



# ECOLOGICAL SYSTEM OF RICE ITENSIFICATION (SRI) IMPACT ASSESSMENT IN 2001-2005



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## **Summary of the report**

CEDAC learned about SRI from the Low External Input for Sustainable Agriculture newsletter (LEISA) in December 1999 (Rabenandrasana 1999). In 2000, we also received more information on SRI from CIIFAD (Uphoff 1999 and 2000). In the wet season 2000, we integrated the elements of SRI which focused on water and plant management in order to sustain our rice intensification program. In the year 2000, there were only 28 cooperating farmers adapted SRI. In the year 2005, there were about 40,000 farmers adopted SRI in 20 provinces. In term of SRI adaptation, internal assessment study has been conducted for finding out the impact of economical, social, technical, and environmental aspects.

The SRI impact study was conducted first stages, from November to December 2004, and this report has been updated regularly every year. 280 households were interviewed by extension workers, but we selected only 113 households who have been started SRI since 2001 and for whom we had complete data, they re in Prey Veng, Kompong Cham and Ta Keo provinces.

The average size of rice field per household is 1.43 ha. In 2001, farmers applied SRI on an average area of 0.11 ha per household. In the year 2005, farmers applied on the average area of 0.52 ha. By conventional practice, farmers got rice yield only 1.97 ton per ha. By SRI practice, the average yield was 2.86 ton per ha. Gross margin for the conventional practice was 473900 riel per household. By SRI practice, gross margin was varied from 435,600 riel per household to 909,500 riel per household. The comparison with conventional rice it is increased 92 percent per household, because farmer reduced more on the external output for rice production as chemical fertilizer and pesticide, seed, water pumping, hire labor. For conventional rice farmer spend 231,300 riel for one hectare, but for year 2005 spend only 137,000 riel for one hectare.

As the result, all household could get more profit from their rice production. Beside family consumption, some households could sell or exchange rice to support their family such as daily food, school fee, medical, festival...etc. The amount of rice for sale was varied from 36 families, equivalent 30 percent by conventional practice to 87 families, equivalent 77 percent by SRI practice. For other households, they don't sell rice, but they used the rice for rice wine production and animal feed.

55 percent of interviewees said that SRI is easier than conventional practice because of simple techniques and less cost. 18 percent of interviewees said that SRI more difficult than conventional practice because of flood and rice field far from home. 27 percent of interviewees said SRI and conventional rice practice are the same. As the result, one farmer could promote other 17 farmers inside and outside villages.

Main constraints for rice production are disaster, pest, and lack of organic fertilizer, weed and long distance of rice field from home. Farmer though that SRI is very useful to make more benefits in term of economical, social, environmental, and technical aspects.

Generally, SRI adapting can make more benefits for farmer to improve their livelihood system. SRI plots have been slowly enlarged from year to year. It is less cost but higher yield. In case of facing problems with natural disaster like drought and flood, gross margin is still increased. Moreover, SRI can reduce the labor, chemical fertilizer and pesticide usage and the quality of rice is safe. SRI is a soft technology and initiative step to develop farmer community. So, SRI is a suitable technique for farmers to improve the livelihood system for small farmers, and also natural resources conservation.

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## **I. Introduction**

CEDAC is an agricultural and rural development organization set up in August 1997, with initial support from GRET, a French NGO. The center was established as response to the need of the country to have a professional Cambodian organization committed to work for the development of ecological-based family agriculture and a cooperative and mutual help movement organization in the rural areas of Cambodia.

The System of Rice Intensification was originally developed in Madagascar. It is a set of sustainable rice farming technologies that can help small farmers to significantly increase their rice yields without depending on hybrid seeds, chemical fertilizers and pesticides. It is a low-input technology, which can be flexibly applied based on the enabling factors (farm condition etc.).

CEDAC learned about SRI from the Low External Input for Sustainable Agriculture newsletter (LEISA) in December 1999 (Rabenandrasana 1999). In 2000, we also received more information on SRI from CIIFAD (Uphoff 1999 and 2000). In the wet season 2000, we integrated the elements of SRI which focused on water and plant management in order to sustain our rice intensification program. In the year 2000, there were only 28 cooperating farmers adapted SRI. In the year 2005, there were about 40,000 farmers adopted SRI in 20 provinces. From year to year, the yield increases have been significant, with the average yield varying between 3 t/ha and 5 t/ha, compared with a national average less than 2 t/ha. For a comparison of SRI with conventional practice, CEDAC conducted an internal impact assessment study in its target areas such as Ta Keo, Prey Veng, and Kompong Cham province. The study aims to give a good understanding of the following points:

- Economic analysis of SRI adaptation;
- Challenges that farmers are facing and SRI potential for improvement, and
- Scope of adaptation and dissemination.

## **II. Methodology of the Study**

The SRI impact study was conducted first stages, from November to December 2004, and this report has been updated regularly every year. The data were collected by farmer community facilitators in target project areas by using semi-structured interviews. Farmers collaborated with farmer community facilitators to complete the guideline questionnaire throughout the seasonal planting. In the started time, 280 households were interviewed. From these, to have a fourth-year data set, the 113 households who had started using SRI in 2001 and for whom we had complete data, were analyzed for this report, looking at their results from using both SRI and conventional methods. To verify the findings of the study, the results of the analysis were presented to farmers and community facilitators for feedback.

**Table 1: List of provinces, areas and farmers covered in sample**

No.	Province	Name of district	Number of commune	Number of village	Number of farmers
1	Ta Keo	Tramkok	5	11	66
2	Prey Veng	Baphnom Kampong Trabek	5	13	39
3	Kompong Cham	Srey Santhor	3	4	8
<b>Total</b>	<b>3</b>	<b>4</b>	<b>13</b>	<b>28</b>	<b>113</b>

### III. Results of the Study

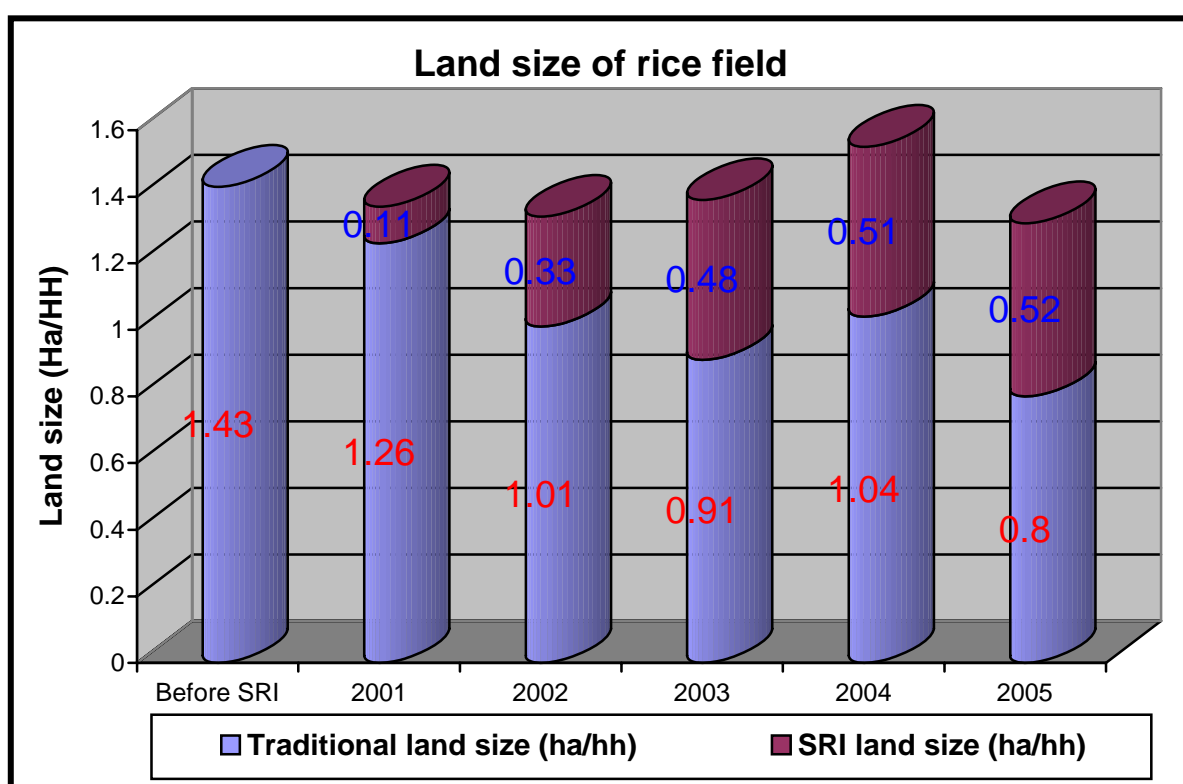
#### 1. Production System Analysis

##### 1.1. Cultivated rice area

The average total size of rice fields for each household is 1.43 ha, and the size has usually been steady, though some were reduced by distribution to children or sale to outsiders. Based on their success with SRI adaptation, farmers have increased their use of SRI within their production system. The size of SRI plots has gradually increased from 0.11 ha/household to 0.52ha/household. Figures on SRI plots and total rice field of each household are shown below:

**Table 2: Size of rice field (hectares per household)**

	Before SRI	2001	2002	2003	2004	2005
Traditional rice (Ha/HH)	1.43	1.26	1.01	0.91	1.04	0.80
SRI (Ha/HH)	----	0.11	0.33	0.48	0.51	0.52
Total area (Ha/HH)	1.43	1.37	1.34	1.39	1.55	1.32



## 1.2. Yield and gross income

The yield and gross income for households that applied SRI is higher than from conventional practice. In 2005, 92 percent of cooperating farmers got higher average gross income than with conventional practice, up to 435,600 riel/HH.

