EVALUATION REPORT

of the

Biodiversity Use and Conservation in Asia Programme

BUCAP

November 2004 - January 2005

1. Preface

The present report is the outcome of an evaluation of the Biodiversity Use and Conservation in Asia Program (BUCAP) commissioned by the donor the Norwegian Development Fund. The purpose of this evaluation is:

1. To provide an evaluation of the strengths and weaknesses of the program, looking at both the organisational challenges, as well as implementation in the field.
2. To provide BUCAP with a basis for reflection and to suggest ways of strengthening the program for Phase 2.

In this review, the international consultant and chair of the review team Dr. Jaap J. Hardon was assisted by national consultants in the respective project countries Bhutan - Mr. Ugen Norbu; Vietnam - Dr. Nguyen Tuan Son; Laos - Ms. Ny Luangkhot.
The country evaluations consisted of in-depth discussions with the various stakeholders, including the project coordinator, farmers in a few project sites, representatives of research, extension, the ministry of agriculture and others as suggested by the BUCAP project staff. Due to time constraints, the country visits took place outside the growing season (Bhutan in November 2004, Vietnam and Laos in January 2005). However, this was not considered a serious problem - the issue is not the layout and appearance of the on-farm trials, but constructive and critical dialogue with the various stakeholders on the objectives and the processes involved and the results achieved. Management was looked at primarily from an operational perspective; does it function, are changes needed.
In the objectives of BUCAP it is stated that "while BUCAP is about conservation and sustainable use of plant genetic resources (PGR), it is also and more so about empowerment of farmers". This led to discussions on on-farm conservation, farmers' access to, control of and use of genetic diversity. A key issue that surfaced during these discussions was in how far the objectives of conservation, broadening the genetic base of on-farm planting materials and participatory variety selection and breeding could be integrated, operated independently or even are contradictory. There also was considerable debate on the relationship between on-farm or *in situ* and *ex situ* conservation. The issue of empowerment of farmers was assumed to be difficult to assess. It might require a comparative analysis between BUCAP and non-BUCAP communities of farmers. However, it was expected from IPM experiences that the Farmer Field School approach is very suitable for on-farm testing of new planting materials, is highly appreciated by farmers and contribute to empowerment in their relationship to at least research and extension.

The report is uneven in its layout of the various country reports. This reflects differences in in-puts provided by the national consultants in the three countries and lack of time by the international consultant, who had put in much more time than was budgeted for. A more uniform document requires input from a professional editor. It is suggested that the Norwegian Development Fund consider this requirement.

2. Overview of Review Findings and Recommendations.

The review of BUCAP was carried out between November 2004 and January 2005. Bhutan was visited in the period November 17 - 25, 2005, Vietnam in January 12 - 22, 2005 and Laos in January 22 - 29, 2005.

Due to time constraints and individual projects dispersed over large geographic areas, only projects conveniently located around the capital cities could be visited. This may bias the observations of this review. On the other hand, the responses of farmers in the sites visited, even between countries were found to be quite similar and this provides some confidence that they provide fairly reliable overall insights.
Also the views of government authorities and supporting institutions in the different countries were found to be compatible and differed mainly due to variation in the nature of organisation, the policies of the respective governments and the relative stage of development.

In the individual country reports detailed summaries of discussions with various stakeholders, including farmers/communities, national and local/provincial supporting institutions are presented. This overview presents major observations and recommendations and issues that are relevant to the overall programme.

General observations and the role of SEARICE

Overall the review team is most impressed by the scope of the BUCAP. With a limited budget SEARICE has successfully initiated projects in all three countries that seem to have a major impact. Delays in starting projects, notably in Bhutan and to a lesser extend in Laos are understandable considering the fact that it required fundamental changes in relationships between farmers and government institutions functioning in essential top-down transfer of technology paradigms. It was an interesting observation that frequently farmers had a better understanding of the project objectives and Farmer Field School (FFS) methodologies than some of the supporting extension and research staff. This illustrates the bottom-up approach of BUCAP. However, this gap has now largely been filled.

Farmers, without exception adapted to FFS as applied to crop improvement rapidly. There are obvious reasons for this. First, farmers are well aware of the importance of good planting material and know what they want. Secondly, testing materials for the suitability for their conditions and selecting in their crops for producing the seeds for the next planting season does not represent introduction of new technology. Farmers have done so since the dawn of agriculture. It is mainly due to modern plant breeding and centralised seed production that such practices have been subject to erosion. Hence, through BUCAP old and increasingly neglected practices were merely "re-vitalised" and improved on which explains their rapid adoption..

SEARICE did well in setting-up and linking BUCAP projects in Laos and Vietnam to the IPM programme and Plant Protection Services/Centres. These organisations had extensive experience with FFS in Integrated Pest Management and assisted in identifying communities with experience in this methodology. In addition, the existing high level of

organisation of farmers in communes in Laos and Vietnam provided for conditions that helped establish the BUCAP projects readily. In Laos, an interesting feature was the involvement in BUCAP of two agricultural colleges. Exposing students to FFS and on-farm participatory research is important for sustaining such activities.

In Bhutan, this situation did not exist. Here the newly established National Biodiversity Centres (NBC) was charged with coordinating and implementing BUCAP. This was a logical choice since it was considering using FFS methodology in involving farmers in comparative testing of farmer varieties in its strategy of evaluating local genetic resources. However, the centre was still in its formative stage and has yet to establish its position in the national agricultural institutional framework. SEARICE provided substantial training in FFS to farmers and raised interest for this approach with the national agricultural research centres. Again, farmers rapidly understood the opportunities offered by BUCAP and FFS. Plant breeders saw it, at least initially primarily as an opportunity to test their improved varieties in farmers' fields. The established research centres, to be fair, also had difficulty in accepting the coordinating role of NBC as a new institute, while NBC staff assigned with coordinating responsibility were away part of the time on training. However, the BUCAP project is now well on its way in the Western and Eastern Region of Bhutan and the review team suggested starting a project in the Central part of the country. The interest in FFS is illustrated by the fact that it was suggested that it should be included in the curriculum of the National Training Institute for extension workers.

The financial management in Laos and Vietnam is handled by OXFAM - Belgium. The separation of financial management from implementation seems to be working well. Some communities in Laos complained about occasional cash-flow problems, but this may also result from somewhat complex official procedures. They did mention that SEARICE involvement had lately gone done and required attention. In Bhutan financial management is handled by NBC as part of their national coordinating role. This leads to a certain competition with research, which would like to have its own earmarked budget.
SEARICE is generally well regarded, especially in the formative stage of developing BUCAP in all three countries. Considering the low level of staff in-put - 1 coordinator who seems to have other responsibilities as well - of SEARICE with occasional consultants notably for training in FFS in Bhutan , effective use has been made of involvement of national organisations.

For technical issues, such as breeding strategies, on-farm experimental layout, intensity and manner of selection, seed production and storage and others, the BUCAP project has largely relied on national research staff in all three countries. This seems to have worked reasonably well. It has promoted interest and ownership on the part of plant breeders. However, time may have come to take a hard look at what is being done. Farmer participatory breeding is a new field and most plant breeders concerned expressed interest in learning from experiences elsewhere. It was felt that in this area, SEARICE could not provide adequate guidance and technical know how. This issue also gets little attention in the original project proposal. The same problem arose earlier in the CBDC programme that preceded BUCAP. It was felt, in my view mistakenly, that farmers did not need such guidance and knew what they were doing.

An illustration that many farmers are interested in knowing more about breeding was the request for an *improptu* lecture on breeding at the end of a meeting with one farmer group in Laos.

A major issue in phase II, having achieved empwerment of farmers, is to provide technical support on on-farm breeding, variety testing, seed production on farm; management and marketing. This is not only relevant to farmers, but also to supporting institutions. There is a need for increased awareness of the importance of farmer seed systems in the national context of regulations. Supporting institutions, and notably plant breeding, need to be made aware that farmer participation in their work is an approach that is novel and adds to their professional credibility. SEARICE, not surprisingly, has not been able to supply such internationally recognised expertise.

General recommendation
SEARICE is supplied with funding that allows it to involve internationally recognised experts as consultants to provide guidance in on-farm participatory breeding, seed selection and seed production as well as on the regulatory frameworks.

The country reports provide in the summaries of the interviews the concerns and observations of the various stakeholder groups. Following are some of the major issues raised that would seem relevant for the overall BUCAP programme and recommendations.

Understanding of national seed systems

In discussions with government authorities, it became apparent that there was a general lack of clear understanding of how national seed systems should feature in agricultural development. Attention was mainly directed at strengthening formal institutional seed systems with little recognition that the farmer seed system is the main source of seeds for farmers. The issue, that both systems are important and complementary, but are totally different in their functions and requirements for improvement seemed not to be fully appreciated. Considerable time was spent in discussions to clarify this issue. In short, the following was pointed out.

- The formal institutional system

Genebanks - plant breeding institutions - varietal release - seed production and distribution - farmers.
The formal institutional seed system represents essentially a linear process providing farmers with finished varieties selected and approved by formal institutions. In developed countries with a market economy private industry plays a major role in plant breeding, seed production and distribution and marketing. This is regulated by Plant Breeders' Rights (PBR) legislation, protecting the interests of private breeding and seed legislation controlling identity and quality of seeds supplied to farmers in a form of consumer protection. This requires genetic uniform varieties, not for agricultural reasons, but to provide identifiable identity in comparison with other varieties.

In the three countries private industry does not play a role in the seed supply chain, hence PBR is not (yet) an issue while control of seed identity and quality control is an institutional issue of process control.

- Farmer seed system

In the farmer seed system, farmers are the breeders, seed producers and producers of crops in a circular process.

The Farmer Seed System is the main source of seed in most developing countries operating since the dawn of agriculture. It is a dynamic system in that farmers continuously look for new planting materials, either local varieties or improved institutionally bred varieties. They often first try such materials on a small scale before adopting or rejecting them. Generally, a certain level of genetic diversity is maintained in local varieties which allows for on-farm selection during seed production to increase local adaptation. Genetic diversity is also considered important to avoid major epidemics of diseases and pest which are a notable feature in modern varieties but less so in local farmer varieties. This is especially important in low-input agriculture without access to chemical disease control.

Both systems operate side-by-side and often farmers make use of both systems for different crops and for multiplying introduced modern varieties for their own use. The increasing role of commercial companies in plant breeding and seed production in developed countries, supported by PBR and in biotechnology with much more restrictive Intellectual Property Rights (patent) protection has made the farmer seed system almost an illegal activity. The value of BUCAP is, that it highlights the importance of farmer seed systems as an essential component in agricultural development in most developing countries. In those countries both systems are complementary. The farmer seed systems is robust, reliable and should be seen as an integral part of agriculture deserving support and recognition by governments and aid organisations alike. BUCAP provides a clear illustration that farmers in farmer seed systems are capable of playing a part in improving crops, stressing consumer qualities, managing agrobiodiversity and, especially in the diverse environments characteristics for the tropic and sub-tropics, insure local adaptation and variety diversity in sustainable agricultural production systems.

Recommendation 1

BUCAP needs to highlight the differences and complementarity between both seed systems in agricultural development to, especially government authorities.

The issue of up-scaling

The question is whether up-scaling BUCAP is desirable or not. Within many of the BUCAP sites the number of farmers that continue to be actively involved has gone done. This is probably not an indication of lost interest. Many of them are reported to continue to practice what was learned. For a community/commune to benefit from BUCAP, only a limited number of really motivated and interested farmers need to participate and serve as a source for improved planting materials. Hence the review team was not very concerned about a drop of farmers actively involved in BUCAP in some of the project sites, but saw it as a natural development.

From the interviews, notably those of farmers, it is evident that many communities/communes around BUCAP sites have an interest in joining the BUCAP project.

The argument against up-scaling is, that it will require increased support which SEARICE may have difficulty in providing. Already now many respondents would like to see more active involvement and support from SEARCE and the various support institutions than is currently realised. It is a reasonable argument not to over stretch and first concentrate on the present project until it is convincingly shown which of the project activities are sustainable successful and choices can be made to provide the project with a more reasoned focus. There is no doubt about the sustainable value of on-farm testing of new varieties (both modern varieties and local varieties from other locations) in comparison with local varieties. The same applies to seed rehabilitation of current varieties. Farmer participation in selection in advanced breeding populations supplied (possibly on request of farmers that involve crosses with their own local varieties) would seem to offer good prospects (the possible problems raised by variety legislation are dealt with below), but actual results are still awaited. Breeding by farmers developing their own breeding populations are still in an early stage.

Adopting a BUCAP approach on a wider scale would entail some major changes in the organisation and execution of national breeding and extension. This can only be reasonably considered when such an approach has fully demonstrated its value. Hence, there would seem to be an advantage in continuing to view BUCAP as a social and technical experiment at this stage and not aim for a major expansion in phase II. The review team tends to favour this view with regard to Vietnam, considering its size of the agricultural sector. More wide-scale adoption of the BUCAP model has political, economic and institutional consequences that need to be fully accepted by the authorities in a government structure as exists in Vietnam. This, we feel is not yet the case.

The LAO PDR is a smaller county, at least in terms of population and a smaller agricultural sector. Here expansion could be considered, also because of evident interest of communities in the vicinity of BUCAP projects. However it requires capacity to support such expansion and interest of supporting institutions to incorporate participatory breeding and variety testing as part of their breeding and extension programmes.

In Bhutan it is felt that expansion could be considered, especially by establishing a BUCAP project in the central part of the country. Expansion here could be guided by covering the major, agricultural environments, which in Bhutan are very diverse. Many of these environments are too small in area to economically justify centralised breeding programs and BUCAP may provide an interesting alternative.

Alternatively, the convincing interest in the BUCAP approach in the communes visited in Vietnam and Lao PDR does argue for expansion. The idea is than to provide more opportunities for communes to participate and allow it to evolve under its own conditions and with the help of farmer trainers. Time will teach where and how the BUCAP approach will spread. The review team questions whether farmer trainers and BUCAP

can already now function without active involvement of institutional trainers and extension services and without the necessary funding. Failure of such expansion might do more harm than good, and strengthen opposition which undoubtedly exists in both technical and political circles. It will require a concerted effort by SEARICE to inform and convince authorities in the very centralised government structures of the advantages of the BUCAP approach in the development of their seed industry.

Recommendation 2

We suggest that SEARICE consider the above alternatives and prepare a position paper for discussion with the various stakeholders, notably from the Ministries of Agriculture and its supporting institutions in the three countries in a series of workshops. .

Rules and regulations

Through WTO/TRIPS and trade pressures from industrial countries, many countries have or are in the process of adopting Intellectual Property Rights legislation on biological materials, including forms of Plant Breeders' Rights. Such legislation is usually accompanied by legal regimes requiring government approval for release of varieties for distribution and marketing and certification schemes that control the identity and quality of seeds of marketed varieties. These legislative and regulatory regimes are relevant for control of commercial breeding and for protecting the interests of farmers buying seeds on the market. However, they are not tailored to the special conditions of farmer seed systems in which the BUCAP approach operates. Already now, this ambiguity is in evidence, most prominently in Vietnam, but also in Lao PDR. In many of our discussions with the various stakeholders, and notably farmers ad provincial authorities these issues and the interpretation of present policies and rules are not very clear and certainly not well understood.

Farmers were particularly concerned about the naming of varieties. They felt that through naming they could express ownership and their pride in having developed a new variety. However farmers both in Vietnam and the Lao PDR (in Bhutan this issue was not raised) were uncertain whether they had the right to do so. Farmers' pride is an essential component of empowerment and should not be underestimated. It is central to their cosmo-vision. Governments that do not allow farmers to express ownership of their own achievements can hardly be expected to be serious in their professed support of BUCAP.

In the Philippines, SEARICE has been actively involved in the national debate on rules and regulations surrounding issues of seed legislation. . So far and in the tradition of NGOs and for understandable reasons, it seems to have been largely guided by political considerations empowering farmers and resisting a growing influence of international commercial interests in the seed industry. In Vietnam and even more so in the Lao PDR it does not concern the position of private industry, but the role of governments. This is far more complicated. However, to maintain credibility with farmers, which is the key to the ultimate success of BUCAP, this issue has to be raised by SEARICE with the responsible authorities and farmers as an essential condition. If this condition is not satisfied, the review team questions whether farmers should be encouraged to be

involved in participatory breeding (explaining the reasons) and stress participatory variety selection and seed rehabilitation. However we agree that ultimately, and well informed, farmers have to make this decision.

Recommendation 3

It is recommended that an external consultant expert on Intellectual Property Rights and seed legislation is asked to produce a position paper on legislation and regulation of the seed sector. These issues are equally relevant in all three countries. . This position paper could than be discussed in a workshop involving the various relevant stakeholders of all three countries and possibly some outside experts.

Strategies in on-farm crop improvement and management of PGR

Apart from BUCAP, there are growing experiences with on-farm crop improvement and management of PGR, notably in countries like India, Nepal, the Philippines and some Central American countries. Plant breeding is less straightforward than sometimes suggested and offers a variety of different approaches determined by crops, by breeding objectives and by the setting in which plant breeding takes place, the way seeds/varieties are distributed and used and their economic purpose. The efficiency of plant breeding in reaching such multiple objectives is largely dependent on the choice of appropriate and long-term breeding strategies. Time would seem to have come for an analysis of results and experiences obtained so far to provide guidance in making necessary choices. Such an analysis would also seem relevant to address the request of many farmer groups in all three countries to expand BUCAP to include a range of suggested other crops, including vegetables, soybean, peanuts and others. For vegetables in S.E. Asia, BUCAP may learn from experiences of the PEDIGREA project (www.pedigrea.org) in Indonesia, The Philippines and Kampuchea, which appears to be similar to BUCAP in objectives and involves the former chairman of SEARICE Rene Salazar. The partners of PEDIGREA, apart from NGOs in Indonesia and the Philippines, include formal research institutions to provide technical backstopping

Recommendation 4

It is suggested that BUCAP and/or NDF take a lead in providing an overview of approaches, methodologies and results of on-farmer participatory plant breeding and variety testing, possibly with the help of some external experts. This overview than could be discussed in an international workshop, including plant breeders, representatives of various organisations and institutions actively involved with on-farm crop improvement and PGR management. The outcome could result in a BUCAP Technical Manual on On-farm Participatory Crop Improvement and Seed Production It is quite possible that such a manual already exists (apparently one has been produced by PEDIGREA) , in which case that could be used or adapted to the special situation in the three countries.

This is also considered important to impress on plant breeders in the three BUCAP countries that they are involved in a new and challenging approach to plant breeding.

Organising BUCAP farmers

To have a structural impact on the national seed system, as seems possible, BUCAP farmers/communities may have to organise themselves supported by training of managements skills in order to further their case and acceptance at government levels. This would facilitate their representation in national decision processes on seed system development in the three countries. In addition, it would create a national platform for negotiations to protect the interest of BUCAP farmers/communities. This involves empowerment of issues as well as empowerment of farmers. A logical approach would be to establish nation-wide BUCAP co-operatives. In industrial countries, farmer co-operatives have played an important role in development of the seed industry. When discussed, in Bhutan and Vietnam farmer co-operatives would seem a possibility. In the Lao PDR it was stated emphatically that a farmer co-operative would not be acceptable to the government. Here a looser BUCAP network was suggested. Establishing farmer co-operatives may well be beyond the capacity of BUCAP, and if considered an option, would probably require a separate project proposal to be submitted to potential donors for support.

On the negative side, establishing co-operatives may create a situation that facilitates such co-operatives to be easily taken-over by commercial companies if privatisation of the seed industry becomes government policy. This is a serious problem, but for which we have no solution or recommendation.

Training materials

At most sites of BUCAP in the three countries, farmers expressed a need for concise training manuals in the local languages on the various technical and regulatory issues involved. Also the possibility of videos was mentioned. It would be a large undertaking, but relevant far beyond the requirements of BUCAP. The Wageningen based NGO ARGOMISA (and probably others) have produced such booklets for many years on agricultural practices. Perhaps it should be developed as a separate project.

