in dry season	2	5	6	20	57	40	4	16	4	50	2
Mitigation of inundation & flooding	2	5	6	3	9	6	2	8	2	14	
Construction/rehabilitation of farm road	0	0	0	1	3	2	1	4	1	3	
Construction/rehabilitation of farm to market road	0	0	0	0	0	0	0	0	0	0	
Drainage improvement	0	0	0	7	20	14	14	56	14	28	3
Leveling of paddy field	0	0	0	2	6	4	3	12	3	7	
Others (specify)	1	3	3	1	3	2	0	0	0	5	
Total	40	100	117	35	100	70	25	100	25	215	

4-4. Agricultural support services

Agricultural Support Required	Degree of Necessity of Support									Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Field Extension services (demonstration / field guidance)	27	68	81	4	10	8	4	12	4	93	1
Provision of quality seed	6	15	18	20	50	40	0	0	0	58	2
Farmer training (technical & host-harvest operation)	4	10	12	7	18	14	12	36	12	38	3
Farmer training (organization, marketing, farm management)	0	0	0	4	10	8	5	15	5	13	
Support to organize farmers	0	0	0	1	3	2	3	9	3	5	
Provision of market information	1	3	3	2	5	4	3	9	3	10	
Provision of farm credit	1	3	3	1	3	2	2	6	2	4	
Provision of fertilizer	1	3	3	1	3	2	4	12	4	9	
Others (specify)	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	40	100	120	33	100	99	297	

Attachment B1.2-2 Results of Questionnaire Survey: Farming Practices Etc.: Por Canal (1/4)

A. Farming Practices

A-1. Reason for fallow of rice field in Dry Season

Response (plural alternatives)	n	%
Labor shortage	3	8
Working capital shortage	3	8
Water shortage	34	85
Total	40	100

A-3. Reasons for selection of rice variety

Response (plural alternatives)	n	%
Good taste	4	10
Easy to cultivate	1	3
High Land	3	8
Flooded Area	4	10
High quality	3	8
Good yield	18	45
High price in market price	4	10
Following other people	3	8
Respondents	40	100

A-4. Seed sources: rice

Response (one alternative)	n	%
Own products	29	78
Exchange with others	5	14
Certified seed purchased	2	5
Others	1	3
Total	37	100

A-6. Seed sources: vegetables

Response (one alternative)	n	%
Own products	21	88
Exchange with others	2	8
Commercial seed procured at local market	1	4
Total	24	100

A-8. Land preparation method

Response (one alternative)	n	%
Draft animal	11	30
Machinery	26	70
Manual	0	0
Total	37	100

A-10. No. of plants/hill (wet season): rice

Response (one alternative)	No./Hill
N	40
Mean	4.8
Minimum	3
Maximum	8

A-12. Fertilization Volume: Urea (unit: kg/ha)

Item	Kg/ha
N	36
Mean	61
STD	68
Minimum	250
Maximum	0

A-14. Fertilizer (Compost/Manure)

Item	Kg/ha
N	40
Mean	298
STD	717
Minimum	0
Maximum	4,000

A-16. Cleaning (method)

Response	n	%
Engine winnower	17	89
Manual winnower	1	5
Manual without winnower	1	5
Total	19	100

A-2. Rice variety: rainy season

Response (plural alternative)	n	%
Ha Pramboun (59)	11	28
CAR 56	7	18
Phka Mulis	6	15
CAR 6	3	8
Kamping Pouy	2	5
Riang Chey	2	5
Floating rice	2	5
Phkar ruodoul	1	3
Rice Vear	1	3
Sen Pidor	1	3
Low rice	1	3
Sen chey	1	3
Rompe	1	3
IR	1	3
Respondents	40	-

A-5. Seed sources: upland crops

Response (one alternative)	n	%
Own products	17	74
Exchange with others	5	22
Certified seed purchased	1	4
Others	0	0
Total	23	100

A-7. Seed replacement of rice

Response (one alternative)	n	%
Once per 3 croppings	16	73
Once per 4 - 6 croppings	0	0
Once > 6 croppings	6	27
Total	22	100

A-9. Transplanting method: rainy season

Response (one alternative)	n	%
Regular planting	36	92
Random planting	3	8
Total	39	100

A-11. Age of seedling of rice (wet season)

Response (one alternative)	Age of Seeding
N	40
Mean	45 days
Minimum	25 days
Maximum	60 days

A-13. Fertilization Volume: DAP (unit: kg/ha)

Item	Kg/ha
N	39
Mean	8
STD	19
Minimum	75
Maximum	0

A-15. Threshing (method)

Response	n	%
Engine thresher	40	100
Pedal thresher	0	0
Manual threshing	0	0
Total	40	100

A-17. Drying (method)

Response	n	%
Sun drying	38	100
Dryer	0	0
Total	38	100

Attachment B1.2-2 Results of Questionnaire Survey: Farming Practices Etc.: Por Canal (2/4)

B. Farm Input Supply

B-1. Procurement of certified seed

Response (one alternative)	n	%
Easy	23	58
Difficult	13	33
Not possible	4	10
Total	40	100

B-2. Procurement of wanted seed

Response (one alternative)	n	%
Easy	25	63
Difficult	12	30
Not possible	3	8
Total	40	100

B-3. Seed supply timing

Response (one alternative)	n	%
In time	25	63
Delayed	9	23
Not obtained	6	15
Total	40	100

B-4. Quality seed price

Response (one alternative)	n	%
Too expensive	12	30
Acceptable	9	23
Not purchased	19	48
Total	40	100

B-5. Procurement of wanted fertilizer

Response (one alternative)	n	%
Easy	33	83
Difficult	4	10
Not possible	3	8
Total	40	100

B-6. Fertilizer supply timing

Response (one alternative)	n	%
In time	32	80
Delayed	5	13
Not obtained	3	8
Total	40	100

B-7. Fertilizer price

Response (one alternative)	n	%
Too expensive	26	65
Acceptable	8	20
Not purchased	6	15
Total	40	100

C. Post-harvest

C-1. Rice milling cost (bran received by interviewee)

Item	Riel/ton
N	34
Mean	56,206
STD	24,485
Minimum	6,000
Maximum	100,000

C-2. Paddy storage (king of container used)

Response (one alternative)	n	%
Bag	9	23
Bamboo basket	6	15
Wooden box	25	63
Others	0	0
Total	40	100

C-3. Paddy (Maximum storage period; month)

Item	No.	%
0 - 12 months	0	0
0 - 6 months	40	100.0
Total	40	100

C-4. Rice (kind of container)

Response (one alternative)	n	%
Bag	39	35
Bamboo basket	0	0
Wooden box	1	1
Others	0	0
Total	40	100

C-5. Rice (Maximum storage period; month)

Item	Month
N	40
Mean	1.3
Minimum	1
Maximum	3

C-6. Roughly estimated total losses (% of production)

	%
N	36
Mean	4
Minimum	1
Maximum	20

C-7. Most dominant loss of paddy

Response (one alternative)	n	%
During harvesting	16	40
At threshing,	22	55
At drying	0	0
At cleaning	0	0
At storage	2	5
At other time	0	0
Total	40	100

C-8. Second dominant loss

Response (one alternative)	n	%
During harvesting	11	28
At threshing,	14	35
At drying	4	10
At cleaning	3	8
At storage	8	20
At other time	0	0
Total	40	100

Attachment B1.2-2 Results of Questionnaire Survey: Farming Practices Etc.: Por Canal (3/4)

D. Marketing

D-1. Sold product

Response (one alternative)	n	%
Field dried paddy	8	28
Sun dried paddy	19	66
Milled rice	2	7
Total	29	100

proportion to total marketing volume

D-3. Marketing of vegetable

Response	n	%
Market in village	31	89
Market in commune center	3	9
Market in district center	1	3
Collector/middleman	0	0
Other (specify)	0	0
Total	35	100

D-5. Marketing of livestock

Response	n	%
Market in village	21	57
Market in commune center	2	5
Market in district center	2	5
Collector/middleman	12	32
Other (specify)	0	0
Total	37	100

E. Food Supply Conditions

E-1. Food supply condition (rice)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	30	75
Own harvest/ product is just enough to the household demand	5	13
Purchased (or exchanged) to meet the household demand	2	5
Insufficient	3	8
Total	40	100

E-3. Food supply condition (other cereals)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	3	12
Own harvest/ product is just enough to the household demand	6	24
Purchased (or exchanged) to meet the household demand	11	44
Insufficient	5	20
Total	25	100

E-5. Food supply condition (roots and tuber crops)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	1	5
Own harvest/ product is just enough to the household demand	3	14
Purchased (or exchanged) to meet the household demand	13	59
Insufficient	5	23
Total	22	100

E-7. Food supply condition (beans)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	0	0
Own harvest/ product is just enough to the household demand	1	5
Purchased (or exchanged) to meet the household demand	15	71
Insufficient	5	24
Total	21	100

D-2. Market Destination of Paddy

Response	n	%
Rice miller in village	2	8
Rice miller in commune center	6	24
Rice miller in district center	3	12
Collector/middleman	14	56
Local market	0	0
Total	25	100

D-4. Marketing of field crops

Response	n	%
Market in village	19	53
Market in commune center	2	6
Market in district center	5	14
Collector/middleman	10	28
Other (specify)	0	0
Total	36	100

D-6. Marketing of other product (fish)

Response	n	%
Market in village	26	84
Market in commune center	2	6
Market in district center	3	10
Other (specify)	0	0
Total	31	100

E-2. Food supply condition (vegetables)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	8	25
Own harvest/ product is just enough to the household demand	10	31
Purchased (or exchanged) to meet the household demand	6	19
Insufficient	8	25
Total	32	100

E-4. Food supply condition (meat)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	7
Own harvest/ product is just enough to the household demand	2	7
Purchased (or exchanged) to meet the household demand	20	71
Insufficient	4	14
Total	28	100

E-6. Food condition (fish)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	5	19
Own harvest/ product is just enough to the household demand	0	0
Purchased (or exchanged) to meet the household demand	17	65
Insufficient	4	15
Total	26	100

E-8. Rice purchased in last year (kg)

	kg/farm
N	2
Proportion to sample farmers (40)	5%
Mean (per respondent)	22
Minimum	0
Maximum	500

Attachment B1.2-2 Results of Questionnaire Survey: Farming Practices Etc.: Por Canal (4/4)

F. Extension Services

F-1. Visit of extension worker

Response (one alternative)	n	%
One per < week	3	8
Once per 2 weeks-1 month	4	10
Seldom visited	33	83
Total	40	100

F-2. Technical capability of extension workers

Response (one alternative)	n	%
Sufficient	17	43
Not sufficient	8	20
No service provided	15	38
Total	40	100

F-3. Are you satisfied with current extension services

Response (one alternative)	n	%
Satisfied	21	53
Not satisfied	3	8
No service provided	16	40
Total	40	100

F-4. What kind of extension services are you needed

Response (specified)	n	%
Technical training & technical guidance	16	47
Fertilizer application & compost	4	12
Water Management	3	9
Demonstrat	6	18
Text book need	3	9
Seed/farm input supply	2	6
Total	34	100

Totals exceed 100% due to multiple responses

G. Farm Credit

G-1. Access to farm credit

Response (one alternative)	n	%
Easy	14	54
Difficult	2	8
Not provided	10	38
Total	26	100

G-2. Timing of provision

Response (one alternative)	n	%
In time	11	42
Delayed	5	19
Not provided	10	38
Total	26	100

G-3. Amount of credit

Response (one alternative)	n	%
Sufficient	12	46
Not sufficient	5	19
Not provided	9	35
Total	26	100

G-4. Procedures for credit application

Response (one alternative)	n	%
Easy	7	27
Difficult	8	31
Not possible	11	42
Total	26	100

Attachment B1.3-1 Results of Interview Survey in Major Communes/Villages Located in Wat Chre, Wat Loung & Damnak Ampil Sub-project Areas (1/3)

Boeung Kinar Commune (Interview with Commune Office)		Tropeng Chong Commune (Interview with Commune Office)		Snam Preah Commune (Interview with Commune Office)	
Wat Chre Sub-project		Wat Loung & Damnak Ampil Sub-project		Wat Loung & Damnak Ampil Sub-project	
Wet Season Rice	Transplanting 100% under transplanting Sowing Early June - Early July Transplanting Mid. July - Mid. Sep. Harvesting Mid. Nov. - Mid. Jan. Variety - Medium Phka Mulis, Phka Rumduol, Phka Khney Local (Chong Banla) - Late (Neang Pong, Phka Sia) Yield level 1.2 t/ha	Wet Season Rice	Transplanting (90%) Sowing End May - End June Transplanting Early July - Mid. Aug. Harvesting Mid. Nov. - Early Jan. Direct Sowing (about 10% in clayey soils) Higher yield even under direct sowing; labor cost high for planting Start of rain late: direct sowing Variety - Medium Phka Mulis, Phka Rumduol, CAR 7 Local (Chong Banla) - Late (Neang Pong, Kang Threung) Yield level 1.5 t/ha	Wet Season Rice	Transplanting 90% under transplanting Sowing End May/Early June - Early July Transplanting End July - Early Oct. Harvesting Mid. Nov. - Early Jan. Variety Phka Rumduol (most common), Somali (common), Phka Khney (common), Chong Banla, CAR 4, CAR 9
Dry Season Rice	No dry season rice cropped	Dry Season Rice	Transplanting Transplanting is 90% of dry season rice Sowing Early Jan. - Mid. Jan. Harvesting Early Feb. - Mid. Feb. Direct Sowing Mid. Apr. - End Apr. Sowing Early Jan. - Mid. Jan. Harvesting Mid. Apr. - End Apr. Variety IR 66, Sen Pidao Yield level 3.0 t/ha Area Wat Loung: no dry season rice Dam. Ampil: 55ha (cropped area in commune in 2008) (commune irrigated area: 628ha & plan for dry season rice in 2008 is 150ha)	Dry Season Rice	Dry season rice area is less than 10ha in the commune Transplanting 100% under transplanting Sowing Early Dec. - Mid. Dec. Transplanting Early Jan. - Mid. Jan. Harvesting Mid. Apr. - Early May Variety IR, Sen Pidao Yield level 4.0 t/ha (sum dried 3.6 t/ha) Irrigation Pumping
Other Crops in Paddy Field	Watermelon, cucumber & pumpkin: 2 crops per year 15 ha x 2 crops = 30ha/year/commune Location (village Prey Phdau, Krasang Kruo, Vat Cgrey, 1st season: Jan - Early Mar. Location (village Prey Svay, P. Damrei, D. Chres 2nd season: Apr. - June No irrigation applied	Other Crops in Paddy Field	Watermelon & cucumber: 10ha in commune (not in Wat Loung & D. Ampil) Season: April - June (mostly 1 pumping/season)	Other Crops in Paddy Field	About 60ha in the commune Watermelon, cucumber, gourd, pumpkin Season: Early Feb - Early May Irrigation No pumping, depending on night dew Location (village Andoung Krasang, Kaoh Krasang, Thuoth Fa Chab, Cheung Phleung
Reasons No Other Crops in Early Wet Season	- Watermelon/cucumber etc. grown - Excessive wetness - Tried, but too much rain -- too wet & no products - Corn need water; mungbeans not yet tried	3 Rice Croppings in Commune	Ea. Jun - Mid. Mar; Ea May - Ea Aug; Ea Aug. - Nov About 23 ha, Buor Srangae & Preah Chambak village	Reasons No Other Crops in Paddy Fields	
Crops Grown in Upland Field	Cassava, mungbeans, string beans, cucumber, pumpkin 41ha in commune	Crops Grown in Upland Field	Corn, egg plant, string beans, mungbeans, pumpkin	Crops Grown in Upland Field	Sugar cane, orange, banana, cucumber, string beans, mungbeans, egg plant, tomato, leafy vegetables, corn Upland field 128ha in commune
Land Use	Paddy field ha, upland field ha, water ha, village area ha, road etc. ha, total ha	Irrigation Conditions	Wat Loung Wet season -- enough water Dry season -- cropped area 0ha D. Ampil Wet season -- enough water (no 2ry canals) Potential 628ha, plan 150ha, actual 55ha in commune Paddy field ha, upland field ha, water ha, village area ha, road etc. ha, total ha	Land Use	Paddy field 4,650ha, upland field 51ha, water 142ha, village area 1,043ha, road etc. 114ha, total 6,000ha
NCCD in 2008		NCCD in 2008		NCCD in 2008	- Wet season W. Loung: basically no irrigation D. Ampil: possible only along main canal - Dry season Very limited by pumping
Prevailing Marketing Channel		Prevailing Marketing Channel	Paddy: sell to collector in village	Prevailing Marketing Channel	- Canal & road rehabilitation - Water supply, health & hygiene, capacity building Paddy: sell to collectors come to village from outside Other crops: local market (Pursat & Bakan market)

