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Japan International Cooperation Agency

EX-POST EVALUATION STUDY ON DAIRY TECHNOLOGY IMPROVEMENT PROJECT

FINAL REPORT

MARCH 2005

PT. INDOKOEI INTERNATIONAL

Engineering and Management Consultant

INO
JR
04-07

Executive Summary

I. Outline of the project		
Country : Indonesia		Project title : The Dairy Technology Improvement Project the Republic of Indonesia
Issue/Sector Animal Industry		Cooperation scheme : Project type Technical Cooperation
Division in charge : Livestock and Horticulture Division, Agricultural Development Cooperation Department		Total cost : 809 million Yen
Period of cooperation	3 March 1997 - 2 March 2002	Partner Country's Implementing Agency: Provincial Livestock Services of West Java.
		Supporting organization in Japan: Agricultural Planning Bureau, Ministry of Agriculture, Forestry and Fisheries (MAFF).
Related cooperation :		

1. Background of the Project

The consumption oh milk in Indonesia has increased steadily. Milk plays a key in improving infant nutrition. However, the production technology at the farmer level still low, because capacity of the instructors providing technical guidance to the farmers was insufficient. As dairy cattle were poorly manage, heredity characteristic of milk cows were not being fully exhibited, and the quality of the milk secretion were extremely low. Under this circumstances, the Government of Indonesia requested the Government of Japan provide Project-type Technical Cooperation to increase the supply of high quality milk to consumers an increasing the income of the farmers.

2. Project Overview

This project researched and analysed the status quo of each technology for feeding and managing of dairy cattle, reproductive health management and forage production and utilization. It also transferred relevant techniques to the selected farmers in the targeted area and BPT-HMT's in Cikole and Bunikasih.

(1) Overall goal

Dairy technology and productivity at farmer's level is improved.

(2) Project purpose

The integrated technical services system for dairy technology is established.

(3) Outputs:

(a) Technology for feeding and management for dairy cattle is improved, (b) Technology or reproductive health management is improved, (c) Technology for forage production and utilization is improved, (d) Technology for technical staff as well as selected farmers is improved.

(4). Inputs:

Japanese side:

Long-term experts	10	Equipment	159 million Yen
Short-term experts	16	Local cost	89 million Yen
Trainees received	22	Others	14 million Yen

Indonesian side:

Land and facilities	1,794.047	Million Rupiah (24 Million Yen)
Others	1,768.137	Million Rupiah (24 Million Yen)

II. Evaluation Team

Member of Evaluation Team	Soedjasmiran Prodjodihardjo, DVM.	
Period of evaluation study	Day/Month/Year~ Day/Month/Year 14 March 2005 - 31 March 2005	Type of Evaluation: Ex-post Evaluation Study

III. Result of Evaluation

1. Summary of Evaluation Results

(1) Impact

In the Cikole and Buniasih Dairy Centers, the number of claves borne is increased, while the average milk yield per head of caw has increased significantly from 7.70 litters/head/day in 1997 to be 16.86 litters/head/day in 2000 in Cikole and from 8.4 kg/head/day in 1997 to be 15.1 kg/head/day in 2000 in Buniasih. The quality of milk could be maintained well.

The dairy technology developed under the project has been adopted in farm level. The average milk yield has increase from 11 litters/day/head in 2001 to be around 13 litters/day/head in 2004. The quality of fresh milk has also improved.

From the facts, it can be concluded that the overall goal of the project to improve the dairy technology and productivity at farmer's level has been highly achieved.

The other positive impacts are increase of farmers' income from increase of yield production and better quality of milk and improve of farmer's group management and capability.

During field observation, discussion and interviews, the negative impact is negligible.

(2) Sustainability

Qualified human resources (ex-counterparts) are available in the Cikole and Bunikasih Dairy Centers. The organizations of the two centers have been developed under strong support from the Provincial Government of West Java.

In farm level, the adopted technology has been disseminated among the member of farmers' groups. The cooperation among the farmers groups has been well developed.

In view of the institutional and outcomes, the project is highly sustainable.

2. Factors that have promoted project in the aspect of:

(1) Impact

The institutional capacity development and the human resource capability improvement (in BPT HMT Cikole and Bunikasih) had taken a significant role in promoting the impacts. In the field level (farmers), the entrepreneurship of the farmers had a very positive power in promoting the impacts.

Beside that, the dynamic efforts of the Board of Management of the Dairy Cooperative Unit in the village had a significant role in supporting the dissemination of the appropriate technology and make it more possible to be implemented in farm level.

(2) Sustainability

The "man power capability" and "financial/economical support" are the main factors that promoted the sustainability of the project both in UPT and farm level. In farm level the economical aspect had been rather more dominant in the UPT than in farm level.

(3) Others

Since the dairy farming business need a substantial size of land to provide forage, it seems that the security of maintaining land for dairying is highly important (both in UPT as well as in farm level).

