***Bhutan-German***
***Sustainable RNR*-Development Project (BG-SRDP)***
**RNR = Renewable Natural Resources*

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## ***Project Document No. 42***

# Impact Assessment of RNR Activities Supported by the Bhutan-German Sustainable RNR Development Project in Punakha and Wangdue-Phodrang Dzongkhag

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*Lobesa, September 1999*

# ABSTRACT

The Bhutan-German Sustainable RNR Development Project (BG-SRDP), in its drive to sustainably manage the natural resources, widened its scope during the second phase (1997-2000) to support RNR activities of the two dzongkhags viz. Punakha and Wangdue-Phodrang. Out of the various RNR activities supported by the project so far, the most common one is the geog-level farmer training. While farmer trainings have been conducted on several topics, the one which featured more commonly in both dzongkhags is the training on crops (wheat and mustard cultivation) and livestock (dairy, poultry and piggery). These two training activities have been the main focus of the impact assessment carried out by NRTI in the month of August. A total of 1040 farmers from across the 2 dzongkhags had been trained on the above topics. However, 70 interviews were carried out in 4 identified geogs.

While the cultivation of wheat and mustard is not a new practice for the farmers of Punakha-Wangdi valley, almost all the respondents considered the training important because they could learn new cultivation techniques for the first time. Also received were the free inputs under the promotional programme, which farmers, for all practical reasons accorded high priority. For about 71% of the respondents, the newly gained knowledge did not just remain in their head but were applied.

The training on livestock focused on improved management practices. The idea of reducing local cattle breed and going for few improved breeds that are sustained by growing pasture, fodder trees, and making hay or silage, seemed very attractive. However, it was the training input on cattle-shed construction that managed to drive many a farmer at Kabji and Goenshari into action. Many have improved the existing structures after the training.

The two farmer trainings, however broad in their objectives and contents nevertheless succeeded in encouraging a substantial number of farmers to apply them. Above all it has succeeded in creating a general awareness on improved crop cultivation and livestock management. This is an achievement, not only for the project but also for the dzongkhag extension. What should not be overlooked is the fact that this is just the first step in the whole process of the farmers' adoption. There still remain other important steps to complete the process that has just been started. The process shall be completed only once the farmer adopts the practice without intervention of the extension agent. It is possible that many farmers will slacken their interest next season; on the contrary, there will be farmers maintaining the same initial drive. What is now important for the extension service is to strictly follow up the training and provide necessary support to maintain the same interest. How could this be accomplished? That is the area where the project's support in future may prove valuable.

## ACKNOWLEDGEMENT

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1. Mr. Reinhard Wolf, Team Leader, GTZ
2. Mr. Abilal Baskota, National Project Coordinator
3. The supporting staff of the GTZ project
4. Dzongkhag Sector Heads & Planning Officers of Punakha and Wangdue
5. The extension agent(AAEO) of Daga-Uma Geog
6. The Agri extension agent of Thoetsho geog
7. The extension agents(AAEO, AHA) of Kabji geog
8. The extension agent(AH) of Goen shari
9. The Gup of Thoetsho geog

Finally NRTI would like to acknowledge the consultant team constituted by Mr. Jamba Gyeltshen, Lecturer (AG-sector), and Mr D.B. Gurung, Lecturer(FO-sector), for putting in considerable effort to be able to complete the task in a given time.

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# ACRONYMS

| | |
|---|---|
| BG-IFDP | Bhutan German, Integrated Forestry Development Project |
| BG-SRDP | Bhutan German, Sustainable RNR Development Project. |
| DAHO | Dzongkhag Animal Husbandary Officer |
| DAO | Dzongkhag Agriculture Officer |
| DFEO | Dzongkhag Forest Extension Officer |
| DSA | Daily Subsistence Allowance |
| EA | Extension Agent |
| FYM | Farm Yard Manure |
| NRTI | Natural Resources Training Institute |
| TOR | Terms of Reference |

### Explanations

| | |
|---|---|
| Geog | Block |
| Dzongkhag | District |
| Dzongkha | National Language of Bhutan |

### Measurements

| | |
|---|---|
| 3 langdo | 1 acre dry land |
| 4 langdo | 1 acre wet land |
| 1 drey of wheat | 2 kilo grams |

# 1. INTRODUCTION

Over the past one and half years, the Bhutan-German Sustainable RNR Development Project (BG-SRDP) had been supporting various RNR activities under Punakha and Wangdue dzongkhags. As such, an assessment of the support measures was not done before. Through this impact assessment, the project wanted to confirm whether the support measures were useful to farmers; if they were not, what improvements could be considered in future. Moreover, the project expects a joint evaluation mission in September 1999 and as a preparatory measure, an internal assessment of this kind was felt necessary. NRTI, as a 'neutral' institution was requested to conduct the assessment. The task was duly accepted and carried out by NRTI during the month of August as stipulated in the Terms of Reference (Appendix-8).

Out of the several RNR activities supported by the project, farmer-training on crops and livestock was more common. This assessment was focused mainly on two topics: crops (wheat and mustard cultivation) and livestock (dairy, poultry and piggery management)

The methodology agreed upon and adopted for the assessment was an interview of randomly selected farmers who attended the above training. A total of 70 interviews from 4 selected geogs were carried out by a team of 2 consultants in 2 weeks. The interview focused on the types of benefits that the farmer-participants received from the training in terms of knowledge and inputs. It was even more important to find out if the knowledge gained was applied and its results obtained.

The findings of the interview were presented to the Project staff, Dzongkhag Sector Heads and Planning Officers during a debriefing session held on 27 August 1999 at NRTI.

The same findings are presented in this report in 2 different parts. Part A covers the findings of the training on wheat and mustard and Part B covers that of dairy, poultry and piggery management. This is followed by farmers' recommendations, the team impressions, conclusions and the recommendations of the assessment team.

## 1.1 The project background

The Bhutan-German Sustainable RNR-Development Project (BG-SRDP) 1997-2000 is the second phase of the GTZ project which started its first phase in 1994 as the Bhutan-German Integrated Forest Management Project (BG-IFMP) at Lobesa. For a sustainable management of natural resources in the project area, the second phase adopted a multi-sectoral approach based on the RNR policy of the RGOB. The BG-SRDP scaled down its coverage to Punakha and Wangdi-Phordrang dzongkhags.

The main purpose of the project is:

"***To strengthen the sound planning and management of renewable natural resources(RNR) within priority areas of Punakha and Wangdi-Phordrang Dzongkhag***"(BG-SRDP Working Paper No. 14)

One of the approaches chosen to achieve the above purpose was by implementing crop and livestock activities duly identified by the concerned sectors in collaboration with the intended target group.

## 1.2 Purpose of the impact assessment

The main purpose of the assessment as given in the Terms of Reference is:

***' ... to confirm that the support measures are useful and as such can be continued or, if success... is rather doubtful or not existing at all, to redirect & improve the support measures.'***

While the project support was extended to numerous RNR activities (Appendix-9) the main focus of the present impact assessment exercise was on farmer-training within the RNR sector.

## 1.3 Scope of the impact assessment

Before going into how the impact of the above-mentioned training was assessed, it is perhaps useful to discuss some of the limitations underlying the impact assessment exercise itself and the general approach that was adopted.

*Limitations*

- While the topics chosen for the training was important from the farmer's point of view, the objective of the two trainings appeared to be too broad and general to find any measurable impact.
- Even if there was a measurable impact, there was no baseline data to compare.
- The farmer training conducted throughout the dzongkhag involved the participation of more than a thousand farmers that certainly involved a huge investment for the project; however, when it comes to assessing the impact, one is basically talking about the result or the effect of that one-day training input. Therefore the only scope for assessment was to find out whether the participants gained any new knowledge out of that training. If they did, had they applied and got some results.

## 1.4 Focus of the interview

Realising the above limitations, the first step in planning the whole exercise lay in defining the type of impact that could be possibly looked at. This was followed by the process of setting up some specific guiding objectives. These specific objectives led to the framing of relevant interview questions to arrive at some indicators.