**Table 3: Yield and gross income**

	Before SRI	2001	2002	2003	2004	2005
Land size (Ha/HH)	1.43	1.37	1.34	1.39	1.55	1.32
Total rice yield (T/Ha)	1.97	2.02	2.34	2.66	1.91	2.86
SRI yield (T/Ha)	----	2.70	2.75	2.89	2.19	3.20
Gross income (riel/HH)	473900	579400	741600	894300	453400	909500

*Note: Rice Price: 1Kg = 400riel, (1 USD=4000 Riel)*

## 1.3. Fertilizer usage

Generally, farmers used chemical fertilizer and natural fertilizer to increase yield on their fields. By conventional practice, a small amount of farmers used organic fertilizer (cow manure) in their rice field, while 94 percent of rice farmers applied chemical fertilizer in rice field. They believed that only chemical fertilizer can increase rice yield. All the years after intervention of SRI project, the amount of chemical farmers has decreased. In this year 2005, only 72 percent of farmers in the sample applied chemical fertilizer. Some farmers applied a small amount of chemical fertilizer in conventional plots, and the rest of them stopped using chemical fertilizer entirely.

The number of organic farmers has been increasing since they started to adapt SRI. They used compost, cow manure and other organic matter to apply in their rice fields. In all, 98 percent of cooperating farmers used organic manure in the rice field.

**Table 4: Fertilizer used**

	Before SRI	2001	2002	2003	2004	2005
Compost (Kg/HH)	1300	1870	2300	2800	2482	2718
Compost (Kg/Ha)	942	1399	1750	2100	1655	2059
Chemical fertilizer (Kg/HH)	160	123	103	90	60	60
Chemical fertilizer (Kg/Ha)	116	92	78	67	40	46

**Table 5: Chemical fertilizer and pesticide used**

	Before SRI	2001	2002	2003	2004	2005
Chemical fertilizer (HH)	106	99	92	85	78	82
Chemical fertilizer (% of HH)	94	87	81	75	69	72
Chemical pesticide (HH)	33	22	15	7	4	2
Chemical pesticide (%)	28	19	13	0.6	0.3	0.18

#### 1.4. Production costs

In total there are various expenditures such as chemical fertilizer 40%, hire labor 38%, seed 15%, water 6%, and chemical pesticide is nearly no used (smaller than 1%). All these expenses have been reduced, especially on seed, chemical fertilizer, and pesticide.

**Table 6: Household expenditure for rice production**

	<b>Before SRI</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Seed (riel/HH)	49100	37000	22000	22000	23400	20000
Chemical fertilizer (riel/HH)	133000	104800	59800	59000	64400	71500
Chemical pesticide (riel/HH)	2800	1300	200	200	200	140
Pumping (riel/HH)	19100	11000	9600	9600	69500	4500
Hired labor (riel/HH)	125800	91500	63500	63500	62500	84900
Total (riel/HH)	329800	245600	155200	155200	220000	181000

**Table 7: Rice production expenditure per hectare**

	<b>Before SRI</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Seed (riel/Ha)	31400	26200	16700	16100	15600	15100
Chemical fertilizer (riel/Ha)	92400	73600	45600	43300	42900	54100
Chemical pesticide (riel/Ha)	3000	1500	150	140	130	106
Pumping (riel/Ha)	13700	8100	7300	7000	46300	3400
Hired labor (riel/Ha)	90800	68500	48400	46600	41600	64300
Total expenses (riel/Ha)	231300	177900	118100	113100	146500	137000

#### 1.5. Gross margins

Gross margins also increased with the adoption of SRI. In 2005, the gross margin including SRI was 909,500 riel per household, compared with the margin from producing rice the year before adapting SRI of 470,700 riel per household. This increase of 93 percent was obtained from converting only part of their rice production to SRI methods. If and when they cultivate entirely with SRI, the profitability of their rice operations should be still greater. But gross margins in 2004 are decreased to 17,300 (equal 4 percent) in comparison with the year before SRI, because most of farmer's rice field can't harvest cause by heavy drought.



**Table 8: Gross margin from household rice production**

	Before SRI	2001	2002	2003	2004	2005
Gross income (riel/HH)	460700	548300	678100	869800	512000	1280000
Total expenses (riel/HH)	329800	245600	155200	155200	220000	181000
Total expenses (riel/ha)	231300	177900	118100	113100	146500	137000
Gross margin (riel/HH)	470700	576800	737000	893600	453400	909500
Gross margin (riel/ha)	331400	427200	554100	603800	266300	689000

**Table 9: Average gross margin classification associated with SRI adoption**

Value	HH	Before SRI	HH	2001	HH	2002	HH	2003	HH	2004	HH	2005
-500,000 to 0	15	-28400	1	-90000	0	0	0	0	19	-242900	0	0
0 to 500,000	53	250200	62	241500	45	247700	29	314400	57	250800	40	308400
500,000 to 1,000,000	30	706900	33	743000	44	708700	42	735600	25	704600	34	754500
1,000,000 to 1,500,000	15	1153900	17	1220400	16	1230200	30	1190400	9	1211800	19	1271600
1,500,000 to 2,000,000	1	1509000	1	1582000	9	1567500	10	1701500	3	1653500	13	1676800
2,000,000 to 2,500,000	0	0	0	0		0	3	2266600	1	2228400	3	2095500
2,500,000 and up	1	2585500	1	2620000	1	3200000	1	3220600	1	2694200	4	3134600

Note: in riel (1USD=4000 riel)

When we calculated the average for all 113 households, there were benefits. If we calculated by individual households, there were 16 households that made no profit before SRI, and 1 household that lost profit in the first year of SRI (2001). The reasons that made farmers lose money in rice production were low yield and high expenditure on hired labor, buying chemical fertilizer, pumping water, and using more seed.

#### ▪ **Gross margins in Ta Keo province**

Gross margin has been increased since farmers here started to apply SRI. Comparing conventional practice with SRI in terms of gross margin, we see that this has grown from 412,500 riel per household to 793,200 riel per household in 2005. The growth of gross margin from conventional practice to SRI is 92 percent, or 380,700 riel per household. But gross margin in 2004 has been less increased in comparison of the year before SRI because that year has heavy drought.

**Table 10: Gross margins in Ta Keo province**

	Before SRI	2001	2002	2003	2004	2005
Gross income (riel/HH)	734100	804500	839700	941100	611500	956700
Total expenditure (riel/HH)	321600	250600	199500	157000	189800	163400
Total expenditure (riel/ha)	286500	223500	179000	141800	136600	136200
Gross margin (riel/HH)	412500	553800	640100	784000	421700	793200

- **Gross margins in Prey Veng province**

Since the first year of adaptation of SRI, the gross margin has increased steadily. In 2005, gross margin was 1,064,300 riel per household with SRI practice, compared to 400,800 riel per household with conventional practice. The growth from conventional practice to SRI practice was 165 percent, or 663,500 riel per household.

Although, rice field of farmer has drought but gross margin still increased to 285,500 riel per household (equal 71 percent) in 2004.

**Table 11: Gross margins in Prey Veng province**

	Before SRI	2001	2002	2003	2004	2005
Gross income (riel/HH)	686300	723900	910300	1190700	976000	1239200
Total expenditures (riel/HH)	285500	211200	211400	176400	289700	174800
Total expenditures (riel/ha)	161500	132400	132100	104100	170100	101600
Gross margin (riel/HH)	400800	512600	698900	1014300	686300	1064300

- **Gross margins in Kompong Cham province**

Farmers in Kompong Cham province have larger sizes of rice field. Some of them have 4 ha of rice field per family. In 2005, average gross margin was very high because farmers expended less for rice production and they had good soil fertility and enough rain water and got high rice production, gross margin was 1,830,400 riel per household with SRI practice, compared to 989,500 riel per household with conventional practice. The growth from conventional practice to SRI practice was 85 percent, or 840,900 riel per household. In 2004 has heavy drought and gross margin are decreased to 217,600 riel per household (equal 21 percent) compared with conventional practice.