Attachment B1.3-1 Results of Interview Survey in Major Communes/Villages Located in Wat Chre, Wat Loung & Damnak Ampil Sub-project Areas (2/3)

Khmar Totueung Commune (Interview with Commune Office)		Wat Loung Village (Interview with village chief)		Damnak Ampil Village (Interview with village chief)	
Wat Loung (limited in area)		Wat Loung Sub-project		Damnak Ampil Sub-project	
Wet Season Rice	Transplanting 100% under transplanting Sowing Early June - End July Transplanting End July - End Sep. Harvesting Early Nov. - Mid. Jan. Variety - Medium Phka Mulis, Phka Rumduol, CAR 4, CAR 9, Phka Khney Local (Chong Bania, Krohom) 2.5 t/ha	Wet Season Rice	Transplanting 100% under transplanting Sowing Early June - Early/End July Transplanting Early July - Mid Sep. Harvesting Mid. Nov. - Mid. Jan. Transplanting postponed till Sep. in water shortage area Variety Phka Khney (most common), Phka Rumduol (2nd) Somali, CAR 9	Wet Season Rice	Transplanting 100% under transplanting Sowing Early May - Early July Transplanting Early July - Mid Sep. Harvesting Early Nov. - Early Jan. Transplanting postponed till Sep. when rain not enough Variety CAR 9 (low land), Phka Mulis, Phka Rumduol, Phka Khney, Chong Bania & Somali (high land), CAR 2, Korn Chin
Dry Season Rice	Irrigated field 700ha (20% x paddy field 3,840ha) Villages: Kamprak Koun, Kaoh Krabei, Damnak Thong Transplanting 100% under transplanting Sowing Early Jan. - Jan. 20 Transplanting End Jan - Mid. Feb. Harvesting Early Apr. - Early May Irrigated Area About 300ha Variety Mostly Sen Pidao (IR limited) Yield level 2.0 t/ha	Dry Season Rice	Yield level 2.0 t/ha Area 120ha Irrigation Half of village can get water from canal in main wet season No dry season rice cropped	Yield level 2.0 t/ha Area 271ha Irrigation Only field close to canal with pumping No gravity irrigation possible No dry season rice cropped	
Other Crops in Paddy Field	3 crops/year in paddy field Rice: May - July (early) Rice: July - Dec. (medium) Watermelon etc.: Jan. - Mar. Cucumber, watermelon, pumpkin: 44ha/commune (2nd year after introduction of vegetables in commune) Season: Early Feb. - Early Apr. Village: Kamprak, Tuol Ang., Khmar Totu, Kaoh Krabei	Other Crops in Paddy Field	No other crops than rice in paddy fields	No other crops than rice in paddy fields	
Crops Grown in Upland Field	Mungbeans, cassava, corn, watermelon, cucumber Mungbeans, corn May - Sep. Watermelon/cuct Oct. - Dec. Watermelon/cuct Jan. - May Wet season: by gravity Dry season: by gravity	Reasons No Other Crops in Paddy Fields	- Soils become too hard in dry season - Cattle grazing in early wet season - Clayey soils difficult to grow other crops	Clayey soils distributed in paddy fields	
3 Crops/year		Crops Grown in Upland Field	Mungbeans, string beans, corn, pumpkin, egg plant in home garden Cropping season: Early/Mid. May - Mid. Nov./Early Dec.	Upland fields are distributed with sandy soils Watermelon, pumpkin, groundnut for marketing Egg plant, string beans, gourd, leaf veg. for consumption	
Irrigation Conditions		Irrigation Conditions	Groundnut 3ha in 2007 in village Yield level 3.0 t/ha (doubtful) price: R. 6,000/kg (grain) Season Early Apr. - Mid. /End June Mid. Oct. - Early Jan.	Groundnut 3ha in 2007 in village Yield level 3.0 t/ha (doubtful) price: R. 6,000/kg (grain) Season Early Apr. - Mid. /End June Mid. Oct. - Early Jan.	
Land Use	Paddy field 3,840ha, upland field 160ha, water 355ha, village area 650ha, road etc. 245ha, wood land 80ha, total 5,230ha	Irrigation Conditions	- Half of village can get water from canal in main wet season - Early wet season can get water when rain, but very limited because canal level is higher than river water	No water for irrigation both early wet & dry season	
NCCD in 2008					

Attachment B1.3-1 Results of Interview Survey in Major Communes/Villages Located in Wat Chre, Wat Loung & Damnak Ampil Sub-project Areas (3/3)

Rumleth Commune (Interview with Commune Office)		Bakan District (Interview DAO)	
Damnak Ampil (outside of Sub-project Area)		Wat Loung, Wat Chre & Damnak Ampil Sub-project	
Wet Season Rice	Transplanting 100% under transplanting Sowing Early June - Mid. July Transplanting Mid. July - Early. Sep. Harvesting Mid. Dec. - Mid. Jan.	Wet Season Rice	Transplanting Sowing Early June - Mid. July Transplanting Early July - End Aug Harvesting Early End. Sep. - Early Oct. Medium Mid. Oct. - Mid. Nov. Late End Dec. - Mid. Jan.
Variety - Medium	Phka Mulis, CAR 2, CAR 9, Phka Khney Local (Chan Kom, Kompeak, Krochok Kney)		Variety - Medium Phka Mulis, Phka Rumduol, P. Rumchang Kroform, CAR 3, CAR 6, CAR 4 CAR 9, CAR 13, Rieng Chbey Local (Chong Bantla) - Early IR 66, Sen Pidao, IR 64
Yield level	2.0 - 2.5 t/ha		
Irrigation	Pumping possible along main canal		
Almost all villages have paddy fields in D. Ampil command area			
Dry Season Rice	Along main canal, area limited at 5 - 10ha/commune in 2007 Transplanting Early Jan. - End Jan. Sowing Early Feb. - Mid. Feb. Transplanting Early Apr. - Mid. Apr. Harvesting IR 66, Sen Pidao Variety 2.0 - 3.0 t/ha Yield level Anticipated Cropping Systems Double cropping of rice & crops with short growth duration like watermelon	Dry Season Rice	Transplanting Sowing Mid. Oct. - Mid. Nov. Transplanting Mid. Nov. - Mid. Dec. Harvesting End Jan. - Mid. Mar. Direct Sowing Sowing End. Oct. - End Dec. Harvesting Early Feb. - Mid./end Mar. Variety IR 66, Sen Pidao, IR Kesar, 70 days rice Location (commune) Tropeang Chong, Boeng Khmar, Me Tuek, Rumlech Floating rice usually cultivated under direct sowing
Other Crops in Paddy Field	Watermelon 100 - 120 ha in commune (paddy field: 4,650ha) (no other crops in paddy fields) Season: Early Apr. - Early June Promising Crops Mungbeans: to avoid damage caused by grazing animal		- Labor shortage for transplanting - Labor hiring cost high - Higher yield attained under direct sowing - Time is limited for
Reasons No Other Crops in Paddy Fields	- Watermelon: short growth duration - Long duration crops, affect paddy cultivation - Never tried other crops - Watermelon: already have market outlet		
Crops Grown in Upland Field	Mungbeans, long beans, cucumber, morning glory, leek Village compound, get water from canal/ditch Vegetables: along river, watering Cultivation year round, pumping/watering		
Land Use	Paddy field 4,650ha, upland field 511ha, water 142ha, village area 1,043ha, road etc. 114ha, total 6,000ha		
Land Use	Paddy field 4,650ha, upland field 511ha, water 142ha, village area 1,043ha, road etc. 114ha, total 6,000ha		
NCCD in 2008			
Prevailing Marketing Channel	Paddy: sell to collector come to village from outside Watermelon: sell to collector in village (partly sold by a friend)		

Attachment B1.3-2 Results of Socio-economic Survey: Damnak Ampil (1/3)

1. Design of Sample Survey

Sample Number	30 farmers	No. of villages	4 villages	Survey method	Interview survey by enumerators
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2. Farming Constraints and Improvement

2-1. Farming Constraints (agronomic & farm management)

Question What are serious agronomic & farm management constraints for farming ? (select plural answer)

Farming constraint (agronomic/farm management)	Degree of Constraints												Total Score	Rating
	Most Serious Score: 4			2nd Serious Score: 3			3rd Serious Score: 2			4th Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Low yield of crops (paddy)	10	33	40	4	13	12	1	3	2	3	10	3	57	1
Crop losses due to pest & disease	2	7	8	2	7	6	1	3	2	1	3	1	17	
Weed problem	1	3	4	6	20	18	3	10	6	5	17	5	33	3
Crop losses due to wild animal	0	0	0	1	3	3	3	10	6	1	3	1	10	
Difficulty for hiring draft animal/machinery	0	0	0	1	3	3	0	0	0	0	0	0	3	
Labor shortage	2	7	8	0	0	0	4	13	8	4	13	4	20	
Insufficient extension services	3	10	12	5	17	15	2	7	4	2	7	2	33	3
Shortage of farming capital	3	10	12	2	7	6	3	10	6	4	13	4	28	
Difficulty for obtaining quality seeds	0	0	0	2	7	6	1	3	2	1	3	1	9	
Difficulty for purchasing fertilizers	0	0	0	1	3	3	3	10	6	1	3	1	10	
Expensive farm inputs	1	3	4	0	0	0	1	3	2	2	7	2	8	
Poor soil conditions	0	0	0	5	17	15	4	13	8	3	10	3	26	
Marketing problems of products	0	0	0	0	0	0	1	3	2	2	7	2	4	
Lack of farm credit	0	0	0	0	0	0	0	0	0	0	0	0	0	
Others	8	27	32	1	3	3	3	10	6	1	3.333	1	42	2
Total	30	100	120	30	100	90	30	100	60	30	100	30	300	

2-2. Farming Constraints (physical)

Question What are serious physical constraints for farming ? (select plural answer)

Farming Constraints/Physical (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water shortage in wet season	10	33	30	4	13	8	1	3	1	39	2
Irrigation water shortage in dry season	12	40	36	6	20	12	1	3	1	49	1
Inundation/flooding	1	3	3	7	23	14	0	0	0	17	
Drainage problem	3	10	9	7	23	14	7	23	7	23	3
Lack of farm road	2	7	6	3	10	6	3	10	3	15	
Lack of transportation means	2	7	6	2	7	4	9	30	9	19	
Leveling problem of paddy field	0	0	0	0	0	0	4	13	4	4	
Others	0	0	0	1	3	2	5	16.67	5	7	
Total	30	100	90	30	100	60	30	100	23	173	

2-3. Marketing constraints

Marketing Constraints (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Unstable market prices of paddy/rice	18	60	54	4	13	8	1	3	1	63	1
Low market prices of paddy/rice	4	13	12	7	23	14	2	7	2	28	2
Limitation of market of paddy/rice	4	13	12	3	10	6	6	20	6	24	3
Unstable market prices of other crops	2	7	6	5	17	10	3	10	3	19	
Low market prices of other crops	0	0	0	6	20	12	4	13	4	16	
Limitation of market of other crops	0	0	0	1	3	2	2	7	2	4	
Unstable market prices of livestock	0	0	0	1	3	2	6	20	6	8	
Low market prices of livestock	0	0	0	0	0	0	0	0	0	0	
Limitation of market of livestock	0	0	0	0	0	0	4	13	4	4	
Lack of or poor farm to market road	0	0	0	3	10	6	2	7	2	8	
Others	2	7	6	0	0	0	0	0	0	6	
Total	30	100	90	30	100	60	30	100	30	180	

2-4. Reasons for limited productivity of crops in the rice field of interviewee (not specific to last year)

Reasons for Limited Productivity (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Drought in wet season	17	57	51	5	17	10	0	0	0	61	1
Water shortage in dry season	4	13	12	7	23	14	1	3	1	27	2
Shortage of farming capital	0	0	0	3	10	6	2	7	2	8	
Poor seed quality	1	3	3	4	13	8	3	10	3	14	
Poor soil	2	7	6	5	17	10	9	30	9	25	3
Limited application of fertilizer	1	3	3	2	7	4	2	7	2	9	
Damages caused by wild animal (rat)	0	0	0	3	10	6	6	20	6	12	
Poor drainage	2	7	6	1	3	2	0	0	0	8	
Flooding/inundation	2	7	6	0	0	0	2	6.667	2	8	
Inadequate farming technologies	1	3	3	0	0	0	1	3.333	1	4	
Damages caused by pest & disease	0	0	0	0	0	0	1	3.333	1	1	
Others	0	0	0	0	0	0	3	10	3	3	

Attachment B1.3-2 Results of Socio-economic Survey: Damnak Ampil (2/3)

2-5. Activities/practices to improve rice productivity implemented by the interviewee in the past 3 years (plural answer)

Activities Implemented	No. & Proportion of Respondents Implemented Activities/Practices		Remarks
	No.	%	
Increased fertilization doses	22	24	No. of respondents : 30 Maximum 4 activities selected/respondent Total answers: 90
Application of compost/manure	13	14	
Used quality seed (local variety)	16	18	
Used quality seed (high yielding variety)	16	18	
Constructed of farm pond	3	3	
Started to use water pump for irrigation	7	8	
Improved farming practices	3	3	
Improved post-harvest practices	3	3	
Changed marketing methods	4	4	
Others	3	3	
Total	90	100	