Exit strategy

The start of the BUCAP project has been different in the three countries In Bhutan it has been relatively slow and uneven for reasons that have been mentioned in the country report (umfamiliarity with Farmer Field School (FFS) methodology and institutional problems) and more rapid in Lao PDR and Vietnam exploiting FFS experiences and programs in Integrated Pest Management (IPM). However, now that it is on its way, it has a far greater impact than might have been expected considering that it is really quite a small project. All stakeholders indicated that they would continue using the FFS approach introduced by the project. Farmers are by now confident that they can handle FFS, certainly in dealing with extension and research, but also by providing training to other communities. Extension agents also seem to like it and prefer it over the common system of organizing occasional field days on particular subject matter. Finally FFS provided a learning process for research, accepting farmers not just as recipients of their technologies, but as partners in developing it. Hence from the look of it FFS provides for a sustainable technology. This is no mean achievement and BUCAP should be proud of it.

It is assumed that a second phase will take place. We suggest that during the formulation of the second phase an exit strategy is designed to ensure continuation of realizing BUCAP objectives for the following reasons:

- FFS introduced by the BUCAP project has wider relevance beyond the subject matter of BUCAP;
- FFS has provided a methodology to assist farmers in gaining access to genetic diversity of crops and thereby obtain direct relevance in agricultural development;
- FFS has been effective in empowerment of farmers where it concerns its planting materials and probably beyond;
- FFS fits in with making people at the grassroots level self-reliant in decision-making and management of their own development.

These developments have to go on and should be considered in an exit strategy creating a situation that provides for sustainable continuation. As reviewers it is not our task to indicate what such an exit strategy should look like, only to suggest that it is needed. What is recommended is to look at sustainability requirements, such as institutionalization (e.g. incorporation of FFS in the regular training curriculum of extension agents) and propagation (publicity through media, production of FFS manual), during the formulation of the next phase.

Logical Framework

It is not clear how the logical framework was developed and who all were involved in its development. The one that is available in the project proposal has far too many objectives (reflected as "purposes" in the proposal). In order to maintain focus and purpose, there is a need to consolidate them into a few objectives (say three) and draw clear linkages between various levels of the framework, e.g. between outputs and objectives. The involvement of various stakeholders in the formulation of the logical framework remains vital.

Recommendation 5

(a) It is recommended that in Phase II BUCAP together with the various stakeholders develop an exit strategy appropriate to the individual countries to promote sustainable continuation. .

(b) It is recommended that BUCAP, together with relevant stakeholders, develop a more limited and clearer logical framework.

3. Conclusion

This overview is meant to do what its' title suggests; provide an overall synthesis of what was learned in this evaluation, providing details in the country reports. BUCAP, in its execution is a highly complex project in countries with equally complex institutional relationships and political sensitivities. We tried to cope with them as best as we could.

The execution of some the recommendations may go beyond the funding and possibly even the organisational capacity of the BUCAP project. On technical issues relationship is suggested with the new policy and program of the International Plant Genetic Resources Institute (IPGRI) stressing the link between genetic resources management and livelihood systems and the FAO Action Plan on Plant Genetic Resources for Food and Agriculture amongst others. It also has a direct bearing on the UNDP commissioned

proposal for a National Agricultural Biodiversity Programme in Lao PDR and the GEF. The problem of these international organisations for BUCAP is, of course, that they mainly work through governments, while BUCAP starts from farmers. On the other hand, in all three BUCAP countries, governments are in firm control of the farming sector and are also the partners of BUCAP.

As for development of national farmer organisations, many Aid Agencies and larger International NGOs have an expressed interest.

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INTRODUCTION

The original proposal of the Biodiversity Use and Conservation in Asia Programme, 2000 - 2004 (BUCAP) provides extensive detail on its origin, objectives, envisaged organisation and management that need not be repeated here. Clearly the review will have to look into all these aspects. Below, some of the more specific aspects to be covered are reviewed.

Objectives

It is stated in the original Project Proposal, that "while BUCAP is about conservation and sustainable use of Plant Genetic Resources (PGR) management, it is also and even more so about empowerment of local farmers" (underlined by reviewer). Under BUCAP this is to be achieved through:

(1) Strengthening farmers' role in PGR management
(2) Strengthening farmers' role/control of PGR conservation and development
(3) Strengthening farmers' control of a key resource in agriculture, PGR.

While these objectives are overlapping, not mentioned is the need to provide benefits to the livelihood, households and food security of farmers and their farmer seed systems. Farmers are primarily interested in good planting material that suit their various requirements. Free exchange of PGR and not claiming ownership or exclusive control over PGR is the norm in farmer seed systems throughout the world. These seed systems are based on the understanding of mutual inter-dependency on genetic diversity for the general good. Hence control and ownership tend to be not only foreign to their cosmo vision, but in fact may go contrary to the functioning of their system. This creates ambivalence if not ambiguity. The aims of BUCAP are a general response, shared by many Civil Society Organisations, to concerns over increasing privatisation of PGR in the hand of private industry which should rightly be resisted.

Also many plant breeders, notably in government are rightfully worried about general developments that may restrict access to PGR. Public plant breeders in the BUCAP countries Bhutan, Laos and Vietnam don't breed varieties for their own good, but for the use of farmers. It is essential that the review tries to get information on how compatible BUCAP is with the personal views of researchers and what motivates them to co-operate beyond being provided with some extra temporary funding for their work.

Hence the review does not question the objectives, but looks at how farmers, plant breeders and development agencies interpret the objectives in the actual project activities.

Balance between empowerment/partnership and management/improvement of crops

Plant genetic resources have been discovered by anthropology and sociology as an interesting field of research concerned with the livelihood and households of farmer communities. Understanding the social constructs that govern management and use of crop resources is obviously essential in efforts aimed at raising the productivity and broadening the genetic base in sustainable and socio- economic and environmental appropriate farming systems. The main BUCAP objectives of better and more diverse planting materials together with empowerment of farmers can only be achieved if it goes in tandem with improving the livelihood of farmers. It requires truly inter-disciplinary approaches. The project countries have highly centralised political economies. Empowerment of farmers in a way challenges the accustomed position of national research and extension services, which are generally weak in participatory methodologies. BUCAP needs to be sensitive to this dichotomy. It requires a good

balance in the support of the project by SEARICE. Reading through the various project training reports, this balance is an issue that needs to be addressed in this review.

Training seems to emphasize the operational aspects of Farmer Field School (FFS) approaches. This is probably justified. Firstly, The FFS method of testing would seem very appropriate for comparative on-farm testing of different varieties, involving diverse observations during the course of a growing season. Secondly, FFS testing puts farmers in a position where they are the final judges on the value of tested materials.

However, at least for farmers FFS are only a means to an end. The complexities of participatory variety selection (PVS) and participatory plant breeding (PPB) methodologies appear to get relative little attention in the project proposal and various reports. While involving farmers in PVS is generally accepted, the most appropriate form of involving farmers in PPB is still an issue of debate, certainly among plant breeders..

Stakeholders

The choice of and relationships between the various stakeholders such as farmers (male and female)/communities/local organisations/research/extension and their representatives is critical to the functioning of the project and the sustainability of activities. In reviewing these aspects, special attention may be directed at:

- Envisioning of the joint problem/opportunity
- Identification of the stakeholders
- Getting commitment to collaborate
- Possible barriers to collaboration; what are the factors, what was needed to get collaboration
- Power/status differences
- Conflicts within and between stakeholder groups
- Understanding of technical complexities
- Possible institutional disincentives
- group dynamics

Getting reliable information on all these aspects will not be easy during limited-time visits and discussions, but some general impression of the situation is hopefully possible. Here the national consultants together with the local coordinators of BUCAP will play an important role.

User perspectives

BUCAP deals with the most important stable crop rice and in Bhutan also with maize. Users are not just farmers but primarily households and consumers, and also include traders, millers and national authorities involved in development and in food security.

Scaling up

Scaling-up requires rooting participatory approaches in farming communities and supporting services by clear evidence of practical benefits and shared interests. It is

normal that a project proposal is developed by a single organisation and reflects possible biases. However, it is important that this is realised and that room is available to adapt the project during its course to the desires, opportunities and requirements of its stakeholders in a truly participatory fashion. The stakeholders need to have a sense of ownership of their project. This requires not just participatory evaluation at the end of the project period, but continuous monitoring.

Participatory approaches in crop improvement

This part is considered in some detail. The BUCAP project emphasizes broadening genetic diversity in farmers' fields and empowerment of farmers. However, at the end farmers will probably judge BUCAP for its contribution to provide access to planting materials that better suit their requirements.

Conventional plant breeding, based on developments in industrial countries primarily addresses relative uniform environments and market-oriented agriculture. The main objectives are maximisation of yield and broad adaptability to cover large areas. Economic rationale suggests that for field crops, investment in plant breeding requires cultivation of new varieties on a minimum of 100.000 HA to recover the costs of breeding.

The tropic and sub-tropics have, compared with temperate regions, much more diverse environments over short distances, requiring more attention to environmental adaptation. In addition, farmers and consumers have more diverse requirements additional to harvested yield potential, which is especially evident in rice, however with the possible exception of irrigated rice produced for national and international markets.

To cover the more diverse requirements, plant breeders increasingly involve farmers in setting breeding objectives and include multi-locational tests to evaluate performance of breeding lines under different practices and environments. BUCAP, following the pioneering approaches of the CBDC programme, has gone a step further. Its starting point is the proven ability of farmers to develop "farmer varieties" or landraces by both human and natural selection, combining local adaptation with specific consumption requirements in continuous processes of selection. This has a number of consequences that differentiate farmer varieties from varieties bred by institutional/commercial breeding ("modern varieties")

Table 1. Characteristics of Farmer and Modern Varieties

FARMER VARIETIES	. MODERN VARIETIES
genetically heterogeneous	genetically homogeneous
local adaptation	broad adaptability
diverse characteristics	yield maximisation

The main objectives of BUCAP is to empower farmers to play a role in the development and choice of planting materials that best suit their requirements, making use of both systems of variety development. In addition, BUCAP emphasises the importance of maintaining genetic variety diversity in farmers' fields. This is based on the assumption that:

1. such diversity plays a role in improving sustainability and achieving natural balances with biotic and a-biotic stress factors in diverse environments and
2. conserving genetic diversity *in situ* maintains continuous availability for further crop improvement and maintain the ownership rights of farmers over such materials.

In public campaigns many NGO's highlight these assumptions to challenge the formal plant breeding establishment which in an equally uncritical manner promote the use of uniform MVs over large areas as a condition for better yields. Both assumptions however need to be questioned in this review when subjected to farmers as they may well be dependent on environmental and socio-economic conditions in the project areas.

Since the nineteen eighties most plant breeders realise that breeding for primarily increased yields in more favourable environments may have increased national food production in many countries, but led to new associated problems. These include inequity in benefits to small resource-poor farmers, new pest and disease problems due to genetic uniformity, loss of PGR, insufficient attention to consumer/cultural determined preferences etc. To address such problems Participatory Plant Breeding (PPB) and Participatory Variety Selection (PVS) were developed.

PVS and PPB clearly require new approaches in breeding by plant breeding institutions. Hence one should expect, not necessarily reluctance to adopt PVS and PPB, but the need for convincing evidence that such approaches are useful and cost-effective, especially in national research and extension systems faced with lack of adequate funding and trained staff.

Conclusion

This, somewhat lengthy introduction is meant to indicate the possible biases of the reviewer(s). To avoid such biases would have required a larger review team representing more diverse views and the SEARICE co-ordinator as a participant to serve as a resource person during the review. This was not possible. Hence the report is likely to contain

views on principle issues that may not be shared by SEARICE. However, they should not be interpreted as criticism, but are presented for consideration in a constructive manner to further strengthen what we see as a highly successful and innovative project that open new ways in providing farmers with a rightful role in developing crop varieties that suit their various requirements.

2. BUCAP - BHUTAN

Review of the BUCAP project in Bhutan

The BUCAP project in Bhutan was reviewed in the period November 17 - 26.
The international consultant was assisted by the national consultant Mr. Ugen Norbu and by staff of the National Biodiversity Center in the persons of Ms. Asta Tamang (coordinator agrobiodiversity program) and Ms. Chico. The BUCAP coordinator Mr. Singay Dorji was unfortunately not available due to family circumstances.

Pre- Project Formulation

In October 1998, a fact-finding mission visited Bhutan to study and see the feasibility of BUCAP project in Bhutan. Having selected Bhutan as one of the partner countries beside Vietnam and Lao PDR, representatives were invited from Bhutan also to participate in Workshop in Vietnam in July 1999. Four member team (one from RNRRC Khangma now Wengkhar, one from RNRRC Bajo and two from NBC participated in the workshop. The participants were given back ground information on community approaches to PGR conservation and demonstrated the framework and contents for the project development.

Project Formulation

Project formulation was done during September-October 1999. Project was formulated in a participatory manner with the involvement of Coordinating Unit (NBC) and Implementing Agencies (RNRRC Khangma now Wengkhar & Bajo). RNRRC Khangma was selected to implement BUCAP activities in the eastern region since Maize is one of the mandate crops of RNRRC Khangma where as RNRRC Bajo was selected since rice is one of the mandate crops of RNRRC Bajo, maize and rice being the crop focus of BUCAP project. Having completed the first draft, the project proposal was presented to all the biodiversity stakeholder in a forum called 'National Assembly of BUCAP Project' at NRTI Lobesa in November 1999. Following the National Meeting, the representatives from the Coordinating Unit, Implementing Agencies and SEARICE incorporated the comments of the BUCAP National Assembly and reviewed the final version for submission.

The project was endorsed by the Ministry in December 1999. Simultaneously, the proposal was submitted to SEARICE and DF. The project went though a process of verification in 2000 and was finally endorsement by RGoB in 2000.

Implementation

Implementation commenced from 2001/2002 to 2004/2005.

Project stakeholders: The RNRRC Khangma, Bajo and Yusipang. Western region under RNRRC Yusipang was included during the time of implementation. This was basically because, the Research Officer from RNRRC Yusipang who was involved in the project formulation got transferred to Yusipang and he expressed interest to implement BUCAP

activities in the western region as well. Thus the rational for implementation of BUCAP activities in three regions with the plans to include east-central region during phase II of the project.

Summary interviews - stakeholders' views on BUCAP and FFS

In the course of field visits and interactions with farmers and staff of the various stakeholder organisations – NBC, research and extension – a pattern evolved in the respective general views on BUCAP and FFS.

Farmers

Farmers were highly appreciative of FFS introduced through BUCAP. Advantages mentioned included;

- Planned series of interactions during the growing season were generally considered to be far more informative than single 'Field days'
- It improved their knowledge and understanding of crop growth and in what way that could be improved – viz a viz selection practices to give better seeds and improved the performance of the (local) varieties.
- Better understanding of what research and plant breeding can offer and that they as farmers matter .
- Improved interaction with extension and on a more equal basis.
- Improved cooperation within the community.

Farmers in all the sites visited, stated that they would like to extend the FFS approach to include other crops. In addition there seemed to be consensus that they would try to continue FFS approaches also after completion of the BUCAP project. When questioned, at all sites but one there were farmers who felt confident that they could assist other farmers/communities in using FFS. Especially evident is that FFS gave farmers a sense of empowerment through being part of a participatory process in which their concerns and views were seriously considered. Also the fact that in some of the locations local varieties performed better than the supplied research varieties increased their confidence. While there have been some considerable delays in starting-up some of the BUCAP projects, response and interest of farmers to the FFS approach has been very good.

A number of suggestions were made where farmers thought improvements were necessary:

- The need for strict experimental layout protocols planting comparative trials in straight lines and plots was questioned. Farmers preferred their own planting methods, including broadcasting, and larger plots.
- While FFS meetings were held over the growing season, at some sites the timing was irregular to suit the research and extension staff. Farmers preferred fixed dates to be able to plan their work accordingly.

- Farmers at some of the more distant sites, especially those in the East, would like to have more frequent interaction with NBC and research staff. A car for the BUCAP project is urgently needed.
- Some of the farmers felt confident that they could help in establishing additional FFSs, but felt that for that they needed to have some project money.
- A general need exists for simple learning materials on FFS and on the relevant subject matter. Text should be simple with a lot of visuals in view of still existing iliteracy among farmers.

Research and plant breeding

The program coordinators and staff of RNRRCs Bajo and Yusipang and a research officer of RNRRC Khangma were appreciative of BUCAP. It was stated that while research already was familiar with farmer participatory research, FFS took it a step further by engaging farmers in a more active role. However, in discussions and with information obtained at the various sites from farmers, it became evident that the concept of FFS and the objectives of BUCAP were often still interpreted in a somewhat limited sense. In practice FFS and the BUCAP project was primarily seen as a form of improved on-farm testing of their new or experimental varieties with local varieties as controls. The fact that at two sites (Thinleygang and Paro) the "local controls" out-performed research varieties was explained by differences in planting density (Paro) and by inappropriate local agronomic practices (Thinleygang). Without disregarding these explanations, the possibility that local materials might well have their local merits could have been mentioned. It illustrates that the primary concern of research is the performance and acceptance of their own materials. Through BUCAP, both researchers and farmers now were much clearer about desired characteristics in the crops. Also the value of good seed and the rehabilitation of local varieties through seed selection methods was now better appreciated. A point in case is variety #11, introduced some 30 years ago from Japan and now treated as a local variety whose yield potential was restored. The issue of on-farm conservation or broadening on-farm diversity was not mentioned in discussions.

Some concerns were expressed:

- The quality of experts/consultants provided by BUCAP through SEARICE were not always satisfactory.
- The coordination by NBC should become more pro-active and adhere to established official channels.
- It was suggested that extension staff should provide guidance in the FFS activities.
- Considering the importance and potential for wider application of FFS, training in this methodology should be included in the curriculum of regular training of field extension agents.

Extension services

On field visits, the review team was accompanied by local extension officers. BUCAP was generally seen as very important to their work, as it introduced them to FFS. They viewed it as very effective in strengthening the ability of farmers in comparing different varieties and in improving the quality of their own planting materials. Most saw

opportunities to apply FFS to other crops, and vegetables were mentioned most often. Additional training in FFS was considered important. Both farmers and extension officers mentioned the need for training equipment, including white boards, flip charts, pens, paper etc. A small budget for this would go a long way Also easy learning materials with a lot of visual presentations would be extremely helpful. illiteracy is still a problem with older farmers. Such materials, or at least examples that could be adapted, must be available from the many programs on FFS in especially S.E.Asia. If the BUCAP project has no budget for producing such materials, SEARICE should try to find additional funding, because it is an urgent requirement.

All this suggests that although BUCAP is a relatively small project, the introduction of FFS is having a large impact beyond its own project objectives. The need for additional training, learning from other on-going FFS projects and the inclusion of FFS in standard training of extension personnel was emphasised.

National Biodiversity Centre

NBC is responsible for coordinating the BUCAP project. It does so administratively. However, it appears that NBC has not as yet integrated the BUCAP objectives of on-farm conservation and access to more genetic diversity to farmers effectively in its own program. This may be due to the fact that NBC is still in a stage of establishing its facilities while also staff was away on training. If NBC is to justify its coordinating role, it must establish itself as a working partner with some urgency. Interpreting the objectives of BUCAP, this could include identifying potentially interesting local varieties from comparable environments, both within and outside Bhutan, to on-farm comparative trials. It also needs to foster a better understanding, especially within the research sector of the broader objectives of BUCAP. Finally it must get involved in insuring proper facilities and technical support to the various field projects. All in all, it must establish leadership. NBC should also realize that BUCAP offers a good opportunity for the agrobiodiversity program to illustrate that a genebank is not a museum, but can play an important role in agricultural development.
Past problems about purchasing a BUCAP project vehicle need to be solved. Transport appears to have been a major problem in NBC's past activities in coordination and project guidance. Frequent field visits and regular contacts with institutional stakeholders are essential to insure proper coordination and promote trust and a team spirit.