**Table 12: Gross margins for Kompong Cham province**

	Before SRI	2001	2002	2003	2004	2005
Gross income (riel/HH)	1402000	1411000	1748800	1655000	1132000	2189000
Total expenditures (riel/HH)	412500	193000	160600	152200	360100	179200
Total expenditures (riel/ha)	187500	87700	73000	69200	182300	87700
Gross margin (riel/HH)	989500	1217900	1588200	1502700	771800	1830400

### 1.6. Quantity of rice sold

Besides consuming rice in the household, some households can sell or exchange rice to get money to support the family such as for daily food, school fees, medical expenses, festivals, etc. Other household do not sell rice but used some for rice wine production and animal feed. The numbers of farmers who sell to outsiders and the quantity of rice sold are increasing (see detail in table below).

**Table 13: Quantity of rice that farmer sold**

	Before SRI	2001	2002	2003	2004	2005
Number of HH	36	37	44	60	53	87
Quantity (Kg/HH)	301	316	437	785	385	857
Income (riel/HH)	120100	128600	201100	314000	231300	460300

## 2. Labor Requirements

The survey found 55 percent of cooperating farmers saying that for them, SRI is more profitable because it requires less labor and less seed, while giving higher yield. They considered SRI a simple technique and easy to practice, even for women and children. On the other hand, 18 percent of cooperating farmers said that they find SRI more difficult than conventional rice, because of the requirements for water management and for weeding and soil loosening. Finally, 27 percent said that SRI and conventional practices are the same for them, considering harvesting, natural fertilizer collecting, and weeding and soil loosening the most demanding aspects of SRI.

**Table 14: Labor usage**

Techniques	-5	-4	-3	-2	-1	0	1	2	3	4	5
Seedbed preparation	16	30	67	32	20	47	6	0	4	0	2
Sowing	28	56	60	40	24	22	2	6	3	0	0
Uprooting seedlings	36	51	72	39	16	6	15	4	1	1	0
Transporting them	63	98	40	22	7	7	0	2	1	0	0
Transplanting them	18	46	54	59	24	18	10	8	3	0	1
Water management	0	5	8	14	19	48	18	41	67	17	4
Weeding	1	1	5	6	4	39	30	46	58	41	7
Compost making	0	1	5	6	3	41	32	66	38	25	21
Harvesting	9	6	12	13	24	137	16	15	6	1	1
Total (score)	171	294	323	231	141	365	129	188	181	85	36
Percent of Total (%)	11	14	16	12	2	18	3	2	2	2	18

Note: -5 = most decreased, 0 = the same, 5 = most increased

### ***3. SRI adoption***

SRI techniques were very quickly adopted by cooperating farmers, especially immediate transplanting, using young seedlings, transplanting them one by one, natural fertilizer use, weeding and soil loosening, large space for transplanting, seed selection, and land leveling. On other hand, some farmers did not adapt some of the SRI techniques, such as transplanting in rows, transplanting just 2 to 3 seedlings per hill, and young seedlings.

### ***4. Diffusion***

There were many farmers from different places who come to learn from SRI farmers. Among the 113 interviewees, they promoted SRI to other 969 households in their own villages and to 967 households in neighboring villages. This means that one cooperating farmer is promoting SRI to 17 households inside and outside their home villages.

### ***5. Constraints***

According to the results of the study, farmers faced certain problems with SRI practice, such as flooding, drought, insects and diseases, weeds, lack of natural fertilizer, and rice fields being far from home. Farmers complained that it was difficult to apply SRI because the lack of water management facilities. Many fields do not have their own access to water supply or their own control to cut it off.

### ***6. Farmer's impressions***

SRI adaptation has played an important role in reducing the cost of external inputs such as seed, labor, chemical fertilizer, pesticide while getting high yield.

There are 80 percent of households which planned to expand their area of rice field under SRI. 7 percent of households do not expand their area of rice field under SRI because they are very old or employed in another job. Some households think that their rice field is too far from home so they can not give the supervision required for SRI. 70 percent of households said they will adopt more of the SRI techniques. 75 percent said they will begin intensifying and diversifying their farming systems by growing multi-purpose trees or fruit trees, using green manure, raising animals, and trying to collect more materials to make compost. 20 percent of households planned to dig small canal to drain water.

#### **IV. Conclusions and Recommendations**

Generally, SRI adaptation can make more benefits for farmer to improve their livelihood system. SRI plots have been slowly enlarged from year to year as it has less cost but higher yield. Despite facing certain problems with natural disasters like drought and flood, gross margin has still increased. Moreover, SRI can reduce the use of labor, chemical fertilizer and pesticide, and the quality of rice produced is safer. SRI is also a step toward developing the farmer community, its orientation and attitudes. So, SRI is a suitable technique for farmers to improve their livelihood system and also conserve natural resources.

Most of various expenditures such as for chemical fertilizer, chemical pesticide, hiring labor and pumping water can be reduced, so we should encourage farmers to use natural fertilizer and to dig a small canal around the field for better water management. Moreover, farmers can utilize some of their rice field area for multi-purpose farming.

Annex1: Data of Land size and yield

No	Name of farmer	Village	Province	Size area of rice field (ha)						Size area of SRI (A)					Yield (Kg)					SRI yield (Kg)					
				Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005	Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
1	Ngoun Hean	Prey Talei	Ta Keo	1	1	1	1	1	1	1	50	50	16	16	1800	1800	2100	2010	1680	1680	60	1050	1547	240	384
2	Mey Chring	Prey Talei	Ta Keo	1.5	1.5	1.5	1.5	1.5	1.5	2	20	70	150	100	2100	2400	3000	4100	2400	4200	130	750	3042	2400	3560
3	Sao Rith	Prey Talei	Ta Keo	1.5	1.5	1.5	1.5	0.75	1.5	1	60	50	50	25	4200	4200	4200	3000	1200	3600	60	1800	1200	960	600
4	Long Yos	Prey Talei	Ta Keo	2	2	2	2	1.2	1.2	1	90	90	50	120	3600	3900	3000	2904	3920	4500	70	2000	2050	2100	4500
5	Din Ratana	Prey Talei	Ta Keo	1.1	1.1	0.9	0.9	0.8	0.8	1	23	25	45	20	1200	1200	1200	2160	1920	2400	60	720	850	1200	1200
6	Chheng Loan	Prey Talei	Ta Keo	1.3	1.3	1.3	1.3	0.8	1	5	30	50	30	50	2990	2870	2970	4111	2400	2400	150	1200	1548	1200	2500
7	Prak Nan	Prey Khvav	Ta Keo	1.7	1.7	1.7	1.7	1.5	1.5	20	30	39	35	15	3900	3000	3000	1881	4800	4000	270	950	1206	1260	1800
8	Men Morn	Prey Khvav	Ta Keo	1.5	1.5	1.5	1.5	1	0.6	2	45	50	25	15	3000	2120	3050	1911	2400	1440	120	1050	1040	360	720
9	Som Le	Prey Khvav	Ta Keo	0.35	0.35	0.35	0.35	0.6	1	7	35	15	12	15	400	700	800	1080	1440	1560	200	1200	720	168	560
10	Orm Oun	Prey Khvav	Ta Keo	1.5	1.5	1.5	1.5	0.5	1.5	5	30	50	20	60	2400	3380	4160	3200	720	3840	150	900	1500	350	2200
11	Ngeth Von	Chorm Pol	Ta Keo	0.5	0.5	0.5	0.5	0.06	0.3	1	4	4	4	13	1150	1150	1160	672	100	450	12	120	240	240	235
12	Sok Rin	Chorm Pol	Ta Keo	0.7	0.7	0.7	0.7	0.04	0.5	2	4	27	27	0	650	442	728	2500	80	750	52	130	1020	1020	0
13	Oak Khgne	Chorm Pol	Ta Keo	4	4	4	4	4	4	2	4	15	80	400	4080	4320	5040	5760	5100	6720	48	180	720	750	6720
14	Nak Him	Chorm Pol	Ta Keo	0.85	0.85	0.8	0.8	0.55	0.72	6	35	40	35	72	840	2550	2400	2600	2100	5040	180	1200	1500	2000	5040
15	Chea Kuy	Chorm Pol	Ta Keo	1	1	1	1	0.65	0.7	1	14	14	20	40	2000	2800	2600	2400	1440	1800	31	450	640	600	1060
16	Kuchsom On	Chorm Pol	Ta Keo	1	1	1	1	1	1	1	15	15	18	70	1920	1920	2560	2800	840	3000	96	480	520	288	2450
17	Ong Ying	Taso	Ta Keo	1.12	1.12	1.12	1.12	2	0.7	10	100	100	70	70	1300	1621	1690	3360	1680	4900	400	3000	3360	900	4900
18	Chea Than	Taso	Ta Keo	2.5	2.5	2.5	2.5	0.7	2	15	36	100	100	45	2600	3120	3120	3840	1440	3640	450	1800	3120	3120	2598
19	Kong Meun	Taso	Ta Keo	0.5	0.5	0.5	0.5	0.5	0.5	4	18	35	35	35	480	600	900	1176	720	1032	160	620	1032	1032	960
20	Om Sim	Taso	Ta Keo	2	2	2	2	1.75	1.5	7	70	70	45	100	2100	3000	3600	3300	2160	3600	560	1750	2790	888	2650
21	Som Heun	Trapaing Kabas	Ta Keo	0.65	0.65	0.65	0.65	0.48	0.6	4	4	50	20	10	1200	1440	1200	2500	540	1440	120	120	1458	340	740
22	Chhay Lim	Trapaing Kabas	Ta Keo	1.17	0.78	0.78	0.78	0.75	0.45	3	3	12	12	11	2400	1680	1680	1700	1680	1272	120	130	500	360	612
23	Tep Khen	Trapaing Kabas	Ta Keo	0.91	0.91	0.91	0.91	0.3	0.12	13	13	10	20	9	2352	720	600	800	480	720	600	600	420	312	648
24	Tep Muth	Trapaing Kabas	Ta Keo	0.9	0.9	0.9	0.9	0.5	0.7	12	12	47	47	10	792	864	960	824	720	1080	204	240	1002	1002	480
25	Chom Heun	Trapaing Kabas	Ta Keo	0.7	0.65	0.65	0.65	0.7	0.7	4	13	30	50	30	1200	1200	1200	1560	1200	1440	120	390	950	720	740
26	Chom Chhoun	Trapaing Kabas	Ta Keo	0.75	0.75	0.75	0.75	0.35	1.35	7	55	60	20	30	960	1200	1800	1800	504	960	560	1300	1700	360	960
27	Tim Roeun	Trapaing Kabas	Ta Keo	0.5	0.5	0.5	0.5	0.5	0.5	3	22	50	50	30	480	816	1200	1400	1152	960	96	552	1400	1152	792
28	Choub Chea	Trapaing Kabas	Ta Keo	0.8	0.8	0.62	0.62	0.7	0.65	3	62	20	40	30	1320	1800	1320	2100	720	1556	135	1320	810	648	1008
29	Som Von	Trapaing Kabas	Ta Keo	0.8	0.8	0.8	0.6	0.6	0.3	4	2	60	20	30	720	840	600	840	56	720	120	80	840	44	720
30	Prak Ngim	Tasoun	Ta Keo	1.5	1.5	1.5	1.5	0.7	1.5	11	40	40	30	50	4000	4500	4200	4800	960	4800	390	1800	1200	1050	1745
31	Som Oun	Tasoun	Ta Keo	1.5	1.5	1.5	1.5	0.8	0.7	18	15	70	12	20	3000	3500	2700	3600	2160	2550	300	600	2160	384	680