2-6. Necessary activities to improve rice productivity in the field of the interviewee (farming & farm management; plural answer)

Necessary Activities	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 4			2nd Most Required Score: 3			3rd Most Required Score: 2			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Improvement of farming practices	7	23	28	6	21	18	5	17	10	5	17	5	61	1
Use of quality seed (local variety)	8	27	32	7	24	21	2	7	4	0	0	0	57	2
Use of quality seed (high yielding variety)	5	17	20	6	21	18	3	10	6	2	7	2	46	3
Use of adequate doses of fertilizer	1	3	4	5	17	15	6	21	12	7	24	7	38	
Improved leveling of paddy field	1	3	4	2	7	6	4	14	8	0	0	0	18	
Planting at proper time	1	3	4	0	0	0	3	10	6	6	21	6	16	
Intensive weeding	0	0	0	2	7	6	4	14	8	6	21	6	20	
Formation/strengthening of farmers organization	0	0	0	0	0	0	0	0	0	0	0	0	0	
Others	7	23	28	1	3	4	3	10	6	3	10	3	38	
Total	30	100	120	29	100	87	29	100	58	29	100	29	294	

2-7. Necessary physical works to improve rice productivity in the field of the interviewee (plural answer)

Necessary Physical Works	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water supply for wet season	15	50	45	7	24	14	4	15	4	1	4	1	64	1
Irrigation water supply for dry season	11	37	33	11	38	22	2	7	2	1	4	1	58	2
Mitigation of inundation/flooding	0	0	0	3	10	6	8	30	8	10	38	10	24	
Drainage improvement	3	10	9	7	24	14	9	33	9	8	31	8	40	3
Others	1	3	3	1	3	2	4	15	4	6	23	6	15	
Total	30	100	90	29	100	58	27	100	27	26	100	26	201	

3. Livestock Constraints

Livestock Constraints	Degree of Constraints												Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1							
	No.	%	Score	No.	%	Score	No.	%	Score					
Low productivity	13	43	39	3	10	6	2	7	2				47	1
Shortage of feed	3	10	9	12	40	24	5	17	5				38	2
Low or unstable market prices	1	3	3	5	17	10	6	20	6				19	
Market availability	1	3	3	0	0	0	0	0	0				3	
Losses due to diseases	9	30	27	2	7	4	3	10	3				34	3
Insufficient veterinary services	3	10	9	5	17	10	8	27	8				27	
Insufficient extension services	0	0	0	1	3	2	6	20	6				8	
Difficulty in obtaining good breed	0	0	0	2	7	4	0	0	0				4	
Others	0	0	0	0	0	0	0	0	0				0	
Total	30	100	90	30	100	60	30	100	30				180	

4. Expectations for Improvement

4-1. Farming (agronomic & farm management)

Expectations for Improvement	Degree of Expectation												Total Score	Rating
	Most Expected Score: 3			2nd Most Expected Score: 2			3rd Most Expected Score: 1							
	No.	%	Score	No.	%	Score	No.	%	Score					
Productivity improvement of wet season rice	19	63	57	5	17	10	0	0	0				67	1
Productivity improvement of dry season rice	11	37	33	7	23	14	0	0	0				47	2
Productivity improvement of field crops	0	0	0	7	23	14	1	3	1				15	
Productivity improvement of vegetables	0	0	0	2	7	4	4	13	4				8	
Productivity improvement of livestock/poultry	0	0	0	6	20	12	5	17	5				17	3
Increasing livestock holding size & production	0	0	0	2	7	4	12	40	12				16	
Increasing poultry holding size & production	0	0	0	0	0	0	2	7	2				2	
Strengthening/formation of farmers organizations	0	0	0	1	3	2	1	3	1				3	
Improvement of post-harvest operation	0	0	0	0	0	0	2	7	2				2	
Others	0	0	0	0	0	0	3	10	3				3	
Total	30	100	90	30	100	60	30	100	30				180	

Attachment B1.3-2 Results of Socio-economic Survey: Damnak Ampil (3/3)

4-2. Farming (farming system)

Farming System	Degree of Expectation									Total Score	Rating
	Primarily Intended Score: 3			Secondary Intended Score: 2			Thirdly Intended Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Double cropping of rice	25	83	75	1	3	2	0	0	0	77	1
Stable single cropping of rice	4	13	12	6	20	12	9	30	9	33	3
Multiple farming (crop + livestock etc.)	1	3	3	16	53	32	6	20	6	41	2
Crop diversification	0	0	0	7	23	14	15	50	15	29	
Others	0	0	0	0	0	0	0	0	0	0	
Total	30	100	90	30	100	60	30	100	30	180	

4-3. Farming (physical)

Farming (physical)	Degree of Expectation									Total Score	Rating
	Primarily Expected Score: 3			Secondary Expected Score: 2			Thirdly Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Adequate irrigation water supply in wet season	11	37	33	8	27	16	1	3	1	50	2
Adequate irrigation water supply in dry season	13	43	39	8	27	16	2	7	2	57	1
Mitigation of inundation & flooding	0	0	0	3	10	6	1	3	1	7	
Construction/rehabilitation of farm road	3	10	9	0	0	0	9	30	9	18	
Construction/rehabilitation of farm to market road	1	3	3	2	7	4	1	3	1	8	
Drainage improvement	2	7	6	9	30	18	10	33	10	34	3
Leveling of paddy field	0	0	0	0	0	0	4	13	4	4	
Others (specify)	0	0	0	0	0	0	2	7	2	2	
Total	30	100	90	30	100	60	30	100	30	180	

4-4. Agricultural support services

Agricultural Support Required	Degree of Necessity of Support									Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Field Extension services (demonstration / field guidance)	15	50	45	7	23	14	5	17	5	64	1
Provision of quality seed	10	33	30	14	47	28	3	10	3	61	2
Farmer training (technical & host-harvest operation)	4	13	12	5	17	10	9	30	9	31	3
Farmer training (organization, marketing, farm management)	1	3	3	1	3	2	5	17	5	7	
Support to organize farmers	0	0	0	1	3	2	0	0	0	2	
Provision of market information	0	0	0	0	0	0	0	0	0	0	
Provision of farm credit	0	0	0	1	3	2	1	3	1	3	
Provision of fertilizer	0	0	0	1	3	2	7	23	7	9	
Others (specify)	0	0	0	0	0	0	0	0	0	0	
Total	30	100	90	30	100	90	30	100	90	270	

Attachment B1.3-3 Results of Interview Survey with Rice Millers in & around the Sub-project Area

Items	Bakan District: Dammak Ampil, Wat Loung & Wat Chre Rehabilitation Sub-projects	Boribo District: Lum Hach Rehabilitation Sub-project
Name	Kok Ky Rice Mill (Vice Chairman of Pursat Rice Miller Association) Tropeang Chong Commune (along Route No. 5)	Only 1 medium-scale rice mill in the district
Location	On Ta Poeng Commune	Pontle Commune (Boribo town)
Milling Capacity	Paddy 4 ton/hr (large scale mill)	Paddy 1 ton/hr (medium scale)
Annual Marketing Volume	400 ~ 500 ton milled rice (2007)	No rice milling in the last 1 year because: - Milling cost high (increase of fuel cost) - Limited handling volume - Easy to sell to buyers from Viet Nam - Limited market of IR variety in Cambodia - Currently not operated because not profitable
Operation Period	From October to June	Full operation: 5 months/year Other period: morning operation
Procurement of Paddy	- Sun dried paddy - Mostly from village collectors	- Sun dried paddy - Contract growers - Village collectors
Marketing of Rice/Paddy	- Mostly marketed to wholesaler in Phnom Penh - Partly at Moung Ruessel market - Marketed to buyers from Thailand at present (depending on prices offered)	Phnom Penh, Sihanoukville - Buyer from Vietnam
Paddy Mortgage Services	No mortgage services employed	No mortgage services employed
Other Services to Farmers	Contract growing - Difficulty to introduce & need money - Farmers sell to other buyers offering higher price (Viet Nam buyers)	Providing farm inputs & pumping fuel (in kind) No interest on credit Farmers obligation: sell paddy to the miller at market price
Problems	- Competition with Viet Nam (collecting field dried paddy) - Price unstable influenced by demand in Viet Nam - Viet Nam buyers offer higher price - Viet Nam buyers disregard quality (price difference) - In Pursat, harvesting in wet season (from October), in Battambang in dry season (Jan.) - Dryer: no technical support & experiences	- Insufficient paddy to mill in wet season - Currently stop milling because of limited market & price low (wholesaler stopped order) - In 2007, poor market in June - Hike of fuel price
Price Information	Current paddy price (June 2008) Somali: R. 1,500/kg; Pk. Khney: R. 1,300/kg. Neang Mine (mixed): R. 1,200/kg Current rice price (June 2008) Somali: R. 3,000/kg; Pk. Khney: R. 2,600/kg, Neang Mine (mixed): R. 2,000/kg - Rice price will increase up to October, 2008 - Prices declining in June - Sen Pidao (aromatic & soft) R. 100/kg higher than IR (hard) Price fluctuation Price rise Nov. ~ Feb. Harvesting season Somali: R. 950/kg; Pk. Khney: R. 850/kg. Neang Mine (mixed): R. 850/kg Price trend from 2007 to 2008 Price rise Nov. ~ Feb. 08 & decrease Mar. ~ Apr. 08 - IR rice marketed to Viet Nam & Thailand - Mills in Pursat higher quality than Mills in Battambang - Pursat Millers Association plan to buy paddy from 2008 by using loan from Rural Dev. Bank	IR 66 (paddy, recession rice) Apr., 2008: R. 1,050/kg June, 2008: R. 900/kg Current paddy price (June 2008) Somali: R. 1,500/kg; Pk. Khney: R. 1,200/kg, Neang Mine (mixed): R. 1,100/kg, Sen Pidao R. 1,000/kg Current rice price (June 2008) Somali: R. 2,800/kg; Pk. Khney: R. 2,400/kg, Neang Mine (mixed): R. 2,100/kg Sen Pidao R. 2,200/kg (limited) After harvest (2007 ~ 08) Somali: R. 800/kg; Pk. Khney: R. 750/kg, Neang Mine (mixed): R. 650/kg
Other Information	Milling cost Free if rice bran & broken rice retained by miller	

Source: Interview survey by the IICA Study Team

Attachment B1.3-4 Results of Questionnaire Survey: Farming Practices Etc. Damnak Ampil (1/4)

A. Farming Practices

A-1. Reason for fallow of rice field in Dry Season

Response (plural alternatives)	n	%
Labor shortage	1	4
Working capital shortage	0	0
Water shortage	23	92
Other	1	4
Total	25	100

A-3. Reasons for selection of rice variety

Response (plural alternatives)	n	%
Good taste	1	3
High price	3	10
High yield	21	70
Short Term	5	17
Total	30	100

A-4. Seed sources: rice

Response (one alternative)	n	%
Own products	17	57
Exchange with others	6	20
Certified seed purchased	4	13
Others	3	10
Total	30	100

A-6. Seed sources: vegetables

Response (one alternative)	n	%
Own products	10	53
Exchange with others	1	5
Commercial seed procured at local market	2	11
Certified seed purchased	6	32
Total	19	100

A-8. Land preparation method

Response (one alternative)	n	%
Draft animal	25	83
Machinery	5	17
Manual	0	0
Total	30	100

A-10. No. of plants/hill (wet season): rice

Response (one alternative)	No./Hill
N	30
Mean	4.0
Minimum	3
Maximum	6

A-12. Fertilization Volume: Urea (unit: kg/ha)

Item	Kg/ha
N	30
Mean	81
STD	
Minimum	81
Maximum	500

A-14. Fertilizer (Compost/Manure)

Item	Kg/ha
N	30
Mean	644
STD	
Minimum	0
Maximum	4,000

A-16. Cleaning (method)

Response	n	%
Engine winnower	16	57
Manual winnower	1	4
Manual without winnower	11	39
Total	28	100

A-2. Rice variety: rainy season

Response (plural alternative)	n	%
Somaly	14	74
IR	1	5
Kamping Pouy	1	5
Phkar Khney	1	5
Kha 9	1	5
Sakmahol	1	5
		0
		0
		0
Total	19	100

A-5. Seed sources: upland crops

Response (one alternative)	n	%
Own products	16	70
Exchange with others	2	9
Certified seed purchased	1	4
Local Seed	4	17
Total	23	100

A-7. Seed replacement of rice

Response (one alternative)	n	%
Once per 3 croppings	23	79
Once per 4 - 6 croppings	2	7
Once > 6 croppings	4	14
Total	29	100

A-9. Transplanting method: rainy season

Response (one alternative)	n	%
Regular planting	27	90
Random planting	3	10
Total	30	100

A-11. Age of seedling of rice (wet season)

Response (one alternative)	Age of Seeding
N	29
Mean	44 days
Minimum	25 days
Maximum	60 days

A-13. Fertilization Volume: DAP (unit: kg/ha)

Item	Kg/ha
N	30
Mean	16
STD	
Minimum	0
Maximum	250

A-15. Threshing (method)

Response	n	%
Engine thresher	24	80
Pedal thresher	2	7
Manual threshing	4	13
Total	30	100

A-17. Drying (method)

Response	n	%
Sun drying	1	3
Dryer	29	97
Total	30	100

Attachment B1.3-4 Results of Questionnaire Survey: Farming Practices Etc. Damnak Ampil (2/4)

B. Farm Input Supply

B-1. Procurement of certified seed

Response (one alternative)	n	%
Easy	25	83
Difficult	5	17
Not possible	0	0
Total	30	100

B-2. Procurement of wanted seed

Response (one alternative)	n	%
Easy	30	100
Difficult	0	0
Not possible	0	0
Total	30	100

B-3. Seed supply timing

Response (one alternative)	n	%
In time	29	97
Delayed	0	0
Not obtained	1	3
Total	30	100

B-4. Quality seed price

Response (one alternative)	n	%
Too expensive	9	30
Acceptable	7	23
Not purchased	14	47
Total	30	100

B-5. Procurement of wanted fertilizer

Response (one alternative)	n	%
Easy	21	70
Difficult	9	30
Not possible	0	0
Total	30	100

B-6. Fertilizer supply timing

Response (one alternative)	n	%
In time	21	70
Delayed	7	23
Not obtained	2	7
Total	30	100

B-7. Fertilizer price

Response (one alternative)	n	%
Too expensive	23	77
Acceptable	4	13
Not purchased	3	10
Total	30	100

C. Post-harvest

C-1. Rice milling cost (bran received by interviewee)

Item	Riel/ton
N	35
Mean	112,800
STD	
Minimum	40,000
Maximum	300,000

C-2. Paddy storage (king of container used)

Response (one alternative)	n	%
Bag	14	47
Bamboo basket	3	10
Wooden box	12	40
Others	1	3
Total	30	100

C-3. Paddy (Maximum storage period; month)

Item	No.	%
0 - 6 months	9	30
7 - 12 months	21	70.0
Total	30	100.0

C-4. Rice (kind of container)