### *Definition of 'Impact'*

When one talks about the impact of a training on farmers, the most logical expectation is the increase in production or productivity. One of the indicators to assess the project's achievement states:

*"total productivity (...agriculture, animal husbandry) for priority areas increases by 10% in a balanced manner by 12/2000"*

The constraint, however, is that increase in productivity is realised only when a farmer accepts the new technology as a regular practice. It certainly takes time for the farmer to reach this stage. A brief mention on the concept of the process of adoption might help to appreciate the focus of this impact assessment.

Broadly speaking, the 2 farmer-trainings subjected to the impact assessment were basically aimed at transferring a 'new' technology. The impact of such a technology-transfer programme can be expected at different stages in the whole adoption process mentioned below (Dahama & Bhatnagar, 1985)

1. Awareness of a new technology(Awareness)
2. Developing interest in the new technology (Interest)
3. Applying the new technology on a trial basis(Evaluation)
4. Adopting or rejecting based on the results of the trial.(Adoption/Rejection)

It takes time for the farmer to reach the stage of adoption. In the case of the 2 farmer trainings in question, only one year has passed and presumably farmers have not passed the awareness and application (evaluation) stage. It is also important to consider that some farmers adopt quickly (progressive) while others take a longer time. In view of the above stages of adoption that a farmer undergoes, one can expect a varying degree of impact from farmer to farmer. Some might be only aware of the improved practices, while others might have already passed that awareness stage and applied on a trial basis (evaluation). The fact that a farmer has applied it once does not necessarily mean that he has adopted it, as it can only be determined at a later stage. After evaluation, the farmer may reject the technology or accept it. It is only after he or she accepts it as a regular practice that one can consider the adoption process complete.

This particular assessment takes place after one year of the training. While it is too early to expect farmers to have adopted the new knowledge they learnt during the training, the impact assessment tried to focus on whether:

-awareness has been created (new knowledge gained)
-interest being raised
-knowledge being applied at least on trial basis

If there is no impact, what must have gone wrong? Was the chosen topic not important and need-based? Was the training method not appropriate? Were there any constraints that did not allow any application? What are the farmers' expectations and recommendations? These were some of the questions asked during the assessment.

With the above understanding, the impact assessment tried :

1. To find out what new knowledge they gained from the training
2. To find out whether the farmers applied the new knowledge
3. To find out type of results that farmers got by applying the new knowledge
4. To find out if the training influenced their thinking(attitude)
5. To confirm the importance or relevance of the chosen topic for training
6. To find out how the training was conducted, what were the contents & objectives
7. To find out the training history to see the possible influence of past trainings
8. To find out the constraints that did not allow any application of knowledge gained
9. To find out farmer's expectations and recommendations to improve future trainings

Guided by the above objectives the questionnaire emphasised on the following main areas (Appendix-12)

- Feed-back on the training content
- The past training history
- Importance of the crop/livestock in the farming system
- Impact or usefulness of the training
- Farmers recommendation

# 2. METHODOLOGY

## 2.1 Planning and preparation for farmer interview

The first meeting with Project staff, Dzongkhag Sector Heads and Planning Officers of Punakha and Wangdue dzongkhags laid down the following:

-4 geogs to be covered

-sample size of 7-8% to be applied

-2 weeks as the expected duration of data collection

- a semi-structured interview as the methodology

As the next step, follow-up discussions were held with the DAO and DAHO of the two dzongkhags on the training details. Then the EA of the selected geogs were also contacted and the interview programme discussed. The EAs were asked to contact the concerned village officials and inform the farmer participants to make themselves available for the interview.

While a draft questionnaire was circulated to some concerned officials for necessary comments, the same questionnaire was subjected to a field test in Kabji geog.

## 2.2 Interview

The total number of farmers trained on the two topics were 1040 (Table-1). Aiming at a sample size of 7%, about 73 farmers were required to be interviewed within the stipulated time of 2 weeks.

**Table-1**: Number of farmers trained

| **Topic** | **Punakha** | **Wangdue** | **Sub-total** |
|---|---|---|---|
| Wheat and mustard | 360 | 195 | 555 |
| Dairy, poultry & piggery | 185 | 300 | 485 |
| Grand total | | | 1040 |

The total number of interviews done was 70. Interviews were carried out with a total of 57 farmers across the four selected geogs (Table-2). At least 13 farmers had attended both the trainings. A total of 35 interviews were carried out on wheat and mustard and 35 on dairy, poultry and piggery training.

**Table-2:** Number of interviews (geog-wise)

| Dzongkhag | Geog | No. of farmers | | Total | Remarks |
|---|---|---|---|---|---|
| | | AG | AH | | Attended both |
| Punakha | Kabji | 6 | 9 | 15 | 1 |
| | Goen shari | 10 | 11 | 21 | 2 |
| Wangdue | Thoetsho | 11 | 9 | 20 | 9 |
| | Daga-uma | 8 | 6 | 14 | 1 |
| Total | | 35 | 35 | 70 | 13 |

## 2.3 Data analysis

The data was compiled in 3 different stages: those quantitative data were compiled in one format and the descriptive ones on a separate sheet (see Appendices 2-7)

## 2.4 Debriefing

During the first meeting with the sector heads it was informed that a debriefing session would be held before finalising the report and therefore on 27/8/99 the session was held at NRTI with the following objectives:

- share information on the findings
- express views/comments on the findings
- stimulate thinking towards future improvement

# 3. FINDINGS OF THE INTERVIEW

## 3.1 PART A: Training on wheat and mustard

### 3.1.1 Objective, content and method

The overall objective for the one-day training on wheat and mustard was to impart technical knowledge on improved methods of cultivation. It focused on good land preparation practices, adequate manuring and timely irrigation.

While the lectures with the use of charts and visual aids were aimed at imparting technical knowledge, the objective of the demonstration was two-fold; it was not only aimed at demonstrating the cultivation technique but also served as an experiment for the farmers to compare the different manure treatments.

Given below is a sample of the content transferred and translated from a chart (Dzongkha) [1]

| | |
|---|---|
| Crop | Wheat |
| Variety: | Bajoka |
| Land preparation: | Plough the field twice, break the soil clods to get a fine tilth. |
| Seed rate: | 12 kg / langdo of wetland; 16 kg/langdo of dryland |
| Manuring: | Farm yard manure(FYM) 4-5 tons/acre; |
| | Nitrogen: Phosphorus: Potassium(NPK) 24:16:8 kg/acre |
| Irrigation: | First 35-40 days after sowing (DAS) |
| | Second 70-75 DAS(flowering time) |
| | Third 90-100 DAS (grain filling stage) |
| Weeding: | Once |
| Pest and disease: | Report to EA |

| | |
|---|---|
| Demonstration: | |
| Objective: | 1. to demonstrate the improved cultivation techniques |
| | 2. to show the effects of the different manure treatments on crop yield |
| Treatments | 1. Control |
| | 2. FYM only |
| | 3. Fertiliser only |
| | 4. FYM + Fertiliser |

[1] content of lecture for the training on wheat in Kabji geog(source: DAO office, Punakha)

While the content of the training in the four geogs appeared to be same the delivery method, however, differed from geog to geog. Lectures and visual aids were applied in Thoetsho and Daga-uma geogs; in Kabji and Goen shari, lecture and demonstration was applied (Table-3).

**Table-3**: Venue, date, duration and method of the training on wheat and mustard

| Geog | Venue | Date | Duration | Method |
|---|---|---|---|---|
| Thoetsho | Bajo Lhakhang | 02/10/98 | 1 day | Lecture + visual |
| Daga-uma | Beychu | 02/11/98 | 1 day | Lecture + visual |
| Kabji | Chewgang(mustard)<br>Serigang(wheat) | 27/11/98<br>01/12/98 | 1 day<br>1 day | Demonstration |
| Goen shari | Shengosa(wheat)<br>Shengosa(mustard) | 01/12/98<br>12/12/98 | 1 day<br>1 day | Demonstration |

### 3.1.2 General feed-back

***Importance of wheat and mustard***

**a) Wheat**

While talking about the impact of the training, it was as important to find out the relevance of the topic as it was to see how effectively the training had been conducted. A training, no matter how perfectly conducted, may not produce any impact if the chosen topic is not important to a farmer or a farmer does not accord high priority. To verify this, farmers have been asked whether they grew the given crop at all and if they did, what was the crop area and production.