Management Issues

Management and Coordination

The BUCAP project has had some management and coordination problems. To a large extent, this was understandably due to the fact that the NBC – the principal project implementing agency – is a young institution, officially established only in 1998. Being a new institution, the first 5-6 years were spent on staff training, development of infrastructure and facilities, and establishing institutional linkages with partners. It was also noted that the BUCAP project had changed several hands not only at the NBC level but also at RNR-RC and geog extension levels due to staff training and transfers.

Several stakeholders also raised lack of clarity of implementation mechanism and the role of NBC. Some felt that the existing project implementation bypassed necessary procedural requirements, for instance in the nomination of candidates for training. They felt there is a need to streamline the process in keeping with normal procedural requirements. There was also at least one respondent who felt that there were too many players involved in BUCAP and felt that the project could do away with the RNR-RCs and directly deal with the agriculture extension services. This just goes on to show the lack of understanding of the role of various project partners among the partners themselves and, therefore, the need for sensitisation.

Now that staff associated with management of BUCAP activities have returned from training and resumed BUCAP responsibilities, it is expected that the management and coordination will improve. Additionally, it is recommended that the NBC engage the active participation of various stakeholders in the formulation of the next phase of BUCAP, taking the participation process beyond the national team and steering committee meetings. This will not only be useful for project design but also present the opportunity of clarifying the role of different partners (NBC, RNR-RCs, dzongkhag/ geog agriculture extension services, etc) and defining the mechanisms for coordination between them.

Lack of Awareness at the Policy and Management Level

Through discussions with various stakeholders, it was observed there was a lack of clarity and awareness about the BUCAP project particularly at the policy and management level. As a result, in some situations, BUCAP project activities were happening because of the conviction and interest of individual crop field researchers and extension agents with very little support from their management.

It is therefore suggested that once the project design is in place for the next phase, it will be critical that the project designers sensitise officials at the policy and management level about BUCAP project to enhance their understanding and enlist their support. It will also be critical to strategically relate BUCAP project to the overall RNR sector policy and programmes as much as possible so that it is not perceived as something outside of the mainstream RNR sector development efforts. The stronger the relationship between the BUCAP project activities and the overall RNR sector policy and programmes, easier it will be for the NBC to garner support for the BUCAP project at the policy and management level.

Annual RNR conference and the RNR research and extension annual review and planning meetings are also important forums to reinforce the understanding and profile of BUCAP activities at a broader scale.

Monitoring

Some RNR-RC staff emphasised the need for more regular monitoring and guidance from the NBC. The NBC cited that, in addition to absence of staff for overseas training, this was due to lack of project vehicle to travel to various project sites. While procurement of a project vehicle was planned, the NBC was unable to procure one due to the Finance Ministry's regulation restricting procurement of pool vehicles, which came

into force during the beginning of the project. Now that the restriction has become less rigid, the NBC intends to procure a project vehicle. With the availability of project vehicle and key staff back from training, it is expected that monitoring of project activities will improve.

It is noted that community self-assessment is an innovative tool that the project has used. However, there seems to be the tendency to focus too much on positive changes. There is a need to make such assessment more analytical and holistic in the sense that it does not look only at the positive changes but also at other aspects such as constraints, new ideas, what could have been done better/ areas of improvement from the farmers' point of view comprehensively. It is not clear as to how often community self assessment will be carried out. Recommendation is to have it more regularly, perhaps once every year in each FFS site.

Fund Flow

While the NBC has full responsibility and authority for management of project finance in line with the overall project management and coordination responsibility, the process of getting funds released to it involves several layers of bureaucracy (see **Annex 4**) and procedural requirements, and is therefore time-consuming. The issue of fund flow is a complicated and generic one, and has considerable bearing on the progress of implementation of project activities. While it is understandable that strict financial controls and procedural requirements are embedded in the government bureaucracy to prevent corruption and maintain financial accountability and that there is little that the project management can do about it, it might be possible to alleviate the problem to some extent by programming budget request and disbursement on an annual basis rather than having to go through the process at more frequent intervals. It was also understood that the fund disbursement from SEARICE, which is coordinating and managing BUCAP at the regional level, to the RGoB is on half-yearly basis. It might be worth exploring the possibility of fund disbursement from SEARICE to RGoB on annual basis.

Programmatic Issues

Publication, dissemination and exchange

It is obvious that all stakeholders – farmers, research, extension – are convinced that the FFS approach is extremely suitable for use in PVS and PPB. There is a need to give wider formal journals, through the media and through development networks both within and outside the government system. It confronts the paradigm of top-down Transfer of Technology that is still common in many developing countries, and really empowers farmers.

A recurring request was for simple publications with lots of visuals and simple written information on FFS subject matter to be used by farmers. This should probably be taken up by SEARICE. It seems an urgent requirement. If it is not budgeted for, we suggest that the NDF consider this as an extra project. It requires expert input on both subject matter and information transfer as well as good quality pictorials.

An issue frequently raised was exchange visits. In this respect, farmers from east Bhutan are ahead having already made cross-visits between sites in their region. They clearly enjoyed the opportunity to visit other sites and claimed that they benefited from it. We were not able to find out what exactly they learned. Some farmers said that they brought some seed of various crops from other sites, others that they exchanged experiences in the FFS process. Whatever, such visits are clearly seen as an extra bonus for participating in FFS and help in the group dynamics which is important.

Also visits to RNRRCs were said to help farmers in understanding what research was about and what it did or could do for them.

A somewhat contentious issue is visits to other BUCAP countries Vietnam and Laos. Selecting the person from within the group seemed to have been a difficult process. One woman selected in the East was said to have been chosen because of her literacy and education. She would be better placed to exchange information and share her experiences. A man from Paro claimed that they had held a lottery to select the farmers for the study tour to Vietnam. Whether this was true is difficult to say. In our meeting with the group, he was definitely the most vocal, dominating the meeting with apparent little resentment of the others. On being asked what was the most interesting thing they saw in Vietnam, both said it was the fact that there were farmers who made their own crosses. The woman said that she did not think she would want to do it, preferring to receive material from the RNRRC. However, the man from Paro said he was seriously considering it and felt confident he could compete with the RNRRCs. Both were impressed by the way the Vietnamese were organised, but felt that the actual agricultural practices were not much different. Hence, in all it was more an experience than a learning process. A person from extension felt that international visits by farmers were not advisable as they would produce a large cultural shock – this was not evident in either of the two farmers we met. A possible good point is that trainers of FFS might gain more direct benefit from it.

An idea that emerges is that of farmer extension agents, people who are essentially farmers but who can be nurtured into becoming extension agents at the village level through training and experience. FFS would be an excellent training ground for such people. While this concept of farmer extension agent may be a bit too advanced at this stage, there is definitely the scope for future application given the growing impetus on decentralization.

Up-scaling FFS

SEARICE is a community-oriented NGO concerned with empowerment of farmers and with a history of involvement in PGR- related issues as they affect farmers. The BUCAP project combines both concerns. Looking at the situation in Bhutan, farmers seem to be autonomous in deciding on what planting materials to use and empowerment would not seem to be an issue. Also, conservation of biological resources is embedded in the culture and policies of the Royal Government of Bhutan. Hence, also that is not an issue. In spite of that BUCAP has had a significant impact by introducing FFS as a method to involve farmers as partners rather than as subjects of agricultural development. The

method and philosophy behind FFS has therefore much broader application. There are definitely opportunities for up-scaling FFS-type of processes within agricultural development, also in Bhutan. The question is whether SEARICE sees itself as a major actor in such activities. Depending on availability of funding of the next phase, up-scaling can be taken up in terms of geographic coverage and crop coverage. In the ongoing phase, BUCAP project covers all the Regional RNR-RCs excepting the RNR-RC Bumthang, which is responsible for the east central region covering the dzongkhags of Bumthang, Trongsa, Zhemgang and Sarpang. It will be appropriate to extend BUCAP activities to RNR-RC east central region to make the coverage comprehensive at least at the level of RNR-RCs. With respect to up-scaling in terms of crop coverage, there is considerable interest among farmers, extension agents, and researchers alike to extend the FFS to other crops, such as minor cereals and vegetables.

Exit strategy

The start of the BUCAP project in Bhutan has been slow and uneven for reasons that have been mentioned in various parts of the report. However, now that it is on its way, it has a far greater impact than might have been expected considering that it is really quite a small project. All stakeholders indicated that they would continue using the FFS approach introduced by the project. Farmers are by now confident that they can handle FFS, certainly in dealing with extension and research, but also by providing training to other communities. Extension agents also seem to like it and prefer it over the common system of organizing occasional field days on particular subject matter. Finally FFS provided a learning process for research, accepting farmers not just as recipients of their technologies, but as partners in developing it. Hence from the look of it FFS provides for a sustainable technology. This is no mean achievement and BUCAP should be proud of it.

It is assumed that a second phase will take place. We suggest that during the formulation of the second phase an exit strategy is designed to ensure continuation of realizing BUCAP objectives for the following reasons:

- FFS introduced by the BUCAP project has wider relevance beyond the subject matter of BUCAP.
- FFS has provided NBC with a methodology to assist farmers in gaining access to genetic diversity of crops and thereby obtain direct relevance in agricultural development.
- FFS has been effective in empowerment of farmers where it concerns its planting materials and probably beyond.
- FFS fits in with the national decentralization policy of making people at the grassroots level self-reliant in decision-making and management of their own development.

These developments have to go on and should be considered in an exit strategy creating a situation that provides for sustainable continuation. As reviewers it is not our task to indicate what such an exit strategy should look like, only to suggest that it is needed. What is recommended is to look at sustainability requirements, such as institutionalization (e.g. incorporation of FFS in the regular training curriculum of

extension agents) and propagation (publicity through media, production of FFS manual), during the formulation of the next phase.

Logical Framework

It is not clear how the logical framework was developed and who all were involved in its development. The one that is available in the project proposal has far too many objectives (reflected as "purposes" in the proposal). In order to maintain focus and purpose, there is a need to consolidate them into a few objectives (say three) and draw clear linkages between various levels of the framework, e.g. between outputs and objectives. The involvement of various stakeholders in the formulation of the logical framework remains vital.

A sample of logical framework that could be adapted for the next phase of the project is appended as Bhutan **Annex 5**.

Scheduling of FFS Activities

It was pointed out that in some sites, FFS related meetings are conducted in an ad hoc manner by researchers and extension agents. Farmers suggested that they would prefer meetings that are scheduled in advance so that they could plan their activities accordingly. There was also suggestion to develop FFS calendar jointly with the farmers so that the timing of the FFS activities is consistent with that of the local farming activities.

Other Observations

Complementarity with other programmes/ projects

During the course of interaction with various people, it became clear that the BUCAP project had a major added value in its ability to complement other programmes/ projects. For instance, the UNDP felt that the BUCAP project provides a useful platform for the NBC to leverage Global Environment Facility (GEF) grant for an Integrated Livestock and Crop Conservation Project by covering activities which are important but cannot be financed by GEF. NBC staff also pointed out that the BUCAP project activities on farmers' fields and the central gene bank were mutually reinforcing.

In-Country Cross Visits

The need for cross-visits between farmers of various project sites came out strongly particularly from the farmers. In this regard, it was encouraging to note that the RNR-RC East has already made a head-start. It is therefore obvious that in-country cross-visits between farmers will need to be an important feature for the next phase of the BUCAP project. However, such visits will need to be programmed well to allow maximum learning and exchange of ideas and insights between farmers (and also extension agents and field crop researchers).

Learning Materials/ Facilities

Most farmers felt that availability of printed materials with illustrations on FFS and PVS activities will be very useful. They also added they would like to have whiteboards, chart

papers, marker pens and provision to rent a room for use as classroom. While the need for the above learning materials/ facilities is very much appreciated, it is recommended that project cover the costs of these materials for only the initial time and that recurrent costs (such as for stationery and rental) be subsequently built into the regular geog RNR extension programme budget. This is something which will need to be considered in the exit strategy.

Staff Transfer

BUCAP project activities in Khasadrapchhu have not made much headway due to frequent staff changes. Since the inception of the project in the area, three different geog agriculture extension agents have been involved. This has led to a breakdown in the continuity of the project activities. It is therefore important that geog extension agents are allowed to continue at one place for sufficient duration to make project interventions functional. This issue is something which is beyond the control of project management but the NBC and its project partners can emphasize the implications of frequent staff transfers to officials dealing with personnel management wherever there is an opportunity, for instance during management meetings.

Technical issues on farmers' conservation, access, control and use

In the objectives of BUCAP it is stated that "while BUCAP is about conservation and sustainable use of Plant Genetic Resources (PGR), it is also and more so about empowerment of farmers". In the subsequent text, major emphasis is put on conservation and control over use of PGR by farmers.

Bhutan and its farmers have a strong cultural believe in the conservation of their natural environment and the need to balance economic progress with general spiritual wellbeing. Farmers in Bhutan do not seem to be exposed to unjustified pressures to adopt new varieties, nor do they generally lack in appreciating the value of their own local varieties. However changes take place in the wake of agriculture development aimed at food security and improved livelihood of farmer households. Hence the issues of *conservation, control, access* and *use* have to reviewed in the context of the situation in Bhutan.

Conservation and Use

In general, farmers conserve through use. This can be use for food, for economic purposes, for cultural or religious events, for security or any other reason. What they generally not do is to conserve for the sake of conservation. Farmer seed systems tend to be dynamic in the sense that farmers are interested in testing new materials and changes of planting material are common. For instance a blast epidemic in rice in Western Bhutan in the nineteen nineties led to adoption of new blast resistance varieties. Most farmers interviewed said that they did not maintain the old varieties. Hence, for as much as traditional farmer seed systems conserve genetic diversity, they tend to maintain a pool of genetic diversity but particular local varieties may get lost For this reason *ex situ* conservation in genebanks of units of genetic diversity including local varieties is an essential complement of on-farm conservation through use.

Decentralised selection in segregating breeding populations by farmers in different environments, as is taking place in the BUCAP project will undoubtedly lead to more genetic diversity in planting materials and thus to more on-farm conservation. However the range of materials tested in the BUCAP trials is still limited to only a few breeding lines obtained from the RNRRCs with a local variety as control. To have an impact on genetic diversity on farmers fields, the range of materials tested should be broadened beyond breeding materials in the RCs pipeline and could include local varieties from other regions with comparable environments etc. NBC is well placed to identify such materials.

Access

A major objective of BUCAP is to increase genetic diversity in farmers'fields. This requires access. New genetic materials are normally obtained through farmer-to-farmer exchange common in traditional agriculture in Bhutan. A second and increasingly important source is plant breeding at the RNRRCs. The FFS approach in the BUCAP project is definitely contributing to greater access of genetic materials farmers can test in their fields. There is however some ambiguity in the execution of the project. The impression is that the RNRRCs see the BUCAP trials not so much as a means to increase access for farmers and control over breeding, but more as to lead ultimately toan efficient form of on-farm testing of their breeding lines. The reason may be that the BUCAP project started at the tail-end of a crash shuttle breeding program with IRRI to rapidly breed blast (*Pyricularia grisea*) resistance varieties . Blast is a common disease in rice, but only appeared at higher elevations in Bhutan in 1995. All the local varieties were found to be highly susceptible. The BUCAP sites at Paro and around Thimphu were used for on-farm testing and resulted in the release of two blast resistant varieties (Yusirey Kaap and Yusirey Maap) in 2001.

It seems that at least some staff of RNRRCs consider this the normal procedure rather than the exception. This perspective, if correct, needs to be rectified. However this situation does raise an interesting question. Farmers, testing early breeding materials of the RC's variety, can keep such materials and continue to make their own selection. When such materials show satisfactory performance, they may well spread rapidly to other farmers, before the RNRRC has finished its breeding and received certification for distribution by the Variety Approval Board. Will the material distributed by the farmers be classified as a local variety and thus not require official approval?. Even if such materials are required to obtain official approval, farmer to farmer exchange may already have led to distribution beyond control. If such processes take place by farmers in different communities, it may lead to a diversity of 'local varieties', locally selected and closely related to an official released more uniform formal variety. It will be interesting to see whether the formal variety and the local related varieties are differing in their yielding capacity and which are preferred by farmers. Leaving final rounds of selection to farmers, or at least allow institutional and farmer selection to take place in parallel, may well be an option, if increasing genetic diversity is a serious objective . However it will probably conflict with the procedures of the Varietal Approval Board. The question may be asked whether such a board or the farmers themselves are the better judge of what material is good for them and satisfies their requirements. It suggests that the existence and procedures of a Varietal approval Board may well be incompatible with

farmer participatory breeding., unless certification by the board is only required for seed distributed through formal or commercial channels.

At least one farmer in Paro was willing to challenge the RNRRCs in comparing the result of on-farm selection with on-station selection, starting from a common breeding population. This should be taken on.

As stated earlier, NBC should start contributing genetic materials of potential interest to the on-farm BUCAP trials, using results from its national PGR survey, but also accessing other genebanks and collections in other countries. Apart from increasing access by farmers, being associated with agricultural development and farmers will strengthen its overall relevance as an institution.

Control

Control over PGR has become a political issue since the nineteen eighties when the FAO started negotiations that led to the FAO International Treaty on Plant Genetic Resources for Food and Agriculture. It was suggested that industrial countries in the North were exploiting genetic resources in the centres of origin of most major crops situated in the tropics and sub-tropics. In the process they claimed legal ownership through Plant Breeders' Rights for new varieties developed while no recognition was given to the presumed original creators of the local varieties used as base materials. This may suggest injustice. However, varieties protected through plant breeders' rights are still freely available as a genetic resource without restrictions. Secondly, the concept of ownership of genetic material is totally foreign to most if not all agricultural communities. Traditional agricultural and the farmer seed system existing in Bhutan is based on mutual inter-dependence and free exchange not claiming ownership. Promoting control suggests two things; (i) that PGR represents monetary value and (ii) there is a market for it. The reality is, that PGR in farmers fields operate in a market where there are many suppliers and few buyers. It is very likely that Bhutan has genetic diversity of potential value to plant breeding. Within Bhutan few will object against sharing such resources for the common good, while the government strictly controls the export of biological materials under various international agreements. Hence farmer control over genetic planting material would not seem to be an issue in Bhutan.

Recommendations

Key recommendations are summarized below:

- Engage active participation of various stakeholders in the formulation of the next phase of the BUCAP project. In doing so, special attention needs to be given to:
  a) clarifying the role and responsibilities of various project partners and defining coordination mechanisms between them;
  b) relating BUCAP project to the national context as strongly as possible, specially to the overall RNR sector policy and programme objectives so that there is a compelling national rationale;
  c) exit strategy to ensure continuation of project interventions after the conclusion of the next phase;

d) developing a logical framework, which is comprehensible, focused and links the various levels of the framework.

- Plan and conduct a suite of sensitization/ awareness raising activities to enhance the profile and understanding of BUCAP project, especially among officials at the policy and management level. Such activities could include field visits by RNR officers to nearby FFS site(s) during annual RNR conference and other relevant major events, media coverage of FFS activities, awareness workshops, and production of various publicity materials such as brochure and video.

- Conduct community self assessments on an annual basis and evolve them into a more analytical and holistic tool to capture not only the positive changes but also other aspects such as constraints, new ideas, what could have been done better/ areas of improvement from the farmers point of view.

- Explore the possibility of programming budget request and disbursement on an annual basis to alleviate problems associated with fund flow.

- In terms of upscaling, extend FFS activities to RNR-RC Bumthang, which covers the east central region and is the only RNR-RC not covered by BUCAP project. FFS also needs to be extended to other crops, particularly minor cereals and vegetables for which farmers, extension agents and researchers have all expressed considerable interest.

- To institutionalize FFS, explore the possibility of incorporating it as a subject in the regular training curriculum for field extension agents. Though this is something which is beyond the scope of the BUCAP project, NBC could discuss it with the authorities at the Natural Resources Training Institute, Lobesa, and Rural Development Training Institute, Zhemgang, to reinforce and propagate FFS on a nationwide scale. Within the BUCAP project itself, it is felt that development, production and dissemination of an FFS manual will prove valuable in terms of propagating the FFS approach. If this is taken up, coordination/ collaboration with the Wang Watershed Management Project will be very important as this project has been also actively involved in FFS.

