INTERNAL EVALUATION REPORT

Improving Livelihood of Small Farmers through Training on Ecological Agriculture (ILFARM-TEA)

Trapaing Kaek, Prey Torteung, Trapaing Por, Trapaing Ktum and Kachas Villages of Veal Pong Commune, Odong District of Kampong Speu Province

Implemented by CEDAC
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I. Introduction

CEDAC in collaboration with CODEGAZ is implementing a pilot project to address the issues affecting the livelihoods and the social conditions of small farmer communities in Veal Pong Commune, Odong District of Kampong Speu Province through the promotion of ecological agriculture. To achieve this objective, CEDAC is implementing various activities including training needs assessment, project introduction meeting, family and village baseline study, external and internal field visits, technical training on ecological agriculture and follow up, and monitoring and evaluation.

II. Research Methodology

To assess the project impact, the M&E team in collaboration with key trainers from CEDAC conducted an evaluation study in mid January 2010 in the project area in Veal Pong Commune of Oddong District, Kampong Speu Province. The evaluation survey was focused on review of project implementation, measuring the effectiveness of the training programme and recommendations for the next phase.

In the evaluation study, data was gathered from focus group discussions and individual interviews. Three focus group discussion meetings (FGD) were organized and 26 households were randomly selected for in-depth interviews. FGDs were held in 3 target villages of the 5 villages where the beneficiaries are more dominant, and household interviews held in all 5 of the target villages. The participants in FGDs included representatives of beneficiary farmers, villagers (non-project supported), and village chiefs.Information collection was based on a questionnaire form designed by the evaluation team.

Table 1: Studied villages and participants in field data collection process

N	Village	Group Discussions		Household Interviews (HH)
		Participants	Women	
1	Trapaing Kaek	8	5	5
2	Prey Toteung	9	6	7
3	Trapaing Po	9	7	7
4	Trapaing Khtum	0	0	5
5	Trapaing Kchas	0	0	2
	Total	**26**	**18**	**26**

II. Analysis of Project Impacts

2.1 Training program evaluation

Concerning training programme, FGDs reported that they appreciate the training provided. About 70-80% of participants said that the training topics introduced are very important; while in household interview about 50% of respondents said that they are very helpful for improving their living standard. More than 50% of respondents said that the trainer facilitation skill is very good.

Table2: Evaluation on the training programme

Training session	Excellent	Good	Medium

SRI			
Facilitation and explanation of trainer	31%	62%	8%
Training content	54%	42%	4%
Meeting trainee's expectation	50%	46%	4%
Importance of training topics	81%	15%	4%
Fish raising in plastic hole			
Facilitation and explanation of trainer	23%	69%	8%
Training content	42%	54%	4%
Meeting trainee's expectation	15%	69%	15%
Importance of training topics	69%	27%	4%
Home garden			
Facilitation and explanation of trainer	50%	46%	4%
Training content	54%	15%	31%
Meeting trainee's expectation	27%	54%	19%
Importance of training topics	81%	19%	0%
Ecological chicken raising			
Facilitation and explanation of trainer	62%	38%	0%
Training content	54%	42%	4%
Meeting trainee's expectation	23%	65%	12%
Importance of training topics	81%	15%	4%

Source: focused group discussion, January 08, 2010

Furthermore, the participating farmers have disseminated these innovations to their neighbors through formal and informal meetings. According to the evaluation scores, System of Rice Intensification (SRI), ecological chicken raising (ECR) and home garden (HG) score the highest in terms of meeting the farmers' expectation and in being important topics, while fish raising received a lower score. The first 3 topics are easier for farmers to apply as it is low investment. According to household interviews, it was reported that fish raising is a high investment and costly including digging the pond, buying plastic bag and fingerlings, and feeding the fish.

Table 2: The innovation adoption

Innovation	Total direct beneficiary	Number of families applying	Total beneficiary (direct and indirect)
SRI	86	110	182
Fish raising in plastic hole	60	67	124
Home garden	81	70	126
Ecological chicken raising	82	50	147
Total*	**100**	**150**	**200**

*Remark: * this is an approximationsince most farmers received all of these training topics*
Source: focused group discussion, January 08, 2010, and project progress report

2.2- Level of technical adaptation

2.2.1 SRI Adoption

This technique is the most fundamentally successful method that was adapted by farmers in the project target area and outside target areas. SRI is an approach to increase rice productivity with encouraging the use of internal inputs.

According to progress reports, about 110 farmers applied SRI in 2009 with total land size of approximately 30ha (about 10-30% of total paddy land[1]). According to FGD, the target farmers have disseminated the ideas to outsiders or non-project farmers through formal and informal meetings. As a result, around 180 farmers have learnt SRI techniques through attending training and/or visiting the rice field of cooperating/project supported farmers, of which about 40% is non-project supported farmers.

The study found that after the project the overall rice production increased from 1,100kg to 1,200kg per ha, or the increased rice amount of 187 kg/household per year; and the production inputs decreased by 50% as the results of less seed, labor rental and chemical fertilizer use (table4). The organic matter collection and use by the farmers has also increased which resulted in reducing expense on external inputs.