Response (one alternative)	n	%
Bag	27	93
Bamboo basket	0	0
Wooden box	1	1
Others	1	1
Total	29	100

C-5. Rice (Maximum storage period; month)

Item	Month
N	30
Mean	4.5
Minimum	0.5
Maximum	12

C-6. Roughly estimated total losses (% of production)

	%
N	30
Mean	5
Minimum	1
Maximum	10

C-7. Most dominant loss of paddy

Response (one alternative)	n	%
During harvesting	10	33
At threshing	19	63
At drying	0	0
At cleaning	0	0
At storage	1	3
At other time	0	0
Total	30	100

C-8. Second dominant loss

Response (one alternative)	n	%
During harvesting	6	21
At threshing	11	38
At drying	7	24
At cleaning	3	10
At storage	2	7
At other time	0	0
Total	29	100

Attachment B1.3-4 Results of Questionnaire Survey: Farming Practices Etc. Damnak Ampil (3/4)

D. Marketing

D-1. Sold product

Response (one alternative)	n	%
Field dried paddy	13	62
Sun dried paddy	3	14
Milled rice	5	24
Total	21	100

proportion to total marketing volume

D-3. Marketing of vegetable

Response	n	%
Market in village	19	73
Market in commune center	3	12
Market in district center	3	12
Collector/middleman	0	0
Other (specify)	1	4
Total	26	100

D-5. Marketing of livestock

Response	n	%
Market in village	18	62
Market in commune center	6	21
Market in district center	1	3
Collector/middleman	4	14
Other (specify)	0	0
Total	29	100

E. Food Supply Conditions

E-1. Food supply condition (rice)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	21	70
Own harvest/ product is just enough to the household demand	6	20
Purchased (or exchanged) to meet the household demand	3	10
Insufficient	0	0
Total	30	100

E-3. Food supply condition (other cereals)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	3	16
Own harvest/ product is just enough to the household demand	1	5
Purchased (or exchanged) to meet the household demand	15	79
Insufficient	0	0
Total	19	100

E-5. Food supply condition (roots and tuber crops)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	0	0
Own harvest/ product is just enough to the household demand	1	7
Purchased (or exchanged) to meet the household demand	13	87
Insufficient	1	7
Total	15	100

E-7. Food supply condition (beans)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	0	0
Own harvest/ product is just enough to the household demand	1	8
Purchased (or exchanged) to meet the household demand	12	92
Insufficient	0	0
Total	13	100

D-2. Market Destination of Paddy

Response	n	%
Rice miller in village	14	64
Rice miller in commune center	7	32
Rice miller in district center	1	5
Collector/middleman	0	0
Local market	0	0
Other	0	0
Total	22	100

D-4. Marketing of field crops

Response	n	%
Market in village	10	33
Market in commune center	9	30
Market in district center	4	13
Collector/middleman	7	23
Other (specify)	0	0
Total	30	100

D-6. Marketing of other product (fish)

Response	n	%
Market in village	18	75
Market in commune center	1	4
Market in district center	2	8
Other (specify)	3	13
Total	24	100

E-2. Food supply condition (vegetables)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	4	15
Own harvest/ product is just enough to the household demand	9	33
Purchased (or exchanged) to meet the household demand	12	44
Insufficient	2	7
Total	27	100

E-4. Food supply condition (meat)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	8
Own harvest/ product is just enough to the household demand	1	4
Purchased (or exchanged) to meet the household demand	21	81
Insufficient	2	8
Total	26	100

E-6. Food condition (fish)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	7	29
Own harvest/ product is just enough to the household demand	2	8
Purchased (or exchanged) to meet the household demand	14	58
Insufficient	1	4
Total	24	100

E-8. Rice purchased in last year (kg)

	kg/farm
N	3
Proportion to sample farmers (39)	8%
Mean (per respondent)	6
Minimum	0
Maximum	140

Attachment B1.3-4 Results of Questionnaire Survey: Farming Practices Etc. Damnak Ampil (4/4)

F. Extension Services

F-1. Visit of extension worker

Response (one alternative)	n	%
One per < week	2	7
Once per 2 weeks-1 month	7	26
Seldom visited	18	67
Total	27	100

F-3. Are you satisfied with current extension services

Response (one alternative)	n	%
Satisfied	13	48
Not satisfied	10	37
No service provided	4	15
Total	27	100

G. Farm Credit

G-1. Access to farm credit

Response (one alternative)	n	%
Easy	8	47
Difficult	9	53
Not provided	0	0
Total	17	100

G-3. Amount of credit

Response (one alternative)	n	%
Sufficient	6	35
Not sufficient	10	59
Not provided	1	6
Total	17	100

F-2. Technical capability of extension workers

Response (one alternative)	n	%
Sufficient	9	33
Not sufficient	14	52
No service provided	4	15
Total	27	100

F-4. What kind of extension services are you needed

Response (specified)	n	%
Technical training & technical guidance	15	56
Fertilizer application & compost	3	11
visit of extension staff	2	7
Seed/farm input supply	2	7
Practice and demonstrate	5	19
Total	27	100

Totals exceed 100% due to multiple responses

G-2. Timing of provision

Response (one alternative)	n	%
In time	6	35
Delayed	10	59
Not provided	1	6
Total	17	100

G-4. Procedures for credit application

Response (one alternative)	n	%
Easy	6	35
Difficult	11	65
Not possible	0	0
Total	17	100

Attachment B1.4-1 Results of Socio-economic Survey: Wat Loung (1/3)

1. Design of Sample Survey

Sample Number 40 farmers	No. of villages 2 villages	Survey method Interview survey by enumerators
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2. Farming Constraints and Improvement

2-1. Farming Constraints (agronomic & farm management)

Question What are serious agronomic & farm management constraints for farming? (select plural answer)

Farming constraint (agronomic/farm management)	Degree of Constraints												Total Score	Rating
	Most Serious Score: 4			2nd Serious Score: 3			3rd Serious Score: 2			4th Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Low yield of crops (paddy)	12	30	48	7	18	21	1	3	2	3	15	3	74	1
Crop losses due to pest & disease	4	10	16	2	5	6	5	17	10	0	0	0	32	3
Weed problem	4	10	16	1	3	3	3	10	6	2	10	2	27	
Crop losses due to wild animal	0	0	0	3	8	9	1	3	2	1	5	1	12	
Difficulty for hiring draft animal/machinery	3	8	12	1	3	3	0	0	0	0	0	0	15	
Labor shortage	1	3	4	3	8	9	3	10	6	2	10	2	21	
Insufficient extension services	1	3	4	2	5	6	1	3	2	2	10	2	14	
Shortage of farming capital	1	3	4	2	5	6	2	7	4	2	10	2	16	
Difficulty for obtaining quality seeds	2	5	8	3	8	9	6	21	12	0	0	0	29	
Difficulty for purchasing fertilizers	4	10	16	3	8	9	3	10	6	1	5	1	32	3
Expensive farm inputs	0	0	0	1	3	3	1	3	2	1	5	1	6	
Poor soil conditions	3	8	12	6	16	18	3	10	6	3	15	3	39	2
Marketing problems of products	0	0	0	0	0	0	0	0	0	1	5	1	1	
Lack of farm credit	0	0	0	2	5	6	0	0	0	0	0	0	6	
Others	5	13	20	2	5	6	0	0	0	2	10	2	28	
Total	40	100	160	38	100	114	29	100	58	20	100	20	352	

2-2. Farming Constraints (physical)

Question What are serious physical constraints for farming? (select plural answer)

Farming Constraints/Physical (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water shortage in wet season	31	78	93	7	20	14	1	4	1	108	1
Irrigation water shortage in dry season	4	10	12	16	46	32	1	4	1	45	2
Inundation/flooding	1	3	3	2	6	4	3	12	3	10	
Drainage problem	3	8	9	4	11	8	12	46	3	17	3
Lack of farm road	0	0	0	1	3	2	1	4	1	3	
Lack of transportation means	0	0	0	2	6	4	4	15	4	8	
Leveling problem of paddy field	0	0	0	0	0	0	4	15	4	4	
Others	1	3	3	3	9	6	0	0	0	9	
Total	40	100	120	35	100	70	26	100	14	204	

2-3. Marketing constraints

Marketing Constraints (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Unstable market prices of paddy/rice	24	60	72	7	19	14	0	0	0	86	1
Low market prices of paddy/rice	12	30	36	11	30	22	2	9	2	60	2
Limitation of market of paddy/rice	0	0	0	3	8	6	0	0	0	6	
Unstable market prices of other crops	0	0	0	3	8	6	4	18	4	10	
Low market prices of other crops	2	5	6	0	0	0	0	0	0	6	
Limitation of market of other crops	0	0	0	2	5	4	0	0	0	4	
Unstable market prices of livestock	1	3	3	7	19	14	5	23	5	22	3
Low market prices of livestock	0	0	0	2	5	4	7	32	7	11	
Limitation of market of livestock	0	0	0	0	0	0	1	5	1	1	
Lack of or poor farm to market road	0	0	0	2	5	4	3	14	3	7	
Others	1	3	3	0	0	0	0	0	0	3	
Total	40	100	120	37	100	74	22	100	22	216	

2-4. Reasons for limited productivity of crops in the rice field of interviewee (not specific to last year)

Reasons for Limited Productivity (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Drought in wet season	29	73	87	8	20	16	0	0	0	103	1
Water shortage in dry season	4	10	12	8	20	16	0	0	0	28	3
Shortage of farming capital	1	3	3	5	13	10	3	10	3	16	
Poor seed quality	0	0	0	4	10	8	6	19	6	14	
Poor soil	1	3	3	10	25	20	7	23	7	30	2
Limited application of fertilizer	0	0	0	1	3	2	2	6	2	4	
Damages caused by wild animal (rat)	0	0	0	2	5	4	5	16	5	9	
Poor drainage	1	3	3	2	5	4	2	6	2	9	
Flooding/inundation	1	3	3	0	0	0	0	0	0	3	
Inadequate farming technologies	1	3	3	0	0	0	3	10	3	6	
Damages caused by pest & disease	0	0	0	0	0	0	3	10	3	3	
Others	2	5	6	0	0	0	0	0	0	6	
Total	40	100	120	40	100	80	31	100	31	231	

Attachment B1.4-1 Results of Socio-economic Survey: Wat Loung (2/3)

2-5. Activities/practices to improve rice productivity implemented by the interviewee in the past 3 years (plural answer)

Activities Implemented	No. & Proportion of Respondents Implemented Activities/Practices		Remarks
	No.	%	
Increased fertilization doses	32	25	No. of respondents : 40 Maximum 4 activities selected/respondent Total answers: 129
Application of compost/manure	20	16	
Used quality seed (local variety)	20	16	
Used quality seed (high yielding variety)	18	14	
Constructed of farm pond	1	1	
Started to use water pump for irrigation	19	15	
Improved farming practices	7	5	
Improved post-harvest practices	8	6	
Changed marketing methods	2	2	
Others	2	2	
Total	129	100	

2-6. Necessary activities to improve rice productivity in the field of the interviewee (farming & farm management; plural answer)

Necessary Activities	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 4			2nd Most Required Score: 3			3rd Most Required Score: 2			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Improvement of farming practices	11	28	44	5	13	15	3	10	6	5	24	5	70	2
Use of quality seed (local variety)	8	20	32	7	18	21	6	19	12	0	0	0	65	3
Use of quality seed (high yielding variety)	4	10	16	11	28	33	2	6	4	3	14	3	56	
Use of adequate doses of fertilizer	7	18	28	9	23	27	9	29	18	1	5	1	74	1
Improved leveling of paddy field	2	5	8	1	3	3	2	6	4	2	10	2	17	
Planting at proper time	1	3	4	2	5	6	3	10	6	2	10	2	18	
Intensive weeding	0	0	0	4	10	12	4	13	8	5	24	5	25	
Formation/strengthening of farmers organization	0	0	0	1	3	3	1	3	2	2	10	2	7	
Others	7	18	28	0	0	0	1	3	2	1	5	1	31	
Total	40	100	160	40	100	120	31	100	62	21	100	21	363	

2-7. Necessary physical works to improve rice productivity in the field of the interviewee (plural answer)

Necessary Physical Works	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water supply for wet season	30	75	90	7	19	14	2	10	2	0	0	0	106	1
Irrigation water supply for dry season	6	15	18	18	50	36	2	10	2	1	13	1	57	2
Mitigation of inundation/flooding	1	3	3	1	3	2	4	20	4	2	25	2	11	
Drainage improvement	0	0	0	9	25	18	11	55	11	2	25	2	31	3
Others	3	8	9	1	3	2	1	5	1	3	38	3	15	
Total	40	100	120	36	100	72	20	100	20	8	100	8	220	

3. Livestock Constraints

Livestock Constraints	Degree of Constraints												Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1							
	No.	%	Score	No.	%	Score	No.	%	Score					
Low productivity	12	30	36	8	22	16	4	16	4				56	2
Shortage of feed	5	13	15	5	14	10	2	8	2				27	3
Low or unstable market prices	3	8	9	4	11	8	5	20	5				22	
Market availability	0	0	0	1	3	2	1	4	1				3	
Losses due to diseases	18	45	54	10	27	20	4	16	4				78	1
Insufficient veterinary services	2	5	6	6	16	12	5	20	5				23	
Insufficient extension services	0	0	0	3	8	6	4	16	4				10	
Difficulty in obtaining good breed	0	0	0	0	0	0	0	0	0				0	
Others	0	0	0	0	0	0	0	0	0				0	
Total	40	100	120	37	100	74	25	100	25				219	

4. Expectations for Improvement

4-1. Farming (agronomic & farm management)

Expectations for Improvement	Degree of Expectation												Total Score	Rating
	Most Expected Score: 3			2nd Most Expected Score: 2			3rd Most Expected Score: 1							
	No.	%	Score	No.	%	Score	No.	%	Score					
Productivity improvement of wet season rice	31	78	93	6	16	12	0	0	0				105	1
Productivity improvement of dry season rice	5	13	15	11	29	22	2	7	2				39	2
Productivity improvement of field crops	1	3	3	8	21	16	3	10	3				22	3
Productivity improvement of vegetables	1	3	3	4	11	8	8	28	8				19	
Productivity improvement of livestock/poultry	0	0	0	4	11	8	4	14	4				12	
Increasing livestock holding size & production	0	0	0	3	8	6	9	31	9				15	
Increasing poultry holding size & production	0	0	0	1	3	2	3	10	3				5	
Strengthening/formation of farmers organizations	0	0	0	0	0	0	0	0	0				0	
Improvement of post-harvest operation	0	0	0	1	3	2	0	0	0				2	
Others	2	5	6	0	0	0	0	0	0				6	
Total	40	100	120	38	100	76	29	100	29				225	

Attachment B1.4-1 Results of Socio-economic Survey: Wat Loung (3/3)

4-2. Farming (farming system)