3. Factors that have inhibited project in the aspect of:

(1) Impact

In BPT HMT Cikole and Bunikasih: the factor that has inhibited the impact is inconsistency in providing a qualified person and maintaining all the necessary equipments in good operational performance. In the farm level, factors that had inhibited impact is the collection procedures of fresh milk and the milk pricing system (technical and economical factors).

(2) Sustainability

Analogue to the above mentioned item, the sustainability of the post project, has been also impeded by non-continuous provisions of a qualified persons and inconsistency of supporting budgets/equipments. In farm level, the status of the coordination among the farmers, dairy cooperative personnel and the PPL (Penyuluh Pertanian Lapangan/Field Extension Workers) could hampered the sustainability of the post project performance.

(3) Others

The important factor that influences the impact and the sustainability of the project and post project performance is the pricing and the collecting system of the product (fresh milk). The milk produced by the farmers is mostly to be sold to the milk processing industry owned by big private company and the price is relatively low. The recent milk collecting procedures and pricing system doesn't yet give an incentive to the farmers for producing the best quality of milk that they can produce.

4. Conclusion

In general the impact of "Dairy Technology Improvement Project" is *substantial*; the sustainability of the post project is *likely sustainable.* The negative impact is *negligible*. The economical impact had been dominant in making the post project performance to be sustainable. As most of the dairy farmers are smallholder farmers (with the average ownership less than 5 heads of cattle / farmer), there are some problems come up such as technical problems on collecting, handling and examining the quality of milk, unfairness in individual price determination and from then on there is an unfairness in giving price to he *individual farmer*. This condition will impede adopting new technology and in the long run, this could hold back the achievement of "overall" goal of the project.

5. Recommendations

a. The Government of Indonesia should make a consistent provision of a qualified counterparts/PPL/staff of livestock services to motivate and to guide the farmer to improve their dairy farming management through adopting appropriate dairy technology provided by ex Project. It is also recommended that such technologies should be up dated accordingly to the new mature technologies that came from the Research Institution.
b. To provide a sufficient amount of budget and improve the capacity of the counterparts personnel of BPT HMT Cikole and Bunikasih for continuing or even extending its mission as the dairy training centre not only for the national but hopefully for the regional areas as well.
c. To make a continue provision of the necessary spare parts of equipments of cooling unit, milk processing facilities, laboratories etc to make the work of UPT Cikole and Bunikasih in a good sustainable operational condition.
d. To intensify the coordination and cooperation among PPL/Staff of the Livestock services, Dairy Cooperative Units the village and key farmers to encourage the farmers to implement the appropriate dairy technology (provided by ex. Project).
e. To improve the collecting milk procedures and to revise the fresh milk pricing system so that, it will make an incentive to farmers to produce a better quality of fresh milk through the improvement of their dairy farming management.
f. The Government of Indonesia is recommended to provide a guidance and assistant to the dairy farmers (it could be as a "Small Dairy Farming Business Empowerment Program) so that the small farmers may increase their business capacity up to the economical dairy farming size.

6. Lesson Learned

To adopt a mature appropriate technology at the farm level by farmers, a lot of integrated consistent effort needs to be taken appropriately, such as training, guidance and monitoring time to time on the real implementation of the technology.

The most powerful motivator for the farmers in adopting the technology is financial factors, hence the dairy farming business development to realized increase of income shall be taken proportionally.

7. Follow-up Situation

It was interesting to note that in May 2004, the JICA and the government of Indonesia have already signed an agreement to implement "The project for Dissemination of Appropriate Dairy Technology Utilizing Local Resources". The project has started in July 2004 and will terminate on June 2007. The project covers West Java, Central Java, Yogyakarta, East Java, West Sumatra and South Sumatra. Hopefully through this project, the dairy technology that has already adopted by so many farmers in West Java will be extensively disseminated to the farmers in the other regencies in West Java as well as in the other 5 (five) provinces.

The lessons derived from the previous project could be used as reference and guidance for the successful dissemination of a mature dairy technology. The cooperation and coordination among Dairy Cooperative Units, PPL's, ex counterparts/staff Livestock Services in Kabupaten is very important in bringing these dairy technology dissemination succeed.

EX-POST EVALUATION STUDY
ON
DAIRY TECHNOLOGY IMPROVEMENT PROJECT

FINAL REPORT

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CHAPTER I
INTRODUCTION

1.1 General

In order to improve self-reviewing process and accountability to the general public, Japan International Cooperation Agency (JICA) is conducting ex-post evaluation study for its all project that have passed more than three years after the end of cooperation period.

For 2004/2005, JICA calls for the ex-post evaluation for 5 (five) past technical cooperation projects, that are: (i) The Dairy Technology Improvement Project (Bandung, 1989-2002), (ii) The Agricultural Statistic Technology Improvement and Training Project (Jakarta, 1994-2001), (iii) Irrigation Engineering Service Centre (Bekasi, 1994-1999), (iv) Integrated Agriculture and Rural Development Project in Southeast Sulawesi Province (Kendari, 1991-1996, 2000-2001), and (v) Project for Improvement of District Services in South Sulawesi (South Sulawesi Province, 1997-2002)

1.2. Purpose of the Study

Main purpose of the ex-post evaluation study is:

a) To asses the current situation of past project mainly from the impact and sustainability point of view;

b) To draw lesson-learned and recommendation; and

c) To feed back to the improvement of future JICA project management in the similar field, at the same time to increase accountability to the stakeholders and general public.