It has been noted that wheat is second only to rice in the scale of farmer's priority especially in the crop-based (cereals) farming system. The average production of wheat, however, varied from farmer to farmer depending upon the size of the land-holding and the size of family. The variation was so high that it was practically not realistic to arrive at any average figure.

To many farmers, wheat supplements rice. Should rice fail, there is wheat to rely on.

As regards to its use, the 'whole grains' are used for the local brew while the wheat flour is used for consumption. The growing plant as such is cut and fed to cattle. Mainly two types of flour are made: plain wheat flour and roasted wheat flower. While the plain flower is used for making pan cakes, the roasted wheat flour together with tea generally goes well as breakfast and as light meals(fast food) during field works. On religious occasions, flour is used for

making *torma*(cake offerings). Wheat is the main grain used for the local brew-*bangchang/singchang*(beer) and *arra*(distillate). Since it is customary for the farmers not only to have enough stock for their annual religious ceremonies but also maintain a daily stock for their refreshment at the end of a tiring day, a substantial amount goes into brewing itself. A housewife would have to see that the daily supply does not run out. Wheat, therefore, has not only a food value but also a social and religious value.

**b) Mustard**

Mustard would come next to wheat in the scale of farmer's preference and priority.
Unlike wheat, mustard does not seem to perform well everywhere and unlike wheat it is not grown on a wider scale.

Cooking oil is expensive to buy in the market and butter produced at home may not meet the requirement. The gap is filled by their home-produced mustard oil, which farmers find tastier and cleaner than the ones they buy in the market. It is not just the oil; the residual oil cakes are fed to the cattle. Mustard, like wheat has an equally important role.

**Cost-effectiveness**

When asked whether it was profitable to cultivate wheat and mustard, farmers considered them cost-effective. Wheat and mustard require quite a low investment in terms of labour input. Traditionally, a single ploughing followed by some soil preparation (minimal) and few irrigation is all that is required to grow wheat and mustard. There is no need for weeding as there is less weed growth in winter. Having sown once and irrigated few times, the farmer has only to harvest it. Therefore wheat and mustard cultivation is considered profitable.

**Content**

As regards to the contents of the training, the respondents were asked to recapitulate what they had learnt during the training. Most of them could recollect the land preparation aspects. Those who attended the demonstration were better in remembering the land preparation and the irrigation schedules. Some of them could even mention the details of the various treatments applied during the demonstration trials. For these farmers the training session did not end with the end of the demonstration but there still remained the final results of their work to be assessed. A sense of longing for their results had already been created. Later in the season, the participants in Kabji had an opportunity to go and visit the trial plots and were convinced that presence or absence of manure made a big difference in the yield. It was also observed that the treatment with both FYM and fertiliser produced the best growth.

**Training method**

The methods applied during the training as reported by the respondents were lecture and demonstrations - the majority felt it was a demonstration (Table-4)

**Table-4**: Training method applied

| Method | No. of respondents | Percentage |
|---|---|---|
| Lecture | 3 | 8.57 |
| Demonstration(demo) | 25 | 71.42 |
| Field visit | 1 | 2.85 |
| Lecture+demo | 5 | 14.28 |
| Not specified | 1 | 2.85 |

**Duration & season**

The farmers spent a day for the training but effectively the training programme was for half a day in most of the geogs. The majority (69%) felt that the duration was all right, however, 14% felt that the training could have been longer than one day; 8.5% felt it long and another 8.5% could not specify (Table-5).

**Table-5:** Duration of training

| Duration | No. of respondents | Percentage |
|---|---|---|
| Long | 3 | 8.57 |
| Okay | 24 | 68.57 |
| Short | 5 | 14.28 |
| Not specified | 3 | 8.57 |

The season chosen for the training appeared appropriate for 71% of the respondents. The training was conducted at the time when farmers normally had less farm work. However, for those farmers at Goenshari geog which constituted about 26% of the respondents, a slight delay(1-2 weeks) was felt because by the time the demonstration was conducted, farmers had already sown their crop. They no doubt gained much from the demonstration but could not apply the knowledge last season.

**Selection of farmers**

The existing system of farmer selection for any training programme observed in most of the geogs was that the extension agents inform the gup, who in turn relays the information and instructs his subordinates viz. *chipons*, *tshogpas, mangaaps* to mobilise the required number of participants. It was understood that the extension agents and the village officials insist on the participation by a progressive farmer in the village and an active member of the household who is not only capable of applying the knowledge but also disseminate the information to the neighbours. This system of selection is felt acceptable by many farmers.

**Rating on the importance, usefulness, satisfaction and interest**

As can be understood from the above, wheat and mustard are indispensable to the farmers in Punakha-Wangdue valley. They do consider them important and all believed that the training on the crop was need-based. About 91% of the respondents found the training useful. All the participants found the training interesting and if such trainings are organised again they are ever ready to participate. The reason given for this by almost half of the respondents was that they gained new knowledge and skills. The level of satisfaction from the training was high for 63% and medium for 31%.

### 3.1.3 Impact of the training

**a) New knowledge gained on improved cultivation techniques**

Cultivation of wheat and mustard is not a new practice for most of the farmers in Punakha and Wangdue valley; yet last year's training on the same crop benefited them in many ways. Majority of the training participants seemed to have gained new knowledge; many received free seeds and all received the DSA (Table-6). While farmers find all these useful, many consider learning of new knowledge as the most important (Table-7)

**Table-6:** Types of benefits received during the training

| Benefit received | No. of participants | Percentage |
|---|---|---|
| Knowledge+input +DSA | 22 | 62.85 |
| Knowledge+DSA | 10 | 28.57 |
| Not specified | 3 | 8.56 |

**Table-7**: Importance of knowledge, input & DSA

| Importance | No. of respondents | Percentage |
|---|---|---|
| Knowledge | 17 | 48.57 |
| Free input | 10 | 28.57 |
| Knowledge+input+DSA | 2 | 5.71 |
| Knowledge+input | 2 | 5.71 |
| Knowledge+DSA | 1 | 2.85 |
| Not specified | 3 | 8.57 |

About 91% of the respondents mentioned that they gained new knowledge by attending the training on wheat and mustard. The new knowledge gained by those farmers who attended the training is with regard to the cultivation techniques. The training focused mainly on good land preparation techniques, manuring and timely irrigation. To appreciate the fact that farmers did gain new knowledge on crop cultivation, it is necessary to establish the difference between what had been practised earlier and what was learnt during the training. First, a brief description of the traditional cultivation practice is necessary.

According to traditional standards, cultivation of wheat and mustard are one of the simplest forms of crop cultivation. The land would normally be ploughed once and with a minimum of soil preparation seeds would be sown (broadcasted). Weeding and pest control would never be practised. The crop received unscheduled irrigation during the entire growing period.

During the training, however, many farmers learnt that land preparation is an important aspect of crop cultivation. Instead of the traditional single ploughing, they were taught to plough the land twice. Breaking the soil clods and bringing it to a fine tilth to enable easy germination was emphasised. The benefit of a mixture of FYM and fertiliser to increase soil fertility was explained and even demonstrated in some geogs. The importance of irrigation (wheat) at various critical stages, i.e. germination, tillering stage, flowering stage and grain filling stage was taught.

Majority of the respondents could recollect the new cultivation technique that they learnt. Many could tell the different stages where irrigation is critical.

**b) Application of the new knowledge**

The training succeeded in not only creating awareness but also in getting the farmers to apply the new techniques. About 71% of the respondents have applied the new knowledge and realised a good crop yield (Table-8). Some farmers were encouraged to cultivate mustard for the first time. Some farmers already made some comparative trials between local and improved varieties and seemed to be quite impressed by the performance of the improved variety. Increase in area have also been reported by few farmers. The same principles of land preparation were reportedly applied on other crops such as beans by one farmer.