Farming System	Degree of Expectation									Total Score	Rating
	Primarily Intended Score: 3			Secondary Intended Score: 2			Thirdly Intended Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Double cropping of rice	28	70	84	6	17	12	1	5	1	97	1
Stable single cropping of rice	4	10	12	11	31	22	3	14	3	37	3
Multiple farming (crop + livestock etc.)	7	18	21	14	40	28	4	18	4	53	2
Crop diversification	1	3	3	4	11	8	14	64	14	25	
Others	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	35	100	70	22	100	22	212	

4-3. Farming (physical)

Farming (physical)	Degree of Expectation									Total Score	Rating
	Primarily Expected Score: 3			Secondary Expected Score: 2			Thirdly Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Adequate irrigation water supply in wet season	33	83	99	6	17	12	0	0	0	111	1
Adequate irrigation water supply in dry season	4	10	12	17	47	34	3	12	3	49	2
Mitigation of inundation & flooding	1	3	3	1	3	2	4	15	4	9	
Construction/rehabilitation of farm road	0	0	0	3	8	6	2	8	2	8	
Construction/rehabilitation of farm to market road	0	0	0	0	0	0	0	0	0	0	
Drainage improvement	0	0	0	7	19	14	11	42	11	25	3
Leveling of paddy field	0	0	0	2	6	4	5	19	5	9	
Others (specify)	2	5	6	0	0	0	1	4	1	7	
Total	40	100	114	36	100	72	26	100	26	218	

4-4. Agricultural support services

Agricultural Support Required	Degree of Necessity of Support									Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Field Extension services (demonstration / field guidance)	21	53	63	9	23	18	3	10	3	84	1
Provision of quality seed	16	40	48	12	30	24	0	0	0	72	2
Farmer training (technical & post-harvest operation)	2	5	6	13	33	26	9	29	9	41	3
Farmer training (organization, marketing, farm management)	1	3	3	4	10	8	5	16	5	13	
Support to organize farmers	0	0	0	1	3	2	2	6	2	4	
Provision of market information	0	0	0	1	3	2	1	3	1	3	
Provision of farm credit	0	0	0	0	0	0	0	0	0	0	
Provision of fertilizer	0	0	0	0	0	0	11	35	11	11	
Others (specify)	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	40	100	120	31	100	93	279	

Attachment B1.4-2 Results of Questionnaire Survey: Farming Practices Etc.: Wat Loung (1/4)

A. Farming Practices

A-1. Reason for fallow of rice field in Dry Season

Response (plural alternatives)	n	%
Labor shortage	0	0
Working capital shortage	0	0
Water shortage	39	100
Total	39	100

A-3. Reasons for selection of rice variety

Response (plural alternatives)	n	%
Good taste	5	16
High yield	11	34
Easy to cultivate	11	34
Short Term	5	16
Total	32	100

A-4. Seed sources: rice

Response (one alternative)	n	%
Own products	30	79
Exchange with others	6	16
Certified seed purchased	0	0
Others	2	5
Total	38	100

A-6. Seed sources: vegetables

Response (one alternative)	n	%
Own products	20	77
Exchange with others	1	4
Commercial seed procured at local market	2	8
Certified seed purchased	3	12
Total	26	100

A-8. Land preparation method

Response (one alternative)	n	%
Draft animal	30	79
Machinery	8	21
Manual	0	0
Total	38	100

A-10. No. of plants/hill (wet season): rice

Response (one alternative)	No./Hill
N	38
Mean	4.7
Minimum	3
Maximum	8

A-12. Fertilization Volume: Urea (unit: kg/ha)

Item	Kg/ha
N	37
Mean	56.5
STD	67
Minimum	0
Maximum	300

A-14. Fertilizer (Compost/Manure)

Item	Kg/ha
N	39
Mean	373
STD	474
Minimum	0
Maximum	2,000

A-16. Cleaning (method)

Response	n	%
Engine winnower	14	23
Manual winnower	1	2
Manual without winnower	45	75
Total	60	100

A-2. Rice variety: rainy season

Response (plural alternative)	n	%
Pka Malis	4	14
Kha	1	3
Chong Banla	10	34
Pka Rumdoul	1	3
Neang grit	2	7
Malis	4	14
Meang Ming	2	7
Pka Khnhay	5	17
Total	29	100

A-5. Seed sources: upland crops

Response (one alternative)	n	%
Own products	32	80
Exchange with others	3	8
Certified seed purchased	4	10
Local Seed	1	3
Total	40	100

A-7. Seed replacement of rice

Response (one alternative)	n	%
Once per 3 croppings	12	43
Once per 4 - 6 croppings	4	14
Once > 6 croppings	12	43
Total	28	100

A-9. Transplanting method: rainy season

Response (one alternative)	n	%
Regular planting	35	92
Random planting	3	8
Total	38	100

A-11. Age of seedling of rice (wet season)

Response (one alternative)	Age of Seeding
N	38
Mean	43.1 days
Minimum	30 days
Maximum	45 days

A-13. Fertilization Volume: DAP (unit: kg/ha)

Item	Kg/ha
N	37
Mean	27.9
STD	44
Minimum	0
Maximum	150

A-15. Threshing (method)

Response	n	%
Engine thresher	25	71
Pedal thresher	5	14
Manual threshing	5	14
Total	35	100

A-17. Drying (method)

Response	n	%
Sun drying	38	100
Dryer	0	0
Total	38	100

Attachment B1.4-2 Results of Questionnaire Survey: Farming Practices Etc.: Wat Loung (2/4)

B. Farm Input Supply

B-1. Procurement of certified seed

Response (one alternative)	n	%
Easy	20	54
Difficult	16	43
Not possible	1	3
Total	37	100

B-2. Procurement of wanted seed

Response (one alternative)	n	%
Easy	30	79
Difficult	7	18
Not possible	1	3
Total	38	100

B-3. Seed supply timing

Response (one alternative)	n	%
In time	24	63
Delayed	9	24
Not obtained	5	13
Total	38	100

B-4. Quality seed price

Response (one alternative)	n	%
Too expensive	10	27
Acceptable	5	14
Not purchased	22	59
Total	37	100

B-5. Procurement of wanted fertilizer

Response (one alternative)	n	%
Easy	33	83
Difficult	4	10
Not possible	3	8
Total	40	100

B-6. Fertilizer supply timing

Response (one alternative)	n	%
In time	32	80
Delayed	5	13
Not obtained	3	8
Total	40	100

B-7. Fertilizer price

Response (one alternative)	n	%
Too expensive	25	63
Acceptable	7	18
Not purchased	8	20
Total	40	100

C. Post-harvest

C-1. Rice milling cost (bran received by interviewee)

Item	Riel/ton
N	35
Mean	58,000
STD	7,255
Minimum	40,000
Maximum	70,000

C-2. Paddy storage (king of container used)

Response (one alternative)	n	%
Bag	9	24
Bamboo basket	12	32
Wooden box	17	45
Others	0	0
Total	38	100

C-3. Paddy (Maximum storage period; month)

Item	No.	%
0 - 6 months	12	32
7 - 12 months	26	68.4
Total	38	100.0

C-4. Rice (kind of container)

Response (one alternative)	n	%
Bag	38	100
Bamboo basket	0	0
Wooden box	0	0
Others	0	0
Total	38	100

C-5. Rice (Maximum storage period; month)

Item	Month
N	38
Mean	2.1
Minimum	1.0
Maximum	6

C-6. Roughly estimated total losses (% of production)

	%
N	38
Mean	3.7
Minimum	1
Maximum	10

C-7. Most dominant loss of paddy

Response (one alternative)	n	%
During harvesting	12	32
At threshing,	24	63
At drying	0	0
At cleaning	0	0
At storage	2	5
At other time	0	0
Total	38	100

C-8. Second dominant loss

Response (one alternative)	n	%
During harvesting	8	21
At threshing,	10	26
At drying	6	16
At cleaning	7	18
At storage	7	18
At other time	0	0
Total	38	100

Attachment B1.4-2 Results of Questionnaire Survey: Farming Practices Etc.: Wat Loung (3/4)

D. Marketing

D-1. Sold product

Response (one alternative)	n	%
Field dried paddy	11	42
Sun dried paddy	14	54
Milled rice	1	4
Total	26	100

proportion to total marketing volume

D-2. Market Destination of Paddy

Response	n	%
Rice miller in village	4	17
Rice miller in commune center	8	35
Rice miller in district center	3	13
Collector/middleman	6	26
Local market	1	4
Other	1	4
Total	23	100

D-3. Marketing of vegetable

Response	n	%
Market in village	31	100
Market in commune center	0	0
Market in district center	0	0
Collector/middleman	0	0
Other (specify)	0	0
Total	31	100

D-4. Marketing of field crops

Response	n	%
Market in village	17	50
Market in commune center	4	12
Market in district center	3	9
Collector/middleman	10	29
Other (specify)	0	0
Total	34	100

D-5. Marketing of livestock

Response	n	%
Market in village	23	61
Market in commune center	0	0
Market in district center	2	5
Collector/middleman	12	32
Other (specify)	1	3
Total	38	100

D-6. Marketing of other product (fish)

Response	n	%
Market in village	21	81
Market in commune center	3	12
Market in district center	2	8
Other (specify)	0	0
Total	26	100

E. Food Supply Conditions

E-1. Food supply condition (rice)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	28	70
Own harvest/ product is just enough to the household demand	4	10
Purchased (or exchanged) to meet the household demand	7	18
Insufficient	1	3
Total	40	100

E-2. Food supply condition (vegetables)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	12	38
Own harvest/ product is just enough to the household demand	7	22
Purchased (or exchanged) to meet the household demand	9	28
Insufficient	4	13
Total	32	100

E-3. Food supply condition (other cereals)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	5	23
Own harvest/ product is just enough to the household demand	2	9
Purchased (or exchanged) to meet the household demand	11	50
Insufficient	4	18
Total	22	100

E-4. Food supply condition (meat)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	4	15
Own harvest/ product is just enough to the household demand	4	15
Purchased (or exchanged) to meet the household demand	15	58
Insufficient	3	12
Total	26	100

E-5. Food supply condition (roots and tuber crops)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	4	18
Own harvest/ product is just enough to the household demand	3	14
Purchased (or exchanged) to meet the household demand	14	64
Insufficient	1	5
Total	22	100

E-6. Food condition (fish)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	21	54
Own harvest/ product is just enough to the household demand	2	5
Purchased (or exchanged) to meet the household demand	12	31
Insufficient	4	10
Total	39	100

E-7. Food supply condition (beans)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	1	5
Own harvest/ product is just enough to the household demand	1	5
Purchased (or exchanged) to meet the household demand	16	84
Insufficient	1	5
Total	19	100

E-8. Rice purchased in last year (kg)

	kg/farm
N	3
Proportion to sample farmers (39)	8%
Mean (per respondent)	6
Minimum	0
Maximum	140

Attachment B1.4-2 Results of Questionnaire Survey: Farming Practices Etc.: Wat Loung (4/4)

F. Extension Services

F-1. Visit of extension worker

Response (one alternative)	n	%
One per < week	1	3
Once per 2 weeks-1 month	9	23
Seldom visited	30	75
Total	40	100

F-2. Technical capability of extension workers

Response (one alternative)	n	%
Sufficient	20	80
Not sufficient	1	4
No service provided	4	16
Total	25	100

F-3. Are you satisfied with current extension services

Response (one alternative)	n	%
Satisfied	35	88
Not satisfied	2	5
No service provided	3	8
Total	40	100

F-4. What kind of extension services are you needed

Response (specified)	n	%
Technical training & technical guidance	7	21
Fertilizer application & compost	2	6
visit of extension staff	7	21
Seed/farm input supply	2	6
Water management	1	3
Text book	2	6
Practice and demonstrate	13	38
Total	34	100

Totals exceed 100% due to multiple responses

G. Farm Credit

G-1. Access to farm credit

Response (one alternative)	n	%
Easy	14	35
Difficult	7	18
Not provided	19	48
Total	40	100

G-2. Timing of provision

Response (one alternative)	n	%
In time	13	33
Delayed	9	23
Not provided	18	45
Total	40	100

G-3. Amount of credit

Response (one alternative)	n	%
Sufficient	10	25
Not sufficient	11	28
Not provided	19	48
Total	40	100

G-4. Procedures for credit application

Response (one alternative)	n	%
Easy	7	23
Difficult	14	47
Not possible	9	30
Total	30	100

Attachment B1.5-1 Results of Socio-economic Survey : Wat Chre (1/3)

1. Design of Sample Survey

Sample Number 40 farmers	No. of villages 4 villages	Survey method Interview survey by enumerators
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2. Farming Constraints and Improvement

2-1. Farming Constraints (agronomic & farm management)

Question What are serious agronomic & farm management constraints for farming ? (select plural answer)

Farming constraint (agronomic/farm management)	Degree of Constraints												Total Score	Rating
	Most Serious Score: 4			2nd Serious Score: 3			3rd Serious Score: 2			4th Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Low yield of crops (paddy)	16	40	64	1	3	3	2	7	4	1	6	1	72	1
Crop losses due to pest & disease	3	8	12	4	11	12	0	0	0	1	6	1	25	
Weed problem	0	0	0	1	3	3	1	4	2	1	6	1	6	
Crop losses due to wild animal	1	3	4	1	3	3	0	0	0	0	0	0	7	
Difficulty for hiring draft animal/machinery	0	0	0	3	8	9	4	15	8	0	0	0	17	
Labor shortage	3	8	12	4	11	12	2	7	4	2	12	2	30	
Insufficient extension services	0	0	0	3	8	9	4	15	8	4	24	4	21	
Shortage of farming capital	2	5	8	3	8	9	1	4	2	2	12	2	21	
Difficulty for obtaining quality seeds	3	8	12	3	8	9	3	11	6	2	12	2	29	
Difficulty for purchasing fertilizers	4	10	16	3	8	9	0	0	0	2	12	2	27	
Expensive farm inputs	0	0	0	1	3	3	1	4	2	0	0	0	5	
Poor soil conditions	3	8	12	7	18	21	6	22	12	0	0	0	45	2
Marketing problems of products	0	0	0	1	3	3	1	4	2	1	6	1	6	
Lack of farm credit	0	0	0	0	0	0	1	4	2	0	0	0	2	
Others	5	13	20	3	8	9	1	4	2	1	6	1	32	3
Total	40	100	160	38	100	114	27	100	54	17	100	17	345	

2-2. Farming Constraints (physical)

Question What are serious physical constraints for farming ? (select plural answer)

Farming Constraints/Physical (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water shortage in wet season	36	92	108	3	10	6	1	6	1	115	1
Irrigation water shortage in dry season	0	0	0	17	55	34	0	0	0	34	2
Inundation/flooding	0	0	0	0	0	0	0	0	0	0	
Drainage problem	1	3	3	7	23	14	6	33	6	17	3
Lack of farm road	0	0	0	0	0	0	5	28	5	5	
Lack of transportation means	0	0	0	2	6	4	5	28	5	9	
Leveling problem of paddy field	0	0	0	0	0	0	1	6	1	1	
Others	2	5	6	2	6	4	0	0	0	10	
Total	39	100	117	31	100	62	18	100	12	191	