The average yield of SRI fields is 2,300kg/ha or double (??? This doesn't make sense???) increase compared to the normal practice; while the measure of SRI yield during the field day is 2,806-3,187kg/ha relatively to the best practice of SRI (????) in the target area. Box1 show a significant increase in yield of SRI compared to the conventional practice.

On the other hand, the farmers reported that there was a long drought during rice cultivation season (July-August) and it was a struggle for the farmers to try SRI because seedlings become relatively old while awaiting rain fall. However, most of the farmers who have been trained had a strong commitment to do SRI; they started growing rice by following SRI methods even if not enough water or even when the seedling is too old for SRI application. The farmers also reported that the SRI rice is more tolerant to drought than the conventional rice.

Table 4: Rice production status

Description	Before project	In 2009	Difference before and after the project intervention
Manure/Compost (ox-cart)	10	13	3
Expense on organic fertilizer (Riel/HH*)	49,071	10,666	38,404
Chemical fertilizer use (% of HH)	69.23%	38.46%	30.77%
Quantity of chemical fertilizer use (Kg/HH)	50.28	28.50	21.78
Pesticide use (% of HH)	7.69%	3.85%	3,84%
Expense on chemical pesticide (Riel/HH)	15,000	5,000	10,000
Rice seed use (Kg/HH)	71	47	24
Expense on production cost (labor rental, material rental…)	292,200.00	226,578.95	65,621.05
Total rice product (Kg/HH)	1,492	1,680	187
Rice yield in general (Kg/Ha)	1,096	1,200	104

[1] Average paddy land size per household is 1.5ha

SRI yield (Kg/Ha)	2,300

Remark: * HH: household
Source: Household interviewed

Box1:
Mr. Phang Hol, 33, a farmer in Prey Toteung village of Val Pong commune, has participated in training on SRI and other agriculture techniques organized by CEDAC in 2009. After training, last season he tried the SRI method in rice planting on 0.3 ha of his one ha paddy field. He applied only some principles of the SRI methods, including using young seedlings (age 18 days), transplanting one seedling per clump with their root system inserted lightly in the soil, and using organic matter/manure. This year he gets 800kg of rice from 0.3ha SRI field; while he could get only 1,260kg from the remaining 0.7ha. Seeing this good yield, he is committed to use SRI for his entire paddy field in the next season.

2.2.2- Home Gardening

According to FGDs, compost manure, tea compost and biological pesticides have been widely applied by the farmers. It was found that the households interviewed increased their vegetable growing in both quantity and varieties. Table 5 shows that 61% of households interviewed have vegetables for household consumption until January-February; while previously, they had grown only a few varieties of vegetable seasonally. The average vegetable production per household increased from 81kg to 212kg in this season. Interestingly, among 26 interviewed the families that could sell vegetables increased from 6 families in last year to 10 families this year; and the amount of vegetables sold increased from 64kg to 192kg per household. Their income from vegetables increased from 53,000 riel to 151,100 riel per household (24 USD higher than last year). Box2 indicates the increase in vegetable production after training.

Noticeably, the households that do fish raising also grew vegetables on the pond banks to control soil erosion, land-slide, and also to provide a synergy effect of the integrated farming as it is easy to exchange water in the fish pond and use thiswater for watering vegetables.

The target farmers have also disseminated this innovation to non-target farmers inside and outside the project area. As aresult, more than 120 farmers have learnt HG techniques such as composting, liquid compost and biological pesticides through field visits, training, and visiting their neighbors' farm.

Table5: Home gardening

Description	Before project implement	In 2009 (Present)	Difference before and after the project intervention
Compost (% of HH)	7.69%	76.92%	69.23%
Compost tea (% of HH)	0.00%	42.31%	42.31%
Biological repellent (% of HH)	0.00%	16.00%	16.00%
Vegetable variety/HH	5	8	3
Quantity of vegetable product (Kg/HH)	81	212	131
Quantity sold (Kg/HH)	64	192	128
Income sale of vegetable (riel)	53,500	151,400	97,900

Source: Household interview

Box2:
Mr. Ka Sothea, 55, a farmer in Trapaing Khtum village, owns 2.4ha of farming land, of which he uses 0.1ha for growing vegetables. After participating in training in 2009, he has improved his vegetable production by applying compost and growing more varieties of vegetables- increased from 5 varieties in the previous year to 10 varieties in last season. As a result, his vegetable production increased from 20kg to 45kg and the income from vegetables increased from 11,000 riel to 33,000 riel. At the same time, his family also reduced expense for buying additional vegetables for consumption. For his future plan, he will continue growing vegetables and will make tea compost and biological pesticides for vegetable production.

2.2.3-Ecological Chicken Raising (ECR)

According to the progress report, more than 50 families have improved their chicken raising practice, such as building chicken cage/house and improving feeding and sanitation, etc. The study found that more than 80% of households interviewed built chicken cage/house while the other families started construction. The average number of chicken raised per household increased from 5 to 7 head for hens and 15 to 19 head for adult chickens, and the number of chickens sold to the market per household slightly increased (table 6). The disease and mortality cases for chickens have dropped by 20%.