No	Name of farmer	Village	Province	Size area of rice field (ha)						Size area of SRI (A)					Yield (Kg)					SRI yield (Kg)					
				Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005	Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
32	Pa Vith	Tasoun	Ta Keo	1.1	1.1	1.1	1.1	0.75	0.7	2	30	30	30	40	3300	3500	3200	2560	2240	2400	150	1000	1200	896	1200
33	Soth Phalla	Tasoun	Ta Keo	0.85	0.85	0.85	0.85	0.6	0.8	15	15	25	30	20	900	1050	1500	1700	1280	1870	300	550	850	864	115
34	Nob Hoeun	Tasoun	Ta Keo	1.7	1.7	1.7	1.7	1.2	1.2	4	10	40	100	100	3000	3300	4200	4500	2400	3120	150	405	1800	1920	3000
35	Oum Phath	Tasoun	Ta Keo	1	1	1	1	1.3	1.5	5	5	50	50	100	2100	2250	1950	1950	3600	2880	225	250	1040	1680	3920
36	Prak Chres	Tasoun	Ta Keo	1	1	1	1	1	1	13	50	70	100	100	3640	3650	3700	4080	4000	4500	390	1292	2042	4000	4500
37	Keo Bun	Tipath	Ta Keo	1.8	1.8	1.8	1.8	1.5	1.5	7.5	50	60	30	60	3840	3860	1930	4560	1920	4800	144	1200	1300	600	2040
38	Sor Chaniith	Tipath	Ta Keo	0.6	0.6	0.6	0.6	0.5	0.6	3	35	15	15	30	720	840	960	960	720	1200	120	500	300	300	750
39	Prak Thy	Ang Trav	Ta Keo	1	1	1	1	1.5	1.5	2	20	35	40	60	2400	2400	1680	1680	2400	3500	200	600	840	1200	1800
40	Tim Chev	Ang Trav	Ta Keo	0.7	0.7	0.7	0.7	0.8	0.7	4.5	1	10	7	8	2640	3000	1920	2160	780	1200	180	36	600	130	160
41	Em Tim	Ang Trav	Ta Keo	2	2	2	2	2	1.5	25	50	50	150	150	1920	2400	2664	3000	2880	3600	500	2000	2100	2400	3600
42	Pa Vuth	Sre Khvav	Ta Keo	0.44	0.68	0.68	0.68	0.7	0.6	5	12	22	30	20	1000	1500	1600	720	960	1680	150	350	500	1050	1020
43	OI Gnil	Sre Khvav	Ta Keo	1.27	1.27	1.27	1.27	1.48	1.18	13	17	25	28	28	2048	2260	2568	3000	1680	1750	264	408	720	720	1750
44	Ngeth Phal	Sre Khvav	Ta Keo	0.7	0.8	0.8	0.8	1	1	25	20	40	15	10	1080	1320	1512	2100	1200	1680	312	690	1020	360	360
45	Hort Neang	Sre Khvav	Ta Keo	1	1	1	1	0.45	1	1	7	49	33	15	1392	1440	1680	1680	408	1656	12	120	720	288	408
46	Chhorn Phalla	Sre Khvav	Ta Keo	0.3	0.3	0.3	0.3	0.22	0.17	12	24	24	17	17	480	600	720	720	408	552	264	552	650	288	512
47	Keo Som Ol	Popreah Sang	Ta Keo	1	1	1	0.73	0.6	1	1.5	100	100	60	100	2100	2550	3000	2700	1200	2690	48	3000	2700	1200	2690
48	Tea Savy	Popreah Sang	Ta Keo	0.8	0.8	0.8	0.8	0.4	0.9	10	7	40	7	7	960	1200	960	780	240	1170	240	201	520	84	360
49	Ang Loan	Popreah Sang	Ta Keo	0.7	0.7	0.7	0.7	30	0.45	1	3	3	4	10	1200	960	1680	1440	960	1200	12	241	241	36	120
50	Mouk Sokrim	Popreah Sang	Ta Keo	1	1	1	1	1.5	1.3	2	10	13	18	10	1680	1944	1920	1920	1920	2640	48	240	240	192	240
51	Som Houn	Prey Sbaat	Ta Keo	0.48	0.48	0.48	0.48	0.48	0.48	3	24	48	12	20	1440	960	960	1200	1200	1304	132	960	1200	120	624
52	Gnean San	Prey Sbaat	Ta Keo	0.5	0.5	0.5	0.5	1	0.5	20	20	30	50	20	960	960	912	1000	720	2400	300	300	650	600	480
53	Pok Horn	Prey Sbaat	Ta Keo	1.5	1.5	1.5	1.5	1.5	1.5	10	15	32	12	20	2210	3250	3270	2400	350	2400	255	312	672	324	648
54	Um Thy	Chrom Pol	Ta Keo	2	2	2	2	2.5	2.5	4	20	12	50	250	1600	2400	3120	3600	1980	4800	144	720	360	720	4800
55	Keo Neang	Taso	Ta Keo	0.7	0.7	0.7	0.7	0.5	0.5	2	3	9	9	10	500	600	1200	1300	300	288	48	96	338	338	500
56	Nut Lorn	Taso	Ta Keo	1	1	1	1	1	1	2	40	100	40	100	1680	1720	3600	3600	1680	3700	480	1080	3600	1400	3700
57	Hun Meun	Taso	Ta Keo	1	1	1	1	1.4	1	7	7	100	60	100	960	240	240	1500	1920	2400	168	168	1500	960	2400
58	Gnem Sokly	Popreah Sang	Ta Keo	0.9	0.9	0.9	0.9	0.55	0.6	2	75	90	55	60	1440	1680	1920	2400	600	1040	48	1920	2400	600	1040
59	Oak Von	Popreah Sang	Ta Keo	1	1	1	1	1.4	1	60	70	100	60	70	1760	2400	2100	2400	1920	3000	1440	1560	2400	960	3000
60	Touch Yim	Popreah Sang	Ta Keo	1.5	1.5	1.5	1.5	1.8	2	30	30	25	40	200	1960	2520	2660	2640	1200	3650	840	828	625	600	3650
61	Sem Yeun	Popreah Sang	Ta Keo	1.25	1.25	1.25	1.25	0.9	1.2	2.5	20	30	90	120	3600	3700	4000	3080	1440	2400	72	480	1000	1440	3400