1.3 Scope of Study Work

The evaluation study has been conducted through the following steps:

a) Desk study reviewing document relating to the projects;

b) Identification of major question and key informants for the evaluation study;

c) Collection of background data needed for evaluation analysis;

d) Observation of project site and key informant interviews;

e) Analysis of collected data, including result of interviews; and

f) Drafting report.

1.4 The Study Team and Study Period

Ex-post evaluation study on five JICA Technical cooperation as mentioned in point 1.1 was carried out by the Study Team's Consultants for three weeks during March 2005, from 2nd week of March until the end of March 2005. Name of the study team and the project that has been evaluated by each member of consultant are as follows:

Table 1.1 Name of the Study Team and the Project to be Evaluated

Name	Position	Project
Hadiono S	Team Leader	Integrated Agricultural and Rural Development Project
Soedjasmiran Prodjodihardjo	Dairy Specialist	Dairy Technology Improvement Project
Soedjatmiko	Agriculture Economist	The Agricultural Statistics Technology Improvement and Training Project
Besar Hatmaya	Irrigation Engineering Specialist	Irrigation Engineering Service Center Project
Arief Effendi	Rural Development Specialist	Integrated Agricultural and Rural Development Project
Tugiyo	Public Health Specialist	Project for Improvement of District Services in South Sulawesi

The study was carried out within three (3) weeks from 2nd week of March until the end of March 2005. The detail schedule of the implementation is as follows:

a) Preliminary meeting 2nd week of March, 2005

b) Observation and interviews 3rd week of March, 2005

c) Drafting of report 4th week of March, 2005

d) Submission of Final Report March 31, 2005

CHAPTER II
PROJECT INFORMATION

2.1 Background of the Project

The consumption oh milk in Indonesia has increased steadily. Milk plays a key in improving infant nutrition. However, the production technology at the farmer level still low, because capacity of the instructors providing technical guidance to the farmers was insufficient. As dairy cattle were poorly manage, heredity characteristic of milk cows were not being fully exhibited, and the quality of the milk secretion were extremely low.

The Project was located in West Java Province, where around 40% of the national fresh milk was produced every day (equivalent to 413,000 kg /day, 1997). Almost 90% of this fresh milk was sold to four (4) big milk processing plant in Bandung and Jakarta. At that time total population of dairy cattle in West Java was 79,000 heads or around 24% of the national dairy cattle population. Only less then 10% of the products was marketed directly to the consumer in form of the pasteurized milk, yogurt, ice cream etc.

Under this circumstances, the Government of Indonesia requested the Government of Japan provide Project-type Technical Cooperation to increase the supply of high quality milk to consumers an increasing the income of the farmers.

The project main site is located in BPT HMT (Balai Pembibitan Ternak dan Hijauan Makanan Ternak, Animal Breeding and Forage Center) in Cikole, Lembang sub-District, Bandung District and the project sub-site is located in BPT HMT Bunikasih, Warungkondang sub-District, Cianjur District.

2.2 Overall Goals, Project Purpose, Output, Activities and Inputs

Project was to be implemented in accordance with the following Project design:

1) Overall Goal

Dairy technology and productivity at farmer's level is improved

(2) Project Purpose

The integrated technical services system of dairy technology is established.

(3) Output

- Technology of the feeding and management for dairy cattle is improved;
- Technology of forage production and utilization is improved;
- Technology of for reproductive health management is improved; and
- Technology for technical staff as well as selected farmers is improved.

(4) Activities

This project researched and analyzed the status quo of the dairy technology for:

- Feeding and managing of dairy cattle;
- Reproductive health management; and
- Forage production and utilization.

Following the result of the above mentioned research and analyze (the status of dairy technology), the project set up an improved technologies (in feeding and management of dairy cattle, reproductive health management, technology for forage production and utilization) that would be disseminated to the farmer.

Within period of project's implementation, project had carried out training for technical staff as well as selected farmers.

Project also transferred relevant techniques to the selected farmers in the targeted area (pilot farm, pilot area) and BPT-HMT's in Cikole and Bunikasih.

(5) Input

Japanese side:

Long-term expert	10	Equipment	159 million Yen
Short term expert	16	Local cost	89 million Yen
Trainees received	22	Others	14 million Yen

Indonesian side

Land facilities	1,794.047 million Rupiah (24 million Yen)
Others	1,768.137 million Rupiah (24 million Yen)

CHAPTER III
APPROACH AND METHODOLOGY

3.1 The Conceptual Approach in Implementing the Evaluation Study

The ex-post evaluation study on the JICA projects is expected to verify the impact and sustainability of the projects at the stage more than three year after the end of cooperation period. More specifically, the evaluation seeks answer to the following main evaluation questions:

(1) Impact of the Project

a) To what extend has the project's "overall goal" been achieved since the time of terminal evaluation?

b) What "positive" and also "negative" impacts are observed as a result of the project?

c) How the project contributed the improved institutional capacity of the implementing institution?

d) Are there any external factors that have contributed to (or impeded) the achievement of "overall goal" of the project?