Table 6: Chicken Raising Status

Description	Before project	In 2009 (Present)
Number of hen/HH (Head/HH)	5	7
Number of chicken (Head/HH)	15	19
Egg rate (Egg/time/hen)	11	12
Hatching rate (%/time/hen)	80.77%	92.31%
Disease case (time/hen)	69%	54%
Mortality case	58%	37%

Source: Household interview

The main techniques that farmers applied are:

- Give regular water to chickens. They put some traditional medicine/herb (lemon grass, neem bark, ginger, garlic, etc.) in the feeding water.
- Some farmers constructed cages for chicks.
- Give feed regularly, especially mixing the feed with ivy gourd leaves and other vegetables.
- Some farmers made compost cages in the chicken pen (chicken compost) to create good environment for attracting termite or insects which is natural feed with high protein for chickens.

However, the adoption is also dependent on the available space in the households' farm. On average, the size of their chicken cage is 2.5m x 3.5m which is appropriate to the recommended techniques (3x4m). It was interesting to note that most of them applied most of the recommended techniques including regularly cleaning the chicken space, disease control and feeding.

Noticeably, some of the farmers reported that a few years ago their chicken raising suffered from birth flu which caused high chicken mortality. This bad experience makes them reluctant to restart chicken raising.

Table7: Technical Adaption on ECR

Description	Before project	In 2009 (Present)
Botanical medicine use	19%	65%
Frequency of feeding	8%	73%
Frequency of providing water	4%	69%
Care taking	12%	77%
Production cycle (Month/Raising cycle)	5.7	4.6
Frequency of sale of chicken (time)	2.5	3
Quantity of sale (Kg/HH)	15.25	24.97
Planned to expand the production (% of HH)		92.31%

Source: Household interview

2.2.4 Fish Raising

According to the progress report, 67 families applied fish raising, of which 7 families are non-cooperating/project supported farmers. The study found that 68% of households interviewed said that the innovation is interesting and important for them. The farmers were impressed that they could save more time and money on food when raising fish. Moreover, the farmers were successful with this technique with low mortality rate - only 8% (table 8). They could get the fish for household consumption and only a few families could sell to other villagers in small amounts. Apart from direct benefits from fish, most of them grew vegetables surrounding fish ponds to use the integrated system more effectively. It can contribute to control soil erosion, land-slide, to facilitate the drainage/irrigation of water in the fish pond[2] and also provides additional food. Additionally, after visiting cooperating farmers that applied fish raising in plastic hole, 7 families outside the project have applied this innovation.

Some interviewed households reported that they have faced some problems in the fish raising, such as lack of feed and plastic that covered the pond broke down during raising period. However, there are 28% of interviewed farmers confirmed that they will continue this technique by replacing plastic holes with concrete ponds which are more durable.

Table8: Fish raising status

Description	Status
Maximum size of fish (g/head)	270.59
Minimum size of fish (g/head)	98.24
Average size of fish (g/head)	182.35
Mortality rate	8%
Supply to family consumption (head/HH)	248
Expense on fish feeding (Riel/HH)	45125
Sale of fish product (% of HH)	12.00%
Quantity of sale (Kg/HH)	1.33
Income from fish (Riel/HH)	6,300

[2] It is required to replace a portion of the water in the fish pond every week.

Continue raising fish (% of HH)	28.00%

Source: Household interview

III- Conclusion

In general, the farmers appreciated the training programme. They are very interested in System of Rice Intensification (SRI), ecological chicken raising and home garden, while the fish raising topic is likely not so interesting for them since the latter is high investment and needs more external inputs compared to the first 3 topics, which are more appropriate for their local resources and knowledge. Rice, home garden and ecological chicken production have remarkably increased in the project area. This indicates that the project should focus primarily on food security rather than on income generation for the community members.

IV- Recommendation

Based on the evaluation findings, some recommendations and suggestions will be considered:

- Project should conduct regular follow-up meetings and consultation meetings after each training session, possibly on a monthly basis. This would motivate farmers/innovators to apply the innovation and also help them to settle problems as they occur during their implementation.

- To strengthen the application of innovation, refresher training on each topic should be organized in quarterly meetings. These events could help the adopting farmers to review their technical practice and the trainer could also address technical problems faced by the farmers during training sessions.

- The support on fish raising should be strengthened. The trainer should conduct more action research on fish raising in plastic-laid hole to find better methods; otherwise, the project should consider introducing alternative techniques for fish raising.

- Training needs assessments (TNA) should be well organized before project implementation in order to provide enough information to the community members, and to identify the farmers with the most potential and interest to join the project. During TNA, the training topics and training process should be clearly presented, so that the farmers have choices to select any topic that they want to learn.

- As requested by the farmers, pig raising techniques should be considered as it is also appreciated for their local situation.

- Concerning sustainable development, the project should consider topics related toself improvement in the next phase. Trainings on this theme would motivate and inspire the farmers to become more self-reliant and self-empowered.