No	Name of farmer	Village	Province	Size area of rice field (ha)					Size area of SRI (A)					Yield (Kg)					SRI yield (Kg)						
				Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005	Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
62	Khun Sokha	Popreah Sang	Ta Keo	0.9	0.9	0.9	0.9	0.7	0.75	1	20	90	70	75	2400	2400	2400	3300	1920	1920	48	440	3300	2080	2720
63	Ven Kun	Taso	Ta Keo	2	2	2	2	0.5	0.5	3	2	4	25	25	2400	3000	2500	1200	420	960	72	48	200	340	360
64	Khseth Gnah	Taso	Ta Keo	1	1	1	1	0.7	1	30	70	100	35	30	2400	2400	2440	2800	960	1760	720	1680	2800	700	780
65	Som Horn	Taso	Ta Keo	0.48	0.48	0.48	0.48	0.48	0.48	3	24	48	48	30	1440	960	960	1308	1200	1304	132	960	1200	1200	924
66	Sin Chrek	Takork	Prey Veng	0.5	1.5	2	2	1.5	1	18	0.5	18	17	20	700	2555	2870	2000	1458	1080	655	135	400	600	960
67	Boy Ren	Takork	Prey Veng	2	2	2	2	2	2.5	2	40	40	40	40	1320	1980	2860	2550	2500	3350	60	1200	850	992	1550
68	Prak Leak	Krouch	Prey Veng	2.4	2.65	2.65	2.9	2	2	25	121	32	200	20	750	3600	2100	2500	3104	3600	750	1425	960	3104	540
69	Thov Kunthea	Krouch	Prey Veng	3	1.5	2	3	3	3	4	15	60	100	50	3640	1365	5200	6825	5460	6000	102	456	1690	2000	1500
70	Va Mean	Krouch	Prey Veng	0.25	0.25	1	1	1.5	1.5	4	17	9	150	150	450	500	1575	1950	4000	4500	375	675	345	4000	4500
71	Phan Sopheak	Krouch	Prey Veng	1.5	1.8	1.5	0.95	1.25	2	5	20	20	25	25	12	660	1120	1052	6000	2450	180	630	800	840	600
72	Boy Saban	Krouch	Prey Veng	2	0.6	0.5	2	1.5	2.5	22	22	22	150	100	600	600	960	2868	2500	2800	480	300	720	720	1200
73	Chhen San	Krouch	Prey Veng	5	3	1.8	4	4	4	10	50	167	189	80	2640	1920	1000	8864	7959	6600	144	1120	4719	7400	1200
74	Sao Horn	Krouch	Prey Veng	2	2	2	1.1	3.5	3	23	23	28	100	40	1200	2500	4800	5760	8333	8300	900	960	1200	3260	2000
75	Put Cheun	Krouch	Prey Veng	2	2	1.5	3	1.5	2	60	60	60	25	40	3000	2500	3000	3200	2500	4000	1540	770	1200	1000	2250
76	Va Kol	Krouch	Prey Veng	3.5	3.5	2.5	2.2	3.5	3.5	3	35	25	100	250	600	1680	2880	2500	7000	7010	40	120	150	2000	5600
77	Long Theun	Kansom Oak	Prey Veng	2	2	1	2	1.5	1.5	10	100	100	50	30	720	1080	1920	4500	1250	2640	84	1920	3000	720	600
78	Long Ran	Kansom Oak	Prey Veng	1	0.5	2	1.5	1	1	20	120	120	100	20	1100	1200	2400	3250	2000	1140	360	2000	3250	2000	240
79	Sok Khoy	Kansom Oak	Prey Veng	4	3	1.5	2	2.5	0.8	15	15	15	15	80	500	564	1248	1200	1500	1200	564	1248	480	360	1200
80	Ky Samuth	Kansom Oak	Prey Veng	2	0.77	1	1	1.5	3	1	27	100	100	25	500	936	2160	2880	4000	4980	60	1000	2880	4000	480
81	Khvan Hun	Kraing Chin	Prey Veng	2.5	2.5	2.5	2.5	2	3	50	100	100	97	130	4800	4800	4320	3800	3000	4680	96	2160	2880	1200	3600
82	Meas Phon	Kraing Chin	Prey Veng	2	2	2	2	1.5	1.5	4	150	150	120	100	2400	960	4500	4850	840	2940	720	4000	4500	840	2040
83	Tea Noun	Komhaing Reach	Prey Veng	1.2	1.2	1.2	1.2	1.2	0.8	12	32	32	14	7	1140	3600	3600	3600	720	1210	396	960	1060	408	360
84	Lim Ry	Komhaing Reach	Prey Veng	2.4	2.4	2.4	2.4	3	3	70	70	16	60	30	2880	3840	5000	5000	3600	3000	1800	2500	560	2000	1000
85	Chhay Mek	Komhaing Reach	Prey Veng	1	1	1	1	1	1	15	15	15	10	10	2500	672	2000	2200	600	2000	72	432	520	36	288
86	Him Yan	Trapaing Svay	Prey Veng	0.9	0.9	0.9	0.9		1	30	10	10	10	30	960	1600	720	800	0	1500	360	280	350	220	240
87	Chou Chon	Trapaing Svay	Prey Veng	2	2	2	2	1	1	50	50	50	20	20	960	960	240	3000	1200	1200	240	240	1500	168	84
88	Bun Paov	Tong Neak	Prey Veng	2.8	2.8	2.8	2.8	2.5	2	43	43	40	50	20	3600	2292	2292	2200	3600	5850	792	1450	1500	3600	5850
89	Toun Loan	Krous	Prey Veng	1	1	1	1	1	1.5	2	20	25	50	70	2000	1000	1000	1500	1332	2040	40	500	850	1332	765
90	San Kim	Krous	Prey Veng	3.5	3.5	3.5	3.5	1	1	5	20	70	50	50	2000	1000	1200	2000	1500	1944	120	550	1300	1000	1044
91	Chea Tech	Svay Prakral	Prey Veng	0.7	0.7	0.7	0.7	1.5	2	15	25	30	31	20	840	1447	3000	3000	1080	3726	340	600	900	780	576



No	Name of farmer	Village	Province	Size area of rice field (ha)						Size area of SRI (A)					Yield (Kg)					SRI yield (Kg)					
				Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005	Before	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
92	Kham Saveun	Trapaing Kabas	Prey Veng	0.9	0.9	0.9	0.9	0.8	0.8	10	10	10	10	12	1680	1680	1440	2340	480	1200	288	500	600	360	420
93	Phim Thoy	Trapaing Kabas	Prey Veng	1.4	1.4	1.4	1.4	1.6	1	10	40	60	60	50	3600	3120	2640	3600	3720	3280	480	1550	1900	1040	2350
94	Chhim Neath	Trapaing Kabas	Prey Veng	1.1	1.1	1.1	1.1	1.1	1.1	3	3	50	50	50	1200	1440	1200	3000	2000	3500	58	120	1450	1000	2000
95	Chhim Yeng	Trapaing Kabas	Prey Veng	2	1.2	1.2	1.2	1.7	1.7	4	7	50	18	21	1500	1500	2000	3976	1680	2640	203	280	1500	266	1200
96	Tim Sin	Trapaing Kabas	Prey Veng	1	1	1	1	1	1	25	25	25	25	25	1420	1700	2040	1920	2760	2250	84	660	840	840	840
97	Pouch Run	Ang Kanh	Prey Veng	0.5	0.5	0.5	0.5	0.5	0.9	14	32	32	30	30	1400	1440	1500	1200	600	2125	330	1000	1000	550	1275
98	Kith Savy	Ang Kanh	Prey Veng	0.18	0.18	0.18	0.18	0.4	0.55	18	18	18	10	17	400	500	550	500	0	1668	500	550	500	360	900
99	Chhim Sameun	Ang Kanh	Prey Veng	0.8	0.8	0.8	0.8	0.75	1	17	17	17	17	17	1680	1680	2500	2500	1095	1600	250	400	600	300	750
100	Pouch Yun	Ang Kanh	Prey Veng	1.5	1.5	1.68	1.68	1.7	1.7	13	13	13	13	13	1800	2000	2000	4000	1500	2000	240	480	500	375	600
101	En Chheum	Ang Kanh	Prey Veng	1.7	1.7	1.7	1.7	2	1.7	18	18	15	18	23	3500	4000	4000	5310	1500	1765	336	850	650	450	720
102	Thoung Kiet	Prey Kuy	Prey Veng	0.4	0.4	0.4	0.4	1.1	0.25	2	40	40	40	25	480	560	720	720	1000	360	60	720	720	600	360
103	Sou Saing	Prey Kuy	Prey Veng	1	1	1	1.2	1.3	1	3	15	50	30	25	960	1560	360	960	690	2000	240	450	720	250	380
104	Hen Ry	Trapaing Svay	Prey Veng	2.5	2.5	2.5	2.5	2.5	2.5	20	20	20	30	30	2400	1800	2040	2300	1044	5000	324	450	550	500	1300
105	Lay Samo	Kraing Chin	Prey Veng	2.55	2.55	2.55	2.55	2.5	2.5	15	50	50	30	20	4800	3600	4080	2900	2500	4800	540	1500	1200	150	1200
106	Van Korn	Trea	Kampong Cham	2	1.5	1.2	20	50	50	150	92	2400	5700	6800	6880	3600	6500	800	2050	1500	800	2050	1500	1500	2880
107	Ry Thy	Kh nol Doung	Kampong Cham	3.5	3	3	1	32	150	200	150	4800	5400	6900	6000	3000	6900	60	1250	4000	60	1250	4000	2000	5376
108	Choun Chun	Chibal	Kampong Cham	1	1	0.75	20	100	100	100	75	1200	1800	1900	2000	3360	3850	792	1900	2000	792	1900	2000	2000	4500
109	Mom Buntheun	Chibal	Kampong Cham	0.5	1	0.7	50	50	50	48	50	960	720	1200	1200	1920	1680	720	1200	1200	720	1200	1200	860	1060
110	Mok Hy	Toung Tralach	Kampong Cham	1.6	1.6	1.7	5	7	100	110	70	2680	1600	1600	1920	1200	4000	288	320	1680	288	320	1680	1680	1700
111	Oum Koun	Toung Tralach	Kampong Cham	3.4	3.4	3.4	1	70	70	100	30	6000	2400	4176	3800	4800	9030	480	1680	2200	480	1680	2200	2688	1920
112	Put Sarun	Toung Tralach	Kampong Cham	4	2.7	4	20	70	120	270	120	6400	7000	8400	6700	1200	7860	840	2400	4600	840	2400	4600	4600	3360
113	Keo Hy	Toung Tralach	Kampong Cham	1.6	1.6	1.6	1	30	160	30	30	3600	3600	4000	4600	3560	3960	36	1200	4600	36	1200	4600	1250	1440