(2) Sustainability of the Project

a) To what extend have the project have the benefits of the project continued (maintained) since the end of the cooperation period?

b) To what extend is the outcome of the project expected to maintain?

c) What are the major factors that have enhanced (or impeded) sustainability of the project?

To answer to those main evaluation questions, the Consultant need to collect, process and analyzing all necessary data relevant to the impact and sustainability of the project. The data that was collected are the primary and secondary data.

In respect to that above mentioned principle of mind, the evaluation study has been carried out through the following phase.

3.2 Desk Study or Preparation Phase

This phase of work had covered the following activities:

a) Reviewing documents relating to the project;

b) Identification of major question and key informant for the evaluation data; and

c) Preparing questionnaires (semi structure) for interviews.

3.3 Data Collection and Field Observation

(1) Sort and Resources of the Data

The Consultant has prepared all necessary questionnaires for interviewing or exploring primary data from respondents or persons (key informants), who's capacity are closely related to the project's impact and sustainability. The persons to be interviewed are presented in the Annex 1.

In addition to the primary data, there were a much of secondary data that had been collected from the books, document, reports etc. Observation study in the project site was also carried out to observe the recent condition of the project and to assess the changes that happened.

Observation study was carried out in West Jawa, covering:

a) Provincial Livestock Services of West Java;

b) Cikole Dairy Center, Bandung District, West Java Province;

c) Bunikasih Dairy Center, Cianjur District, West Java Province;

d) Dairy Cooperative Unit Tandangsari, Sumedang District, West Java.Province; and

e) Pilot farm/area, Haurngombong village, Tanjungsari, Sumedang District, West Java Province.

(2) Measurement of the Changes

The main purpose of the ex-post evaluation study is to assess the current situation of past project, mainly from impact and sustainability point of views. Assessment of the changes both quantitative and qualitatively, the consultant used the guiding framework and rating system to guide the evaluation as shown at the following Table 3.1.

3.4 Data Processing and Analyzing

The data that had been collected are being processed, analyzed and assessed both qualitative and quantitatively. The quantitative data, such as the milk production, the number of farmers, cattle population is analyzed statistically (descriptive statistic). The qualitative changes are assessed by deductive and inductive reasoning.

3.5 Drafting Report

Drafting report is carried out simultaneously at the time of data collection and field observation. Primary data derived from interviews is to be supported and added by secondary data explored out of the references, printed materials, reports etc. that had been collected from the respective stakeholders.

Table 3.1 Guiding Framework for Ex-post Evaluation in Impact and Sustainability on the Dairy Technology Improvement Project

Main Domain and Key Questions	Assessment of Changes		Sustainability potential	Remarks
	Presence and Direction of Change (+) (0) (-)	Extend of Change (Rating) *) 4/3/2/1	Rating **) 4/3/2/1	
I. Dairy Technology (Did farming technology and practices change?) 1. General feeding and management 2. Reproductive health management 3. Hygiene control of milk 4. Forage production and utilization				
II. Institutional (Capacity and Policy) 1. Did the institutional capacity change? 2. Did the institutional policy on dairy change?				
III. Financial/Economic 1. Did the quantity of milk production change? 2. Did the birth rate change? 3. Did the quality of milk change? 4. Did the milk price change? 5. Did the inst. budget change? 6. Did the revenue change?				
III. Social 1. Did the dairy technology in community change? 2. Did access inform and knowledge change? 3. Did dairy farmers feel empowered? Market place? 4. Did forage or dairy feed security change?				

Note:

Rating *) : 4 = High 3 = Substantial 2 = Modest 1= Negligible
Rating **): 4 = Highly likely 3 = Likely 2 = Unlikely 1= Highly Unlikely

3.6 Reporting

Report of the ex post evaluation study on the Dairy Technology Improvement Project consists of 2 (two) parts, that are:

(1) Evaluation Report and Annexes

Outline of the Evaluation report is as follows:

a) Introduction

b) Project Information

c) Methodology

d) Result of Evaluation and Finding

e) Lessons Learned

f) Overall Conclusion

g) Recommendations

The annexes of the report consist of list of persons to be interviewed, photos and list of references.

(2) Evaluation Summary Sheet

CHAPTER IV
RESULTS OF EVALUATION AND FINDINGS

4.1 General

As described in the previous chapter (Chapter II , point 2.1.), the project main site is located in BPT-HMT (Balai Pembibitan Ternak dan Hijauan Makanan Ternak, Animal Breeding and Forage Center) Cikole, Lembang Sub-District, Bandung District and the project sub-site is located in BPT HMT Bunikasih, Warungkondang Sub-Ditrict, Cianjur District. Project also transferred relevant dairy technologies to the selected farmers in the targeted area (pilot farm, pilot area) and BPT-HMT's in Cikole and Bunikasih. For assessing the changes that happened caused by the project, the consultant classified the impact and sustainability of the project in to two categories of objects, that are: (i) The government's institutional groups (Cikole dairy center and Bunikasih dairy center), and (ii) The farmers, farmers groups, farm area, dairy cooperative unit.