2-3. Marketing constraints

Marketing Constraints (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Unstable market prices of paddy/rice	18	47	54	7	22	14	2	11	2	70	1
Low market prices of paddy/rice	12	32	36	7	22	14	0	0	0	50	2
Limitation of market of paddy/rice	1	3	3	4	13	8	0	0	0	11	
Unstable market prices of other crops	2	5	6	2	6	4	3	17	3	13	
Low market prices of other crops	3	8	9	0	0	0	3	17	3	12	
Limitation of market of other crops	0	0	0	0	0	0	0	0	0	0	
Unstable market prices of livestock	1	3	3	6	19	12	3	17	3	18	3
Low market prices of livestock	0	0	0	5	16	10	5	28	5	15	
Limitation of market of livestock	0	0	0	0	0	0	1	6	1	1	
Lack of or poor farm to market road	1	3	3	1	3	2	1	6	1	6	
Others	0	0	0	0	0	0	0	0	0	0	
Total	38	100	114	32	100	64	18	100	18	196	

2-4. Reasons for limited productivity of crops in the rice field of interviewee (not specific to last year)

Reasons for Limited Productivity (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Drought in wet season	35	88	105	1	3	2	1	3	1	108	1
Water shortage in dry season	1	3	3	12	30	24	1	3	1	28	3
Shortage of farming capital	0	0	0	3	8	6	8	27	8	14	
Poor seed quality	1	3	3	2	5	4	4	13	4	11	
Poor soil	0	0	0	16	40	32	7	23	7	39	2
Limited application of fertilizer	0	0	0	0	0	0	2	7	2	2	
Damages caused by wild animal (rat)	0	0	0	3	8	6	1	3	1	7	
Poor drainage	1	3	3	0	0	0	3	10	3	6	
Flooding/inundation	0	0	0	0	0	0	0	0	0	0	
Inadequate farming technologies	0	0	0	3	8	6	3	10	3	9	
Damages caused by pest & disease	0	0	0	0	0	0	0	0	0	0	
Others	2	5	6	0	0	0	0	0	0	6	
Total	40	100	120	40	100	80	30	100	30	230	

Attachment B1.5-1 Results of Socio-economic Survey: Wat Chre (2/3)

2-5. Activities/practices to improve rice productivity implemented by the interviewee in the past 3 years (plural answer)

Activities Implemented	No. & Proportion of Respondents Implemented Activities/Practices		Remarks
	No.	%	
Increased fertilization doses	34	29	No. of respondents : 40 Maximum 4 activities selected/respondent Total answers: 119
Application of compost/manure	20	17	
Used quality seed (local variety)	20	17	
Used quality seed (high yielding variety)	18	15	
Constructed of farm pond	1	1	
Started to use water pump for irrigation	12	10	
Improved farming practices	7	6	
Improved post-harvest practices	2	2	
Changed marketing methods	3	3	
Others	2	2	
Total	119	100	

2-6. Necessary activities to improve rice productivity in the field of the interviewee (farming & farm management; plural answer)

Necessary Activities	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 4			2nd Most Required Score: 3			3rd Most Required Score: 2			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Improvement of farming practices	16	40	64	4	10	12	5	16	10	1	5	1	87	1
Use of quality seed (local variety)	6	15	24	6	15	18	3	10	6	4	21	4	52	
Use of quality seed (high yielding variety)	6	15	24	14	35	42	3	10	6	1	5	1	73	2
Use of adequate doses of fertilizer	7	18	28	4	10	12	8	26	16	4	21	4	60	3
Improved leveling of paddy field	0	0	0	1	3	3	0	0	0	0	0	0	3	
Planting at proper time	1	3	4	5	13	15	3	10	6	0	0	0	25	
Intensive weeding	0	0	0	4	10	12	5	16	10	4	21	4	26	
Formation/strengthening of farmers organization	1	3	4	1	3	3	2	6	4	3	16	3	14	
Others	3	8	12	1	2.5	3	2	6	4	2	11	2	21	
Total	40	100	160	40	100	120	31	100	62	19	100	19	361	

2-7. Necessary physical works to improve rice productivity in the field of the interviewee (plural answer)

Necessary Physical Works	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water supply for wet season	35	88	105	4	13	8	1	5	1	0	0	0	114	1
Irrigation water supply for dry season	1	3	3	21	68	42	2	11	2	1	14	1	48	2
Mitigation of inundation/flooding	0	0	0	0	0	0	1	5	1	3	43	3	4	
Drainage improvement	2	5	6	5	16	10	12	63	12	0	0	0	28	3
Others	2	5	6	1	3	2	3	16	3	3	43	3	14	
Total	40	100	120	31	100	62	19	100	19	7	100	7	208	

3. Livestock Constraints

Livestock Constraints	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Low productivity	14	36	42	5	14	10	4	14	4	56	2
Shortage of feed	6	15	18	8	22	16	1	3	1	35	3
Low or unstable market prices	3	8	9	5	14	10	4	14	4	23	
Market availability	0	0	0	1	3	2	1	3	1	3	
Losses due to diseases	14	36	42	13	35	26	4	14	4	72	1
Insufficient veterinary services	0	0	0	5	14	10	10	34	10	20	
Insufficient extension services	2	5	6	0	0	0	5	17	5	11	
Difficulty in obtaining good breed	0	0	0	0	0	0	0	0	0	0	
Others	0	0	0	0	0	0	0	0	0	0	
Total	39	100	117	37	100	74	29	100	29	220	

4. Expectations for Improvement

4-1. Farming (agronomic & farm management)

Expectations for Improvement	Degree of Expectation									Total Score	Rating
	Most Expected Score: 3			2nd Most Expected Score: 2			3rd Most Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Productivity improvement of wet season rice	35	88	105	3	8	6	0	0	0	111	1
Productivity improvement of dry season rice	2	5	6	15	38	30	0	0	0	36	2
Productivity improvement of field crops	1	3	3	11	28	22	8	26	8	33	3
Productivity improvement of vegetables	0	0	0	1	3	2	5	16	5	7	
Productivity improvement of livestock/poultry	0	0	0	2	5	4	3	10	3	7	
Increasing livestock holding size & production	0	0	0	8	20	16	2	6	2	18	
Increasing poultry holding size & production	0	0	0	0	0	0	8	26	8	8	
Strengthening/formation of farmers organizations	0	0	0	0	0	0	5	16	5	5	
Improvement of post-harvest operation	2	5	6	0	0	0	0	0	0	6	
Others	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	40	100	80	31	100	31	231	

Attachment B1.5-1 Results of Socio-economic Survey : Wat Chre (3/3)

4-2. Farming (farming system)

Farming System	Degree of Expectation									Total Score	Rating
	Primarily Intended Score: 3			Secondary Intended Score: 2			Thirdly Intended Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Double cropping of rice	33	83	99	1	3	2	0	0	0	101	1
Stable single cropping of rice	3	8	9	11	32	22	2	9	2	33	3
Multiple farming (crop + livestock etc.)	2	5	6	17	50	34	6	27	6	46	2
Crop diversification	2	5	6	5	15	10	14	64	14	30	
Others	0	0	0	0	0	0	0	0	0	0	
Total	40	100	120	34	100	68	22	100	22	210	

4-3. Farming (physical)

Farming (physical)	Degree of Expectation									Total Score	Rating
	Primarily Expected Score: 3			Secondary Expected Score: 2			Thirdly Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Adequate irrigation water supply in wet season	34	85	102	5	15	10	0	0	0	112	1
Adequate irrigation water supply in dry season	2	5	6	19	58	38	3	13	3	47	2
Mitigation of inundation & flooding	1	3	3	0	0	0	3	13	3	6	
Construction/rehabilitation of farm road	0	0	0	0	0	0	1	4	1	1	
Construction/rehabilitation of farm to market road	1	3	3	1	3	2	2	9	2	7	
Drainage improvement	0	0	0	6	18	12	11	48	11	23	3
Leveling of paddy field	0	0	0	1	3	2	3	13	3	5	
Others (specify)	2	5	6	1	3	2	0	0	0	8	
Total	40	100	114	33	100	66	23	100	23	209	

4-4. Agricultural support services

Agricultural Support Required	Degree of Necessity of Support									Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Field Extension services (demonstration / field guidance)	26	67	78	7	18	14	2	6	2	94	1
Provision of quality seed	8	21	24	18	46	36	1	3	1	61	2
Farmer training (technical & host-harvest operation)	3	8	9	10	26	20	13	42	13	42	3
Farmer training (organization, marketing, farm management)	0	0		3	8	6	4	13	4	10	
Support to organize farmers	0	0		1	3	2	3	10	3	5	
Provision of market information	0	0	0	0	0	0	3	10	3	3	
Provision of farm credit	0	0		0	0	0	0	0	0	0	
Provision of fertilizer	2	5	6	0	0	0	4	13	4	10	
Others (specify)	0	0		0	0	0	1	3	1	1	
Total	39	100	117	39	100	117	31	100	93	279	

Attachment B1.5-2 Results of Questionnaire Survey: Farming Practices Etc. Wat Chre (1/4)

A. Farming Practices

A-1. Reason for fallow of rice field in Dry Season

Response (plural alternatives)	n	%
Labor shortage	1	3
Working capital shortage	0	0
Water shortage	33	97
Total	34	100

A-3. Reasons for selection of rice variety

Response (plural alternatives)	n	%
High yield	15	19
Short Term	6	7
Suitable to own fields	4	5
Easy to cultivate	2	2
Good taste/high quality	2	2
Traditional variety	1	1
High price in market price	2	2
Others	8	10
Respondents	40	

A-5. Seed replacement of rice

Response (one alternative)	n	%
Once per 3 croppings	13	50
Once per 4 - 6 croppings	2	8
Once > 6 croppings	11	42
Total	26	100

A-7. Age of seedling of rice (wet season)

Response (one alternative)	Age of Seeding
N	40
Mean	44.5 days
Minimum	30 days
Maximum	60 days

A-10. Fertilization Volume: Urea (unit: kg/ha)

Item	Kg/ha
N	40
Mean	40
STD	64
Minimum	0
Maximum	300

A-12. Fertilizer (Compost/Manure)

Item	Kg/ha
N	40
Mean	260
STD	382
Minimum	0
Maximum	2,000

A-14. Threshing (method)

Response	n	%
Engine thresher	33	83
Pedal thresher	6	15
Manual threshing	1	3
Total	40	100

A-16. Drying (method)

Response	n	%
Sun drying	39	98
Dryer	1	3
Total	40	100

A-2. Rice variety: rainy season

Response (plural alternative)	n	%
Phka Runduol	14	35
Kha Pram	14	35
Neang Noy	7	18
Phka Mulis (Somali)	6	15
Riang Chey	3	8
Neang Keo	2	5
Chong Banla	2	5
Others	11	28
Respondents	40	

A-4. Seed sources: rice

Response (one alternative)	n	%
Own products	31	78
Exchange with others	7	18
Certified seed purchased	1	3
Others	1	3
Total	40	100

A-6. No. of plants/hill (wet season): rice

Response (one alternative)	No./Hill
N	40
Mean	5.0
Minimum	1
Maximum	10

A-8. Land preparation method

Response (one alternative)	n	%
Draft animal	31	84
Machinery	6	16
Manual	0	0
Total	37	100

A-11. Fertilization Volume: DAP (unit: kg/ha)

Item	Kg/ha
N	40
Mean	20
STD	32
Minimum	0
Maximum	100

A-13. Transplanting method: rainy season

Response (one alternative)	n	%
Regular planting (random line planting) 1/	33	83
Random planting	7	18
Total	40	100

1/: appears to be line planting without using planting line

A-15. Cleaning (method)

Response	n	%
Engine winnower	16	52
Manual winnower	3	10
Manual without winnower	12	39
Total	31	100

Attachment B1.5-2 Results of Questionnaire Survey: Farming Practices Etc. Wat Chre (2/4)

B. Farm Input Supply

B-1. Procurement of certified seed

Response (one alternative)	n	%
Easy	20	56
Difficult	13	36
Not possible	3	8
Total	36	100

B-2. Procurement of wanted seed

Response (one alternative)	n	%
Easy	25	68
Difficult	10	27
Not possible	2	5
Total	37	100

B-3. Seed supply timing

Response (one alternative)	n	%
In time	25	68
Delayed	8	22
Not obtained	4	11
Total	37	100

B-4. Quality seed price

Response (one alternative)	n	%
Too expensive	9	24
Acceptable	3	8
Not purchased	25	68
Total	37	100

B-5. Procurement of wanted fertilizer

Response (one alternative)	n	%
Easy	28	76
Difficult	7	19
Not possible	2	5
Total	37	100

B-6. Fertilizer supply timing

Response (one alternative)	n	%
In time	28	76
Delayed	7	19
Not obtained	2	5
Total	37	100

B-7. Fertilizer price

Response (one alternative)	n	%
Too expensive	27	73
Acceptable	6	16
Not purchased	4	11
Total	37	100

C. Post-harvest

C-1. Rice milling cost (bran received by interviewee)

Item	Riel/ton
N	34
Mean	40,755
STD	23,879
Minimum	3,400
Maximum	100,000

C-2. Paddy storage (kind of container used)

Response (one alternative)	n	%
Bag	12	30
Bamboo basket	8	20
Wooden box	19	48
Others	1	3
Total	40	100

C-3. Paddy (Maximum storage period; month)

Item	No.	%
0 - 6 months	14	35
7 - 12 months	26	65
Total	40	100

C-4. Rice (kind of container)

Response (one alternative)	n	%
Bag	40	100
Bamboo basket	0	0
Wooden box	0	0
Others	0	0
Total	40	100

C-5. Rice (Maximum storage period; month)

Item	Month
N	39
Mean	1.3
STD	1.0
Minimum	1
Maximum	6

C-6. Roughly estimated total losses (% of production)

	%
N	35
Mean	4.0
STD	3.9
Minimum	0.5
Maximum	15

C-7. Most dominant loss of paddy

Response (one alternative)	n	%
During harvesting	13	12
At threshing	21	19
At drying	2	2
At cleaning	1	1
At storage	3	3
At other time	0	0
Total	40	36

C-8. Second dominant loss

Response (one alternative)	n	%
During harvesting	10	25
At threshing	9	23
At drying	5	13
At cleaning	4	10
At storage	11	28
At other time	1	3
Total	40	100

Attachment B1.5-2 Results of Questionnaire Survey: Farming Practices Etc. Wat Chre (3/4)

D. Marketing

D-1. Sold product

Response (one alternative)	n	%
Field dried paddy	7	47
Sun dried paddy	6	40
Milled rice	2	13
Total	15	100

proportion to total marketing volume

D-3. Marketing of vegetable

Response	n	%
Market in village	31	84
Market in commune center	6	16
Market in district center	0	0
Collector/middleman	0	0
Other (specify)	0	0
Total	37	100

D-5. Marketing of livestock

Response	n	%
Market in village	19	51
Market in commune center	7	19
Market in district center	0	0
Collector/middleman	10	27
Other (specify)	1	3
Total	37	100

E. Food Supply Conditions

E-1. Food supply condition (rice)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	21	53
Own harvest/ product is just enough to the household demand	8	20
Purchased (or exchanged) to meet the household demand	2	5
Insufficient	9	23
Total	40	100