- Based on the response of the farmers, the following activities are recommended for inclusion in the next phase of the BUCAP project[1]:
  a). Cross-visits between farmers of various project sites and to on-station research trials;
  b) Production of FFS/PVS learning materials with simple texts and good illustrations (photographs or hand-drawn sketches).

- Develop FFS calendar jointly with farmers to ensure consistency with timing of local farming activities.

- The BUCAP is so far focussed on testing modern varieties made available by the RNRRCs against local varieties using FFS. Broadening the range of tested materials to include local varieties from different regions identified by NBC and the issue of on-farm conservation should be considered in phase 2.

- The truly participatory nature of FFS is not yet fully understood by some researchers and extension staff. There is a continued need for training and awareness raising to build-up the understanding and skills of researchers and extension agents in this regard.

- NBC has not been able to fully realize its coordinating and leadership responsibilities. Now that relevant staff is trained and are back in place, NBC should take steps to fully assume its coordinating responsibilities, including regular visits to project sites and interaction with farmers and project partners. FFS is based on personal contacts and trust. For this purpose, a project vehicle is essential and its purchase should have high priority.

Bhutan Annex 1A: Itinerary

17 November	Arrival of Dr. Jaap Hardon. In the afternoon, preliminary discussion with officials at NBC, Serbithang
18 November	Meetings with officials at MoA and at Helvetas/ SDC Programme Coordination Office, LOD, and UNDP
19 November	Travel to Wangduephodrang. On the way, meeting with officials at RNR-RC, Yusepang. On reaching Wangduephodrang, meetings with officials at RNR-RC, Bajo, and with the DAO of Wangduephodrang. Overnight at Wangduephodrang.
20 November	Meetings with FFS farmers at Thangu, Wangduephodrang, and Thinleygang, Thimphu. Return to Thimphu.
21 November	Meeting with farmers from the east from Khaling, Trashigang, and Drametsi, Mongar, and field crop research officer from Khangma RNR research sub-station and geog agriculture extension from Khaling at NBC, Serbithang.
22 November	Travel to Paro. Visit to Druk Seed Corporation at Bondey, Paro. In the afternoon, meeting with FFS farmers at Doep Shari. Return to Thimphu
23 November	Meeting with FFS farmers at Khasadrapchhu, Thimphu. In the afternoon, brief visit to SDS office.
24 November	Writing of draft report.
25 November	Morning, writing of draft report. In the afternoon, debriefing and discussion of key findings and issues at NBC, Serbithang.
26 November	Departure of Dr. Jaap Hardon.

Bhutan Annex 1B : People Met

RGoB Officials

At Ministry of Agriculture, Thimphu

1. Dr. Ugyen Tshewang, Programme Director, NBC, Serbithang
2. Ms. Asta Tamang, Project Manager, Agro Biodiversity Section, NBC, Serbithang
3. Ms. Cheki Wangmo, Agro Biodiversity Section, NBC, Serbithang
4. Mr. Sherub Gyaltshen, Director, DAS, MoA
5. Dr. Pema Choephyel, Director, CoRRB, MoA
6. Mr. N.K. Pradhan, Chief Research Officer, CoRRB, MoA

At RNR-RCs

7. Dr. Lungten Norbu, Programme Director, RNR-RC West, Yusepang
8. Ms. Mumta Chhetri, Programme Officer, Field Crops Section, RNR-RC West, Yusepang
9. Mr. B.B. Ghaley, Research Officer, Field Crops, RNR-RC West, Yusepang
10. Mr. Hema Devi, Research Assistant, Field Crops, RNR-RC West, Yusepang
11. Mr. P.L. Giri, Research Assistant, Field Crops, RNR-RC West, Yusepang
12. Mr. D.B. Rana, Research Assistant, Field Crops, RNR-RC West, Yusepang
13. Mr. Sangay Duba, Programme Director, RNR-RC West Central, Bajo
14. Mr. Karma, Research Officer, Field Crops, RNR-RC West Central, Bajo
15. Mr. Neelam Pradhan, Research Assistant, Field Crops, RNR-RC West Central, Bajo

At Dzongkhag Administration/ Geog RNR Extension Centers

16. Mr. Pema Dorji, Dzongkhag Agriculture Officer, Wangduephodrang Dzongkhag Administration
17. Ms. Pema Lhaden, Geog Agriculture Extension Agent, Thangu RNR Extension Center, Wangduephodrang
18. Mr. S.B. Rai, Geog Agriculture Extension Agent, Khaling RNR Extension Center, Trashigang
19. Ms. Deki Pem, Geog Agriculture Extension Agent, Shari RNR Extension Center, Paro
20. Ms. Thuji Wangmo, Geog Agriculture Extension Agent, Khasadrapchhu RNR Extension Center, Thimphu

21. Mr. Phuntsho Wangdi, Geog Agriculture Extension Agent, Thinleygang RNR Extension Center, Thimphu

Others

22. Mr. P.M. Pradhan, Managing Director, Druk Seed Corporation, Bondey, Paro

Farmers

At Thangu, Wangduephodrang

23. Ms. Chador Bidha
24. Ms. (to be inserted later after getting the name from NBC)
25. Ms. (as above)
26. Mr. (as above)

At Thinleygang, Thimphu

27. Mr. Thinley
28. Ms. Thinley Bida
29. Mr. Dorji Gyeltshen
30. Mr. Sherab

At Doep Shari, Paro

31. Ms. Tshering Pem
32. Ms. Choki Om
33. Ms. Sonam Choden
34. Ms. Naarim
35. Ms. Choki
36. Mr. Dorji
37. Mr. Dawa Tshering
38. Mr. Kaka

At Khasadrapchhu, Thimphu

39. Ms. Bakum
40. Ms. Lhaden
41. Mr. Mingma
42. Mr. Gattu
43. Ms. Karma
44. Mr. Sangay Dorji

From East Bhutan

45. Ms. Pema Ongmo, Khaling, Trashigang
46. Ms. Sangay, Drametsi, Mongar

Bhutan Annexe 2: Acronyms And Glossary Of Bhutanese Terms

Acronyms

BUCAP	Biodiversity Use and Conservation in Asia Programme
CoRRB	Council of Renewable Natural Resources Research Bhutan
DAO	Dzongkhag Agriculture Officer
DAS	Department of Agriculture Services
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
GEF	Global Environment Facility
LoD	Liaison Office of Denmark
MoA	Ministry of Agriculture
NBC	National Biodiversity Center
PGR	Plant Genetic Resources
PPB	Participatory Plant Breeding
PVS	Participatory Varietal Selection
RGoB	Royal Government of Bhutan
RNR	Renewable Natural Resources
RNR-RC	Renewable Natural Resources Research Center
SDC	Swiss Agency for Development and Cooperation
SEARICE	South East Asia Regional Institute for Community Education
UNDP	United Nations Development Programme

Glossary of Bhutanese Terms

Dzongkhag	District
Geog	Administrative Block, made up of few to several villages

Bhutan Annexe 3: Observations and Notes from Meetings with various Stakeholders.

17.11.04

General discussions with NBC

- BUCAP project lost a year because of delay in project approval by the RGoB. The delay was because the BUCAP donor – the Development Fund of Norway – was a new donor in the country and the RGoB wanted to know more about it before project approval. In addition, the absence of key staff – Asta Tamang and Singay Dorji – for training abroad affected the continuity of project management and coordination. The NBC was also very occupied with the completion of the building facilities and procurement of equipment. However, it is felt that now good progress is being made. Farmer participatory PVS and PPB (?) is ongoing with five communities in the western region and three communities in the eastern region of the country, with the former focusing on rice varieties and the latter on maize varieties. Good cooperation is available from RNR-RCs at Yusepang (West Bhutan), Bajo (Central West) and Wengkhar (East) and dzongkhag/ geog agriculture extension services.

- BUCAP fits very well in the objectives of the NBC, complementing *ex situ* conservation with on-farm activities. Discussions persisted at some length on the issues of on-farm crop diversity use and its' relationship with *in situ* conservation. This is an issue that needs further elaboration.

- On financial management, Dr. Tshewang claimed that the NBC had full responsibility and authority in line with the overall management and coordination responsibility for the BUCAP project. However, the process of getting funds released from the Finance Ministry is complicated and time consuming because of various procedural requirements, e.g. the need to secure quotations and to go for the lowest quoted rate.

- NBC has submitted a project proposal on animal and plant genetic conservation to UNDP for GEF funding. This is fully in line with developments at the FAO and the FAO Commission on PGRFA. Dr. Ugyen Tshewang contributes the necessary expertise in this area.

- It was suggested that a preliminary national agrobiodiversity survey of common crops had been completed, combined with environmental zonation of the (main?) agricultural production areas. This would provide very helpful information for BUCAP in identifying local varieties for consideration in Farmer Field School (FFS) demonstration plots.

- One school of thought argues that PVS, and possibly PPB, is particularly useful for crops that obtain little or no support from formal breeding, or for major crops grown outside the environmental range covered by conventional plant breeding. In a way, BUCAP does the opposite and applies PVS and PPB for major crops (rice and maize) grown in the environmental range to a large extent covered by national plant breeding. The assumed rationale is that it will contribute to the empowerment of

farmers to provide them with objective choices rather than have to depend on information supplied by formal (extension) agencies.

- Dr Ugyen Tshewang suggested that it was easier to mobilize donor funding to support projects on *in situ* conservation, but *ex situ* conservation was much less popular. This is a generally observed tendency in international organizations, national aid agencies and also, and especially in CSO's. It is a disturbing development and not based on understanding agrobiodiversity and what is needed to conserve it. This issue needs to be dealt in more detail within this report, since it would also appear to apply to the overall attitude of SEARICE in the BUCAP project.

- BUCAP highlights in the past one year include the study of tour of BUCAP stakeholders to Vietnam, training of trainers (ToT) of RNR-RC plant breeders and geog agriculture extension agents, and community self-assessment of farmers trained by the plant breeders and geog agriculture extension agents

18.11.04

Meeting with Mr. Phuntsho Wangdi, Geog Agriculture Extension Agent, Thinleygang[2]

- It was informed that selection of varieties was based on the interest and needs of the farmers.

- It was suggested that it was difficult to begin the FFS approach as the farmers were not confident about the new intervention and it took some time to convince them and mobilize their participation.

Meeting with Mr. Sherub Gyaltshen, Director, Department of Agriculture Services, MoA

- A very general and wide ranging discussion on the potential benefits of BUCAP and the FFS approach for (i) farmers in access to and selecting appropriate varieties; (ii) for plant breeders to test their materials in farmers' fields and in diverse environments; and (iii) for NBC through identifying and supplying potentially useful landraces from different regions for FFS testing schemes play a role in agricultural development. We then discussed opportunities to exploit consumer preferences for local rice varieties for export markets, linked with organic/ecologically sound farming certification. It was said that the better locally grown varieties fetched 2-4 times higher prices than the imported varieties from India. Hence, opportunities may be offered by specialty markets. It suggested that the BUCAP project, in promoting on-farm conservation through use of more genetic diversity, should also consider aspects of marketing to insure improved benefits to farmers. This issue also came up

[2] A quick discussion was held with Mr. Wangdi as we waited for Mr. Sherub Gyeltshen to be free for our meeting. Mr. Wangdi had also come to see Mr. Gyeltshen in connection with the processing of his approval for participation at farmers' conference on crop diversity in Cambodia, sponsored by BUCAP.

in discussions with Mr. Erwin Koenig, Resident Coordinator of Helvetas/SDC Programme Coordination Office (see later).

- From his attendance of presentations made by geog agricultural extension agents at a recent workshop, Mr. Gyaltshen said he was very impressed with the FFS approach and thinks there is a good potential to extend it to other agricultural crops, including vegetables.

- Bhutan has a comparative advantage over the neighbouring countries in terms of the opportunities for organic farming. To this end, the MoA is developing a strategy to promote organic farming and explore niche markets for organic farm products.

Meeting with Dr. Pema Choephyel, Director, CoRRB, MoA

- Dr. Choephyel emphasized the need for BUCAP to adhere to procedures relevant to involvement of RNRRC's in projects. Unless BUCAP activities were timely submitted and included in project plans and duly approved, cooperation from RNR-RCs might not be possible. This was accepted. However, we suggested that BUCAP was not necessarily an additional burden but provided RNR-RCs with interesting options to have their materials, free of charge, tested by farmers and in different environments and thus fitted in their on-going activities. Dr. Choephyel suggested that the evaluation team also confirm the appropriateness and functioning of the institutional linkages between RNR-RCs and the NBC during discussions with the staff of RNR-RCs.

- There is a need to clarify BUCAP research and conservation mandates so that there is a clear line of communication and coordination for delivery and mainstreaming of BUCAP activities within the national agriculture research and extension system.

- Institutional changes over the past 3-4 years have also affected awareness about BUCAP. There was more awareness about BUCAP within the central research staff earlier on. With the segregation of DRDS, this awareness has lessened.

- FFS is not actually a new intervention in Bhutan. It has been used in other crops, e.g. potato farming. However, BUCAP has been useful in that it has revived the approach and presents the opportunity to consolidate it in a more comprehensive manner.

- The involvement of various stakeholders in the formulation of the first phase of BUCAP activities in the country has been superficial. There is, thus, a need to more actively engage various stakeholders in the formulation of the next phase of BUCAP project.

<u>Meeting with Mr. Erwin Koenig, Resident Coordinator, Helvetas/SDC</u>

- Mr. Koenig gave a short overview of the kind of activities they support in Bhutan. Support to the national RNR research system forms a substantial part of the Helvetas/SDC assistance in the country. Besides, they are also involved in supporting the RNR training institutes, namely the Natural Resources Training Institute (which

is now well established) and the Rural Development Institute (which is in the stage of development).

- A broad discussion on the aims and objectives of BUCAP was held. This was followed-up by a discussion on the potential of marketing local rice varieties. HELVETAS is supporting such a project, providing materials with an organic label for export to Switzerland . First products were selected based on the ease of control of the production process – pipla (a medicinal plant), lemon grass oil and dried yak meat.

Meeting with Mr. Tek B. Chetri , Programe Officer, Liaison Office of Denmark

- Mr. Chetri was not familiar with the BUCAP project. However, DANIDA financial assistance was provided for the establishment of herbarium, Flora of Bhutan, and training of staff at the NBC under the Environmental Sector Programme Support (ESPS), which concluded last year.

Meeting with Dr. Seeta Giri, Head, Environment Unit, UNDP

- Dr. Giri was well aware of BUCAP and is actively assisting in the development of a project by the NBC on Integrated Livestock and Crop Conservation for a medium-size grant by the Global Environment Facility. It was said that the BUCAP project was useful as it gave the platform for this project to leverage GEF grant, which requires co-financing from the government and other sources. BUCAP also complements the proposed GEF project in that it can cover many activities that will not be eligible for GEF.

- We discussed at some length the growing split between *in situ* and *ex situ* conservation and the considered politically correct preference for the former by many donors and CSOs. However, it appears that the UNDP, or at least Dr Giri, is well aware of this problem.

19.11.04

Meeting with staff of RNR-RC West, Yusipang[3]

- RNR-RC Yusipang is responsible for food crop research in the western region, which includes Thimphu, Paro, Haa, Chhukha, and Samtse dzongkhags (districts). In terms of BUCAP activities, they are working at three sites – Thinleygang (Thimphu dzongkhag), Khasadrapchhu (also in Thimphu dzongkhag), and Doep Shari (Paro dzongkhag).

- RNR-RCs only accept projects/activities that fit in their approved research programmes. There is no additional staff specifically for BUCAP. Existing government staff implement BUCAP activities as part of their larger job

responsibilities. Only working costs for implementation of BUCAP activities are paid for by BUCAP.

- Initially, RNR-RC Yusepang was not a part of the BUCAP project. It joined later as it became interested and BUCAP had adequate funds to cover additional areas.

- FFS is seen as a very important addition to on-going on-farm research. While various participatory approaches have been in practice in agricultural development, FFS takes the participatory approach further by engaging farmers more actively. It will certainly continue to be used even after the conclusion of the BUCAP project. It also fits in well with the government's decentralization policy to make local communities self-reliant.

- BUCAP already contributed to the adoption of two Blast resistant new varieties in the Paro area. Also good results obtained in rehabilitation of variety # 11, improving seed quality.

- At the community self-assessment, which involved both BUCAP farmers and non-BUCAP farmers, there was very positive feedback about the FFS approach. Additional farmers are keen to participate in FFS.

- There is serious consideration to expand the application of FFS to field testing of other crops, such as wheat and mustard.

- Cross-visits to other BUCAP sites and discussion of common issues will be valuable. It was said that in-country visits cross visits between farmers would be more useful than study tours to foreign countries as the education level of Bhutanese farmers is much lower. Suggestion was there to instead focus on sending field extension agents to study tours to other countries as they have the capacity to more effectively learn about the practices in other countries and extend new ideas and insights to the farmers.

- The RNR research and extension systems have been given the new mandate to help farmers to establish cooperatives. The FFS approach can help RNR research and extension staff to mobilize farmers to work as a cooperative.

Some critical remarks:

- Some occasional problems in the coordination of NBC, being an institute in the process of establishment and staff training. However, such coordination should go through official and established channels.

- There is room for improvement in the coordination joint meetings between the project sites.

- The quality of "experts" supplied through SEARICE was not always adequate. There is a need to involve RNR-RCs in the selection of expert(s).

- Farmer exchange between countries was questioned. It was suggested that such exchange visits for trainers was providing more effective in benefits to the projects, and farmer exchange visits be limited to within country.

- It was suggested that all extension personnel should be trained in FFS as it could be very widely applied. One of the best ways to do that would be to incorporate FFS in the curriculum of the regular training programmes for field extension agents.

Meeting with staff of RNR-RC Central West, Bajo

- Staff of RNR-RC Bajo were equally appreciative of the FFS approach. It provides an interesting learning process for plant breeders to work with farmers, and for farmers to better understand how to do selection and the importance of this for maintaining the quality of their varieties in seed production. With the help of BUCAP, the process of participatory improvement of plant varieties is being accelerated/ reinforced. The FFS is enhancing group dynamics and farmers are learning to work collectively in selecting crop varieties. The farmers are now at least clear about the traits that they want in crop varieties.

- The training received on FFS by researchers and field extension agents was extremely helpful.

- There was no reservation about the usefulness of PVS. However, there was some doubt on PPB. It was suggested that RNR-RCs were better placed to make crossings and produce breeding populations through a number of rounds of selection, supplying farmers with such segregating populations for further selection and adaptation.

- Introduction of new varieties does not necessarily lead to loss of farmer varieties as farmers tend to maintain their own varieties for special reasons, such as for their own consumption due to flavor, aroma, etc.

- So long BUCAP is not limited to conservation but also promotes crop diversity that enhances benefits to the farmers, RNR-RCs' will be interested in maintaining collaboration as their interest is in improving food security and farm livelihoods through development and release of appropriate research interventions.

- There had been some problems in releasing funding, and it was suggested that such funding might better be channeled through the CoRRB.

- There is a need to clarify institutional mechanism and linkages between various partners so that there is improved coordination of BUCAP activities.

Meeting with Dzongkhag Agricultural Officer, Wangduephodrang

- The DAO did not appear to be very familiar with the BUCAP project and with participatory approaches. However, he appeared interested to learn about it and agreed that it might help extension officers in their work.

- While FFS was regarded as a valuable approach, the DAO felt that it impinges on farmers' time and resources. He suggested that there was a need to compensate participating farmers for use of their land and to develop timetable for BUCAP activities in accordance with local farming calendar. His suggestion was based on the what little feedback he has received from the farmers and extension agents.

- There were too many players involved in BUCAP and this increased bureaucracy in project management and implementation. He would prefer if NBC could directly deal with dzongkhag agriculture extension system instead of involving RNR-RCs.