The reason why this kind of category or classification is considered to be necessary, because those two segments of beneficiaries of the Project (dairy technology improvement) have a different characteristics in making changes.

The two BPT-HMT (Cikole and Bunikasih) are structurally under the Provincial Livestock Services, supported by counterparts that had already intensively been trained, to be provided necessary equipments and budget for implementing their missions as dairy training center to transfer the technology. On the other hand, the farmers, farm area, farmers groups and dairy cooperative units are an independent dairy farming business which will take only any changes if they consider that the changes are beneficial for his family, his group or his business.

In the early stage of the project (1998/1999) there were 3 (three) pilot and pilot area as the following Table 4.1.

Table 4.1 Pilot Farm and Pilot Area at the Early Stage of the Project 1998/1999 (The Dairy Improvement Project)

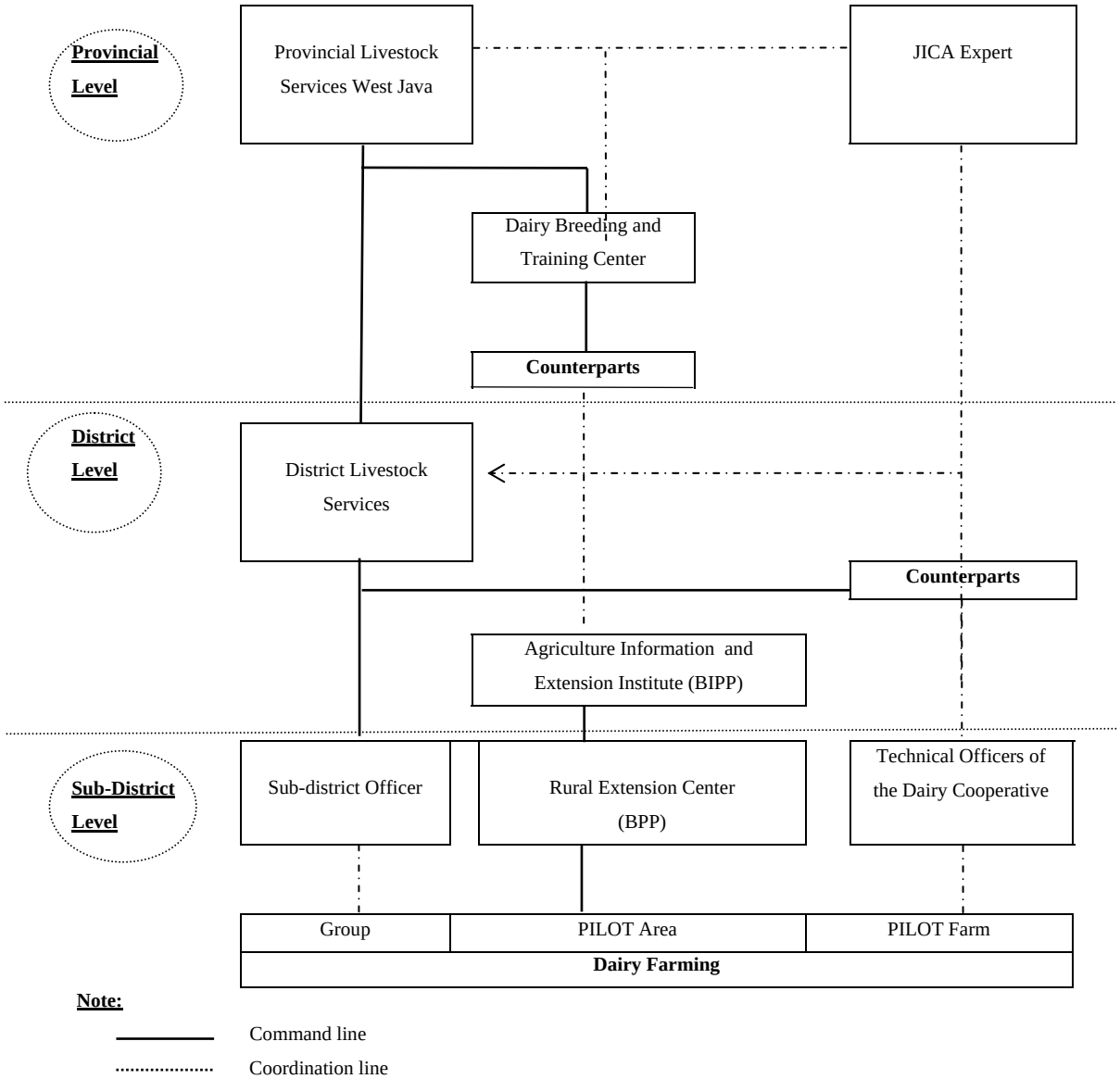
No	Pilot Farm	Pilot Area/Farmer's Group	
1.	Nunung Suarni	Group Goha I , KPBS Pangalengan	Village : Taruna Jaya Sub-district : Pangalengan District : Bandung
2.	H.Misbach	Group Cisurupan I , KUD Cisurupan	Village : Cisurupan Sub-district : Cisurupan District : Garut
3.	Maman	Group Harapan wangi , KUD Tanjungsari	Village : Hurngombong Sub-district : Tanjungsari District : Sumedang