## Annex2: Rice Production Expenditures

No	Name of farmer	Village	Province	Total expend (riel per HH)					
				Before	2001	2002	2003	2004	2005
1	Ngoun Hean	Prey Talei	Ta Keo	299400	279400	262400	53100	328000	186700
2	Mey Chring	Prey Talei	Ta Keo	264200	204400	206400	53500	116000	116000
3	Sao Rith	Prey Talei	Ta Keo	404200	326200	140900	82100	118400	118400
4	Long Yos	Prey Talei	Ta Keo	429000	235400	120400	115200	147000	130000
5	Din Ratana	Prey Talei	Ta Keo	466000	466000	223000	271000	550500	502500
6	Chheng Loan	Prey Talei	Ta Keo	471000	446000	384700	729000	178000	178000
7	Prak Nan	Prey Khvav	Ta Keo	724000	164400	110000	10000	159000	259000
8	Men Morn	Prey Khvav	Ta Keo	179600	9000	7500	9000	130000	140000
9	Som Le	Prey Khvav	Ta Keo	280800	158700	171600	79400	78000	143150
10	Orm Oun	Prey Khvav	Ta Keo	269800	250000	195900	228900	55000	324000
11	Ngeth Von	Chorm Pol	Ta Keo	106000	106000	84000	20000	24000	47000
12	Sok Rin	Chorm Pol	Ta Keo	179700	115700	100700	76200	16000	227500
13	Oak Khgne	Chorm Pol	Ta Keo	1312600	1377600	1329600	1132600	2142600	1405000
14	Nak Him	Chorm Pol	Ta Keo	426500	197500	187500	115000	227000	12000
15	Chea Kuy	Chorm Pol	Ta Keo	268000	260000	219000	67000	169000	70000
16	Kuchsom On	Chorm Pol	Ta Keo	488500	482500	404700	336500	267000	370500
17	Ong Ying	Taso	Ta Keo	342000	325000	222500	222500	128000	21000
18	Chea Than	Taso	Ta Keo	400000	375000	320000	140000	162000	135000
19	Kong Meun	Taso	Ta Keo	105000	105000	70000	45000	55000	15000
20	Om Sim	Taso	Ta Keo	452000	290000	145000	80000	188700	70000
21	Som Heun	Trapaing Kabas	Ta Keo	313000	258000	190500	205500	63000	31000
22	Chhay Lim	Trapaing Kabas	Ta Keo	338000	244000	198000	196000	100500	55000
23	Tep Khen	Trapaing Kabas	Ta Keo	289500	49100	49100	49100	30000	30000
24	Tep Muth	Trapaing Kabas	Ta Keo	200700	198300	230300	220300	105800	105800
25	Chom Heun	Trapaing Kabas	Ta Keo	186000	152000	139500	107000	287000	103000
26	Chom Chhoun	Trapaing Kabas	Ta Keo	432500	412500	124500	49200	166500	166500
27	Tim Roeun	Trapaing Kabas	Ta Keo	194500	194500	149000	126400	42800	42800
28	Choub Chea	Trapaing Kabas	Ta Keo	165000	126000	116000	115000	95800	95800
29	Som Von	Trapaing Kabas	Ta Keo	614500	192000	119500	60000	146000	128000
30	Prak Ngim	Tasoun	Ta Keo	218000	218000	158800	173000	69400	185000
31	Som Oun	Tasoun	Ta Keo	324000	242500	212500	133500	117000	100500
32	Pa Vith	Tasoun	Ta Keo	127000	96000	71000	70500	38400	38400
33	Soth Phalla	Tasoun	Ta Keo	49800	82300	64600	42300	48000	48000
34	Nob Hoeun	Tasoun	Ta Keo	192200	167400	149600	136200	104400	115000
35	Oum Phath	Tasoun	Ta Keo	174000	144000	174000	161000	181000	181000
36	Prak Chres	Tasoun	Ta Keo	377500	359500	217300	134750	67500	67500
37	Keo Bun	Tipath	Ta Keo	512000	435000	193000	195000	430000	400000
38	Sor Chanith	Tipath	Ta Keo	230000	175000	27500	70000	100000	100000
39	Prak Thy	Ang Trav	Ta Keo	504000	514000	504000	324000	360000	533000
40	Tim Chev	Ang Trav	Ta Keo	215000	220000	215000	285500	190000	170000
41	Em Tim	Ang Trav	Ta Keo	492000	358000	120000	73000	85100	35000
42	Pa Vuth	Sre Khvav	Ta Keo	142000	138000	86000	39000	69400	68000
43	Ol Gnil	Sre Khvav	Ta Keo	227000	347000	262000	137300	257000	290500
44	Ngeth Phal	Sre Khvav	Ta Keo	211000	219500	254500	333100	76800	76800
45	Hort Neang	Sre Khvav	Ta Keo	166000	166000	144500	73000	65600	35000
46	Chhorn Phalla	Sre Khvav	Ta Keo	197500	69000	62000	58250	65600	22500
47	Keo Som Ol	Popreah Sang	Ta Keo	183500	112000	40500	77700	22200	154000
48	Tea Savy	Popreah Sang	Ta Keo	800000	227500	265000	132800	141500	141500
49	Ang Loan	Popreah Sang	Ta Keo	588000	694000	664000	506000	414500	414500
50	Mouk Sokrim	Popreah Sang	Ta Keo	200000	203000	172200	80000	126000	126000
51	Som Houn	Prey Sbaat	Ta Keo	211000	196000	206000	29320	297500	59500
52	Gnean San	Prey Sbaat	Ta Keo	218000	62600	90000	149600	42500	42500
53	Pok Horn	Prey Sbaat	Ta Keo	218000	170000	144500	217500	27100	27100
54	Um Thy	Chrom Pol	Ta Keo	532500	482500	407500	207500	737000	580000
55	Keo Neang	Taso	Ta Keo	129000	24000	24000	24000	53000	22000
56	Nut Lorn	Taso	Ta Keo	374200	324400	211600	129200	290000	80000
57	Hun Meun	Taso	Ta Keo	425500	80500	37500	6000	119400	119400
58	Gnem Sokly	Popreah Sang	Ta Keo	153000	265400	241200	251200	322000	245000
59	Oak Von	Popreah Sang	Ta Keo	278000	254400	277000	252800	119400	119400
60	Touch Yim	Popreah Sang	Ta Keo	209000	196800	196800	216800	368400	368400