20.11.04

Meeting with farmers (one male, 3 female) from project site at Thangu, Wangduephodrang[4]

- Altogether, 17 farmers are involved in the FFS. Initially, there were 19 but two withdrew as they found it difficult to participate regularly as there were only a few members in their households and also because their homes were a bit far away.

- This site was at the same altitude and environment as the Bajo research station. Hence, it might be assumed that results at Bajo also apply to fields of this community.

- The farmers were very happy with BUCAP. It helped them to better understand the importance of selection in seed production. They very much like the group testing of new varieties, also because of the social contacts. They expected to continue this kind of group testing, even if BUCAP would end.

- The research protocols, planting comparative trials in strict plots and lines etc, was questioned. They suggested larger plots and broadcasting.

- Interest was expressed in extending the project to include other crops like mustard, vegetables, wheat.

- The farmer who provided the land and labour felt he was extra burdened without much compensation except some tools. It was suggested that he could be compensated in kind, e.g. fertilizer and pesticides. As planting different varieties is

[4] A research officer and a research assistant from RNR-RC Bajo and the geog agriculture extension agent were also present at the meeting.

labor-intensive, he found it very difficult as labour assistance from other farmers was not always readily available during various stages of the growing cycle.

- All farmers expressed an interest in visiting other FFS sites and exchange experiences.

- One of the women farmers had participated in study/exchange visit of Vietnam. She said that practices in Vietnam were not much different from those in Bhutan. An exception was that Vietnamese farmers selected plants before harvest of which the panicles were later harvested for seeds. In Bhutan, panicles for providing seeds for next years planting were selected at harvest.

- Some farmers at the sites she visited in Vietnam were making their own crosses for developing new varieties. She thought that for that there was little interest in Bhutan, leaving development of breeding populations to RNR-RCs.

Meeting with farmers (one female, three male) at Thinleygang

- As the geog agriculture agent was away (to participate in the farmers' conference in Cambodia), the livestock extension agent mobilized the BUCAP farmers for the meeting. Altogether, there are 10 farmers in the FFS – four from Lemjakha and six from Lumitsawa.

- The farms are situated at around 2200 m altitude, while the breeding of RNR-RC Bajo is done at an altitude of around 1600 m. This may well introduce a problem of genotype x environment interaction.

- Again farmers expressed their great interest in BUCAP – it had fostered community action and increased their interaction with research and extension. It made them aware of the importance of seed selection and how to improve it.

- They started BUCAP activities only in 2003. They planted 4 modern varieties with their own farmer variety. Their own variety gave the highest yield. However, they felt that they might not have treated the modern varieties correctly, since one of the farmers had seen that they performed much better in Paro. So, they would try again. It shows an objectivity many plant breeders could learn from. It is more likely, that the modern varieties are just not adapted to such high altitudes. It raises the question whether the objective of the trial was to identify potential material of interest to these farmers, or to test the limits of the environmental adaptation of the modern varieties.

- Farmers indicated their great interest in visiting other sites and learn from their experiences.

- Farmers were interested in written training materials to learn more. They would also like to have blackboard/ whiteboard, some chairs, etc for training sessions.

- They also suggested that TV programmes on FFS would be very helpful. Although their village can not receive TV broadcast as there was no TV cable network yet in the locality, they would definite watch such programmes if videos were produced and shown at the RNR extension center.

- In order to address labor constraints, they have tried direct seeding but did not get very good results as the timing was a bit too late. They have decided to try it again and this time at the right time.

- The host farmer is from Lumitsawa. It was decided to have the FFS on his field as it was close to the road and, therefore, most convenient for other farmers.

- The farmers of Lemjakha would like to have their own FFS once there is road access to their village. Currently, it was not appropriate to have an FFS in their village as they felt that technical guidance and backstopping from RNR-RC and extension center may not possible on a regular basis due to lack of road access. A road to their village is there in the current Ninth Five Year Plan and they expect to have one soon.

21.11.04

Meeting with farmers from the East (two women), a research officer and an extension agent.

- The program in the East started already in 2001 at 3 sites, namely Drametsi (Mongar dzongkhag), Kanglung and Khaling (both in Trashigang dzongkhag). All sites were above 2,000 m in altitude, and included mainly maize but also rice. The initial start was slow, because the Programme Director, RNR-RC East, as well as the concerned DAOs were not convinced about BUCAP activities due to lack of awareness. In fact while both the responsible research officer and extension agent present expressed their full support for BUCAP, the impression is that the respective organisations and their management still have to be convinced. It calls for awareness raising/ sensitization about BUCAP, its rationale and objectives.

- The impression is that in the East research, extension and farmers work already quite well together.

- The research officer felt, that FFS was definitely interesting and useful, but low literacy of farmers was an impediment to realizing its full potential. Hence, it appears that in the East BUCAP is more a form of on-farm testing, very much controlled by the RNRRC with the contribution of FFS that participatory testing is done at intervals during the growing season instead of only at the end.

- The farmers indicated that a major contribution of BUCAP was the selection of cobs to provide seed for next year planting season. Previously they selected post-harvest, selecting big, well filled cobs. Now they had learned to look at plant height (medium, against lodging), husk cover, cob filling, vertical rows of kernels, size etc.

- Farmers indicated interest in expanding communal testing to other crops such as mung bean, kidney bean, some minor cereals, upland rice. This could be taken up by the NBC, assisting in identifying potentially promising materials for entering into trial plots.

- It was felt that the project activities in the East received insufficient support from both SEARICE and NBC (possibly because of the long distance involved). There is a need for more regular field monitoring and guidance from the NBC.

- Farmers were confident that neighbouring communities were interested in entering into BUCAP type of activities, and that they could play a role in providing some assistance. However, they would require also some institutional support and some facilities and funding for community meetings.

- The project was advanced in the east in terms of facilitating farmer exchanges between various sites. They have already conducted cross-visits between farmers of different sites. This needs to be propagated to other regions where BUCAP is active.

Problems

- There were no fixed meetings but these were arranged on an ad hoc basis by the researchers and extension agents when convenient. Farmers preferred fixed meetings so they could arrange their work accordingly.

- Study tours are useful, but more than one farmer per site should be selected to share ideas and experiences.

- With no vehicle for BUCAP activities, mobility is often a problem, also for NBC, research or extension staff to visit project sites regularly.

22.11.04

Meeting with farmers (7 female, 2 male) at Doep Shari, Paro

- Altogether 15 farmers were participating in the FFS, most of them being women.

- The farmers were very pleased with their trials. Initially, they were skeptical about the results. Later, however, they found the crops in the trial plots growing very well.

- FFS has been encouraging as the farmers have started to learn improved crop management practices collectively and there is a sense of cohesion among them.

- The farmers want to break into three FFS from the next growing cycle as they have now more confidence. Initially, they limited themselves to one FFS as they were not sure how it would work. There is also interest among other farmers to join.

- The farmers were very vocal about their interest to visit other BUCAP sites in the country. They have requested RNR-RC Yusepang for a visit to the on-station trails.

- It was also suggested that learning materials with lots of illustrations will be useful. The farmers felt that such materials will help them compare their crop growth with the visuals in the book and prompt them to ask questions/ seek guidance from the geog extension agent where they have doubts.

- Three farmers (all male) had participated in the BUCAP study tour to Vietnam. Two of them were present at the meeting and were very articulate about their observations from the tour. They explained the seed selection practice employed by the Vietnamese farmers and the crossing of different rice varieties. They also suggested they would also be interested in crossing local and modern varieties to optimize the characters they want in their crop. They also observed that the Vietnamese farmers were poor in resources (land, draught animal) compared to the Bhutanese farmers but were very hardworking and more literate.

23.11.04

Meeting with farmers (4 female, 3 male) at Khasadrapchhu

- There are a total of 9 farmers participating in the FFS, 4 being female and 5 male.

- Staff changes in the geog agriculture extension service have led to breakdown in the continuity of the BUCAP activities. Since the beginning of BUCAP activities, 3 different agriculture extension agents have been involved.

- It was not known to geog agriculture extension agent until they had finished transplantation that the crop trials were to be based on FFS.

- The farmers have switched over to modern varieties since the rice blast epidemic of 1995. One woman farmer is still maintaining a few local varieties al beit on small scale just in case the modern varieties fail. However, she is going to maintain only one local rice variety from next growing cycle as that particular variety has good flavor and shape for seep (rice flake), which can be used on special occasions such as when there is a religious ceremony at her home.

- The farmers would like to have whiteboard, chart papers, felt pens, etc for the FFS. It was also suggested that they would like to use one of the rooms in the host farmer's house as classroom and that if the project could pay rental for usage of such rooms.

Bhutan Annex 4: sample of logical framework matrix

NARRATIVE DESCRIPTION	INDICATORS	BASELINE	TARGETS	MEANS OF VERIFICATION	ASSUMPTIONS
Long-term Outcome Implementation of national strategies for sustainable development integrating social, economic and environmental issues strengthened	Contribution to the achievement of MDGs	2003 National MDG Report	MDG Targets	National MDG Reports	Government and donor commitment will remain consistent
Project Objective Improved capacity of the local authorities and communities for environmentally sustainable development and MDG implementation	• # of sustainable development initiatives planned, implemented and monitored by the local authorities and communities; • Reflection of environmental issues in DYT and GYT meeting minutes, *geog* plans, and NA deliberations	950 Micro Environmental Action Plans developed of which 87 are under implementation in 57 *geogs*.	• Geog Environmental Action Plans operational in five *dzongkhags* and integrated in respective *geog* annual plans; • DEC established and functional in all the 20 dzongkhags.	Periodic project progress reports; project evaluation report; DYT/GYT meeting minutes, *geog* plan documents, and NA proceedings	
Project Outputs 1. Knowledge and ability for environmentally sustainable development increased among DYT and GYT members	• # of awareness and training workshops conducted; • % of DYT and GYT members knowledgeable about environmental management and its links to broader sustainable development; • Level of local participation in the public consultation process required under the EA Act • Reflection of environmental issues in DYT and GYT meeting minutes.	387 DYT/ GYT members, including 22 women members, trained through previous workshops.	1,000 DYT / GYT members, with an increase in women participation by 50%.	Training workshop reports; interviews of DYT/GYT members; DYT/GYT meeting minutes; EA related documents; periodic project progress reports	
2. Planning, implementation and monitoring capability for geog-based environmental management increased among GYT members and other local people	• # of GEAPs, supporting MDGs, implemented; • % of GEAPs reflected in the annual *geog* plans.	87 MEAPs are under implementation in 57 *geogs*.	GEAPs operational in five selected *dzongkhags* and integrated in respective annual *geog* plans.	GEAP documents; field visits and interviews of GYT members, other local people and key informants (dzongkhag officials, *geog* extension agents); periodic project progress reports.	GYT members and other local communities will have the time required for planning and implementation of MEAPs.

3. BUCAP LAO PDR

Review of the BUCAP Project in Laos

The BUCAP project in Laos was reviewed in the period January 20 - 29. The review was undertaken by Dr. Jaap Hardon (Netherlands -plant breeder) with the assistance of Ms. Ny Luangkhot (Laos - socio-economist).

As part of the review the team had discussions with persons belonging to the following main groups (for details see LAO PDR Appendix 1):

(a) farmers and trainers;
(b) Ministry of Agriculture - (i) Director General - Department of Agriculture; (ii) deputy- director National Agriculture and Forestry Research Institute (NAFRI); (iii) director and staff - National Agriculture Research Center (NARC); (iv) staff Plant Production and Protection Center (PPC); (v) staff at district (DAFO) and provincial (PAFO) level - Vientiane province;
(c) International Organisations - (i) staff UNDP; staff FAO; staff CGIAR/ CIAT;
(d) Non- Government Organisation (NGOs) - (i) OXFAM - Belgium; (ii) OXFAM - Australia; VECO - Belgium

Initially visits were planned to project sites in two provinces - Vientiane province and Champasak province. However, return flight from Pakse in Champasak province could not be confirmed. It was decided to cancel that visit. Reviews in Bhutan and Vietnam indicated that responses of farmers at different sites tended to be similar and raised few additional issues. More divergence in views and a need for discussions and information was expected at the level of concerned institutions of the Ministry of Agriculture. Also, it was felt that various international organisations should be contacted, as they were involved in projects relevant to genetic resources and BUCAP.

Brief Project Background

Project Formulation

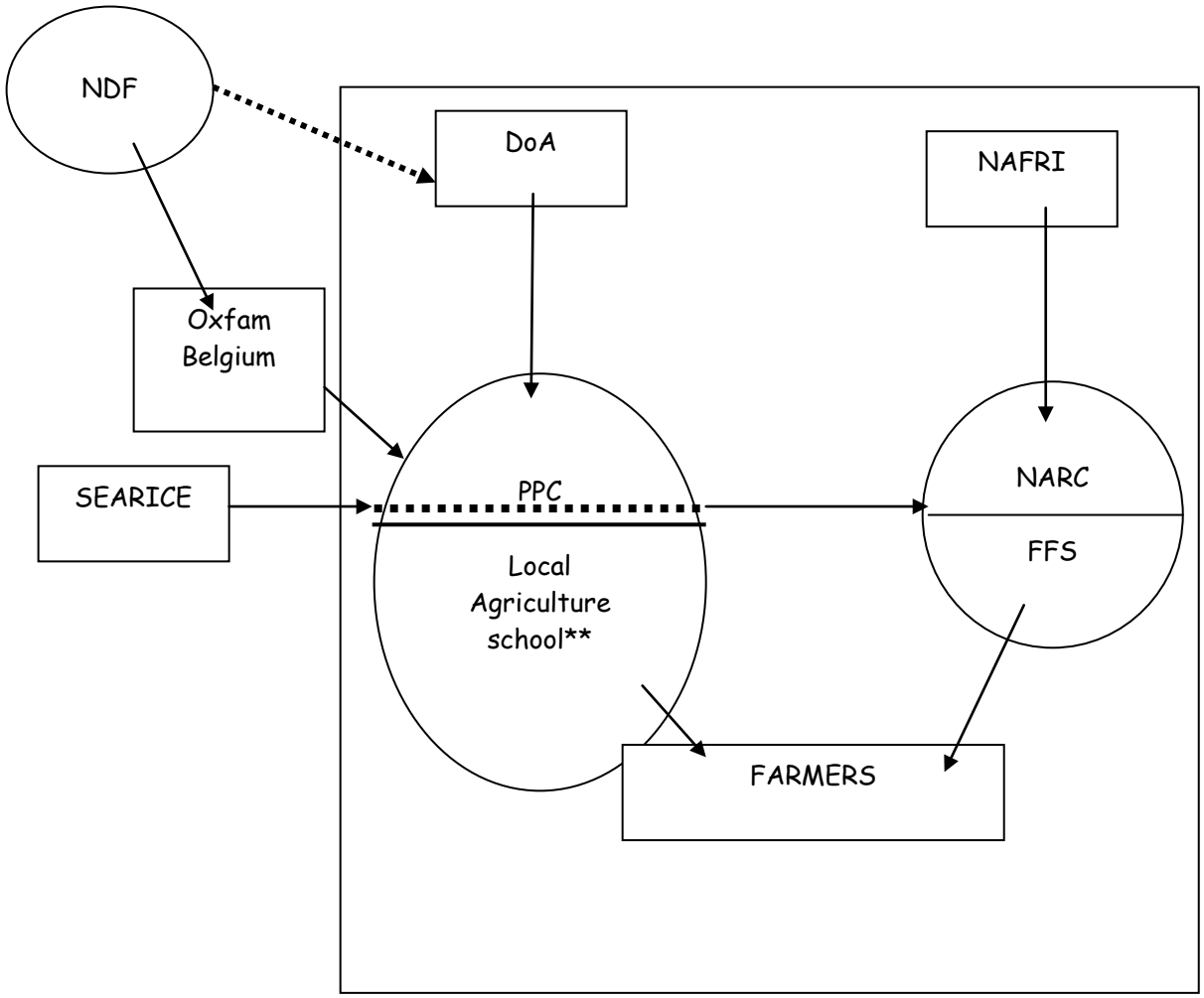
In October 1998, a fact-finding mission visited Laos to study and see the feasibility of BUCAP project and Lao PDR was selected as one of the partner countries beside Vietnam and Bhutan. Lao PDR was selected because it exemplifies a country undergoing agricultural transition from subsistence economy to intensive agriculture. The challenges of arresting genetic erosion and maintaining farmer knowledge and practices while undergoing transition were some of the prime reasons for selection.
At the end of 1999 the LAO PDR project proposal was finalised and a start made with the implementation. The year 2000 was the pilot year, the first phase started in 2001.

Project implementation

The original partner of SEARICE for BUCAP was the National IPM Programme which was then under the Agriculture Extension Office, housed in the PPC building. Ideally, BUCAP would have preferred to have the IPM coordinator as the BUCAP coordinator, but when BUCAP commenced the IPM program junior staff, such as Mr. Viengsavay (in Laos) and Mr. Phousit (in Vietnam) were taken on As part of the internal politics, DoA decided to give IPM coordination to Phousit and BUCAP to Viengsavay. These are but samples of internal politics SEARICE had to deal with in order to get BUCAP up and running. Around 2002, there was restructuring within DoA, which led to the creation of the Plant Protection Center (PPC). It was decided by DoA that the Extension Agency would coordinate IPM and that PPC would coordinate BUCAP, This should have been the other way around, because IPM is more directly related to plant protection than BUCAP. BUCAP is building on an extension methodology – FFS, and working for its wider adoption. We had discussions on this with Oxfam Belgium and we decided, along with NARC to give the set-up a try since in the end the main implementers in the field, (which supposedly will also be split into plant protection and extension) are still one and the same for both IPM and BUCAP. PPC as an institution has no experience on FFS save for BUCAP and a few former IPM people (2 staff) who became part of PPC.

The project financial management is provided by OXFAM solidarity Belgium. Initially this was done jointly with CIDSE who however withdrew from the project. The change in financial arrangement came before 2004 and CIDSE only handles the funds intended for the agricultural schools which falls within its program on SA with agri schools. The main coordinating institution, the PPC, was supported by the Agriculture and Forestry Colleges in Champassak (CHAFC) and Luangprabang (LAFC), all under the Department of Agriculture (DoA) of the Ministry of Agriculture and Forestry (MAF). The National Agricultural Research Center (NARC) of the National Agriculture and Forestry Research Institute (NAFRI) provides technical backstopping and breeding materials for on-farm testing. The Provincial Agriculture and Forestry Offices (PAFOs) and District Agriculture and Forestry Offices of the National Agriculture and Forestry Extension Services (NAFES) provide advice and participated in training activities. The staff of NAFES in the Districts are the main trainers of BUCAP.

Chart 4.1 Administrative lines of institution involvement in implementation of BUCAP Laos, Phase 1.



** Farmer trainers of IPM program.

The chart does not reflect fully the relationships. N DF has no direct or indirect line to DoA and Oxfam -Belgium. N DF's link to BUCAP is through the PMC (Project Management Committee) at the regional level. The financial part for all the projects is coursed through SEARICE.

General remarks

The organisational structure may seem rather complicated. However, it carries the advantage of broad involvement throughout the Ministry of Agriculture in horizontal coordination involving high ranking officials in the various departments. furthermore, the ministry itself is comparatively small and staff tends to know each other. As a result, the BUCAP project is broadly known. However, its participatory approach and emphasis on on-farm management of crop improvement and seed production in a Farmer Seed

System as an alternative to the top-down transfer of technology model of an Institutional Seed System, practiced so far by the MoA institutions may still not always be fully understood.

Interesting is the involvement of the two agricultural colleges in the project in the provinces of Champassak and Luangprabang. Here future extension workers are trained. BUCAP already has an influence on the curricula, with added attention to on-farm conservation and breeding and the FFS methodology. Creating more awareness of future extension workers for the importance of agrobiodiversity and how to involve farmers in its management and use will undoubtedly promote the sustainability of the BUCAP approach in Lao PDR. .

Recent reorganisation within the MoA has led to changes in the mandate of the PPC . this mandate is now limited to quality control and licensing and registration of planting materials for export and import. The IPM project has been transferred from PPC to the National Agriculture and Forestry Extension Services (NAFES).