**Table-8:** Percentage of respondents who applied new knowledge

| Application | No. of respondents | Percentage |
|---|---|---|
| Applied | 25 | 71.42 |
| Not applied | 10 | 28.57 |

Farmers seemed to be convinced by the training and demonstration and felt that the new cultivation technique was better than the traditional practice. Many of them applied the technique last season. Those farmers who could not observe the results of their demonstration last year owing to bad weather are still looking forward to apply the same techniques next season.

In the overall there has been an increased awareness on the importance of using good seeds, applying fertilisers, preparing the land properly and giving timely irrigation.

**Constraint**

The main constraints why some farmers could not apply the new knowledge were limited land, unfavourable agro-climatic condition, pest and disease problems, and shortage of family labour.

## 3.2 PART B: Training on dairy, poultry & piggery

### 3.2.1 Objective, content and method

The overall objective of the training on dairy, poultry and piggery was to train farmers on the management aspects. It focused not only on proper housing, feeding and health care but also concentrated on pasture, fodder trees and silage making. The table below is a sample of the contents covered in Kabji geog, Punakha. The procedure of procuring pullets and piglets from government farms and information on the availability of financial support from financial institutions was announced.

**Table-9:** A sample of the training content for the farmers training at Kabji geog centre.

| **Topic** | **Content** |
|---|---|
| Dairy | Livestock feed management |
| | Cattle housing |
| | Pasture development |
| Piggery | Pig rearing system, policy issues |
| | Housing system |
| | Feeding |
| | Marketing |
| Poultry | Rearing system, govt. policy |
| | Feeding |
| | Marketing |
| | Public health |

### 3.2.2 General feed-back

***Importance of dairy, poultry and piggery***

For a farmer, agriculture farming is incomplete without farm animals. They are an integral part of the farming system and provide the farming family with milk, butter cheese, meat and eggs. For many farmers they are an important source of draught power. Above all cattle provide the much-needed manure to grow crops.

Poultry on the other hand may not be as important as cattle but they no doubt provide eggs required for home consumption and for sale. The highest number of poultry birds owned was ten. Many farmers kept few numbers only.

Pork is the important meat item during the annual functions and as such most farmers rear one or two. The maximum number reared was 5. Though most farmers rear pigs for the annual functions, a certain number of farmers especially in Goenshari geog refrained from rearing them on religious grounds.

**Content**

Many farmers could broadly recollect what they had learnt during the training. The following table records some of the training contents that farmers could remember from last year's training.

**Table-10:** Training contents mentioned by the respondents

| Content | No. of respondents |
|---|---|
| Backyard poultry and piggery rearing | 32 |
| Pasture development | 16 |
| Cattle management | 15 |
| Animal health care | 14 |
| Cattle shed construction | 9 |
| Increase jersey breed & reduce local cattle | 7 |
| Procurement of poultry and piggery | 6 |
| Fodder trees | 5 |

**Training method**

The methods applied during the training as reported by the respondents were lecture with visual illustrations and some demonstrations. About 51% of the respondents felt it was a lecture with visual illustrations, while 23% of them felt that some aspects of demonstration was also present. The following table shows the details.

**Table-11:** Training method applied during

| Method | No. of respondents | Percentage |
|---|---|---|
| Lecture | 18 | 51.42 |
| Demonstration(demo) | 8 | 22.85 |
| Lecture + demo | 7 | 20 |
| Lecture+demo+field | 1 | 2.85 |
| Field + demo | 1 | 2.85 |

**Training duration & season**

The training duration in the 3 geogs was one day and for Kabji it was 2 days(Table-12). In general the majority of the respondents felt that the duration was all right (Table-13)

**Table-12:** Venue, date, duration & method of the training on dairy, poultry and piggery

| Geog | Venue | Duration | Method |
|---|---|---|---|
| Thoetsho | Geog centre | 1 day | Lecture+visual |
| Daga-uma | Kamichu | 1 day | Lecture+visual |
| Kabji | Geog centre | 2 days | Lecture+visual |
| Goen shari | Geog centre | 1 day | Lecture+visual |

**Table-13:** Duration of the training

| Duration | No. of respondents | Percentage |
|---|---|---|
| Long | 3 | 8.57 |
| Okay | 26 | 74.28 |
| Short | 5 | 14.28 |
| Not specified | 1 | 2.85 |

The season chosen for the training was right for 80% of the respondents. About 17% felt the training was a little delayed especially for making silage as enough grasses were not available.

**Selection of farmers**

The procedure for selection of farmers is generally same throughout the 4 geogs. The extension agents inform the gups who in turn instruct his subordinates to organise the farmers as mentioned earlier.

**Rating of the training - usefulness, satisfaction and interest**

About 97 % of the respondents found the training useful. All found that the topic of the training was not only need-based but also interesting and satisfying because they learnt new livestock management techniques. Given the opportunity, all except one old woman wanted to attend again. The old woman perhaps felt it would not be of much use to her. The reasons given as to why farmers wanted to attend again were that new knowledge would be learnt, those forgotten would be refreshed and updated.

As regards to the training history, at least 4 farmers had attended a one-week training at Wangchutaba but they could not remember exactly when the training took place. Probably they thought it was more than 5 years ago.

### 3.2.3 Impact of training

**a) New knowledge gained on livestock management**

The benefits from the training are in terms of the knowledge gained, free inputs and DSA received (Table-14). Of the three types of benefits, knowledge is felt the most important by 89% of the respondents (Table-15). Almost all participants mentioned that they gained new knowledge from the training in housing, feeding, calf care and treating against common diseases. The housing requirement for backyard poultry and piggery was another main topic from which they gained much. Besides management aspects, farmers could learn the importance of reducing the local cattle and going for improved breeds. Making silage and hay were also taught in some geogs.

For most farmers it was a useful information on the procedures involved in procuring young poultry and piglets from government farms. They learned about the availability of loan facilities from financial institutions.

**Table-14** Type of benefits received

| Benefits received | No. respondents | Percentage |
|---|---|---|
| Knowledge+input +DSA | 16 | 45.71 |
| Knowledge+DSA | 18 | 51.42 |
| DSA | 1 | 2.85 |

**Table-15:** Importance of the type of benefits

| Which is more important? | No. of respondents | Percentage |
|---|---|---|
| Knowledge | 31 | 88.57 |
| Free input | 2 | 5.71 |
| Knowledge+free input | 1 | 2.85 |
| DSA | 10 | 2.85 |

**b) Application of the new knowledge**

The impact of the training was not only in the knowledge gained or awareness created but 83% of the farmer participants did apply some aspects of the knowledge gained from the training. The most notable applications were found with regard to the housing of cattle and piggery. At least 9 farmers mentioned that they improved their cattle shed. About 2 farmers constructed a new cattle shed for the first time and another farmer did the same for the birds. About 7 farmers developed pasture and 3 farmers planted fodder trees. One farmer (chimi of Kabji geog) sold all his local birds in the hope of changing the whole stock but unfortunately his replacements were eaten by dogs even before it reached his village. About 3 farmers mentioned about increased milk yield as one of the results of the training.

**Table-16:** Application of the knowledge gained

| Application | No. respondents | Percentage |
|---|---|---|
| Applied | 29 | 82.85 |
| Not applied | 6 | 17.14 |

There were some farmers who mentioned that the cattle-shed construction was just half-done and wanted to complete during the dry season.

**Constraints**

Constraints that prevented the farmers from applying the improved techniques were: labour shortage, coincidence with village labour contribution, land shortage, presence of a large herd for which shed construction was not feasible.

## 3.3 Farmer's recommendations

### 3.3.1 Training method

In order to improve future farmer trainings with regard to the training methodology, farmer selection and choice of the training topic, the study revealed that

- demonstration as a training method is preferred by all
- choice of the training topic is to be done by the extension agent

About 83% of the respondents felt that demonstration would be the best training method. Since the majority of the farmers cannot read and write this method is the best for them to remember long. Lectures are heard and forgotten soon. It is for this reason that farmers feel training has to be repeated so that they can continuously update and refresh their knowledge.

### 3.3.2 Choice of training topic

Regarding the choice of topic the majority felt that extension agent was the right person to decide on a relevant training topic as he knew the farmers' general shortcomings and requirements. Some suggested that farmers should propose during geog meetings.