No	Name of farmer	Village	Province	Total expend (riel per HH)					
				Before	2001	2002	2003	2004	2005
61	Sem Yeun	Popreah Sang	Ta Keo	338800	184400	185000	160000	200800	200800
62	Khun Sokha	Popreah Sang	Ta Keo	402900	273500	314000	90000	247000	125000
63	Ven Kun	Taso	Ta Keo	316000	235000	170000	105000	90000	40000
64	Khseth Gnah	Taso	Ta Keo	164800	188800	105600	109600	65000	40000
65	Som Horn	Taso	Ta Keo	207200	166820	80420	29320	57000	25500
66	Sin Chrek	Takork	Prey Veng	195000	104000	105000	105000	165000	159000
67	Boy Ren	Takork	Prey Veng	367000	283000	173000	115000	142000	104200
68	Prak Leak	Krouch	Prey Veng	844000	579500	488500	342000	453800	342000
69	Thov Kunthea	Krouch	Prey Veng	349000	601000	564000	524000	796000	524000
70	Va Mean	Krouch	Prey Veng	121000	37500	166000	253750	315000	253750
71	Phan Sopheak	Krouch	Prey Veng	586000	548500	477000	219000	533000	219000
72	Boy Saban	Krouch	Prey Veng	126000	88500	75000	115000	365600	115000
73	Chhen San	Krouch	Prey Veng	580000	441000	304000	325000	489400	325000
74	Sao Horn	Krouch	Prey Veng	295000	168000	314500	194000	748000	566000
75	Put Cheun	Krouch	Prey Veng	327500	268500	257000	307000	665000	307000
76	Va Kol	Krouch	Prey Veng	200000	292000	1183000	319400	767000	319400
77	Long Theun	Kansom Oak	Prey Veng	116000	136000	152000	188000	389000	188000
78	Long Ran	Kansom Oak	Prey Veng	595500	564500	604000	197000	316000	181000
79	Sok Khoy	Kansom Oak	Prey Veng	294000	111200	326100	104400	220000	104400
80	Ky Samuth	Kansom Oak	Prey Veng	411000	464500	317000	165000	232500	165000
81	Khvan Hun	Kraing Chin	Prey Veng	553500	288500	95500	199000	113000	113000
82	Meas Phon	Kraing Chin	Prey Veng	117000	64000	15000	15000	59000	15000
83	Tea Noun	Komhaing Reach	Prey Veng	287000	271500	229000	15000	136000	15000
84	Lim Ry	Komhaing Reach	Prey Veng	307500	167000	225000	64000	192000	64000
85	Chhay Mek	Komhaing Reach	Prey Veng	361000	163000	150500	120000	190000	120000
86	Him Yan	Trapaing Svay	Prey Veng	253400	344500	18000	15000	15000	15000
87	Chou Chon	Trapaing Svay	Prey Veng	252000	146000	111500	52000	183000	52000
88	Bun Paov	Tong Neak	Prey Veng	57500	22600	22600	102500	214000	102500
89	Toun Loan	Krous	Prey Veng	531800	11800	30400	100000	222000	100000
90	San Kim	Krous	Prey Veng	232000	800	800	270000	356000	85000
91	Chea Tech	Svay Prakral	Prey Veng	241500	54500	11000	14500	70900	14500
92	Kham Saveun	Trapaing Kabas	Prey Veng	110000	110000	81000	81000	81000	60000
93	Phim Thoy	Trapaing Kabas	Prey Veng	438000	350000	338000	286000	286000	286000
94	Chhim Neath	Trapaing Kabas	Prey Veng	180000	110000	72500	37000	92000	37000
95	Chhim Yeng	Trapaing Kabas	Prey Veng	222000	170000	110000	147000	132000	115000
96	Tim Sin	Trapaing Kabas	Prey Veng	226000	205000	164000	210000	210000	210000
97	Pouch Run	Ang Kanh	Prey Veng	83000	29000	29000	17000	17000	95000
98	Kith Savy	Ang Kanh	Prey Veng	100000	76500	64500	64500	64500	64500
99	Chhim Sameun	Ang Kanh	Prey Veng	70000	64000	84000	113000	113000	113000
100	Pouch Yun	Ang Kanh	Prey Veng	210500	110000	110000	265000	769000	195000
101	En Chheum	Ang Kanh	Prey Veng	150000	220000	220000	567500	622000	422000
102	Thoung Kiet	Prey Kuy	Prey Veng	90000	18000	10900	24000	28100	24000
103	Sou Saing	Prey Kuy	Prey Veng	707000	567500	567500	459800	480000	459800
104	Hen Ry	Trapaing Svay	Prey Veng	47500	30500	27500	183000	183000	183000
105	Lay Samo	Kraing Chin	Prey Veng	185000	169000	162500	162500	162500	162500
106	Van Korn	Trea	Kampong Cham	620100	669300	503300	503300	177000	177000
107	Ry Thy	KhnoI Doung	Kampong Cham	83000	25200	44000	44000	589000	521000
108	Choun Chun	Chibal	Kampong Cham	970000	88000	124000	102800	529600	126000
109	Mom Buntheun	Chibal	Kampong Cham	774500	180000	160000	160000	205000	187000
110	Mok Hy	Toung Tralach	Kampong Cham	208500	37500	58000	33000	544000	33000
111	Oum Koun	Toung Tralach	Kampong Cham	183500	240000	120000	120000	250500	135000
112	Put Sarun	Toung Tralach	Kampong Cham	228500	122500	113500	196000	523000	196000
113	Keo Hy	Toung Tralach	Kampong Cham	232000	182000	162000	59000	63000	59000

Annex3: Gross margin in Rice production

No	Name of farmer	Village	Province	Gross margin (riels per HH)					
				Before	2001	2002	2003	2004	2005
1	Ngoun Hean	Prey Talei	Ta Keo	420600	440600	577600	750900	344000	485300
2	Mey Chring	Prey Talei	Ta Keo	575800	755600	993600	1586500	844000	1564000
3	Sao Rith	Prey Talei	Ta Keo	1275800	1353800	1539100	1117900	361600	1321600
4	Long Yos	Prey Talei	Ta Keo	1011000	1324600	1079600	1046400	1421000	1670000
5	Din Ratana	Prey Talei	Ta Keo	14000	14000	257000	593000	217500	457500
6	Chheng Loan	Prey Talei	Ta Keo	725000	702000	803300	915400	782000	782000
7	Prak Nan	Prey Khvav	Ta Keo	836000	1035600	1090000	742400	1761000	1341000
8	Men Morn	Prey Khvav	Ta Keo	1020400	839000	1212500	755400	830000	436000
9	Som Le	Prey Khvav	Ta Keo	-120800	121300	148400	352600	498000	480850
10	Orm Oun	Prey Khvav	Ta Keo	690200	1102000	1468100	1051100	233000	1212000
11	Ngeth Von	Chorm Pol	Ta Keo	354000	354000	380000	248800	16000	133000
12	Sok Rin	Chorm Pol	Ta Keo	80300	61100	190500	923800	16000	72500
13	Oak Khgne	Chorm Pol	Ta Keo	319400	350400	686400	1171400	-102600	1283000
14	Nak Him	Chorm Pol	Ta Keo	-90500	822500	772500	925000	613000	2004000
15	Chea Kuy	Chorm Pol	Ta Keo	532000	860000	821000	893000	407000	650000
16	Kuchsom On	Chorm Pol	Ta Keo	279500	285500	619300	783500	69000	829500
17	Ong Ying	Taso	Ta Keo	178000	323400	453500	1121500	544000	1939000
18	Chea Than	Taso	Ta Keo	640000	873000	928000	1396000	414000	1321000
19	Kong Meun	Taso	Ta Keo	87000	135000	290000	425400	233000	397800
20	Om Sim	Taso	Ta Keo	388000	910000	1295000	1240000	675300	1370000
21	Som Heun	Trapaing Kabas	Ta Keo	167000	318000	289500	794500	153000	545000
22	Chhay Lim	Trapaing Kabas	Ta Keo	622000	428000	474000	484000	571500	453800
23	Tep Khen	Trapaing Kabas	Ta Keo	651300	238900	190900	270900	162000	258000
24	Tep Muth	Trapaing Kabas	Ta Keo	116100	147300	153700	109300	182200	326200
25	Chom Heun	Trapaing Kabas	Ta Keo	294000	328000	340500	517000	193000	473000
26	Chom Chhoun	Trapaing Kabas	Ta Keo	-48500	67500	595500	670800	35100	217500
27	Tim Roeun	Trapaing Kabas	Ta Keo	-2500	131900	331000	433600	418000	341200
28	Choub Chea	Trapaing Kabas	Ta Keo	363000	594000	412000	725000	192200	526600
29	Som Von	Trapaing Kabas	Ta Keo	-326500	144000	120500	276000	-123600	160000
30	Prak Ngim	Tasoun	Ta Keo	1382000	1582000	1521200	1747000	314600	1735000
31	Som Oun	Tasoun	Ta Keo	876000	1157500	867500	1306500	747000	919500
32	Pa Vith	Tasoun	Ta Keo	1193000	1304000	1209000	953500	857600	921600
33	Soth Phalla	Tasoun	Ta Keo	310200	337700	535400	637700	464000	700000
34	Nob Hoeun	Tasoun	Ta Keo	1007800	1152600	1530400	1663800	855600	1133000
35	Oum Phath	Tasoun	Ta Keo	666000	756000	606000	619000	1259000	971000
36	Prak Chres	Tasoun	Ta Keo	1078500	1100500	1262700	1497250	1532500	1732500
37	Keo Bun	Tipath	Ta Keo	1024000	1109000	579000	1629000	338000	1520000
38	Sor Chanith	Tipath	Ta Keo	58000	161000	356500	314000	188000	380000
39	Prak Thy	Ang Trav	Ta Keo	456000	446000	168000	348000	600000	867000
40	Tim Chev	Ang Trav	Ta Keo	841000	980000	553000	578500	122000	310000
41	Em Tim	Ang Trav	Ta Keo	276000	602000	945600	1127000	1066900	1405000
42	Pa Vuth	Sre Khvav	Ta Keo	258000	462000	554000	249000	314600	604000
43	Ol Gnil	Sre Khvav	Ta Keo	592200	557000	765200	1062700	415000	409500
44	Ngeth Phal	Sre Khvav	Ta Keo	221000	308500	350300	506900	403200	595200
45	Hort Neang	Sre Khvav	Ta Keo	390800	410000	527500	599000	97600	627400
46	Chhorn Phalla	Sre Khvav	Ta Keo	-5500	171000	226000	229750	97600	198300
47	Keo Som Ol	Popreah Sang	Ta Keo	656500	908000	1159500	1002300	457800	922000
48	Tea Savy	Popreah Sang	Ta Keo	-416000	252500	119000	179200	-45500	326500
49	Ang Loan	Popreah Sang	Ta Keo	-108000	-310000	8000	70000	-30500	65500
50	Mouk Sokrim	Popreah Sang	Ta Keo	472000	574600	595800	688000	642000	930000
51	Som Houn	Prey Sbaat	Ta Keo	365000	188000	178000	450680	182500	462100
52	Gnean San	Prey Sbaat	Ta Keo	166000	321400	274800	250400	245500	917500
53	Pok Horn	Prey Sbaat	Ta Keo	666000	1130000	1163500	742500	112900	932900
54	Um Thy	Chrom Pol	Ta Keo	107500	477500	840500	1232500	55000	1340000
55	Keo Neang	Taso	Ta Keo	71000	216000	456000	496000	67000	93200