Selection of communities and farmers

The selection of communities and farmers is critical to the initial phase of establishing these kind of projects. Use was made of the experience obtained with the FFS methodology in the Integrated Pest Management (IPM) project. This made the Plant Protection Center a natural partner in the first phase. The National IPM program was part of the Agriculture and Extension Agency which split into PPC and NAFES in 2002/2003. Communities and farmers in those communities were selected with experience in IPM - FFS and an expressed interest in participating in BUCAP. Another criteria mentioned was comparative stability of the communities.

The sites and communities selected in the four provinces Champassak, Savannakhet, Vientiane and Luang Prabang are all situated in areas with two rice seasons; wet-season rain-fed and dry-season irrigated. In addition, the selected communities still grow local varieties next to modern improved varieties, the latter mainly in the dry-season under irrigation. The local varieties are mostly glutinous and photoperiod sensitive This was a conscious decision by SEARICE. These are areas where the adoption of improved modern varieties is most likely and thus most prone to genetic erosion through the loss of local varieties.

Achievements

While in Laos, it proved not to be easy to get and check information on what has been done and on actual achievements. In various reports it was suggested that the program started with 6 FFS expanding in the period up to 2004 to 27 FFS and FS in the four provinces. From summaries it appears that some 391 (other data mentioned 541) farmers (of which 92 women) took part in FFS and some 37 (or 34, of which 11 women and 23 men) trainers were trained. An amazing number of 529 "lines" were said to have been tested in Farmers fields, 77 varieties multiplied and a total of 42 were considered to be promising. It was not made clear what lines and population these were in the short time I

was able to speak to those concerned (trainers, breeders from NARC). However, if these numbers are correct, they would seem to be excessive and suggest a need for rationalizing the breeding program adapted to what should and can realistically be done on-farm and what in the breeding station. A short overview of all this would have been helpful, either by SEARICE or the local coordinator.

The lines were from F2/F3, F4/F5 and F6/F7 and the numbers changes with the season. More than 1,000 lines were included in the early stages of BUCAP. These lines were mostly from the breeding station. Both farmers and NARC kept the same lines as part of a study to understand the selection criteria and techniques of farmers. SEARICE for its part have been questioning the capacity of farmers to maintain several lines and even undertake yield replication trials, reducing the farmers' trials into mini-NARC. The 529 lines is actually a reduction from the thousand kept earlier and will still be reduced as farmers evaluate more. It should be noted that in the field set up for F4 evaluation farmers are keeping no more than 20 segregating lines per field trial. Each trial (in different villages) had different parentals depending on the identified breeding objectives of farmers which were matched with the materials available in NARC. The evaluation team had difficulty in grasping these numbers, but it certainly showed to farmers that there is wide variety of materials available to choose from.

A report (undated but presumably prepared in 2004) totled *Developing Plant Genetic Resource Conservation in Farmer Field School to foster farmers sustaining rice production*, prepared by Thongchanh Sengsourivong (director of Champasak Agriculture and Forestry College) on behalf of the Department of Agriculture (DOA), the Plant Protection Center (PPC) and the agriculture and Forestry College, was made available to the review team on the last day when the team presented its preliminary findings. This report suggests that farmers at the various sites had selected 8 varieties for cultivation. From the codes and the information of the NARC plant breeder it appears that these varieties were obtained from crosses made by NARC between high yielding modern varieties and a number of local varieties. Material of these crosses were, as far as we were able to conclude, distributed to farmers in advanced stages of selection (F4 - F5) for yield followed by 3-4 generations of selection by farmers.

The main achievement mentioned in the report by Tongchanh mentioned above is that trainers and farmers participated in participatory learning processes. In this process farmers learned about appropriate practices in rice propagation, laying-out selection trials, simple breeding techniques including making crosses and selection practices for breeding and rehabilitating local varieties. An important achievement is awareness that seeds for next years' planting should be obtained from plants selected in the field prior to harvesting and not obtained from the bulk of the harvested material. In this way, yields of local varieties was improved, according to the information obtained, by often 20-25%. Farmers now realize the importance of their own local varieties in providing aroma, taste and local adaptation, while through breeding the possibility of improving on resistance against pests and diseases and on yield. It provides farmers with pride in what they can achieve and what modern plant breeding can offer them.

Interviews with stakeholders

On arrival in Laos the program of visits had not been finalised by the local BUCAP coordinator. The review team, notably the local consultant, had to make the various appointments with little assistance from the local BUCAP coordinator as the review proceeded. The nature of the review was apparently not very well understood by the various stakeholders at the onset. This may have something to do with the manner of administration prevalent in the government, characterised by top-down decision processes and risk-avoidance attitudes at lower levels. To gain the confidence and cooperation of the various stakeholders, the review team emphasized in discussions that the review was not an *inspection* of the performance, but more an identification of issues that needed attention in Phase II to build on the many achievements realised so far. We stressed the complexity and innovative nature of the project in which we all had to learn. I needed their information for this, and would take full responsibility treating their information as confidential avoiding naming individual sources. For this reason, outcomes of interviews are summarised in three categories:

- Farmers and trainers
- Government institutions
- International Organisations and NGOs

Farmers and trainers

The meeting of farmers was restricted to the projects in Vientiane province at Tulakhom district followed by a visit of on-farm trials at Cheang village. Apart from farmers from the 4 project sites, local (extension) officials and trainers of PAFO and DAFO participated in the meeting (the BUCAP coordinator of the PPC was not present due to other commitments). Initially the meeting was dominated by the officials, but gradually farmers participated in the discussion. At Cheang village two farmers were very proud to show their work and with good reason. The comparative trials looked very good.

Following some of the observations and views that came from discussions with farmers and PAFO and DAFO Staff on the four BUCAP sites in Vientiane province.

- There was an obvious realisation of the importance of local varieties and the need for conservation.
- Two farmers were trained as trainers.
- Active farmer participation at Cheang village went down from 25 to 2. However most other farmers were said to have learnt from their initial involvement in the BUCAP project and continued to practice selection in their own planting material.
- Visits to other sites in Laos were highly valued as an opportunity to exchange information.
- The two active farmers explained that in crossing they had difficulties with time of flowering in making crosses between local and improved varieties.
- On asking whether they perhaps would prefer NARC to make the crosses for them, the answer was that they would not object, but liked to make the crosses themselves also. These two farmers obviously liked to do it.

- One of the officials said that farmers had started to train each other.
- Farmers said that they now actively exchanged information both within and between communities and sharing experiences strengthened a sense cooperation. This extended wider to communities in other regions through friends and relatives.
- Their main concern is combining good yield with good eating quality and claimed that yields had already increased from 3 to around 4 tons per HA. They claimed that some of the yields of their own materials were higher than of varieties provided by NARC. Whether these were actually local varieties or experimental materials (local x improved) provided by NARC was not clear.
- It was proudly said that NARC had already selected two local varieties to be included in their breeding program on the basis of farm trials.
- Farmer breeders indicated that they wanted the NARC to provide them with formal ownership of their results and allow them to market seeds of such varieties. They were under the impression that this required the NARC to name those as formal varieties. However raising this with NARC, there seemed to be uncertainty about whether that was required or not. The NARC officials questioned later seem to think that farmers are free to name whatever they like. They indicated that the varieties selected were mainly from their original crosses (Local x modern improved). Farmers asked us to raise this issue with the authorities of MAF.
- Farmers had occasional difficulty in conserving seeds of their selection trials over time, to bridge failure of their experiments. The need for proper drying of seeds and storing in air-tight containers or special polyethylene bags and ideally in small household freezers was explained. The need for such materials and facilities is obvious if community projects are to evolve in small-scale community breeding programs. This should be addressed in phase II. However, it should be mentioned that the materials in farmers' fields are routinely backed up every season by the NARC

Concluding discussion

It became clear that the farmers active in breeding in these communities saw possibilities in developing into local seed production units supplying farmers with improved seeds. The need for training in management and marketing was identified. Whether such developments should be organised on a community basis or on the basis of individual entrepreneurs within the community was left open. It suggests the need for government policies whether to support de-centralised seed units or, as seems the present policy in stimulating rice production, to depend on a government breeding and seed production organisation, or both. If the MAF, on the basis of the BUCAP project decides that farmers can play a role in breeding and seed production, cooperation with farmer breeders and seed producers need to be institutionalised and require a national policy. The main constraint of farmers is access to potentially useful breeding and selection materials. The national breeding program and its national genetic resources collection could play a role in identifying and releasing such materials.

Community seed units will require some equipment like a portable thresher, proper seed storage and packing facilities etc. This was raised with the OXFAM - Belgium coordinator. The question is whether BUCAP should provide such equipment, or whether communities or individual farmers should seek such investment in a more business-like manner in a form of a loan.

Government institutions

The discussions with government institutions concentrated on the relationship between formal institutional plant breeding and seed supply system with the farmer seed system. The nature of the two systems was discussed (see Overview on Findings and Recommendations, issue 1).

The importance of farmer seed systems in Lao PDR were generally shared by government officials. Following are some views expressed.

- BUCAP was generally viewed as a good project that fitted well in the government policies.
- Institutional plant breeders and extension services were impressed by the manner in which farmers adapted to FFS approaches and took full advantage of the learning processes. BUCAP did not in first instance introduce new technologies, but re-vitalised practices that are well understood by farmers.
- Through farmer selection, plant breeders became more aware of the many different characteristics farmers look for in their crops - as stated, plant breeders look with "one eye" (high yield), while farmers look with "many eyes" (including aroma, taste, local adaptation etc) and in a variety of environments and water regimes.
- Plant breeders appeared keen to support farmer breeding, as it increased their options for getting results tested in the field at early stages of breeding.
- The question was raised whether or not farmers should be encouraged to get involved in actual crossing local varieties or local x modern varieties. The view was that it could be argued that institutional plant breeders were better placed to make such crosses, possibly at the request of farmers/communities and release the resulting breeding populations in more advanced (F4 - F5) generations. However it was stated that involvement in crossing increased the understanding of farmers and both options were valuable.
- Overall, the NARC seemed to be extremely interested in supporting BUCAP as part of their program.
- To provide such support, the need for some equipment for was mentioned, including equipment for testing for protein content and other qualitative characters.
- So far, the NARC provided support on the basis of requests and some financial support from the PPC coordinator.
- Mention was made of the Swiss (SDC) supported LAO - IRRI program to collect local varieties of rice in the Lao PDR. Characterisation of that material might provide local material of interest for introducing into farmer testing and breeding. However, at the same time, concern was expressed about the lack of adequate genebank facilities to store such collections in the Lao PDR and lack of control over its use by IRRI.

- The issue of how the naming/distribution and possibly marketing of farmer selections/varieties should be handled between communities or on a national scale was raised. Plant breeders stated that so far these varieties largely resulted from breeding materials they supplied to farmers, but did not mind how that was done. They would understandably appreciate some recognition for their contributions and likewise were sensitive to provide recognition to contributions of farmers in their results. It became apparent that this issue had so far not been considered by higher officials in MAF in any detail. It was suggested that possibly this should be the responsibility of NAFRI or should be taken up with the deputy minister of agriculture. In discussions at NAFRI it was stated that this problem would be looked into.
- BUCAP so far operates in a number of communities in four provinces. The question of creating some kind of cohesion between these various projects on a national scale was raised. A possible option would be to create a national cooperative as a start of a farmer controlled national seed system. In developed countries farmer cooperatives played an important role in the beginning of what now is the seed industry. Considering the Lao PDR policies, it was suggested establishing a "network" of involved communities/farmers might be a better option.

International organisations and NGOs

A number of International Organisations, including UNDP and FAO are involved in activities that are related to BUCAP. The FAO of course has been closely involved through its IPM program based on the FFS approach providing sites for BUCAP. The UNDP commissioned a proposal for a National Agricultural Biodiversity Programme in the Lao PDR. This is an extremely ambitious proposal. It states correctly hat the Lao PDR is rich in agrobiodiversity and that these resources contribute significantly to the livelihood and well being of the population. In rice genetic resources the main threats are seen to come from the adoption of high yielding modern varieties, replacing local glutinous varieties and from the discouragement of shifting cultivation and up-land rice production by the government. In addition, the habitats of wild rices are threatened. Intervention strategies are suggested, including (i) strengthening the capacity of farmers to manage crops and associated biodiversity and (ii) enhancing efforts to conserve plant genetic resources for food and agriculture both *in situ* and *ex situ* conservation measures. Both suggestions are fully in line with the objectives of BUCAP. The overall proposal reflects what one would like to be implemented, however, seems somewhat unrealistic in the context of the national economy. However it gives strong support to the very cost-effective and apparent social acceptance of BUCAP. The UNDP representative did not seem to be aware of BUCAP but expressed great interest. This lack of knowledge of BUCAP may well be due to changes in staff. BUCAP had discussions with the UNDP consultant as far back as 2003 when they were still formulating the proposal and must have heard of BUCAP through DoA. BUCAP initiated the discussion and UNDP returned with a questionnaire for BUCAP. After that, nothing further was heard.

There are no local NGOs in the Loa PDR. However some international NGOs are active. Among these are OXFAM - Belgium, CIDSE and the Swiss Helvetas. The former role of CIDSE and the present role of OXFAM - Belgium in financial management have been

mentioned. Swiss Helvetas may potentially be an interesting partner as it wants to promote biological products for export including rice.

Some general observations provided are indicated below:

- The management of BUCAP would benefit from a full time coordinator delegated by SEARICE. The reason BUCAP did not have a FULL TIME coordinator is that it chose to build on the current pool in the DoA. This is true for all BUCAP projects. . As stated by BUCAP, they want to 'infect' the institutions with good practice and ideas on PGR as part of 'institutionalizing' BUCAP. These seem good reasons. However, as BUCAP enters into Phase II, we do feel that a full tine coordinator with technical knowledge in breeding would be helpful.
- The need to further emphasis involvement of the Agricultural colleges to reach young farmers and future extension staff by including FFS in curiculas and in practical field training.
- The need to further promote and facilitate interaction between farmers and technical staff of NARC and NAFES which may be limited by lack of funding, transport and overall NARC facilities. It certainly is not due to lack of interests of both farmers or supporting institutional staff. More visibility of SEARICE as a partner in the field could be beneficial. It was deliberate on the part of SEARICE not be visible in BUCAP and for the national teams to own the project. However, we sensed a demand for more professional external support to increase their understanding and confidence in what is a new approach to crop improvement and strengthen their position.
- More advocacy through publishing results of BUCAP through national media.
- The need for simple training manuals and a video on FFS, on laying out trials, crossing, selection practices etc
- The need for planning to scale-up the BUCAP approach.

General observations

The review team was impressed by the overall positive opinion of BUCAP by all sectors approached. SEARICE and notably Didit Pellegrina was commended for the way the BUCAP project was set up in Lao PDR. It showed great political sensitivity and respect for farmers. Also, in the choice of partners BUCAP has been firmly established in the government institutions. BUCAP has been able to capture the support of farmers and has provided them with confidence and challenges through offering opportunities for progress. Awareness has been raised about the value of their local varieties and their use in further improvement. This is no mean achievement in four years BUCAP has been in operation.

However, success creates new challenges:

- BUCAP has illustrated the ability of farmers to be involved in crop improvement complementing institutional plant breeding. The emphasis so far has been on participatory processes as embodied in the FFS approach. The challenge is now to

develop appropriate breeding strategies that capitalize on the comparative advantages of plant breeders and farmers in a complementary manner.

- The BUCAP approach need to become reflected in the regulatory frameworks concerned with the introduction of new varieties in order that farmers get full benefit of their activities in the general interest.

BUCAP started in countries not knowing how much space there is for policy advocacy work. Most NGOs shun these countries because you have to work with the government and that is not popular in those circles. Still, SEARICE was one of the few brave ones, to take on the challenge but started with a technical intervention. It realised that the intervention is political – in terms of opening up opportunities for organizing/empowering farmers and affecting policy changes. With BUCAP, it was learned that that there is a need to build a mass base first – the farmers – who start questioning and asking for a dialogue with authorities to support their work. In the second phase, SEARICE indicated that it will move into this area.

- The BUCAP approach needs to be scaled-up as part of development of a national seed program.

- BUCAP has to become part of national efforts to conserve genetic resources for food and agriculture.

The need for more technical support in rationalizing farmer breeding and access to potentially useful breeding materials was identified. This requires more pro-active participation of NARC beyond acting on request. NARC showed both interest and willingness to do so One possible solution might be to charge NARC with a coordinating role with its own annual budget. BUCAP is both a research and extension project. We weighed our options in having NARC as coordinator since the inception phase, in the end, we decided to support the less supported (compared to NARC) extension system and also because it has the vertical link up and down to the district level. NARC does not have that and will have to work with the extension people anyway. An analysis of the power relations too among the different institutions was considered by SEARICE in its decision. NARC defines its annual budget within BUCAP. What is needed maybe identifying the complementary researches it has/wants to undertake under BUCAP. Such a change might be considered also in view of the fact that coordination of the FAO IPM has recently been transferred from PPC to NAFES. The current coordinator is not really equipped for the task of coordinating BUCAP in the way that it needs to be done. There are politics within and limitations in personnel as well within the current system.

Laos Annexe 1: Agenda of the Mission of Jan 22- 29, 2005

Day	Date	Activity, Location	People met for discussion
1 Sat.	22 Jan	Arrival of the team leader at Vientiane capital city Team meeting; proposed the schedule; present the meeting records performed by local consultant; provided farmers reports.	
2 Sun	23 Jan	Team meeting for making the tentative schedule of the mission	
3 Mon	24 Jan	at Oxfam Belgium office	Mr. Bong MUNSAYAPHOM, Oxfam Program Co-ordinator in Lao PDR.
		at UNDP office	Ms. Katihanna IIomaki, Unit Manager a.i., Environment Unit, National Biodiversity Strategy and Work Plan.
		at Plant Protection Center (PPC)	Mr. Viengsavay SIRIGNAVONG, Coordinator for BUCAP LAOS.
		at IPM/FAO office	Mr. Thongsavanh, Mr. Randall ARNST, Vegetable IPM Programme Development Officer, Lao P.D.R. / Thailand
		at Vientiane	Mr. Dominique Van der Borght Former Oxfam Regional Co-ordinator;
4 Tue	25 Jan	meeting with farmers, trainers and breeders at Vientiane province, Tulakhom district; visit field of farmer at Village Cheang;	see name list of participants, list 2 – People met
5 Wed	26 Jan	at Vientiane	Mr. Keith Fahrney, Agronomist and Project Coordinator, Participatory Research for Development in the Uplands (PRDU) Project / CIAT in ASIA.
		at National Agriculture Research Center (NARC)	Mr. Phoummy Inthapanya, director of NARC; Ms. Chanthakone, breeder; Mr. Phet Many Seng, breeder;
6 Thur	27 Jan	at ministry of agriculture and forestry, department of agriculture (DoA)	Mr. Vilayvanh, Director of Department of Agriculture (DoA)
		at national agriculture and forestry institute (NAFRI)	Dr. Monthathip CHANPHENXAY, deputy director of NAFRI.
7 Fri	28 Jan	presentation of first observations by the team at PPC	see name list of participants, list 3 – People met;
8 Sat	29 Jan	departure of team leader to Bangkok	

Laos Annexe 2A List of people attending the farmers meeting at Ban Cheang, Tulakhom district, Vientiane province.