### 3.3.3 Selection of farmers

Regarding the selection of farmers for training, it did not appear to be a big problem and it was observed during the course of the interview that farmers were a bit indecisive while answering this particular question. Most of them did not seem to be very concerned about the selection process perhaps due to the acceptance of the existing system. However, few suggested to consider farmer's needs and interests, and also share equal opportunities. For the EA and some village officials, it is important to select the farmers based on his/her capabilities to learn from the training and disseminate the new knowledge to the other farmers who did not attend. While it may be bad to decide on any one of the two, it is perhaps important to consider both aspects to the extent possible instead of going by the criteria of EA and village officials alone. The following tables show the distribution of responses as to who should select the farmers.

**Table-17:** Selection of participants for farmer training(wheat and mustard)

| Should be done by | No. of respondents | Percentage |
|---|---|---|
| Extension agent(EA) | 11 | 31.42 |
| Village officials(VO) | 6 | 17.14 |
| Farmers | 6 | 17.14 |
| EA + VO | 6 | 17.14 |
| Not specified | 6 | 17.14 |

**Table-17:** Selection of participants for farmer training (dairy, poultry & piggery)

| Should be done by | No. of respondents | Percentage |
|---|---|---|
| Extension agent(EA) | 13 | 37.14 |
| Village officials(VO) | 14 | 40.00 |
| Farmers | 2 | 5.71 |
| EA + VO | 5 | 14.28 |
| Not specified | 1 | 2.85 |

### 3.3.4 Season for training

The farmer-training activities are normally conducted during the off-season when farmers can conveniently attend. While this may still be maintained, some farmers suggest that the training be conducted sufficiently in advance of the growing season so that timely procurement of the inputs is possible and technical suggestions can be incorporated.

### 3.3.5 Training atmosphere

Farmers generally preferred a formal type of training atmosphere where discipline is maintained. If discipline is not maintained, they fear that farmers would take advantage of the situation and disturb the training programme by talking to one another. However, it was also felt by some that a certain degree of informal atmosphere may be congenial if farmers wanted to interact with the trainer for necessary clarification.

### 3.3.6 General suggestions

Extension agents could be more useful if they consider the following aspects

*Agriculture Extension Agent*

- timely supply of inputs or ensure availability
- supply of improved seeds/seedlings
- control of pest and disease on crops
- frequent visits in the village

*Animal husbandry*

- animal health care
- regular village rounds
- provide artificial insemination facilities
- supply of breeding bull
- supply of fodder and clover seeds

## 3.4 General impressions

1. Farmers were frank, patient & co-operative during interview
2. Farmers were very positive about trainings in general
3. Seeds/seedling supply is a farmers priority (timely availability)
4. Wheat and mustard trainings at the geog level was attended for the 1st time by many participants

# 4. RECOMMENDATIONS

1. Farmers' trainings should be a regular extension activity and has to be based on farmers' need & interest.
2. EA in consultation with the village officials or progressive farmers is in a better position to select training topics and pick farmers for training.
3. Future trainings should focus on demonstration, field visits and study tours as these methods are preferred by illiterate farmers who can hardly read and write. Field days and farmers' study tours may benefit those farmers residing in remote geogs.
4. Farmer to farmer training approach could encourage other farmers to share experiences, learn and adopt new technology from progressive farmers.
5. Promotion of breed has to be location specific. Jersey cross-breeds should not be promoted in difficult terrain such as Goenshari.
6. Any training activity carried out in the geogs needs to be well documented and the records maintained by all concerned parties for future reference. It will certainly facilitate the geog-level planning process for any development activity.
7. The project may standardise a format for proper documentation and submission of reports on any RNR activity that it supports.
8. Streamlining the existing system of input supply network would facilitate the farmers' new technology adoption process.

# 5. CONCLUSION

The possibility of finding an impact of a one-day training was very much doubted at the beginning but as the team went on with the assessment, it became clearer that the trainings made substantial impact in terms of knowledge gained and creating awareness. While it takes some years before a farmer adopts the technology, what is more important at the moment is the follow-up and constant support. If this aspect is not seriously considered, the efforts put in so far may be wasted.

Some of the important points worth mentioning are:

1. The topic selected for the farmers' training was need-based and of farmer's priority
2. The overall organisation of the farmer training was good and was conducted well
3. As far as the past training history of the farmers is concerned, the possibility of its influence on the present impact assessment was not there.
4. The farmers gained adequate knowledge on the improved cultivation practices and general livestock management.
5. About 71% of the farmers applied the improved cultivation practice and are convinced of better results.
6. About 83% applied the knowledge gained in livestock management.

Here, it may be mentioned that the farmers are happy to receive any training that would benefit them. However, it is imperative that they are involved in identifying the priority areas and selecting training topics together with EA. This is an important step in involving the farmers in what is known as the 'bottom up planning'.

# 6. REFERENCE

BG-SRDP Working Paper No.14 - Plan of Operations (revised version, oct 1997)

Dahama, O.P. & Bhatnagar, O.P. (1985)
Education and Communication for Development
Oxford & IBH Publishing Company Pvt. Ltd.

## Appendix-1 General statistics

| | | |
|---|---|---|
| Total number of farmers interviewed | 70 | |
| Actual number of farmers interviewed | 57 | |
| Number of farmers who attended both the training | 13 | 18.57 % |

**Number of farmers interviewed from different geogs**

| Geog | Wheat & mustard | Dairy, poultry & piggery | Total |
|---|---|---|---|
| Goenshari | 10 | 11 | 21 |
| Kabji | 6 | 9 | 15 |
| Thetsho | 11 | 9 | 20 |
| Daga-Uma | 8 | 6 | 14 |

**Training on wheat and mustard**

| | | |
|---|---|---|
| Total number of farmers interviewed | 35 | |
| Farmers who attended wheat training only | 12 | |
| Farmers who attended mustard training only | 4 | |
| Farmers who attended wheat & mustard training | 19 | |
| Farmers who attended mustard training only + wheat and mustard | 23 | |
| Farmers who attended wheat training only + wheat & mustard | | 31 |
| Male interviewees | 20 | 57.14% |
| Female interviewees | 15 | 42.85% |
| Highest number of cattle owned | 20 | |
| Average cattle heads | 7.74 | |
| Average wet land | 8.1 (langdo) | |
| Age range | 17-68 years | |

**Training on dairy, poultry and piggery**

| | | |
|---|---|---|
| Total number of farmers interviewed | 35 | |
| Male interviewees | 24 | 68.57% |
| Female interviewees | 11 | 31.42% |
| Highest number of cattle owned | 20 | |
| Highest number of poultry owned | 10 | |
| Highest number of pigs owned | 5 | |
| Average cattle heads | 8.34 | |
| Average wet land | 9.46 (langdo) | |
| Age range | 16-70 years | |