No	Name of farmer	Village	Province	Gross margin (riel per HH)					
				Before	2001	2002	2003	2004	2005
56	Nut Lorn	Taso	Ta Keo	297800	363600	1228400	1310800	382000	1400000
57	Hun Meun	Taso	Ta Keo	-41500	15500	58500	594000	648600	840600
58	Gnem Sokly	Popreah Sang	Ta Keo	423000	406600	526800	708800	-82000	171000
59	Oak Von	Popreah Sang	Ta Keo	426000	705600	563000	707200	648600	1080600
60	Touch Yim	Popreah Sang	Ta Keo	575000	811200	867200	839200	111600	1091600
61	Sem Yeun	Popreah Sang	Ta Keo	1101200	1295600	1415000	1072000	375200	759200
62	Khun Sokha	Popreah Sang	Ta Keo	557100	686500	646000	1230000	521000	643000
63	Ven Kun	Taso	Ta Keo	644000	965000	830000	375000	78000	344000
64	Khseth Gnah	Taso	Ta Keo	795200	771200	870400	1010400	319000	664000
65	Som Horn	Taso	Ta Keo	368800	217180	303580	493880	423000	496100
66	Sin Chrek	Takork	Prey Veng	85000	918000	1043000	695000	418200	273000
67	Boy Ren	Takork	Prey Veng	161000	509000	971000	905000	858000	1235800
68	Prak Leak	Krouch	Prey Veng	-544000	860500	351500	658000	787800	1098000
69	Thov Kunthea	Krouch	Prey Veng	1107000	-55000	1516000	2206000	1388000	1876000
70	Va Mean	Krouch	Prey Veng	59000	162500	464000	526250	1285000	1546250
71	Phan Sopheak	Krouch	Prey Veng	-581200	-284500	-29000	201800	1867000	761000
72	Boy Saban	Krouch	Prey Veng	114000	151500	309000	1032200	634400	1005000
73	Chhen San	Krouch	Prey Veng	476000	327000	96000	3220600	2694200	2315000
74	Sao Horn	Krouch	Prey Veng	185000	832000	1605500	2110000	2585200	2754000
75	Put Cheun	Krouch	Prey Veng	872500	731500	943000	973000	335000	1293000
76	Va Kol	Krouch	Prey Veng	40000	380000	-31000	680600	2033000	2484600
77	Long Theun	Kansom Oak	Prey Veng	172000	296000	616000	1612000	111000	868000
78	Long Ran	Kansom Oak	Prey Veng	-155500	-84500	356000	1103000	484000	275000
79	Sok Khoy	Kansom Oak	Prey Veng	-94000	114400	173100	375600	380000	375600
80	Ky Samuth	Kansom Oak	Prey Veng	-211000	-90100	547000	987000	1367500	1827000
81	Khvan Hun	Kraing Chin	Prey Veng	1366500	1631500	1632500	1321000	1087000	1759000
82	Meas Phon	Kraing Chin	Prey Veng	843000	320000	1785000	1925000	277000	1161000
83	Tea Noun	Komhaing Reach	Prey Veng	169000	1168500	1211000	1425000	152000	469000
84	Lim Ry	Komhaing Reach	Prey Veng	844500	1369000	1775000	1936000	1248000	1136000
85	Chhay Mek	Komhaing Reach	Prey Veng	639000	105800	649500	760000	50000	680000
86	Him Yan	Trapaing Svay	Prey Veng	130600	295500	270000	305000	-15000	585000
87	Chou Chon	Trapaing Svay	Prey Veng	132000	238000	-15500	1148000	297000	428000
88	Bun Paov	Tong Neak	Prey Veng	1382500	894200	894200	777500	1226000	2237500
89	Toun Loan	Krous	Prey Veng	268200	388200	369600	500000	310800	716000
90	San Kim	Krous	Prey Veng	568000	399200	479200	530000	244000	692600
91	Chea Tech	Svay Prakral	Prey Veng	94500	524300	1189000	1185500	361100	1475900
92	Kham Saveun	Trapaing Kabas	Prey Veng	562000	562000	495000	855000	111000	420000
93	Phim Thoy	Trapaing Kabas	Prey Veng	1002000	898000	718000	1154000	1202000	1026000
94	Chhim Neath	Trapaing Kabas	Prey Veng	300000	466000	407500	1163000	708000	1363000
95	Chhim Yeng	Trapaing Kabas	Prey Veng	378000	430000	690000	1443400	540000	941000
96	Tim Sin	Trapaing Kabas	Prey Veng	342000	475000	652000	558000	894000	690000
97	Pouch Run	Ang Kanh	Prey Veng	477000	547000	571000	463000	223000	755000
98	Kith Savy	Ang Kanh	Prey Veng	60000	123500	155500	135500	-64500	602700
99	Chhim Sameun	Ang Kanh	Prey Veng	602000	608000	916000	887000	325000	527000
100	Pouch Yun	Ang Kanh	Prey Veng	509500	690000	690000	1335000	-169000	605000
101	En Chheurn	Ang Kanh	Prey Veng	1250000	1380000	1380000	1556500	-22000	284000
102	Thoung Kiet	Prey Kuy	Prey Veng	102000	206000	277100	264000	371900	120000
103	Sou Saing	Prey Kuy	Prey Veng	-323000	56500	-423500	-75800	-204000	340200
104	Hen Ry	Trapaing Svay	Prey Veng	912500	689500	788500	737000	234600	1817000
105	Lay Samo	Kraing Chin	Prey Veng	1735000	1271000	1469500	997500	837500	1757500
106	Van Korn	Trea	Kampong Cham	339900	1610700	2216700	2248700	1263000	2423000
107	Ry Thy	Kh nol Doung	Kampong Cham	1837000	2134800	2716000	2356000	611000	2239000
108	Choun Chun	Chibal	Kampong Cham	-490000	632000	636000	697200	814400	1414000
109	Mom Buntheun	Chibal	Kampong Cham	-390500	108000	320000	320000	563000	485000
110	Mok Hy	Toung Tralach	Kampong Cham	863500	602500	582000	735000	-64000	1567000
111	Oum Koun	Toung Tralach	Kampong Cham	2216500	720000	1550400	1400000	1669500	3477000
112	Put Sarun	Toung Tralach	Kampong Cham	2331500	2677500	3246500	2484000	-43000	2948000
113	Keo Hy	Toung Tralach	Kampong Cham	1208000	1258000	1438000	1781000	1361000	1525000