No.	Name	Position	Location
1	Mr. Thong Loh Khamvongsa	Director of PAFO (provincial agriculture and foresty office)	PAFO Vientiane Province
2	Mr. Thong Panh Saypangna	Head of cabinet office of DAFO (district agriculture and forestry office)	Vieng Kham district
3	Mr. Phood Siliphong	Deputy Head of DAFO,	Phonh Hong district;
4	Mr. Khamla Vongsipasom	Deputy Head of DAFO,	Tu La Khom district;
5	Ms. Khampraseuth Southammavong	Trainer, technical staff of agriculture unit;	PAFO Vientiane Province
6	Ms. Chanhtha Souvannaxayavong	Trainer, technical staff of DAFO,	Phonh Hong district;
7	Ms. Chommany	Trainer, technical staff of DAFO,	Tu La Khom district;
8	Mr. Boun Nanh	Trainer, technical staff of DAFO,	Tu La Khom district
9	Mr. Boun Lam	Trainer, technical staff of DAFO,	Tu La Khom district
10	Ms. Vilayvanh	Trainer, technical staff of DAFO,	Vieng Kham district
11	Ms. Phonephet	Trainer, technical staff of DAFO,	Vieng Kham district
12	Mr. Thongmany	Trainer, technical staff of DAFO,	Vieng Kham district
13	Mr. Kham Khay	Farmer	Phonh Hong district
14	Mr. Chanh Lam	Head of FFS	Vieng Kham district, Pak Ka Gnung Village;
15	Mr. Somboun	Farmer	Pak Ka Gnung Village;
16	Mr. Khone	Farmer	Pak Ka Gnung Village;
17	Ms. Khamkhay	Farmer	Pak Ka Gnung Village;
18	Ms. keo Pha Lid	Farmer	Pak Ka Gnung Village;
19	Ms. Seio	Farmer	Pak Ka Gnung Village;
20	Mr. Thong Dam	Farmer	Village Done Kuad, Vieng Kham district;
21	Ms. Chiang Kham	Farmer	Village Tha Pho Xay, Vieng Kham district;
22	Ms. Thong Khanh	Farmer	Village Cheang, Tu La Khom district;
23	Mr. Kone Keo	Farmer	Village Sivilay, Phonh Hong district
24	Mr. Bua Dam	Farmer	Village Na Xone, Phonh Hong district
25	Mr. Bua La	Farmer	Village Tha Pho Xay, Vieng Kham district
26	Mr. In Peng	Farmer	Village Done Kuad, Vieng Kham district;
27	Mr. Sone Kham	Farmer	Village Nong Phong, Tu La Khom;
28	Mr. Lea	Farmer	Village Nong Phong, Tu La Khom
29	Mr. Leo Kham	Trainer, technical staff of PAFO	PAFO Vientiane Province
30	Ms. Thong	Farmer	Village Nathong, Phonh Hong district

Laos Annex 2B Box 3 List of participants at the presentation of first observations

No.	Name	Position
1	Mr. Vilaysouk KHENNAVONG	Director of PPC
2	Ms. Chanthakhone BUALAPHANAH	breeder of NARC
3	Mr. Phetmanyseng XANGXAYASANH	breeder of NARC
4	Mr. Viengsavay SIRIGNAVONG	BUCAP coordinator
5	Mr. Kham Luang KEOKA	Program Coordinator of OCAA Laos
6	Mr. Bong MUNSAYAPHOM	
7	Mr. Khanxay SOMCHANDA	PPC technical staff
8	Mr. Sitthiphone PHOMMASACK	PPC technical staff
9	Mr. Oulayvanh SINGVILAY	PPC technical staff

4. Bucap Vietnam

Review of the BUCAP project in Vietnam

Introduction

The Vietnam BUCAP project was reviewed between January 13-22, 2005. The team leader Dr. Jaap Hardon (Netherlands - plant breeder) was assisted by the national consultant Dr. Nguyen Tuan Son, lecturer in economics at the Faculty of Economics and Rural Development of Hanoi Agricultural University.

Brief Project Background

The BUCAP project was initiated in Vietnam by SEARICE in 2000 through the National Integrated Pest Management (IPM) Program of the Plant Protection Department of the Ministry of Agriculture and Rural Development. Administrative assistance and financial management was provided by Oxfam Solidarity Belgium in Hanoi.

Main objectives of the project are to provide farmers with knowledge and methodology to conserve and diversify plant genetic resources of rice at the community level through Farmer Field School (FFS) and field studies to improve yield of local adapted varieties that are resistant against pests and diseases and fit common local practices and levels of external inputs and water regimes.

In the years 2000 - 2002 projects have been started in rice in 5 provinces in North and Central Vietnam including Hoa Binh and Bac Kan (Northern mountainous area), Hanoi (Red river delta), Thua Thien-Hue (Central region) and Quang Nam (Central coastal region). Since 2003, based on results obtained so far, the project expanded to five other provinces including Yen Bai (North mountain region), Nghe An and Quang Binh (Northern central region), Kien Giang and Dong Thap (Mekong river delta). Among ten project provinces, four provinces (Nghe An, Quang Binh, Kien Giang and Dong Thap) are part of the IPM component of the Agricultural Support Program Sector - ASPS, DANIDA, while at Yen Bai financial support is provided by Oxfam-HongKong.

The apparent success of the BUCAP project has led to other donors: Oxfam-Belgium in the Hoa Binh province through the Vietnam Farmers Union, CIDSE to support in Bac Can province to extent ten more BUCAP villages, the European Commission will support ten villages in Cao Bang as part of the Bac Can rural development project and in Son La as part of the Lai Chau rural development project and in two villages of low literate ethnic minority people in Dien Bien district of Dien Bien province. All in all, it is obvious that BUCAP has created great interest in Vietnam as a development model in rice production, covering by the end of 2003 no less than 48 villages in 10 provinces.

Project activities

The main project activities are:

(1) Training farmers in FFS methodologies in management of PGR and improving rice varieties.
(2) Breeding varieties through participatory plant breeding (PPB) and through selection in breeding populations obtained from plant breeding institutions.
(3) Through participatory variety selection (PVS), testing on-farm potential new varieties adapted to local conditions.
(4) Rehabilitating through selection varieties (both local and improved) which through mixing and/or poor seed production practices had deteriorated.
(5) Seed production of selected new varieties or rehabilitated varieties for distribution within communities.

Project achievements

The results of the BUCAP project up to 2004 have been comprehensively summarised by the National IPM Program of Vietnam in a report entitled: "*Evaluation Report On The Community Plant Genetic Resource Conservation And Development Project – 2003"* (Hanoi, February 2004).

The results are impressive and only some major achievements are highlighted below to illustrate the scope of the program.

1) Number of field studies:	538
Of which:	
- Participatory variety selection (PVS)	147
- Population/Line Selection	150
- Participatory Plant Breeding (PPB)	68
- Comparison/multiplication varieties	47
- Studies on Rice Intensification (SRI)	20
2) Number of farmers involved	2,519
Of which:	
- Number of women	1,169
- Number of men	1,350

In 2003, farmers were reported to have selected 185 varieties from 347 for multiplication or further testing. In the old (starting) provinces 750 tons of seed of selected varieties were produced (215 tons in Spring season and 535 tons in Summer-Autumn season).

Through selection, in breeding populations provided by institutional plant breeding, farmers in Mo Da village (Hoa Binh province) developed two varieties (MD1, MD2) and farmers in Tam Xuan village developed two varieties (TX1, TX2).

An interesting example of the success of BUCAP in empowering farmers to do their own variety selection is provided by the site in Kim Boi district (visited by the review team). The local government had stipulated that 80% of the rice area should be planted with hybrid rice varieties obtained from China. However these varieties appeared to be badly adapted to the local environment and gave low yields due to being susceptible to diseases. In comparison, locally tested and selected varieties by farmers (including MD25, MD26, AYT77) did well showing both good yields and good eating quality while requiring less external inputs (fertiliser, chemical pet and disease control) and being better adapted to local water regimes.

Another example, illustrating the interest of farmers in the BUCAP approach is the establishment of a BUCAP club at Tam Xuan village (Quang Nam province). Members contribute the equivalent of US$6.50 or 100.000 Vietnam Dongs (which for them is a substantial amount) per season to build-up a fund to maintain activities such as carry out field studies to select adapted varieties and supply and exchange planting materials with other farmers in the community.

A very encouraging development is the generally positive co-operation and support of local authorities. In almost all projects communes and agricultural cooperatives participating in BUCAP provided farmers with meeting rooms and materials, gave financial support for farmer meetings, reduced or freed farmers from taxes on their experimental fields. In the Hoa Binh, provincial authorities even used part of the IPM budget to expand BUCAP activities. Moreover, mass media at province and district level assisted in publishing BUCAP activities by farmer groups, notably in Quang Nam, Hanoi and Hoa Binh.

The confidence of farmers in the BUCAP project exerting their autonomy in making their own choices is illustrated by the two following events.

First, the conduction of a farmer technical conference in Kim Boi district of Hoa Binh province in 2003, supported by the BUCAP Project Management Board. The meeting lasted for 3 days and attracted about 200 people including farmer groups, people committees from various provinces and districts and communes. In addition, representatives participated from many government institutions (VASI, Institute of Agricultural Genetics, Biotechnology Institute, Hanoi Agricultural University, Cuu Long Research Station, National Institute for Plant Protection, the Plant Protection Department, the Extension Agency, the local breeding station). Also present were representatives of seed centers, seed producer co-operatives, and representatives of the Ministry of Agriculture and Rural Development. In addition, representatives were present from International Organisations and Non Governmental Organisations including FAO-IPM, DANIDA, NORAD, CIDSE, OXFAM-Belgium and the EU. The meeting was considered to be very successful in highlighting BUCAP. Following this, additional conferences were held with participants from 9 provinces in the Central coastal region at Quang Nam, and at provincial level at Hanoi and Bac Can.

The second is a community self assessment process conducted in three provinces including Hanoi, Quang Nam and Thua Thien-Hue. Through these processes farmers,

trainers and the Project Management Board critically analysed their weaknesses and strengths in phase I in preparing for phase II. It shows confidence in analysing the past and preparing for the future.

Interviews With Stakeholders

The highlights, summarised above, humble the present review team and question the need for an external evaluation in Vietnam as carried out by the present mission. We could only visit project sites in the time available in the Hanoi and Hoa Binh area and have discussions with various stakeholders in Hanoi. In this we concentrated on identifying issues that might require attention in phase II. We do so, fully realising that our views may not do justice to what is achieved. However, we hope that they will be helpful in what we see as a remarkable development involving farmers in increasing agricultural productivity and livelihood security in a sustainable manner and at the same time meeting national economic goals.

The outcomes of the discussions with stakeholders are summarised in five categories

- Farmers and farmer trainers.
- National and Provincial authorities
- Research Institutions
- NGOs

Interviews were not structured to establish an informal atmosphere and avoid the impression that the review was an inspection... At the onset we stated that we were convinced that BUCAP was a good project and definitely needed to be continued. Hence our review was meant to learn from what was done in phase I to improve the conditions for phase II. For this we needed their help and frank opinions for which the review team would take full responsibility. We found that this broke the ice and led to interesting discussions and insights.

Initially, the discussions at the project sites were dominated by government officials who joined the visits to farmer groups and by commune leaders. However, after some probing, also farmers joined in the discussions. It illustrated the high level of organisation and discipline of farmers in communes.

<u>Summary of collected views</u>

Farmers and trainers were generally very positive about BUCAP. It provided them with recognition that they were mayor suppliers of seed and can play a significant role in improving the quality and productivity of rice in Vietnam. BUCAP showed the ability of farmers to be partners in breeding and seed production rather than passive recipients of improved varieties.

The infra-structure of research and extension coupled with the high degree of organisation of the farming sector through communes and the familiarity with FFS

methodology through the very successful IPM program is a key to this success. BUCAP has made full use of this advantage. It has successfully promoted a sense of empowerment among farmers and communes that they are not just recipients of the products of research, but can select and adapt such results to suit their own economic and environmental conditions.

Research and extension services have equally become more sensitive of the role farmers can play in raising both yield and quality of rice at a national level and generally to see farmers less as clients and more as partners in a common goal. BUCAP suggests that instead of offering limited sets of varieties, research should offer baskets of potential opportunities and allow farmers to make their own choices and facilitate the adaptation to a variety of diverse local conditions. In this, it illustrates the importance of exploiting locally adapted and preferred varieties in decentralised on-farm breeding with higher yielding modern varieties.

This is, by all accounts a significant achievement. However, it only illustrates what can be done in a number of farmer participatory projects. The challenge of BUCAP for phase II is how to capitalise on these achievements. These would seem to involve:

1 How to up-scale the BUCAP approach to become an integral part of national objectives to raise rice production and quality.
2 How to affect national regulations to provide on-farm breeding and seed production with economic incentives complementing national breeding and seed production.
3 To promote national strategies to combine national breeding with on-farm breeding and selection to make maximum use of respective comparative advantages while maintaining genetic diversity essential to sustainable agricultural production.
4 To explore possibilities to expand the BUCAP approach to other crops.

These are ambitious objectives. To get acceptance of these objectives, the results of BUCAP so far need to be better known and understood by policy makers. It requires government awareness and acceptance of farmers as breeders, seed producers and conservers of agro-biodiversity in the national context. SEARICE needs to make a concerted effort to publicise its results through publications (technical and through the media) and meetings with (higher) governmental authorities.

Following are summaries of the interviews held by the review team with the various stakeholders.

Farmers and trainers

Ha Bi and Hop Kim communes, Kim Boi district of Hoa Binh province (in mountain area, S.W. of Hanoi, flat erosion plain).

These communes consisted of minority tribal people of which some 60% were said to be Muong minority group.
We were accompanied by staffs of the provincial Hoa Binh Plant Protection Sub-department. We were informed that the leader of the district would have liked to be present but had another engagement. Around 20 farmers participating in BUCAP project were present.

- Farmers gave an introduction on their activities. They were highly appreciative of the training that they received and participated in FFS, what they had learned about breeding, how to make crosses, variety testing, and ways to improve the quality of their seeds.
- Farmers explained that before they started participating in the BUCAP project, their choice of varieties heavily depended on advice from extension services and (in their words) "the seed company". Now they felt they could make their own choices.
- A point in case was that they had been obliged by the authorities to buy and plant hybrid varieties of rice imported from China on 80% of their land. These varieties performed poorly, possibly due to ill adaptation, amongst others by variation in water regimes in their fields. The hybrid varieties also appeared to be more affected by pests and diseases than their own local varieties and required more costly inputs like chemical fertilisers as well as pesticides. Hence, the promised improvement in yields was not obtained, while also they did not like the quality. Moreover, the hybrid rice fetched a lower price in the market than their own local varieties. On the up-side, it provided a clear illustration of the value for farmers to participate in variety selection and allow them to make their own choices.
- Unfortunately, there was no standing crop; hence we could not see their experiments and their variety materials. However they proudly showed seeds and panicles of plants selected, expressing a sense of satisfaction easily shared by any plant breeder.
- Crosses were made on a community basis. The group was asked whether they would like the plant breeding stations to make the crosses for them and multiply and select them through the early generations, as it was a laborious activity to do so. However they stated that they liked to this themselves also, because they had increased confidence in their own local varieties as parents.
- The farmers saw definite prospects in selling their improved seed to other communities which had shown interest in their seeds. They wanted to name their varieties, for instance as Kim Boi something. However; they were not clear what were the rules. They had heard about a need for governmental approval and certification. They also had heard about possibilities to get some form of ownership on their materials. We were asked to raise this with the authorities. I explained that there were different rules in different countries, but assumed that they were free to name their varieties. Also selling seeds to neighbouring communities would probably be possible. Buyers would know from whom they bought the seed and if not satisfied, would not buy again. This provided an incentive to sell good seed without the need for certification. However, this was common sense and not all government regulations seem satisfy that condition.
- Farmers would like to expand BUCAP project to other crops and oranges, pineapple, flowers and watermelon were mentioned, amongst others for an assumed tourist market. We stated to subject fruit trees to on-farm testing was difficult and required a

lot of land. As for the other crops, they should probably limit it to PVS and request the extension services for existing varieties.

The meeting ended with music and singing followed by lunch and proves that their local varieties at least produced a very good rice wine!

Yen Mong commune, Hoa Binh town of Hoa Binh province (in mountain area, flat erosion plain)

This group of farmers also belong largely to minority groups. 6 men and 24 women underwent FFS training. In discussions, one woman farmer played a leading role.

Through the BUCAP 30 rice varieties were introduced to this commune. These varieties originate from the Institute of Agricultural Genetics and local varieties such as Bao thai, Ha sticky rice, HB1, Quan sticky rice.

The introduced varieties were higher yielding but lower levels of resistance and lower quality than the local varieties. The purpose of variety crossing is creation new varieties adapted to local conditions and with a higher yield potential and good quality.

The BUCAP farmers want to do variety crossing in the commune in order to create their own good varieties, adapted to local conditions. Variety crossing in the commune is supported by the scientists from research institutes and support to improve the technical knowledge in rice production. This was highly appreciated by the farmers.

In order to exchange seed to other communes, the farmers expressed a lack of knowledge how to obtain approval, mentioning an expected need for variety and seed certification. They also lacked market information on seed demand (where to sell? when to sell? and at what price?).

The suggestion (proposal) from farmers:

- More budget for going to other project sites to exchange knowledge.
- More budget for expansion the experiments to other areas with different condition of soil, water supply…
- In the second phase, help the farmers to get certification for the varieties that perform well in the first phase (variety certification) in order to exchange to other communes.

Views expressed in discussion

- Farmers are very happy with BUCAP and the help they received from SEARICE.
- Farmers join voluntary to a maximum of 30 to make FFS manageable.
- This community grew mainly one local variety of glutinous rice. However they wanted to widen the range of varieties and had a great interest in breeding.
- It was stated that they had 2 hybrid rice varieties from China, 1 new variety and were testing 11 “lines” (presumably breeding populations) obtained as F3 and on-farm selected and propagated to F4 (three populations), F5 (five populations) and F7 (three populations) in the three years of the project. They also received to local varieties from the Institute of Agricultural Genetic (probably from another locality).

- Land for experiments were supplied by the community through land of a single farmer who was compensated with cash for possible yield loss and labour...
- On asking how their own local variety compared, they stated that it was more resistant to diseases and pests, had a higher quality and fetched a higher price in the market. They want to maintain that quality in spite of lower yield. However, when I stated that through breeding they might combine good quality with higher yields, they happily agreed.
- Like farmers in Kim Boi, they had poor experiences with the hybrid rice from China.
- They appreciated receiving breeding populations from government plant breeding stations, but stated that they preferred making their own crosses. The pressure on having to grow hybrid rice varieties has made them suspicious. They think that local adaptation is important and is better insured when they make and develop their own breeding populations.
- They had no difficulty in selling seeds of their improved materials (amongst others by improving the quality of seed by selecting within varieties) within their own community. However if they want to sell seeds to other provinces they wondered, like farmers in Kim Boi, what were the regulations. I explained that certification was developed to control identity and quality of seed produced by (large) commercial companies. The farmer situation is different and if the government wants to strengthen farmer seed systems, it will have to adapt regulations. I promised to bring this up with the authorities.

Additional requirements:
The farmers were asked whether they had any additional requests they wanted from BUCAP.

- They want more land for experiments under different conditions and some assistance in compensation.
- They would like to have training materials on PPB and PVS in the local language as they already received on IPM.
- They valued visits to other communities involved in BUCAP to exchange ideas and experiences.
- They definitely wanted to participate in phase II, and would like some assistance in formulating a program of work.

Again the meeting ended with songs beautifully performed in local dresses followed by lunch and rice wine for which a taste is quickly developing.

Nam Son commune, Soc Son district, Hanoi city (in mountain area, flat valley North of Hanoi).

This commune is situated in a hilly area in a sloping valley surrounded by pine tree covered hills. Apart from rice, maize and potatoes and vegetables are grown including tomatoes, beans and cabbages. The BUCAP group consists of 30 farmers.

