Ministry of Agriculture and Rural Development

Northern Mountainous Agriculture and Forestry Institute

Food and Agriculture Organization of the UN

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"Strengthening Capacities to Enhance Coordinated and Integrated Disaster Risk Reduction Actions and Adaptation to Climate Change in Agriculture in the Northern Mountain Regions of Viet Nam"

Documentation and Demonstration of Good Practices for Disaster Risk Management and Climate Change Adaptation in Northern Mountain Regions in Vietnam

Hanoi, 2011

1. Introduction

Viet Nam is considered as one of the most vulnerable countries to the impacts of climate change and its impacts, including sea level rise, increased frequency of natural disasters like typhoons, floods and droughts. Its agriculture activities are highly exposed to recurring natural hazards, especially in the most vulnerable areas such as the northern mountain region. In recent years, several disasters occurred in this area with unprecedented severity and scale, devastating small watersheds, causing serious losses in term of human lives, properties and the environment.

In order to reduce the disasters risks and impacts, the Government of Viet Nam has adopted the National Strategy on Disaster Prevention, Response and Mitigation 2020. In addition to Government initiatives, within the ONE UN Plan, UN agencies have the role to facilitate the Governments lead in prevention, mitigation, disaster preparedness, response and rehabilitation. The idea underlined in the ONE UN Plan is to take all the UN Agencies working together under the same umbrella in order to address needs and priorities in a more effective manner and take advantage from mutual lessons learned, information sharing, training and coordination. On this regard, the Programme Coordination Group for Natural Disaster Management and Response (PCG10) is committed to support the Ministry of Agriculture and Rural Development (MARD) in disaster risk reduction, preparedness and response through coordination with the involved UN Agencies.

Under this project, with financial support provided by FAO, the Northern Mountain Agriculture and Forestry Institute (NOMAFSI) developed a baseline situation analysis study and documentation of good practices relating to disaster risk management (DRM) and climate change adaptation (CCA) in the target areas. Further, in order to develop and disseminate for effective and wide application of good traditional agricultural practices for DRM and CCA, based on the traditional knowledge in on-farm rice seed production, NOMAFSI has developed advanced technology for on-farm rice seed production using RICM (rice crop integrated management), and together with training of farmers and local cadres in related issues, the institute also conducted demonstrations on on-farm rice seed production and community awareness raising activities.

This report presents the activities conducted and results obtained by NOMAFSI under the LOA singed between the institute and FAO for "Situation Assessment Study, Documentation and Demonstration of Good Practices of Disasters Risk Management (DRM) and Climate Change Adaptation" in the three project's target provinces of Yen Bai, Lao Cai and Phu Tho.

2. Documentation of Good Practices

Surveys were conducted in all the 3 provinces, and the following are the most important findings.

Except practices directly related to DRR, such as, building structures to prevent landslides and flash floods, expanding flood discharge openings of sluices and bridges on roads for flood water drainage, building reservoir systems for both flood and drought control, evacuation of population out of dangerous areas, long-term plan for land use etc., there are agricultural practices of value for mitigating effects of disasters and/or for recovery of crop production after disasters. Most noteworthy are the use of diverse pureline rice varieties which are with good adaptability to local growth conditions, and on-farm production and conservation of seeds of these varieties:

- Older farmers have good knowledge and skills in the production of conventional rice seeds. Before, particularly during 1960-1980, most communities were self-sufficient in rice seeds: each agricultural cooperative established a rice seed production group comprising most experienced and skillful farmers, trained them in relevant techniques and provided them with appropriate land areas and necessary supplies to produce rice seeds for the whole cooperative. This is a useful lesson and great advantage for the project to build community-based rice seed production and supply systems for overcoming the above mentioned problems of seed supply towards DRM. This traditional knowledge is of high values for developing advanced technology for rice seed production at household level.
- Different newly improved pure-line rice varieties (TL6, HT1, BT 13, HD 18, SH 14, T10, and N46) are adaptable to the local growth conditions. Most of these varieties are with short growth duration, good quality and yield. Some local rice varieties, especially Seng Cu variety, are with good/specialty quality. The production of these pureline varieties brings higher income to farmers, and thus their development is of high desire. However, supports from both scientists and local authorities are necessary for communities to propagate and develop/restore pureline rice varieties, because seed companies often consider them unpopular, and hence do not trade their seeds.