E-3. Food supply condition (beans)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	11
Own harvest/ product is just enough to the household demand	1	6
Purchased (or exchanged) to meet the household demand	13	72
Insufficient	2	11
Total	18	100

E-5. Food supply condition (roots and tuber crops)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	13
Own harvest/ product is just enough to the household demand	1	6
Purchased (or exchanged) to meet the household demand	10	63
Insufficient	3	19
Total	16	100

E-7. Food supply condition (other cereals)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	3	17
Own harvest/ product is just enough to the household demand	4	22
Purchased (or exchanged) to meet the household demand	8	44
Insufficient	3	17
Total	18	100

D-2. Market Destination of Paddy

Response	n	%
Rice miller in village	0	0
Rice miller in commune center	1	7
Rice miller in district center	1	7
Collector/middleman	12	80
Local market	1	7
Total	15	100

D-4. Marketing of field crops

Response	n	%
Market in village	20	53
Market in commune center	7	18
Market in district center	3	8
Collector/middleman	8	21
Other (specify)	0	0
Total	38	100

D-6. Marketing of other product (fish)

Response	n	%
Market in village	19	73
Market in commune center	3	12
Market in district center	4	15
Other (specify)	0	0
Total	26	100

E-2. Food supply condition (vegetables)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	11	39
Own harvest/ product is just enough to the household demand	6	21
Purchased (or exchanged) to meet the household demand	9	32
Insufficient	2	7
Total	28	100

E-4. Food supply condition (meat)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	8
Own harvest/ product is just enough to the household demand	5	19
Purchased (or exchanged) to meet the household demand	14	54
Insufficient	5	19
Total	26	100

E-6. Food condition (fish)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	3	13
Own harvest/ product is just enough to the household demand	3	13
Purchased (or exchanged) to meet the household demand	11	48
Insufficient	6	26
Total	23	100

E-8. Rice purchased in last year (kg)

	kg/farm
N	6
Proportion to sample farmers (40)	15%
Mean (per respondent)	105
Minimum	0
Maximum	1,500

Attachment B1.5-2 Results of Questionnaire Survey: Farming Practices Etc. Wat Chre (4/4)

F. Extension Services

F-1. Visit of extension worker

Response (one alternative)	n	%
One per < week	1	3
Once per 2 weeks-1 month	10	25
Seldom visited	29	73
Total	40	100

F-3. Are you satisfied with current extension services

Response (one alternative)	n	%
Satisfied	25	63
Not satisfied	7	18
No service provided	8	20
Total	40	100

F-2. Technical capability of extension workers

Response (one alternative)	n	%
Sufficient	17	43
Not sufficient	13	33
No service provided	10	25
Total	40	100

F-4. What kind of extension services are you needed

Response (specified)	n	%
Technical training & technical guidance	27	30
visit of extension staff	6	7
Seed/farm input supply	3	3
Others	1	1
Total	37	41

Totals exceed 100% due to multiple responses

G. Farm Credit

G-1. Access to farm credit

Response (one alternative)	n	%
Easy	11	39
Difficult	6	21
Not provided	11	39
Total	28	100

G-2. Timing of provision

Response (one alternative)	n	%
In time	10	36
Delayed	7	25
Not provided	11	39
Total	28	100

G-3. Amount of credit

Response (one alternative)	n	%
Sufficient	7	25
Not sufficient	8	29
Not provided	13	46
Total	28	100

G-4. Procedures for credit application

Response (one alternative)	n	%
Easy	4	14
Difficult	10	36
Not possible	14	50
Total	28	100

Attachment B1.6-1 Results of Interview Survey in Major Communes Located in Lum Hach Sub-project Area

Anchanh Rang Commune (Interview with Commune Office)		Phsar Commune (Interview with Commune Office)		Boribo District (Interview with DAO)	
Wet Season	Transplanting 100% Sowing End May - Early July Transplanting Early July - Early Sep. (latest) Harvesting Early Nov. - End Dec./Early Jan. (in elevated fields, transplanting postponed till Sep. due to water shortage & early variety grown) Variety Phka Rumduol, Sen Pidao, CAR 4 Common: local {Phka Sla (m), Neang Sor (m)} Local (Chumreak Phdov) Yield level 0.8 - 0.9 t/ha (due to sandy soils) Irrigated Area No irrigated area even in wet season Reasons for Cultivating Local Varieties - Hard rice (local variety) preferred - Farmers don't want change	Wet Season	Transplanting 100% Sowing End June - End Aug. Transplanting End July - End Sep. (latest) Harvesting Mid. Nov. - End Dec. (in elevated fields, transplanting postponed till Sep. due to water shortage) Variety Prevailing: Chong Prola, Phka Slar CAR 5, CAR 6, Preah Prasat, Phka Rumduol	Wet Season	Transplanting 100% Sowing End May - Early July Transplanting Mid. July - Mid. Sep. Harvesting Mid. Nov. - Mid. Dec. Variety Phka Rumduol, Riang Chey, CAR 5, CAR 9 Local (Klpor Donag, Chumreak Pdiv, Krim) Yield level 1.9 t/ha No cropping of rice (recently stopped because of no water)
Dry Season	No cropping of rice	Dry Season	No cropping of rice New Irrigated Area from 2008: 100 - 200ha Double cropping of rice planned No other crops in paddy fields	Dry Season	
Other Crops in Paddy Field	Cucumber Location (village) Stueng Thmei, Thlok Chrov Area About 30 - 40ha Cropping Season (short variety: about 1.5 month) End Apr. - Early/Mid. June Reasons not cropping in early wet season in paddy fields - Grazing cattle damages crops - No experiences & technical knowledge - Tomato cultivation tried in commune, but affected by disease - Only short duration crop like cucumber can be grown - Watermelon cultivation not yet tried	Other Crops in Paddy Field	Cucumber cultivated outside of the Project Area Reasons not cropping in early wet season in paddy fields - Tried but failed - Poor soil conditions	Other Crops in Paddy Field	Watermelon, cucumber Location (3 communes; about 150ha in district) Mellum, Anhchaanh Rung, Popel Cropping Season Jan. - March (mostly watermelon) Early Apr. - Mid. May (mostly cucumber) Reasons not cropping in early wet season in paddy fields - Growing only in sandy soils; watermelon etc. - Farmers perception - Extension efforts to introduce other crops; only watermelon & cucumber accepted Possible crops - Corn, string beans, egg plant, lettuce, tomato, Chinese cabbage; short growing period crops - Mungbeans & groundnut: possible
Crops Grown in Upland Fields	Dry Season (End Oct. - Mid. Feb.) Cucumber, leaf vegetables, string beans, radish Wet Season (Mid. May - Early/Mid. July) Watermelon, string beans Problems etc.: - Too much rain in wet season - No experiences & farmers perception	Crops Grown in Upland Fields	Cucumber, cassava, sweat potato, gourd in home yard Cropping Season End May - Mid. Nov.	Crops Grown in Upland Fields	String beans, cucumber, sweat potato, green pepper, cassava, taro 200 ha in wet season 1,500 ha in dry season (pumping) Cropping Season Wet season: May - Dec./Jan. Dry season: End Dec. - End Apr.
Land Use		Land Use		Constraints	- Water shortage - Seed quality (farmers use self-multiplied seeds) - Polpot canals not functioning - No serious insect/pest
NCCD in 2008	- Road construction - Vaccination of animal	NCCD in 2008	- Road construction		
Prevailing Marketing Channel	Paddy: sell to collector coming to village Vegetable: sell to collector coming to village				

Attachment B1.6-2 Results of Socio-economic Survey: Lum Hach (1/3)

1. Design of Sample Survey

Sample Number 60 farmers	No. of villages 3 villages	Survey method Interview survey by enumerators
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2. Farming Constraints and Improvement

2-1. Farming Constraints (agronomic & farm management)

Question What are serious agronomic & farm management constraints for farming ? (select plural answer)

Farming constraint (agronomic/farm management)	Degree of Constraints												Total Score	Rating
	Most Serious Score: 4			2nd Serious Score: 3			3rd Serious Score: 2			4th Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Low yield of crops (paddy)	28	47	112	6	10	18	1	2	2	5	15	5	137	1
Crop losses due to pest & disease	8	13	32	4	7	12	5	10	10	1	3	1	55	
Weed problem	0	0	0	8	13	24	6	12	12	0	0	0	36	
Crop losses due to wild animal	2	3	8	1	2	3	2	4	4	0	0	0	15	
Difficulty for hiring draft animal/machinery	1	2	4	3	5	9	1	2	2	2	6	2	17	
Labor shortage	4	7	16	10	17	30	5	10	10	5	15	5	61	3
Insufficient extension services	0	0	0	10	17	30	2	4	4	1	3	1	35	
Shortage of farming capital	2	3	8	6	10	18	7	13	14	7	21	7	47	
Difficulty for obtaining quality seeds	1	2	4	4	7	12	3	6	6	2	6	2	24	
Difficulty for purchasing fertilizers	0	0	0	0	0	0	9	17	18	2	6	2	20	
Expensive farm inputs	0	0	0	0	0	0	0	0	0	0	0	0	0	
Poor soil conditions	8	13	32	8	13	24	8	15	16	8	24	8	80	2
Marketing problems of products	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lack of farm credit	0	0	0	0	0	0	0	0	0	0	0	0	0	
Others	6	10	24	0	0	0	3	6	6	0	0	0	30	
Total	60	100	240	60	100	180	52	100	104	33	100	33	557	

2-2. Farming Constraints (physical)

Question What are serious physical constraints for farming ? (select plural answer)

Farming Constraints/Physical (Answer)	Degree of Constraints									Total Score	Rating	
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1					
	No.	%	Score	No.	%	Score	No.	%	Score			
Irrigation water shortage in wet season	48	80	144	5	9	10	4	11	4	158	1	
Irrigation water shortage in dry season	6	10	18	21	39	42	0	0	0	60	2	
Inundation/flooding	0	0	0	1	2	2	0	0	0	2		
Drainage problem	1	2	3	16	30	32	15	41	15	50	3	
Lack of farm road	1	2	3	2	4	4	4	7	19	7	14	
Lack of transportation means	1	2	3	6	11	12	6	16	6	21		
Leveling problem of paddy field	0	0	0	1	2	2	2	5	2	4		
Others	3	5	9	2	4	4	3	8	3	16		
Total	60	100	180	54	100	108	37	100	37	325		

2-3. Marketing constraints

Marketing Constraints (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Unstable market prices of paddy/rice	29	53	87	6	12	12	2	6	2	101	1
Low market prices of paddy/rice	8	15	24	12	24	24	0	0	0	48	2
Limitation of market of paddy/rice	1	2	3	4	8	8	2	6	2	13	
Unstable market prices of other crops	3	5	9	3	6	6	10	29	10	25	
Low market prices of other crops	3	5	9	2	4	4	5	15	5	18	
Limitation of market of other crops	0	0	0	0	0	0	0	0	0	0	
Unstable market prices of livestock	3	5	9	6	12	12	5	15	5	26	
Low market prices of livestock	2	4	6	11	22	22	6	18	6	34	3
Limitation of market of livestock	3	5	9	5	10	10	1	3	1	20	
Lack of or poor farm to market road	3	5	9	2	4	4	3	9	3	16	
Others	0	0	0	0	0	0	0	0	0	0	
Total	55	100	165	51	100	102	34	100	34	301	

2-4. Reasons for limited productivity of crops in the rice field of interviewee (not specific to last year)

Reasons for Limited Productivity (Answer)	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Drought in wet season	46	77	138	9	15	18	1	2	1	157	1
Water shortage in dry season	3	5	9	17	28	34	1	2	1	44	3
Shortage of farming capital	2	3	6	6	10	12	5	9	5	23	
Poor seed quality	2	3	6	8	13	16	11	20	11	33	
Poor soil	4	7	12	15	25	30	17	31	17	59	2
Limited application of fertilizer	0	0	0	0	0	0	2	4	2	2	
Damages caused by wild animal (rat)	1	2	3	2	3	4	7	13	7	14	
Poor drainage	0	0	0	1	2	2	2	4	7	4	
Flooding/inundation	0	0	0	0	0	0	0	0	0	0	
Inadequate farming technologies	0	0	0	1	2	2	4	7	4	6	
Damages caused by pest & disease	1	2	3	0	0	0	2	4	2	5	
Others	1	2	3	1	2	2	1	2	1	6	
Total	60	100	180	60	100	120	55	100	55	355	

Attachment B1.6-2 Results of Socio-economic Survey: Lum Hach (2/3)

2-5. Activities/practices to improve rice productivity implemented by the interviewee in the past 3 years (plural answer)

Activities Implemented	No. & Proportion of Respondents Implemented Activities/Practices		Remarks
	No.	%	
Increased fertilization doses	43	24	No. of respondents : 60 Maximum 4 activities selected/respondent Total answers: 178
Application of compost/manure	40	22	
Used quality seed (local variety)	26	15	
Used quality seed (high yielding variety)	35	20	
Constructed of farm pond	2	1	
Started to use water pump for irrigation	6	3	
Improved farming practices	20	11	
Improved post-harvest practices	1	1	
Changed marketing methods	2	1	
Others	3	2	
Total	178	100	

2-6. Necessary activities to improve rice productivity in the field of the interviewee (farming & farm management; plural answer)

Necessary Activities	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 4			2nd Most Required Score: 3			3rd Most Required Score: 2			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Improvement of farming practices	29	50	116	5	9	15	4	9	8	1	4	1	140	1
Use of quality seed (local variety)	11	19	44	9	16	27	6	13	12	4	15	4	87	3
Use of quality seed (high yielding variety)	7	12	28	17	29	51	15	32	30	2	7	2	111	2
Use of adequate doses of fertilizer	7	12	28	11	19	33	5	11	10	2	7	2	73	
Improved leveling of paddy field	0	0	0	1	2	3	3	6	6	4	15	4	13	
Planting at proper time	0	0	0	8	14	24	5	11	10	4	15	4	38	
Intensive weeding	1	2	4	4	7	12	5	11	10	5	19	5	31	
Formation/strengthening of farmers organization	1	2	4	1	2	3	4	9	8	4	15	4	19	
Others	2	3	8	2	3	6	0	0	0	1	4	1	15	
Total	58	100	232	58	100	174	47	100	94	27	100	27	527	

2-7. Necessary physical works to improve rice productivity in the field of the interviewee (plural answer)

Necessary Physical Works	Degree of Necessity of Activity												Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1			4th Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score	No.	%	Score		
Irrigation water supply for wet season	47	80	141	9	17	18	4	13	4	0	0	0	163	1
Irrigation water supply for dry season	10	17	30	25	47	50	2	6	2	4	27	4	86	2
Mitigation of inundation/flooding	0	0	0	3	6	6	2	6	2	4	27	4	12	
Drainage improvement	1	2	3	14	26	28	16	52	16	4	27	4	51	3
Others	1	2	3	2	4	4	7	23	7	3	20	3	17	
Total	59	100	177	53	100	106	31	100	31	15	100	15	329	