Views expressed in discussion

- The community was selected on the advice of the Plant Protection Sub-Department of Ha Noi. Farmers joined voluntary and hold weekly meetings. The commune had good meeting facilities and looked very well organised.
- Activities include crossing of Local x High Yielding Improved varieties, variety rehabilitation through selection, variety comparison (13 varieties in 2004) and population resting of 10 of F3 breeding populations. Selection emphasises quality characteristics, short duration and resistances against pests and diseases.
- Interest in expanding to other crops, including potatoes, tomatoes, beans, and papaya. It was pointed out that for potato; a bottleneck was the production of seed-potatoes for planting. On-farm production of potato planting material is no option due to the occurrence of leaf blight. Hence, only varieties of which disease free seed potatoes could be obtained in the market should be considered for testing. For other vegetables and papaya PVS might be considered. For vegetables, a problem is that most of the improved varieties are hybrids.
- Rehabilitation of local varieties led to 25% yield increasing.
- Surrounding communes are interested and are invited to an annual meeting. Exchange of seeds with these communes took place on a farmer-to-farmer basis through barter trade.
  Willingness to train farmers in other communes, but would expect to receive some compensation.
- Through BUCAP increased contact with the research sector was appreciated.
- Also in this commune bad experiences with the hybrid rice from China.
- Farmers were also involved in the rice intensification program (RSI), comparing high and low planting densities - there was difference in yield observed.

Additional requirements:

- There was a need for better storage conditions to keep the seed from farmer's trials.
- A need for information on certification for sale of seed to other provinces
- Farmers like to visit other sites in BUCAP project.
- Farmers would like to have more information on how to organise breeding and seed production in the longer term.

Co Loa commune, Dong Anh district, Hanoi city (Red river delta)

This commune is located in a historical area around Co Loa village which is the site of what was the national capital A.D 939-944. There still is an old imperial palace and a 2000 year old pagoda which attracts many tourists from Hanoi. The area is a typical delta rice area. The farmers were represented by 1 man and 9 women. The community consists of 3800 families and some 15000 people.

Views expressed in discussion

- The commune appears to have an interest in conserving not just rice, but also other crops.
- In rice they are active in all BUCAP activities, including PPB making their own cross and select in breeding populations provided by research, PVS, variety rehabilitation. They also did PVS in soybean in 2003 and in peanuts in 2004.

- Farmers grow 5 local varieties (4 non-glutinous and 1 glutinous) in the summer-autumn season obtained from the Institute of Agricultural Genetic. They were said to be better than their own local varieties.
- Farmers are quite satisfied with some (4) modern varieties for the spring season. Unlike the other communes, modern varieties were appreciated both for high yield and quality. Local varieties were preferred in that season in low lying areas with a high water level.
- Rehabilitation through seed selection prior to harvest successfully raised yields by some 25% and convinced them that should be done routinely.
- Farmers applied PVS also in soy bean in 2003, 4 varieties obtained from research. There was a good market for soybean. In 2004 spring season they did PVS for peanuts, testing 6 varieties from research of which 2 appeared suitable for their conditions.
- Selected varieties in rice were shared with neighbouring communes on a 1:1 barter trade, indicating still mutual bonds of shared community interests.
- Farmers had some experience with hybrid rice varieties - their experience is high yield but low quality and low price. The seed was considered to be expensive and supply unreliable.
- On questioning on their methodology in experiments of breeding populations supplied by research, they said to plant one seed per hole, apply fertilisers and try to control the water level. Before harvesting they selected for (medium) plant height and healthy plants and did this for 3 seasons.
- Farmers appreciated the fact that through BUCAP they had direct contacts with research institutes.
- Questioned whether they would like research institute to make the crosses for them, they saw that as an option, but said they had to pay for it which was a problem.

Requests and suggestions:

- Being located in a tourist area leads them to consider adoption of organic agriculture and would appreciate help from BUCAP in this.
- Visits to other BUCAP sites were highly appreciated and would like some financial support.
- Non-BUCAP farmers were interested in joining.
- Farmers established a BUCAP club, but again would like some financial support for this.
- To improve vegetable production, farmers would like to widen the BUCAP approach to these crops. It was suggested that they first should consider PVS.

<u>National and Provincial authorities</u>

National BUCAP coordinator, Department of Plant Protection, Ministry of Agriculture and Rural Development.

The National Coordinator considered BUCAP a highly successful project, combining low-cost with large output and illustrating the importance of participatory approaches and involving farmers in managing their own development. This has economic, social, political and institutional consequences.

Views expressed in discussion

- Initial requirement for support mainly concentrated on training in FFS methodologies adapted to PPB, PVS and seed rehabilitation. There is a growing need to provide support on identifying suitable breeding materials for the various and diverse environments and assistance in creating appropriate breeding populations (both by research and on-farm) and on selection. In addition, the technical opportunities for expanding a BUCAP approach to other crops, notably vegetables and some cash crops (soybeans, peanut and others) need to be considered. This will have consequences for the relative position of the Plant Protection division and the extension services, supporting FFS methodology, and the Institute for Agriculture Genetics and research stations providing support in plant breeding.
- It was explained that extension services were mainly directed at improving mainstream industrial agriculture stressing modern varieties and use of agricultural chemicals. This is, amongst others done in cooperation the International Rice Research Institute (IRRI) and FAO involving programs on Rice System Intensification (RSI).
- It was also pointed out that extension services derived income from seed production of modern varieties.
- It was suggested that SEARICE organise a national meeting to discuss a possible change into a new organisational support structure for BUCAP.
- BUCAP needs more recognition, both through technical papers and through the public media.

Director and staff of the Plant Protection Sub-Department, Hanoi City

The director expressed great satisfaction with BUCAP. In November 2004 all projects in the province had been evaluated and BUCAP scored very well. The start was somewhat slow. Especially mastering crossing techniques proved to be a problem. However farmers showed great interest in the training provided and very rapidly adopted various selection practices and now were competent in producing good seeds. Also variety development through on-farm selection of advanced breeding populations supplied by the Agriculture Genetics Institute show promise. Selection in breeding populations coming from crosses produced by farmers themselves is progressing, although it is too early to judge the outcome. BUCAP showed the value of involving farmers directly in development activities and convinced the research and extension staffs that a less top-down technology transfer was promising. Also farmers have increased awareness of the value of their local varieties and the need for conservation. Specific issues discussed are summarised below.

Views expressed in discussion

- In the HANOI city a need to increase vegetable production. Vegetable production is intensive and seriously affected by pests and diseases requiring chemical control. The director would like to expand the BUCAP approach in these crops. However, the harvested crop is often not the seed. Seed supply is unreliable and on-farm seed production difficult because of the short growing season.
- So far BUCAP is only active in two districts. The director would like to see it expanded to other districts.

- The IPM-FFS in the Ha Noi area started in 1990, hence there is experience with FFS in all districts of Ha Noi city.
- Training in plant breeding and selection was provided by Institute of Agricultural Genetics on request in good cooperation.
- To improve its capacity to support BUCAP, the Plant Protection Sub-department of Ha Noi would welcome some more equipment including a computer, projector and screen, etc.

Research Institutions

Institute of Agricultural Genetics

Plant breeders of the Institute of Agricultural Genetics co-operated closely with trainers from Plant Protection Sub-department in Ha Noi in providing technical support to BUCAP. They are genuinely interested in this co-operation because it provides them with direct contacts with farmers and helps them in identifying farmer requirements in breeding. They also value the opportunity to work closely with farmers through on-farm testing of breeding materials released in F3, F4 and F5 generations. They regularly visited the various projects to train farmers in making crosses and assist and provide advice in selection. Good possibilities were seen in institutionalising farmer/commune participation in the breeding programs beyond the present situation of providing support on request from the PPSD. This, however required a broadening of their program and mandate supported by a budget to be able to take necessary initiatives. It should also involve the genetic resources institute to help identify and provide pro-actively material of interest to on-farm breeding and selection. The interest is there and, from the opinions obtained from farmers by the review team, their support is highly appreciated as the plant breeders communicate well with farmers.

NGOs

OXFAM - Solidarity Belgium

Oxfam-Belgium is providing financial management for the BUCAP project. There are no problems. The national co-ordinator is valued highly for his handling of the project. He is very clear and straightforward and a pleasure to work with. The following issues were raised in discussion.

Views expressed in discussion

- Considering the success of the BUCAP approach, in the next phase the issue of up-scaling needs attention. This has both economic and political consequences. How can results get broader application, certification of on-farm developed varieties etc?
- The issue of hybrid varieties was raised. It was suggested that hybrid varieties were subsidised by provincial authorities in efforts to realise targets in yield increases.
- The success of BUCAP so far was partly attributed to the well organised infra-structure of research and extension and the high level of organisation of farmers in communes. It was suggested, however, that this infra-structure was still mainly directing its efforts towards high in-put agriculture. To get recognition for the complementarity of the BUCAP approach, its results needed to be more generally

known at higher levels of authority through publications and get involved at the policy level.
- OXFAM has an interest in aspects of trade and globalisation. While Vietnam has become the second largest exporter of rice, the quality of its rice attracts low prices. The emphasis of the BUCAP project on quality should be of interest to national authorities.
- SEARICE and BUCAP should try to get additional donors involved to expand its activities.

VECO - Vietnam

VECO has no direct involvement with BUCAP. It is involved with promoting seed production in Vietnam, but does so primarily through the formal institutional sector. It is impressed by BUCAP in that it works directly with farmers. The important role of farmers as seed producers was recognised. Government regulations in seed production were closely followed. There was, in their view, some ambiguity in recent changes in regulatory frameworks that may or may not allow the sale of on-farm produced varieties beyond district level. They were seeking clarification on this issue.

Concluding remarks and recommendations

The review team had difficulty getting a clear view on the overall project and its achievements from the very extensive reports provided. These reports do not lack in volume and content, but lack transparency and summarised interpretation. Also, the review team received little guidance and help from SEARICE and local co-ordinators in organising the review itself and were largely left to make their own arrangements to establish contacts and visits. This may have something to do with a lack of experience of government institutions with external evaluations, viewing the review as potentially threatening their position in a centralised hierarchy. However, as discussions progressed we sensed an opening-up as it was made clear that we did not come to inspect, but rather identify issues that would need consideration in phase II. Hence, we interpreted the review as a means to help and would take full responsibility for observations and recommendations. In hindsight, it would have been helpful if the review team had prior discussions with the SEARICE co-ordinator on the overall project and benefit from their views or even act as a resource person during the review. It did complicate the ability of the review team in the short time available to fairly assess the project and see through the relationships and interactions of the various stakeholders. As a result, writing the report proved to be much more time consuming than estimated. It required shifting continuously through the very extensive and, to an outsider, not very transparent reports to try get the facts right. We have no pretence that we fully succeeded, but hope that, at least, the issues we identified are meaningful and helpful.

We have no doubts that BUCAP has been successful in its stated main objectives of empowering farmers to participate in decisions on what, for them, is central to their farming systems - good seeds and varieties that suit their local environmental conditions and their economic and household requirements. It also succeeded in making farmers partners in research and development instead of recipients of top-down technology

transfer. These represent substantial achievements and have, from our observations, substantially changed the views of government institutions concerned. The review team therefore, has no doubt that BUCAP should be continued in phase II. It has proved to be both cost-effective and effective in realising its major objectives.

The issues raised as a result of the discussions with various stakeholders are not so much reflecting short comings of BUCAP. They rather reflect consequences of its success that are suggested for consideration in phase II to fully capitalise on results achieved so far. These issues are equally valid for the BUCAP projects in Laos and Bhutan, except that they are more evident in Vietnam and are summarised in the Overview on Findings and Recommendations.

The issue of up-scaling

The issue of up-scaling was broadly discussed in view of the apparent success of BUCAP in Vietnam. This is summarised in the Overview of Findings and Recommendations, because it also applies, albeit possibly to a lesser degree, in Bhutan and Laos.

Rules and regulations

As results of BUCAP are starting to become available in the form of improved planting materials, rules and regulations on seed distribution are starting to affect farmers. Again, since this is, or in time will become, an issue also in Bhutan and Laos, it is summarised in the Overview of Findings and Recommendations.

Strategies in on-farm crop improvement and management of PGR

The farmers in Vietnam have adopted the various activities, including on-farm breeding, of BUCAP in a big way. Time would seem to have come to focus such activities based on more technical rationale exploiting comparative advantages of on-farm breeding with breeding support that can be provided by formal plant breeding. Hence, stressing complementarity rather than separation. As this applies equally to Bhutan and Laos, this issue is addressed in the Overview of Findings and Recommendations.

Vietnam Annexe 1 – Timetable of Mission, Meetings and Issues Discussed.

14.1.05 Discussions with Department of Agriculture and Rural Development and

Sub-Department of Plant Protection of Hoa Binh province.

People attended:

- Mr. Duc: Deputy Director of the Department of Agriculture and Rural Development
- Mr. Can: Director of Plant Protection Sub-department
- Ms. Minh: Deputy Director of Plant Protection Sub-department
- Mr. Yen: Head of Technical Division of Plant Protection Sub-department

Agenda of the meeting:

(1) Discuss the role of agricultural production in Hoa Binh province.
(2) Discuss the advantages and disadvantages in implementation of BUCAP project in Hoa Binh.
(3) The sucesses of BUCAP project in plant genetic conservation in the province.
(4) Discuss the main activities of BUCAP project in Hoa Binh in the first phase.
(5) Proposed activities for the second phase of the project.

15.1.05 Discussion with farmers at Ha Bi and Hop Kim communes, Kim Boi district, Hoa Binh province

People attended:

- Ms. Minh: Deputy Director of Plant Protection Sub-department of Hoa Binh province
- Mr. Yen: Head of Technical Division of Plant Protection Sub-department of Hoa Binh province
- Mr. Phich: Representative of people committee of Ha Bi commune.
- Ms. Thom: Extension worker of Ha Bi commune
- Mr. Luc: Head of Men Boi village (in BUCAP project)
- Mr. Tam: Head of Mo Da village (in BUCAP project)
- Ms. Truc: Director of the plant protection division of Kim Boi district
- Mr. Ban: Deputy Director of Plant Protection Division of Kim Boi district (BUCAP trainner)
- Mr. Phu: Head of the BUCAP
- farmer participants in BUCAP project.

Agenda of the meeting:

The main activities in BUCAP project in the two villages are following:

1) Variety crossing between: CR 203 x Q5
   Khang dan x Q5
   Up to Summer-Autumn season 2004, there are 2 promising lines:
   HKI 1.1.1.1
   HKII 1.1.1.1
2) Line segregation
3) Variety rehabilitation
4) Variety comparision and multiplication: Up to Summer-Autumn season 2004 54,027 kg of rice seed has been produced of which they have exchanged 23,564 kg to other farmers in the same commune and in other communes.
5) Propose plan for Spring season 2005: Line segregation of 7 lines (populations) of which 2 in F5 and 5 in F7.

16.1.05 Discussion with farmers at Yen Mong commune, Hoa Binh town, Hoa Binh province

People attended:

- Ms. Minh: Deputy Director of Plant Protection Sub-department of Hoa Binh province.
- Mr. Yen: Head of technical division of Plant Protection Sub-department of Hoa Binh province.
- Ms. Lap: Director of the Plant Protection Division of Hoa Binh town.
- Mr. On: Chairman of people committee of Yen Mong commune.
- Ms. Tong: Chairman of women union of Yen Mong commune.
- Mr. Phuc: Chairman of farmer union of Yen Mong commune.
- Mr. Minh: Head of agricultural cooperative and head of BUCAP farmer's group.
- farmer participants in BUCAP project.

Agenda of the meeting:
BUCAP project has been started in this commune in Spring season 2003. The activities of BUCAP project in Yen Mong commune were as followed:

1) Orgnised one FFS with 30 participants of which 6 men and 24 women for 18 weeks. The participants are minority groups of Thai, Muong and Tay
2) Variety crossing between HB1 x Q5 (HB1 is local variety and Q5 is high yielding variety).
3) Variety rehabilitation for Bao thai, HB1 and Khang Dan varieties.
4) Selection in 20 segregating lines (populations)
5) Seed multiplication and exchange
6) Other activities included 3 meetings to prepare work plans and 4 meeting for presenting result of experiments.
7) Visitors included 10 delegations with 310 participants from other communes

17.1.05 Discussion with farmers at Nam Son commune, Soc Son district , Ha Noi City

People attended:

- Mr. Hong Anh: Deputy Director of Plant Protection Sub-department of Ha noi City.
- Mr. Van: Vice Chairman of people committee of Nam Son commune.
- Mr. Than: Vice Head of Nam Son agricultural cooperative.
- Mr. Tho: Member of management committee of Nam Son agricultural cooperative
- farmer participants in BUCAP project.

Agenda of the meeting:

(1) Gather general information of this commune and the reasons of selecting this commune into BUCAP project.
(2) Discuss the activities of BUCAP project in Nam Son commune from Spring season 2001 up to present.
(3) Discuss the benefit of BUCAP project for local people
(4) Proposed activities for BUCAP project in the second phase.

18.1.05 Morning: Discussion with farmers at Co Loa commune, Dong Anh district ,

Ha Noi City

People attended:

- Mr. Hong Anh: Deputy Director of plant protection department of Ha Noi City
- Ms. Hang: Deputy Director of Plant protection division of Dong Anh district (BUCAP trainer)
- Mr. Minh: Head of BUCAP farmer's group.
- farmer participants in BUCAP project in the commune.

Agenda of the meeting:

(1) Gather general information of this commune
(2) Discuss the activities of BUCAP project in Co Loa commune from Spring season 2001 up to present.
(3) Discuss the benefit of BUCAP project for local people
(4) Proposed activities for BUCAP project in the second phase.

18.1.05 Afternoon: Working with Plant Protection Sub-Department of Ha Noi City

People attended:

- Ms. Hoa: Director of Plant Protection Sub-department of Ha Noi City
- Mr. Hong Anh: Deputy Director of Plant Protection Sub-department of Ha Noi City
- Representatives of Technical Division of Plant Protection Sub-department of Ha Noi City

Agenda of the meeting:

(1) Discuss the role and the activities of plant protection sub-department of Ha Noi in the first phase of BUCAP project in Ha Noi City.
(2) Discuss the collaboration between plant protection sub-department of Ha Noi with BUCAP coordinating office and other research institutes in implementing BUCAP project in the first phase.
(3) Proposed activities of BUCAP project in the second phase in Ha Noi

19.1.05 Discussion with Institute of Agricultural Genetics

1) Dr. Tran Thi Hoa: Head of Section for genetics and plant conservation, Institute of Agricultural Genetics (IAG)

Agenda of the meeting:

(1) Discuss the collaboration between IAG and in the first phase of BUCAP project.
(2) Propose the activities that IAG should do in the second phase of the project.

2) Mr. Bui Huy Thuy: Deputy Director, Center for Consultant and New technology transfer in agriculture, Institute of Agricultural Genetics (IAG)

Agenda of the meeting:

(1) Discuss the roles of IAG in the first phase of BUCAP project.
(2) Discuss the activities that IAG has done in the first phase of the project.
(3) Discuss what IAG should do in the second phase of the project.

20.1.05 Discussion with BUCAP project in Department of Plant Protection,

Ministry of Agriculture and Rural Development.

People attended: Mr. Ngo Tien Dung, BUCAP Coordinator

Agenda of the meeting:

(1) Discuss the advantages and disadvantages in the implementation of BUCAP project in Vietnam during the first phase.
(2) Discuss the role and the procedure of other research institutes in implementing BUCAP project.
(3) Discuss the role of SEARICE in the first phase of the project.
(4) Discuss further collaboration between BUCAP project with other NGOs in order to get more support both in technical as well as financial resources for the second phase of the project.

20.1.05 Discussion with VECO-Vietnam

People attended:

- Ms. Elise Pinners, Advisor Organisational Development, VECO Vietnam
- Ms. Hoang My Lan, VECO officer

Agenda of the meeting:

(1) Discuss the role of farmer seed system in rice production in Vietnam.
(2) The difficulties that the farmer seed system have to face in production reality.
(3) VECO's experiences in rice seed production in Vietnam.
(4) VECO's opinion on BUCAP project in Vietnam.

21.1.05 Discussion with Oxfam Solidarity Belgium

People attended:

Mr. Bert Maerten, Regional Representative of Oxfam Solidarity of Belgium

Agenda of the meeting:

(1) Discuss the role of Oxfam of Belgium in providing financial management for plant genetic resource conservation in general and in BUCAP project in particular.
(2) The opinion of Oxfam of Belgium on BUCAP project in Vietnam as well as in Hoa Binh province (where Oxfam of Belgium support for activities, they support farmer union).

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