The detailed findings of the baseline study and documentation of good practices are presented in the separated report attached (annex 1).

In order to develop and disseminate for effective and wide application of these good agricultural practices for RDM, the project has developed advanced technology for on-farm rice seed production using RICM (rice crop integrated management) based on the traditional knowledge in on-farm rice seed production. Then, trainings were provided to selected farmers together with conduction of demonstration models for raising communities' capacity and awareness.

3. Training of farmers

Trainings were organized in all the 6 communes selected. In total ca. 200 farmers and local extension workers (50% men and 50% women) were trained in all aspects of advanced technology for on-farm rice seed production, including:

- Seedling production and transplanting
- Rice field management
- Purification, harvest and post harvest

Training	Location	Number of trainees	Men	Women
Rice field management	Sơn Hải	32	20	12
	Mường Vi	27	10	17
	Đại Phác	63	25	38
	Yên Bình	29	10	19
	Minh Hạc	30	20	10
	Chân Mộng	25	12	13
	Subtotal	**206**	**97**	**109**
Seedling production and transplanting	Sơn Hải	25	10	15
	Mường Vi	15	7	8
	Yên Bình,	23	12	11
	Đại Phác,	61	20	41
	Minh Hạc	20	13	7
	Chân Mộng	22	12	10
	Subtotal	**166**	**74**	**92**
Purification, harvest and post harvest	Sơn Hải	30	15	15
	Mường Vi	22	10	12
	Yên Bình	30	20	10
	Đại Phác	60	25	35
	Minh Hạc	25	15	10
	Chân Mộng	25	14	11
	Subtotal	**192**	**99**	**93**

Trainings were organized using farmer field school (FFS) method in combination with developing pilot models for demonstration of on-farm rice seed production and preservation.

4. Implementation of Field Demonstrations

Due to the time limit (the LOA was signed late in 2010, while in Muong Vi commune of Bat Xat district, Lao Cai province, spring rice crop season started earlier) in Muong Vi commune the demonstration was conducted in 2010 summer crop and in 2011 spring crop. In all the rest 5 communes, demonstrations were conducted in the 2 rice seasons in 2010: spring and summer. The results are briefly presented in the following table:

Commune	Crop season	Rice varieties[1]	No. of households	Total area	Yield (t/ha)
Đại Phác	Spring	Chiêm Hương	19	1 ha	6.7
	Summer	Chiêm Hương	10	1 ha	5.7
Yên Bình	Spring	TL6	18	1 ha	5.9
	Summer	TL6	12	1 ha	5.2
Sơn Hải	Spring	HT1	10	1 ha	4.3
	Summer	HT1	9	1 ha	4.5
Mường Vi	Summer	Séng Cù	10	1 ha	5.5
	Spring (2011)	Séng Cù	10	1 ha	6.5
Minh Hạc	Spring	BT13, KD18	16	1 ha	6.2 5.7
	Summer	BT13	16	1 ha	5.3
Chân Mộng	Spring	SH14 BT13	20	1 ha	5.7 6.0
	Summer	T10	20	1 ha	5.3

As seen in the above table, all the pure-line rice varieties expressed good growth and gave good yield. As observed by farmers, the techniques applied by the project is appropriate for their application. All the selected households could fruitfully practice the technology delivered by the project, and gained good yield of rice.

According to all the stakeholders, including farmers, local officials, local staff, project team and project technical advisor, rice seeds produced under the demonstrations were with good quality. Particularly, in Dai Phac and Yen Binh (Yen Bai province), in the summer season, the project provided support to only 1 hectare in each commune (22 households in total), but farmers proactively practiced techniques in more than 10 hectares.