3. Livestock Constraints

Livestock Constraints	Degree of Constraints									Total Score	Rating
	Most Serious Score: 3			2nd Serious Score: 2			3rd Serious Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Low productivity	20	33	60	7	12	14	7	15	7	81	2
Shortage of feed	12	20	36	7	12	14	6	13	6	56	3
Low or unstable market prices	6	10	18	7	12	14	5	11	5	37	
Market availability	1	2	3	2	3	4	0	0	0	7	
Losses due to diseases	20	33	60	21	36	42	12	26	12	114	1
Insufficient veterinary services	1	2	3	12	20	24	10	22	10	37	
Insufficient extension services	0	0	0	1	2	2	5	11	5	7	
Difficulty in obtaining good breed	0	0	0	1	2	2	1	2	1	3	
Others	0	0	0	1	2	2	0	0	0	2	
Total	60	100	180	59	100	118	46	100	46	344	

4. Expectations for Improvement

4-1. Farming (agronomic & farm management)

Expectations for Improvement	Degree of Expectation									Total Score	Rating
	Most Expected Score: 3			2nd Most Expected Score: 2			3rd Most Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Productivity improvement of wet season rice	51	85	153	7	12	14	1	2	1	168	1
Productivity improvement of dry season rice	6	10	18	11	18	22	3	6	3	43	3
Productivity improvement of field crops	1	2	3	17	28	34	10	20	10	47	2
Productivity improvement of vegetables	0	0	0	9	15	18	5	10	5	23	
Productivity improvement of livestock/poultry	0	0	0	5	8	10	8	16	8	18	
Increasing livestock holding size & production	1	2	3	9	15	18	9	18	9	30	
Increasing poultry holding size & production	0	0	0	1	2	2	6	12	6	8	
Strengthening/formation of farmers organizations	0	0	0	0	0	0	5	10	5	5	
Improvement of post-harvest operation	0	0	0	1	2	2	2	4	2	4	
Others	1	2	3	0	0	0	0	0	0	3	
Total	60	100	180	60	100	120	49	100	49	349	

Attachment B1.6-2 Results of Socio-economic Survey: Lum Hach (3/3)

4-2. Farming (farming system)

Farming System	Degree of Expectation									Total Score	Rating
	Primarily Intended Score: 3			Secondary Intended Score: 2			Thirdly Intended Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Double cropping of rice	48	81	144	7	14	14	2	7	2	160	1
Stable single cropping of rice	7	12	21	12	24	24	5	17	5	50	3
Multiple farming (crop + livestock etc.)	3	5	9	25	50	50	8	27	8	67	2
Crop diversification	1	2	3	6	12	12	15	50	15	30	
Others	0	0	0	0	0	0	0	0	0	0	
Total	59	100	177	50	100	100	30	100	30	307	

4-3. Farming (physical)

Farming (physical)	Degree of Expectation									Total Score	Rating
	Primarily Expected Score: 3			Secondary Expected Score: 2			Thirdly Expected Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Adequate irrigation water supply in wet season	50	85	150	8	14	16	1	3	1	167	1
Adequate irrigation water supply in dry season	4	7	12	27	48	54	6	16	6	72	2
Mitigation of inundation & flooding	1	2	3	1	2	2	1	3	1	6	
Construction/rehabilitation of farm road	0	0	0	1	2	2	7	18	7	9	
Construction/rehabilitation of farm to market road	1	2	3	4	7	8	6	16	6	17	
Drainage improvement	2	3	6	11	20	22	12	32	12	40	3
Leveling of paddy field	0	0	0	3	5	6	5	13	5	11	
Others (specify)	1	2	3	1	2	2	0	0	0	5	
Total	59	100	174	56	100	112	38	100	38	327	

4-4. Agricultural support services

Agricultural Support Required	Degree of Necessity of Support									Total Score	Rating
	Most Required Score: 3			2nd Most Required Score: 2			3rd Most Required Score: 1				
	No.	%	Score	No.	%	Score	No.	%	Score		
Field Extension services (demonstration / field guidance)	39	65	117	6	10	12	6	13	6	135	1
Provision of quality seed	11	18	33	29	50	58	0	0	0	91	2
Farmer training (technical & host-harvest operation)	8	13	24	16	28	32	15	31	15	71	3
Farmer training (organization, marketing, farm management)	1	2		1	2	2	8	17	8	10	
Support to organize farmers	0	0		0	0	0	3	6	3	3	
Provision of market information	0	0	0	0	0	0	2	4	2	2	
Provision of farm credit	1	2		2	3	4	4	8	4	8	
Provision of fertilizer	0	0	0	3	5	6	10	21	10	16	
Others (specify)	0	0		1	2	2	0	0	0	2	
Total	60	100	180	58	100	174	48	100	144	432	

Attachment B1.6-3 Results of Questionnaire Survey: Farming Practices Etc.: Lum Hach (1/4)

A. Farming Practices

A-1. Reason for fallow of rice field in Dry Season

Response (plural alternatives)	n	%
Labor shortage	1	3
Working capital shortage	0	0
Water shortage	33	97
Total	34	100

A-3. Reasons for selection of rice variety

Response (plural alternatives)	n	%
High yield	12	25
Short Term	8	17
Suitable to own fields	8	17
Traditional variety	4	8
Easy to cultivate	4	8
Hard rice	3	6
Others	8	17
Respondents	48	-

A-4. Seed sources: rice

Response (one alternative)	n	%
Own products	49	83
Exchange with others	6	10
Certified seed purchased	0	0
Others	4	7
Total	59	100

A-6. Seed sources: vegetables

Response (one alternative)	n	%
Own products	37	67
Exchange with others	8	15
Procured at local market	5	9
Certified seed purchased	2	4
Other	3	5
Total	55	100

A-8. Land preparation method

Response (one alternative)	n	%
Draft animal	57	100
Machinery	0	0
Manual	0	0
Total	57	100

A-10. No. of plants/hill (wet season)

Item	Plants/hill
N	60
Mean	3.6
Minimum	1
Maximum	6

A-12. Fertilization Volume: Urea (unit: kg/ha)

Item	Kg/ha
N	60
Mean	8.5
STD	18.2
Minimum	0
Maximum	50

A-14. Fertilizer (Compost/Manure)

Item	Kg/ha
N	60
Mean	619.2
STD	2,547
Minimum	0
Maximum	20,000

A-15. Cleaning (method)

Response	n	%
Engine winnower	7	13
Manual winnower	4	7
Manual without winnower	44	80
Total	55	100

A-2. Rice variety: rainy season

Response (plural alternative)	n	%
Santos Phlok	17	29
Pka Sla	5	9
Phka Rumdoul	4	7
Chong Banla	3	5
Kuntuy Khmav	3	5
By Soap	3	5
Khnong Romeang	3	5
Middle rice	3	5
Low rice	3	5
Khmong Romiang	2	3
CAR 9	2	3
Tumtos Khleak	2	3
Reang Chey	1	2
Others	4	7
Respondents	58	-

A-5. Seed sources: upland crops

Response (one alternative)	n	%
Own products	35	64
Exchange with others	7	13
Procured at local market	2	4
Certified seed purchased	2	4
Other	3	5
Total	49	100

A-7. Seed replacement of rice

Response (one alternative)	n	%
Once per 3 croppings	18	46
Once per 4 - 6 croppings	3	8
Once > 6 croppings	18	46
Total	39	100

A-9. Transplanting method: wet season

Response (one alternative)	n	%
Regular planting	48	80
Random planting	12	20
Total	60	100

A-11. Age of Seedlings (wet season)

Item	Age (dys)
N	60
Mean	41
Minimum	18
Maximum	60

A-13. Fertilization Volume: DAP (unit: kg/ha)

Item	Kg/ha
N	60
Mean	12.1
STD	22.6
Minimum	100
Maximum	0

A-15. Threshing (method)

Response	n	%
Engine thresher	22	37
Pedal thresher	4	7
Manual threshing	34	57
Total	60	100

A-16. Drying (method)

Response	n	%
Sun drying	58	98
Dryer	1	2
Total	59	100

Attachment B1.6-3 Results of Questionnaire Survey: Farming Practices Etc.: Lum Hach (2/4)

B. Farm Input Supply

B-1. Procurement of certified seed

Response (one alternative)	n	%
Easy	30	54
Difficult	23	41
Not possible	3	5
Total	56	100

B-2. Procurement of wanted seed

Response (one alternative)	n	%
Easy	47	82
Difficult	8	14
Not possible	2	4
Total	57	100

B-3. Seed supply timing

Response (one alternative)	n	%
In time	46	82
Delayed	6	11
Not obtained	4	7
Total	56	100

B-4. Quality seed price

Response (one alternative)	n	%
Too expensive	10	18
Acceptable	8	14
Not purchased	38	68
Total	56	100

B-5. Procurement of wanted fertilizer

Response (one alternative)	n	%
Easy	39	67
Difficult	14	24
Not possible	5	9
Total	58	100

B-6. Fertilizer supply timing

Response (one alternative)	n	%
In time	41	71
Delayed	10	17
Not obtained	7	12
Total	58	100

B-7. Fertilizer price

Response (one alternative)	n	%
Too expensive	30	52
Acceptable	7	12
Not purchased	21	36
Total	58	100

C. Post-harvest

C-1. Rice milling cost (bran received by interviewee)

Item	Riel/ton
N	54
Mean	42,041
STD	
Minimum	3,500
Maximum	80,000

C-2. Paddy storage (king of container used)

Response (one alternative)	n	%
Bag	32	53
Bamboo basket	7	12
Wooden box	18	30
Others	3	5
Total	60	100

C-3. Paddy (Maximum storage period; month)

Item	No.	%
0 - 12 months		#DIV/0!
0 - 6 months		#DIV/0!
Total	0	#DIV/0!

C-4. Rice (kind of container)

Response (one alternative)	n	%
Bag	58	53
Bamboo basket	0	0
Wooden box	0	0
Others	2	2
Total	60	100

C-5. Rice (Maximum storage period; month)

Item	Month
N	53
Mean	2.0
Minimum	1.0
Maximum	6

C-6. Roughly estimated total losses (% of production)

	%
N	54
Mean	4.7
Minimum	0.5
Maximum	20.0

C-7. Most dominant loss of paddy

Response (one alternative)	n	%
During harvesting	19	32
At threshing,	32	53
At drying	1	2
At cleaning	7	12
At storage	1	2
At other time	0	0
Total	60	100

C-8. Second dominant loss

Response (one alternative)	n	%
During harvesting	16	27
At threshing,	11	19
At drying	9	15
At cleaning	11	19
At storage	11	19
At other time	1	2
Total	59	100

Attachment B1.6-3 Results of Questionnaire Survey: Farming Practices Etc.: Lum Hach (3/4)

D. Marketing

D-1. Sold product

Response (one alternative)	n	%
Field dried paddy	5	38
Sun dried paddy	8	62
Milled rice	0	0
Total	13	100

proportion to total marketing volume

D-3. Marketing of vegetable

Response	n	%
Market in village	43	81
Market in commune center	0	0
Market in district center	4	8
Collector/middleman	1	2
Other (specify)	5	9
Total	53	100

D-5. Marketing of livestock

Response	n	%
Market in village	21	35
Market in commune center	2	3
Market in district center	4	7
Collector/middleman	32	53
Other (specify)	1	2
Total	60	100

D-2. Market Destination of Paddy

Response	n	%
Rice miller in village	7	50
Rice miller in commune center	1	7
Rice miller in district center	0	0
Collector/middleman	6	43
Local market	0	0
Total	14	100

D-4. Marketing of field crops

Response	n	%
Market in village	33	69
Market in commune center	7	15
Market in district center	5	10
Collector/middleman	3	6
Other (specify)	0	0
Total	48	100

D-6. Marketing of other product (fish)

Response	n	%
Market in village	21	66
Market in commune center	2	6
Market in district center	4	13
Other (specify)	5	16
Total	32	100

E. Food Supply Conditions

E-1. Food supply condition (rice)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	25	42
Own harvest/ product is just enough to the household demand	21	35
Purchased (or exchanged) to meet the household demand	5	8
Insufficient	9	15
Total	60	100

E-3. Food supply condition (other cereals)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	1	4
Own harvest/ product is just enough to the household demand	7	30
Purchased (or exchanged) to meet the household demand	8	35
Insufficient	7	30
Total	23	100

E-5. Food supply condition (roots and tuber crops)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	3	13
Own harvest/ product is just enough to the household demand	9	39
Purchased (or exchanged) to meet the household demand	7	30
Insufficient	4	17
Total	23	100

E-7. Food supply condition (beans)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	11
Own harvest/ product is just enough to the household demand	8	42
Purchased (or exchanged) to meet the household demand	7	37
Insufficient	2	11
Total	19	100

E-2. Food supply condition (vegetables)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	16	39
Own harvest/ product is just enough to the household demand	12	29
Purchased (or exchanged) to meet the household demand	6	15
Insufficient	7	17
Total	41	100

E-4. Food supply condition (meat)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	6	20
Own harvest/ product is just enough to the household demand	4	13
Purchased (or exchanged) to meet the household demand	9	30
Insufficient	11	37
Total	30	100

E-6. Food condition (fish)

Response (one alternative)	n	%
Own harvest/ product exceed the household demand	2	8
Own harvest/ product is just enough to the household demand	5	19
Purchased (or exchanged) to meet the household demand	9	35
Insufficient	10	38
Total	26	100

E-8. Rice purchased in last year (kg)

	kg/farm
N	9
Proportion to sample farmers (60)	15%
Mean (per respondent)	37
Minimum	0
Maximum	800

Attachment B1.6-3 Results of Questionnaire Survey: Farming Practices Etc.: Lum Hach (4/4)

F. Extension Services

F-1. Visit of extension worker

Response (one alternative)	n	%
One per < week	0	0
Once per 2 weeks-1 month	12	20
Seldom visited	48	80
Total	60	100

F-3. Are you satisfied with current extension services

Response (one alternative)	n	%
Satisfied	48	80
Not satisfied	5	8
No service provided	7	12
Total	60	100

F-2. Technical capability of extension workers

Response (one alternative)	n	%
Sufficient	32	53
Not sufficient	18	30
No service provided	10	17
Total	60	100

F-4. What kind of extension services are you needed

Response (specified)	n	%
Technical training & technical guidance	46	85
Promotion activities	4	7
Seed/farm input supply	2	4
Others	2	4
Respondents	54	-

Totals exceed 100% due to multiple responses

G. Farm Credit

G-1. Access to farm credit

Response (one alternative)	n	%
Easy	16	38
Difficult	9	21
Not provided	17	40
Total	42	100

G-2. Timing of provision

Response (one alternative)	n	%
In time	18	43
Delayed	8	19
Not provided	16	38
Total	42	100

G-3. Amount of credit

Response (one alternative)	n	%
Sufficient	12	29
Not sufficient	12	29
Not provided	18	43
Total	42	100

G-4. Procedures for credit application

Response (one alternative)	n	%
Easy	9	21
Difficult	13	31
Not possible	20	48
Total	42	100