## Appendix-2: Summary sheet on wheat and mustard

Total number of farmers interviewed 35

| | Resp. | % |
|---|---|---|
| 1 a) Land ownership | | |
| Own land | 33 | 94.28 |
| Landless | 2 | 5.71 |
| b) Orchard owner | 9 | 25.71 |
| c) Pasture owner | 3 | 8.57 |
| 2 Farming system(predominantly) | | |
| Crop based | 33 | 94.28 |
| Vegetable based | 1 | 2.85 |
| Crop + vegetable based | 1 | 2.85 |
| 3 Share croppers | | |
| Fully | 2 | 5.71 |
| Partly | 15 | 42.85 |
| None | 16 | 45.71 |
| Nondescript (test q.nnaire) | 2 | 5.71 |
| 4 Training method | | |
| Lecture | 3 | 8.57 |
| Demonstration | 25 | 71.42 |
| Field | 1 | 2.85 |
| Lecture + Demonstration | 5 | 14.28 |
| Can't specify | 1 | 2.85 |
| 5 Who attends the training? | | |
| Self attended | 28 | 80.00 |
| Others | 2 | 5.71 |
| Self + others | 5 | 14.28 |
| 6 Duration of training | | |
| Long | 3 | 8.57 |
| Okay | 24 | 68.57 |
| Short | 5 | 14.28 |
| Can't specify | 3 | 8.57 |
| 7 Interesting | | |
| Yes | 35 | 100 |
| 8 Rating | | |
| Very useful | 23 | 65.71 |
| Useful | 11 | 31.42 |
| Can't specify | 1 | 2.85 |
| 9 Satisfaction | | |
| High | 22 | 62.85 |
| Medium | 10 | 28.57 |
| Can't specify | 3 | 8.57 |
| 10 Training history | | |
| Any member attended | 25 | 71.42 |
| No | 9 | 25.71 |
| Can't remember | 1 | 2.85 |
| 11 Benefit received | | |
| Knowledge + input + DSA | 22 | 62.85 |
| Knowledge + DSA | 10 | 28.57 |
| Can't specify | 1 | 2.85 |
| Nondescript (test q.nnaire) | 2 | 5.71 |
| 12 Importance | | |
| Knowledge | 17 | 48.57 |
| Free input | 10 | 28.57 |
| Knowledge + input + DSA | 2 | 5.71 |
| Knowledge + input | 2 | 5.71 |
| Knowledge + DSA | 1 | 2.85 |
| Can't spfy + (test q.nnaire) | 3 | 8.57 |
| 13 Application | | |
| Applied | 25 | 71.42 |
| Not applied | 10 | 28.57 |
| 14 Attend again? | | |
| Yes | 35 | 100 |
| 15 Topic need based | | |
| Yes | 35 | 100 |
| 16 Season | | |
| Right | 25 | 71.42 |
| Wrong | 9 | 25.71 |
| Can't specify | 1 | 2.85 |
| 17 Training atmosphere | | |
| Formal | 30 | 85.71 |
| Formal + informal | 1 | 2.85 |
| Can't specify | 4 | 11.42 |
| 18 Future training | | |
| Demonstration | 23 | 65.71 |
| Demonstration + field | 6 | 17.14 |
| Field | 2 | 5.71 |
| Can't spfy + (test q.nnaire) | 4 | 11.42 |
| 19 Participants selection | | |
| Extension agents (EA) | 11 | 31.42 |
| Village official (VO) | 6 | 17.14 |
| Farmers | 6 | 17.14 |
| EA + VO | 6 | 17.14 |
| Can't spfy + (test q.nnaire) | 6 | 17.14 |
| 20 Training topic identification | | |
| By Dzongkhag | 2 | 5.71 |
| Extension agent | 14 | 14.00 |
| Farmers | 8 | 22.85 |
| Dzo + EAs | 1 | 2.85 |
| EA + farmers | 3 | 8.57 |
| Can't spfy +(test q.nnaire) | 7 | 20.00 |

## Appendix-3: Summary on dairy, poultry & piggery

Total number of farmers interviewed 35

| | Resp. | % |
|---|---|---|
| 1 a) Land ownership | | |
| Own land | 35 | 100 |
| b) Orchard owners | 14 | 40.00 |
| c) Pasture | 3 | 8.57 |
| 2 Farming system(predominantly) | | |
| Crop based | 32 | 91.42 |
| Vegetable based | 1 | 2.85 |
| Crop + vegetable based | 1 | 2.85 |
| Crop + livestock based | 1 | 2.85 |
| 3 Share croppers | | |
| Partly | 15 | 42.85 |
| None | 20 | 57.14 |
| 4 Training method | | |
| Lecture | 18 | 51.42 |
| Demonstration | 8 | 22.85 |
| Lecture + Demonstration | 7 | 20.00 |
| Lect. + demo. + field | 1 | 2.85 |
| Field + demo. | 1 | 2.85 |
| 5 Who attends the training? | | |
| Self attended | 30 | 85.71 |
| Others | 3 | 8.57 |
| Self + others | 2 | 5.71 |
| 6 Duration of training | | |
| Long | 3 | 8.57 |
| Okay | 26 | 74.28 |
| Short | 5 | 14.28 |
| Can't specify | 1 | 2.85 |
| 7 Interesting | | |
| Yes | 35 | 100 |
| 8 Rating | | |
| Very useful + useful | 34 | 97.14 |
| Can't specify | 1 | 2.85 |
| 9 Satisfaction | | |
| High + medium | 35 | 100 |
| 10 Training history | | |
| Any member attended | 22 | 62.85 |
| No | 13 | 37.14 |
| 11 Benefit received | | |
| Knowledge + input + DSA | 16 | 45.71 |
| Knowledge + DSA | 18 | 51.42 |
| DSA | 1 | 2.85 |
| 12 Importance | | |
| Knowledge | 31 | 88.57 |
| Free input | 2 | 5.71 |
| Knowledge + input | 1 | 2.85 |
| DSA | 1 | 2.85 |
| 13 Application | | |
| Applied | 29 | 82.85 |
| Not applied | 6 | 17.14 |
| 14 Attend again? | | |
| Yes | 34 | 97.14 |
| No | 1 | 2.85 |
| 15 Topic need based | | |
| Yes | 35 | 100 |
| 16 Season | | |
| Right | 28 | 80.00 |
| Wrong | 6 | 17.14 |
| Can't specify | 1 | 2.85 |
| 17 Training atmosphere | | |
| Formal | 32 | 91.42 |
| Informal | 3 | 8.57 |
| 18 Future training | | |
| Demonstration | 17 | 48.57 |
| Exhibition | 2 | 5.71 |
| Demonstration + field | 7 | 20.00 |
| Field | 7 | 20.00 |
| Demo.+exhi.+field | 1 | 2.85 |
| Demo.+exhi. | 1 | 2.85 |
| 19 Participants selection | | |
| Extension agents (EA) | 13 | 37.14 |
| Village official (VO) | 14 | 40.00 |
| Farmers | 2 | 5.71 |
| EA + VO | 3 | 8.57 |
| EA + VO +farmers | 1 | 2.85 |
| Can't specify | 1 | 2.85 |
| EA + farmer | 1 | 2.85 |
| 20 Training topic identification | | |
| By Dzongkhag | 5 | 14.28 |
| Extension agent | 16 | 45.71 |
| Farmers + VO | 8 | 22.85 |
| Dzo + EAs | 1 | 2.85 |
| EA + farmers | 3 | 8.57 |
| Dzo. + EA + farmers | 1 | 2.85 |
| Can't specify | 1 | 2.85 |

## Appendix-4: General comments, wheat & mustard

**Training contents**
soil preparation-///// ///// ///// //
seed sowing-///// ///// ///// //
fertiliser and manure-///// /////
irrigation-///// ////
cultivation practice-///// /
quality seed selection and sowing-///
comparative trials-///
pest and disease management
time of sowing
changing seed
vegetable growing
seed supply
knowledge gained

**Why was it interesting?**
learning new knowledge-/////
personal benefit-//
disease control and pesticide
tremendous increase in production
reinforcement of learning
demonstration and field visit
clarification of doubts
participation is interesting
working in future is easier
soil and water management
adapting to new technology

**Training history**
animal health care related-///// ///// //
double cropping & weed control-///// //
orchard, orange, mango, apple-/////
vegetable growing-///
potato-//
registered seed grower for last 8 years
attended RNR workshop
seed selection
study tour

**Cost effective?**
Easy cultivation-//
food security and supplements rice
no loss, no gain

**Application**
cultivation technique applied-///// ///// //
cultivated mustard for the first time-//
cultivation of beans(principle applied)
demonstration plot was made on his land
local and improved seeds compared
fertiliser applied
seed changed

**Result and training influence**
increase in yield-/////
crop failed-//
increased area-//
increased seed quality and rate-//
cultivated seeds provided by EA
pest control as per training
rouging done
increased awareness on
-good seeds and fertiliser use
-improved cultivation practice
-manure and fertiliser application

**Why attend again?**
new knowledge and skills-///// ///// ///// ///
impart knowledge to younger generation
refresh knowledge, so repeat
demonstration failed (weather)
wish to compare the result
improved technique, better yield

**Formal training atmosphere**
easy learning and systematic

**Constraints**
land -/////
labour shortage-///
pest and disease-///
irrigation problem-//
money-//
land unsuitable-//
no draught animals