At that time the dairy technology to the pilot farm and pilot area was transferred directly by Expert/counterparts to extension officers, man to man - direct transfer of technolog. In 2000 the project has trained 89 officers of Dinas Peternakan and 143 farmers from 11 districts of West Java Province (Bandung, Garut, Sumedang, Bogor, Sukabumi, Cianjur, Tasikmalaya, Kuningan, Cirebon and Majalengka). Out of these 143 farmers, the 120

farms were selected to be pilot farms and pilot area. With this large number of pilot farms and pilot areas, it was impossible to carry out man to man direct transfer of technology by Expert/counterparts.

Based on the principle that, the extension affairs is an autonomous activity of the Districts/Kabupaten/Kota, the technology-transfer's activities were to be carried out through the structural organization as described in following Figure 4.1.

Figure 4.1 The Mechanism of the Dairy Technology to the Pilot Farm/Pilot Area



These structure organization of technology transfer need some conditions to make the implementation running well, i.e.:

a) The kabupaten/regency government should have a high commitment in dairy development policy, so that he will provide a sufficient support of qualified manpower and budget for technology transfer;

b) The sub-district officers (Livestock service's officers, extension officers/PPL) posses a good access and capacity for his/her extension duties; and

c) A good cooperation and coordination in farm level (among farmer's group, pilot farm, village dairy cooperative' management personnel) to make the adoption of technology run appropriately.

To evaluate the impact and sustainability potency of "the post-dairy technology improvement project", it is then worthwhile to analyze to what extend those structure has been working.

Beside that, the present status of "ex-project " in the main site (Dairy Center Cikole), sub-main site (Dairy Center Bunikasih) and at farm level locations (pilot farm, pilot area) will then to be assessed the impact and sustainability potency of the project.

4.2 Present Status of the Project

(1) Dairy Center Cikole and Bunikasih

In general the daily operational activities of the both Dairy Center (such as milking the cows, processing milk and bottling the products, laboratory examination for milk quality, forage and the other feed production) are running well. All the equipment is to be used properly. There are some equipment, that was not in operation due a spare parts that was not in function (for example: tractor, Bunikasih); they used the existing substitute machinery to keep the operational work in order; meanwhile they try to replace with the new spare part. Most the spare parts are not difficult to get in the Bandung (domestic made or import), but some spare parts need to be imported (paper milk strainer).

Some vehicle has been transferred to the Provincial Livestock Services of West Java. As a change the dairy center had gotten a substitute vehicle for its operational activities.

Most of the counterparts (provincial Livestock services, West Java) are still in their post, some were to be transferred to the new assignment for her/his promotion or retired. Sub-counterparts in Cikole and Bunikasih are mostly still in their post, some of them were transferred to a new assignment.

It was interesting to note that in May 2004, the JICA and the government of Indonesia have already signed an agreement to implement "The project for Dissemination of Appropriate Dairy Technology Utilizing Local Resources". The project has started in July 2004 and will terminate on June 2007. The project covers West Java, Central Java, Yogyakarta, East Java, West Sumatra and East Sumatra.

The Dairy Center Cikole is the main site for this project and in 2004 the Training of the Trainer (TOT technology training) had already been carried out in Cikole. The participants were the officers of the Cooperative and the Livestock Services from West Java Province, Central Java Province, DI Yogyakarta province, East Java Province, South Sumatra province and West Sumatra.

Hopefully through this project, the dairy technology that has already adopted by so many farmers in West Java could be extensively disseminated to and adopted by the other farmers in the other regencies in West Java as well as in the other 5 (five) provinces.

(2) Pilot Farm and Pilot Area

The field observation and evaluation was also carried out on the pilot farm, pilot area and dairy cooperative unit in Sumedang regency. The present status of the project at this segment is illustrated as follows:

The pilot farmer (named: Maman) and most of the farmers in pilot area are managing their dairy farming business by adopting most of the dairy technology provided by the project. Equipment provided by project (grass chopper) is well operated and maintained.

To provide a sufficient amount of the forage for their cows, they rent a moderate size of land to grow a good quality grass (Napier grass).

Interviews with some farmers and manager of the dairy cooperative unit indicate that the farmer is mostly clever enough to select the technology that they are going to adopt. Generally they will take a technology that could directly improve their milk yield (feeding technique, forage production and utilization, hygiene control of milking). As the quality of milk will not directly increase their individual revenues, some farmers are not very careful upon the quality improvement scheme.