Seeds produced in the 2010 spring crop were partly used by the producers and their neighbours for commercial rice production in the next season, and partly used for foods. Seeds produced in the 2010 summer crop have different fates:

- Seeds produced in Dai Phac was purchased by Yen Bai Seed Company.
- Seeds produced in Yen Binh were collected by Yen Binh district Extension Station for use in the district extension activities in the next rice season.
- Seeds produced in other 4 communes are being stored by the households and will be used in the next cropping season within the communities.

The cost-effectiveness of the models built in the 6 communes was calculated. The results show that the models of rice seed production could bring better economic benefits to farmers compared to the production of rice for food.

When the labour cost was included in the production input in general, rice production for use as food did not bring significant economic benefits to growers; for most varieties, the net

[1] *Foundation seeds were provided by NOMAFSI*

income was negative, i.e. the total return was less than the total production cost. However, seed rice production models could still brought economic benefits to farmers, except for rice variety KD18 of which the rice price was lowest. The increase in net income from the seed production models ranged from VND 8,400 - 16,450 per hectare, depending on the variety of rice. When applied the techniques offered by the project, for each additional VND 1,000 of labour input, famers could get a net income of VND 4,000 - 9,000 (for spring crop season) and of VND 2,000 - 11,000 (summer season), depending on the variety of rice. The highest profits was that of TL6, followed by Chiem Huong, BT13 etc. Thus, for each 1 additional working day spent for applying the techniques of rice seed production, farmers could get VND 150,000 - 600,000 in return.

When the labour cost was excluded, for all the varieties and for both cases, seed production models and production of rice for food, growers earned economic benefits. As seen, both the total return and net income from the seed production models were higher compared to the production of rice for food. Depending on the rice varieties, the increase in net income from seed production models was VND 10,000 - 18,550 (for spring crop) and 5,700 - 26,800 (for summer crop). The highest increase was recorded for TL6, Sheng Cu and Chiem Huong.

A separate report on the field demonstrations conduction and analysis is included as an appendix of this report (Annex 2).

5. Awareness Raising

Along with conducting surveys, trainings and demonstrations, the project team also paid attention to raise the awareness of communities in DRM, self-sufficiency in crop seed supply, and application of ICM. The issues of genetic diversity of rice and restoration of locally developed pureline rice varieties were also addressed. In each commune, a field day was organized for local cadres and farmers to visit, discuss and evaluate the models. However, due to time and budget limits, not much achievements gained in this aspect; meetings, forums, seminars and workshops were not organized for community's members and officers to discuss the relevant issues.

6. Conclusions

The survey findings confirmed the needs and the feasibility of community-based rice seed production and supply as a reliable and sustainable option for DRM in term of recovery of crop production after disasters.

Along with establishing demonstration models, training were organized for farmers and local cadres in quality seed production of pureline rice varieties. The trainings were delivered using farmer field schools (FFS), and thus trainees could easily understand and apply technologies. After training most of them could effectively practice necessary techniques for seed preparation and treatment, sowing, transplanting, water management, fertilization, purification, weeding, pest control, harvest and postharvest. This was expressed in the high yield of good quality rice seeds of the model fields. noteworthy also, some farmer households applied techniques in their paddies without supports from the project. In Dai Phac, for example, the project provided supports to 19 households (in spring season) and 10 households (in summer season) to build demonstration models of rice seed production in the total area of 1 ha (each season). However, some other households also effectively applied the techniques delivered by the project, and could produce quality rice seeds in their fields.

On the other hand, through building the demonstration models and delivering trainings, the project team promoted the use of local traditional rice varieties, such as Seng Cu, and newly developed pureline ones with desirable traits, including LT6, HT1, BT 13, T10, KH18 and SH4.

The application of improved RICM delivered by the project team, the use of pureline rice varieties with high adaptability to local growth conditions and good quality will help communities obtain stable and high rice production, and protect their land and water resources. This, together with improved community awareness, in turn contributes greatly to reducing forest destruction for bringing land under the plough and/or for forest products. All these impacts on the forest, land and water resources protection are of important values for DRR.