**Recommendations**

Demo. & field visits better -////
select participants based on ability to spread message-///
training topics to be selected by EA -///
avoid favouritism(opportunities to all)-//
improve the existing services
subsidy on herbicide control of *sochum*

**Type of Extension services required and the expected role of EA (70 respondents)**
timely supply of input - ***35***
seeds/seedling-///// /////
pest management-///// /////
frequent visits in the village-///// //
pesticides-////
training on right season-////
on-farm trial-//
fertiliser
promotional programmes
timely procurement of inputs

**General**
demonstration late-////
attended training for the first time-///
enjoy being together
exhibition good for literate only
training should be early enough to allow farmers to organise their inputs
very informative
even well conducted training is difficult for illiterate person to remember
mustard doesn't perform well at Jazena
promotional seeds/seedlings could be more helpful to the poor
training well organised(methods)
informal atmosphere helps learning
promotion of jersey not advisable in Goenshari geog

## Appendix-5: General comments on dairy, poultry and piggery

**Training contents**
back yard poultry, piggery-///// ///// ///// ///// ///// ///// //
pasture development-///// ///// ///// /
cattle management-///// ///// /////
animal health care-///// ///// ////
cattle shed construction -///// ////
increased jersey & decrease local-///// //
poultry & pig procurement -///// /
local & improved breed compared -///// /
fodder trees-/////
AI-///
information on loan availability-//

**Why was it interesting?**
learning new knowledge-///// //
personal benefit and income-////
management techniques-//
clarification of doubts
encouragement
awareness on improved breeds

**Training history**
crop cultivation wheat-/////
dairy, piggery, poultry(Wangchutaba)-////
vegetable growing-///
orange
health related
registered seed grower

**Application**
cattle shed improved-///// ////
pasture developed-///// //
animal health care-///
pig sty improved-///
fodder trees planted-///
bird housing made (1st time)-//
cattle shed constructed (1st time)-//
replaced local birds
changed pig breed
information disseminated to others

**Result and training influence**
increased milk yield-///
changed poultry breed
planning to change housing,
housing improved
aware of how to manage
changed cattle breed
quantity increased (poultry)
working is made easier
fodder trees planted
cattle shed constructed

**Why attend again?**
learning new knowledge-///// ///// //
reinforcement of knowledge-////
awareness created-////
able to manage properly-//
input like seeds received-//
opportunity to clear doubts

**Formal training atmosphere**
discipline is very important during training

**Constraints**
labour shortage-////
occupied with labour contribution -///
land-//
unable to apply due to staff transfer-//
cattle shed feasible for less cattle only
untimely supply of pesticides
procurement of construction material

**Recommendations**
trained breeding bull care-taker
more visits in the villages
selection based on farmers interest
continue to procure inputs at right time
farmers cannot decide what is required
equal training opportunities to farmers
medicine should be available at geog centre

**Type of Extension services required and the expected role of EA (70 respondents)**
animal health care-///// ///// ///// ///// /////

regular village round-///// //
artificial insemination-///// //
improved breeds-///// /
services on dairy, poultry, piggery-////
breeding bull supply-///
training on animal housing-//
supply of fodder & clover seeds-//
management improved
income increased

**GENERAL**

pig not reared on religious ground-//
EA is the right person to identify the needs/requirement of the farmers-//
silage making is yet to be done-//
training is very important
has bought mithun breeding bull so do not want to reduce local for time being
demonstrations are good for easy learning
farmer does not know what is required
DSA of less significance

## Appendix-6: Data compilation sheet on wheat and mustard

### QUESTIONNAIRE FOR IMPACT ASSESSMENT OF RNR ACTIVITIES SUPPORTED BY BG-SRDP

Part A: Training on wheat and mustard

Interviewer: Interview No.

Date of interview:

Dzongkhag: Geog: Village:

Name of the farmer: Age: Sex:

1. a) Farming system: predominantly crop-based
predominantly vegetable-based
predominantly livestock-based
nondescript

b) Share cropping:

Fully Partly None

2. a) Land use:

| Type | Area(acre/langdo) |
|---|---|
| Wetland | |
| Dryland | |
| Orchard | |
| Pasture | |
| Others | |

b) Livestock details

Cattle

| Breed | Male | Female | Total | Milking | Milk yield (bottles) | Draught |
|---|---|---|---|---|---|---|
| Local | | | | | | |
| Mithun cross | | | | | | |
| Jersey cross | | | | | | |
| Jersey | | | | | | NA |
| Others | | | | | | |

*3. Training*

3.1 When and where was the above training conducted?

Month/year: Venue:

3.2 What method was used?

Lecture Demonstration

Field day Study tour Others (specify)

3.3 Who informed you about the training?

3.4 How were you selected?

3.5 Who normally attends the training from your household?

3.6 How long was the duration of the training?

Duration(days): Long O.K Short

3.7 What was the main content of the training?

3.8 Was it interesting? Yes No
Why?

3.9 How would you rate the training?

Very useful Useful Not useful Cannot specify

3.10 Where would you rate your satisfaction?

High Medium Low Cannot specify

*4. Training history*

4.1 Did any one from your family attend any other trainings conducted in the past?

Yes No

If yes, give the following details:

| Topic | Duration | Month/year | Organiser | Incentives |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

If no, have you at least seen or heard of such trainings? Yes No

If yes, mention it.

*5. Importance of wheat and mustard*

5.1 Do you grow them at all? Yes No
If yes, how important are they as compared to other crops?

5.2 Give the following details:

| **Crop** | **Wheat** | **Mustard** |
|---|---|---|
| Area | | |
| Total production/year | | |
| Price | | |
| Cost effective? Yes/No | | |
| Use | | |

*6. Impact or usefulness of the training*

6.1 What type of benefits did you get?

New knowledge Free inputs DSA Others

6.2 Which of the benefits are important. Why?

New knowledge Free inputs DSA Others

6.3 What new ideas or knowledge did you gain from the training?

6.4 Did you apply any of the above mentioned ideas or knowledge?

Yes No

If yes, which knowledge or ideas were applied and what were the results?

| Ideas/knowledge/technical recommendations applied | Result(increase in yield, quality, profit ) |
|---|---|
| | |
| | |
| | |

6.5 Did the training influence you to change anything? Yes No

If yes what have you changed?(increase the area, change variety, seed quantity)

6.6 Do you wish to attend similar trainings in future?

Yes No Why?

*7. Reasons for the presence or absence of impact*

7.1 Was the training properly organised/conducted?

Yes No Why?

7.2 Was the topic need-based and relevant? Yes No

7.3 Was the training conducted in the right season? Yes No

7.4 Which training atmosphere do you prefer?

Formal Informal Others

7.5 What constraints prevented you from applying the knowledge/skill learnt? (land, money etc.)

*8 Recommendations*

8.1 What would you suggest to improve future trainings?
a) Delivery method:

Demonstration Exhibition Field days/study tours Others

b) Selection of participants should be done by(based on):

Extension agent Village official Farmer's need

c) Selection of training topics should be done by:

Dzongkhag Extension agent Farmers

d) Other suggestions

8.2 What type of extension services(training/support) are you interested in? Why?

8.3 How could the extension agents be more useful to you?

8.4 Are you aware of the government policies on self reliance? Yes No

## Appendix-7: Data compilation sheet on dairy, poultry & piggery

### QUESTIONNAIRE FOR IMPACT ASSESSMENT OF RNR ACTIVITIES SUPPORTED BY BG-SRDP

Part B: Training on dairy, poultry and piggery

Interviewer: Interview No.