The present status of the project (Dairy center Cikole, Bunikasih; Dairy cooperative unit Tandangsari Sumedang and Pilot farmer Maman) is illustrated in the photographs taken during field observation study and presented as Annex -2.

4.3 Impacts

(1) Positive Impacts

(a) Dairy Center Cikole and Bunikasih

(i) Dairy Center Cikole (ex-main site of the project)

The official name of this institution was change since 2002. Now the official name of the ex- main site of the project is: Balai Pengembangan Perbibitan Ternak Sapi Perah (Dairy Breeding Development Center) and to be structurally up-leveled to echelon III organization. Its functions are: (i) to be a resource of a good quality dairy cattle breed and forage seed; (ii) to be a demo plot and a test laboratory, and (iii) to be a field training and on the job training site (as a site of applied dairy technology dissemination).

This promotion indicates, the institutional capacity of this Cikole Dairy Center was highly appreciated by the Government of West Java Province and this is really a substantial impact of the project.

From the technological point of view, the impact is high. This has been represented by a significant increase in number of claves borne in this center (in 2004: 59 calves were born out of 162 cows). The average daily milk yield per head of cow has increased significantly from 7.7 liters/head/day (April 1997) to 12.98 liters/head/day (1999/2000) and to 16,86 liters/day/head. The quality of milk could be maintained as good as that has been performed in year 2001, 2002 and 2003 or in some items is even better (total number of bacteria 1 million in 2001 become 996.800 per cc of milk). Sub-clinical mastitis was decreased from 6.9% (Sept 2001) to 5.95% (2004). Fat content in 2004 was 3.6%, a little bit less than the previous year (3.68%, in 1999 and 2000).

The reproductive health management indicate a better performance than in the previous year, for example: (i) the Service per Conception/S/C is 1,6 (2004) compare with 2.1 in 2001, and (ii) calving interval is 12.74 months (2004) compare with 14.0 months in 2001.

The milk was sold partly to the direct consumers (Jakarta, Bandung) and partly to the dairy cooperative. From the financial point of view the consultant observed the following figures of fiscal year 2004:

- Expenditures (excluded salary of the personnel): Rp. 1,508,119,600
- Revenues (fresh milk, pasteurized milk, calves, culled heifers, culled cow) Rp. 1,273,237,250

This figure indicates that from the business point of view, this dairy center is getting lost. Since this institution is a public service, the non-financial benefit (in the form of the result of training, result of test, result in transferring technology, result in providing a good quality of dairy breeding stock, result in providing good quality of forage's seed) are much more important. With this point in mind, the consultant assess that the financial impact of the project to this institution is modest.

(ii) Dairy Center Bunikasih (Ex sub-main site of the project)

Official name, the mission and function of this Dairy Center Bunikasih is similar to that of Cikolre, namely: Balai Pengembangan Perbibitan Ternak Sapi Perah - BPPT Sapi perah (Dairy Breeding Development Center) and to be structurally up-leveled to Echelon III organization. The difference is just in the area, where this institution operates their mission.

From the technological point of view, the impact is high. This has been represented by a significant increase in number of claves borne in this center (in 2004: 90 calves were born out of 211 cows- consist of 65 heads of lactating cows, 39 heads non-lactating cows, 56 heads of heifers, and 51 heads of calves). The average daily milk yield per head of cow has increased significantly from 8.4 kg/head/day in 1997 to 13.8 kg/head/day in 2000 and to 15.1 kg/day/head in 2004. The quality of milk could be

maintained as good as that has been performed in year 2001, 2002 and 2003 or in some items is even better (total number of bacteria 1.6 million in 2001 become 1.0 million per cc of milk in 2004. Sub-clinical mastitis was decreased from 6.9% in 2001 to 5.8% in 2004. Fat content in 2004 was 3.72% little bit higher than the previous year (3.68% in 1999 and 2000).

The reproductive health management indicate a better performance than in the previous year, for example: (i) the Service per Conception/S/C is 1.7 in 2004 compare with 2.1 in 2001, (ii) calving interval is 12.6 months in 2004 compare with 14.7 months in 2001.

The milk was sold partly to the direct consumers (Cianjur and the surroundings) and partly to the dairy cooperative collecting center. From the financial point of view the consultant observed the following figures of fiscal year 2004:

- Expenditures (excluded salary of the personnel): Rp. 1,294,155,550

- Revenues (fresh milk, pasteurized milk, calves, culled heifers, culled cow) Rp. 990,972,200

The above figures indicate that from the business point of view, this Bunikasih dairy center is getting lost. Since this institution is a public service, the non-financial benefit (in the form of the result of training, result of test, result in transferring technology, result in providing a good quality of dairy breeding stock, result in providing good quality of forage's seed) are much more important. With this point in mind, the consultant assess that the financial impact of the project to this dairy center Bunikasih is modest.

b) Observation Study at Farm Level

Observation study, interviews and discussion had been carried out in the following objects: (i) Pilot farmer (name: Maman), and (ii) Pilot area and Dairy Cooperative's Board of Management (KSU Tandangsari), Sumedang District. Out of these field study, discussions and interviews the consultant conclude that in these segment of beneficiaries the impacts of the project could be illustrated as follows:

(i) The technological impact of the project is substantial. Around 60% of the dairy technology had been adopted by the farmers (in the pilot area), especially in the area of the feeding and management. The following figures describe a little more detailed of the result in adopting these technologies.