Date of interview:

Dzongkhag: Geog: Village:

Name of the farmer: Age: Sex:

1. a) Farming system: predominantly crop-based
predominantly vegetable-based
predominantly livestock-based
nondescript

b) Share cropping:

Fully Partly None

2.a) Land use:

| Type | Area(acre/langdo |
|---|---|
| Wetland | |
| Dryland | |
| Orchard | |
| Pasture | |
| Others | |

b) Livestock details

Cattle

| Breed | Male | Female | Total | Milking | Milk yield (bottles) | Draught |
|---|---|---|---|---|---|---|
| Local | | | | | | |
| Mithun cross | | | | | | |
| Jersey cross | | | | | | |
| Jersey | | | | | | NA |
| Others | | | | | | |

Poultry

| Breed | Layers | Non-layers | Total |
|---|---|---|---|
| Local | | | |
| Improved | | | |

Piggery

| Breed | Total number | Remarks |
|---|---|---|
| Local | | |
| Improved | | |

*3. Training*

3.1 When and where was the above training conducted?
Month/year: Venue:

3.2 What method was used?

Lecture Demonstration

Field day Study tour Others (specify)

3.3 Who informed you about the training?

3.4 How were you selected?

3.5 Who normally attends the training from your household?

3.6 How long was the duration of the training?

Duration(days): Long O.K Short

3.7 What was the main content of the training?

| Dairy | Poultry | Piggery |
|---|---|---|
| | | |

3.8 Was it interesting? Yes No
Why?

3.9 How would you rate the training?

| | Very useful | Useful | Not useful | Cannot specify |
|---|---|---|---|---|
| Dairy | | | | |
| Poultry | | | | |
| Piggery | | | | |

3.10 Where would you rate your overall satisfaction?

High Medium Low Cannot specify

*4. Training history*

4.1 Did any one from your family attend any livestock related trainings in the past?

Yes No

If yes, give the following details:

| Topic | Duration | Month/Year | Organiser | Incentives |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

If no, have you at least seen or heard of such trainings conducted in your area? Yes No

If yes, mention it.

*5. Importance of dairy, poultry and piggery*

5.1 Do you rear them at all? Yes No

If yes, approximately what is the value of their contribution.

| Produce | Quantity | | Local market price | Amount(Nu.) | Remarks |
|---|---|---|---|---|---|
| Milk | | bottles | | | |
| Butter | | kilos | | | |
| Cheese | | balls | | | |
| Eggs | | doz | | | |
| Pork | | kilos | | | |

*6. Impact or usefulness of the training*

6.1 What type of benefits did you get?

New knowledge Free inputs DSA Others

6.2 Which of the benefits are important. Why?

New knowledge Free inputs DSA Others

6.3 What new ideas or knowledge did you gain from the training?

6.4 Did you apply any of the above mentioned ideas or knowledge?

Yes No

If yes, which ideas were applied and what were the results?

| Ideas/knowledge/technical recommendations applied | Result(increase in yield, quality, profit ) |
|---|---|
| | |
| | |
| | |

If no, what constraints prevented you from applying the knowledge/skill learnt?(land, money etc.)

6.5 Did the training influence you to change anything? Yes No

If yes what have you changed?(increase the animals, change the breed, housing, managment)

6.6 Do you wish to attend similar trainings in future?

Yes No Why?

*7. Reasons for the presence or absence of impact*

7.1 Was the training properly organised/conducted?

Yes No Why?

7.2 Was the topic need-based and relevant? Yes No

7.3 Was the training conducted in the right season? Yes No

7.4 Which training atmosphere do you prefer?

Formal Informal Others

*8 Recommendations*

8.1 What would you suggest to improve future trainings?
a) Delivery method:

Demonstration Exhibition Field days/study tours Others

b) Selection of participants should be done by(based on):

Extension agent Village official Farmer's need

c) Selection of training topics should be done by:

Dzongkhag Extension agent Farmers

d) Other suggestions

8.2 What type of extension services(training/support) are you interested in? Why?

8.3 How could the extension agents be more useful to you?

8.4 Are you aware of the government policies on self reliance? Yes No

## Appendix-8: Terms Of Reference

**Terms of Reference**

**for a consultancy to assess the impact of various RNR activities supported by the Bhutan-German Sustainable RNR-Development Project (BG-SRDP) for farmers in Punakha and Wangdue-Phodrang Dzongkhag**

**Tentative Date: August 1999**

### 1. OBJECTIVE

The consultant will assess the impact of various training activities supported by BG-SRDP for farmers in Punakha and Wangdue-Phodrang Dzongkhag.

### 2. RELEVANCE TO THE PROJECTS' PLAN OF OPERATIONS

Project purpose is to qualify the rural population in selected areas of Punakha and Wangdue-Phodrang Dzongkhags (target groups) to utilise the renewable natural resources (RNR) in a way that quality and productivity of the RNR are increased. At the same time, the supporting institutions (RNR staff of the Dzongkhag administrations and other institutions) should be qualified in order to better support the target groups.

One of the indicators for the achievement of the project purpose reads that:

- "*by 12/2000 at least 50 % of the farmers living in the priority areas and supported by the project are satisfied with the project's advisory support and are of the opinion, that recommended and implemented measures have sustainably improved their standard of living*"

for result no. 2 (strengthening and improvement of RNR extension services):

- "*at least 25 % of farmers advised by the RNR services in the priority areas on RNR measures have successfully adopted and implemented the measures on their land by 12/2000*"

and for result no. 5 (support of the implementation of crop and livestock activities):

1. "*total productivity (... agriculture, animal husbandry) for priority areas increases by 10 % in a balanced manner by 12/2000*

For this, the contracting of a short term consultant has been earmarked in the Projects' Plan of Operation.

## 3. DESCRIPTION OF THE PROBLEM TO BE SOLVED

The project supports activities in the field of forestry (community forestry, reforestation, forest management), agriculture (soil and water conservation, increase of productivity of agricultural crops), animal husbandry (improved pastures, improved livestock breed) as well as irrigation.

During fiscal year 1998/1999 training measures for farmers as well as for Dzongkhag RNR staff and input supply have been carried out in the following subjects (a detailed list of support measures with a recommendation which measures to assess will be submitted to the consultant at the beginning of the study):

- Agriculture: farmers training, crop promotion and crop demonstration for paddy, wheat, mustard, vegetable, chilly, temperate and sub-tropical fruit plants and mushrooms
- Animal husbandry: pasture development, distribution of oat seed, breed improvement (supply of Jersey, Brown Swiss and Mithun bulls), support of cattle shows
- Irrigation: Banking bookkeeping and mason training, support of water user association (WUA) conferences

Upto now, an assessment of the impact of the various support measures has not been done. This is, however, necessary in order to confirm that the support measures are useful and as such can be continued or, if success of above mentioned activities is rather doubtful or not existing at all, to redirect and improve the support measures.

## 4. DESCRIPTION OF SPECIFIC TASKS WITH RECOMMENDED DURATION

| Task | Recommended Duration |
|---|---|
| 1. Meet with relevant project staff to discuss the methodology and details of the impact assessment (select the support measures to be assessed, decide on sampling intensity) | 1 day |
| 2. Carry out impact assessment in Punakha and Wangdue-Phodrang Dzongkhag | 3 weeks |
| 3. Carry out debriefing with relevant project staff | 1 day |
| 4. Prepare consultancy report with findings and recommendations | 3 days |
| Total time required | Approx. 4 weeks |

## 5. TENTATIVE TIME SCHEDULE

The impact assessment should be completed and report submitted by end of August

## Appendix-9: Summary sheet of BG-SRDP activities

(Source: GTZ, BG-SRDP, Lobesa)

## Appendix-10: List of participants present on debriefing session

## Appendix-11: Planned programme for impact assessment

| Sl. No. | Activities | Duration (Days) | Date | | Remarks |
|---|---|---|---|---|---|
| | | | From | To | |
| 1 | Preparation for 1st meeting | 1 day | 2/8/99 | - | |
| 2 | 1st meeting at GTZ office | 1 day | 3/8/99 | - | |
| 3 | Preliminary information collection | 1 day | 4/8/99 | - | Punakha |
| 4 | Preliminary information collection | 1 day | 5/8/99 | - | Wangdue |
| 5 | Planning and budget estimation | 1 day | 6/8/99 | - | |
| 6 | Field survey preparation | 2 day | 7/8/99 | 8/8/99 | |
| 7 | Assessment in the field | 15 days | 9/8/99 | 23/8/99 | |
| 8 | Data compilation | 3 days | 24/8/99 | 26/8/99 | |
| 9 | Debriefing | 1 days | 27/8/99 | - | |
| 10 | Report writing | 4 days | 28/8/99 | | |
| 11 | Report submission | - | - | | |

## Appendix-12: Sample