- The average milk yield had increased from 11 liter/day/head in 2001 to around 13 liter/head/day in 2004

- Fresh milk quality has also improved; this fact has been reflected in the additional price incentive received by Maman (Pilot farm)

- The dairy cattle population (pilot farm) is increased due to better reproduction performance as shown in the following figures:
  - Heifer age at 1st AI : 15 months
  - Days open : 201 days
  - S//C : 2.3
  - CR by 1st AI : 50%
  - Calving interval : 14.5 months

The above mentioned data is cited from "he project final evaluation report" and then to be cross checked to the Pilot farm and the Board of Management of the Dairy Cooperative Unit Tandangsari, Sumedang.

(ii) The financial aspect of the project is substantial (Pilot farmer - Maman). The increased yield of milk and a better reproduction performance had make his revenues (come from the better quality of fresh milk and good quality of culled calves or culled cows) has increased substantially. On the other hand, the result of interviews with Board Management of the Dairy Cooperative Unit Tandangsari indicates that the milk quality pricing incentive has not yet individually enjoyed. It is a matter of procedure in milk collection (where real good quality milk is being mixed with less quality milk and the price was based on that mixed milk).

(iii) As for the impact on the institution point of view the result of the study indicate that the impact on the farmer's institution is modest. The institutional impact was evaluated through the changes in capacity and policy of the institution. Result from the interviews, field observation and assessment on data that had been collected, reveal that there is some slight changes in institution such as the efforts for developing a better pricing system, the efforts for developing a economically feasible dairy farming business.

(2) Negative Impacts

Result of field observation, interviews and discussion with all the persons interviewed prevails that the negative impacts if any, is negligible.

4.4 Sustainability

In general the sustainability of the project is likely sustainable. This conclusions is derived from the data of the availability of the personnel (quantitative and qualitative) and availability of the budget necessary for continuing and supporting the important activities

of the project and last but not least is the consistent policy of the government in dairy farming industry's industry in the country (Central, Province and District as well)

(1) Dairy Center Cikole and Bunikasih

Availability of the required manpower (ex counterparts) and the strong support from the Provincial Government of West Java to those two institutions give a strong indication that he potency of the sustainability of the project is highly likely sustainable. The organizational development in those two institutions is also considered to strongly support this potency.

Problems that now exist in those two Dairy Center are not crucial (among additional equipments, Improving Human Resources).

(2) Pilot Farmer and Pilot Area

The location, where the observation study and interviews was carried out is in Sumedang regency. The pilot farm is called Maman and the pilot area is named Harapan Sawangi. The field observation, interviews and discussion with pilot farm, pilot area farmers and diry cooperative unit reveals, that the technical, financial and institutional sustainability is likely sustainable. This conclusion was based on the following field findings:

a) The farmers have already well adopted some technology, that:

- could directly influence the milk yield;
- are easy, not difficult to be practiced; and
- are not expensive.

b) The pilot farm and some farmers in the pilot area have enjoyed the increasing production and income, due to the increasing milk yield.

c) They had already rent a sufficient size of land to grow a Napier grass for their forage production.

d) By adopting technology of forage production and utilization, they feel secure of their year around feeding supply for their dairy cattle.

e) Cooperation among the farmer group members has been well developed.

4.5 Factors Promoting (or Preventing) the Impact

(1) Factors that Have Promoted Project in the Aspect of Impact

The institutional capacity development and the human resource capability improvement (in BPT HMT Cikole and Bunikasih) had taken a significant role in promoting the impacts. In the field level (farmers), the entrepreneurship of the farmers had a very positive power in promoting the impacts.

Beside that, the dynamic efforts of the Board of Management of the Dairy Cooperative Unit in the village had a significant role in supporting the dissemination of the appropriate technology and make it more possible to be implemented in farm level.

(2) Factors that Have Inhibited Project in the Aspect of Impact

In BPT HMT Cikole and Bunikasih, the factor that have inhibited the impact is inconsistency in providing a qualified persons and maintaining all the necessary equipments in good operational performance. In the farm level, factors that had inhibited impact are the collection procedures of fresh milk and the milk pricing system (technical and economical factors).

4.6 Factors Promoting (or Preventing) the Sustainability

(1) Factors that Have Promoted Project in the Aspect of Sustainability

The “man power capability” and “financial/economical support” are the main factors that promoted the sustainability of the project both in UPT and farm level. In farm level the economical aspect had been rather more dominant in the UPT than in farm level.

(2) Factors that Have Inhibited Project in the Aspect of Sustainability

Analogue to the above mentioned item, the sustainability of the post project, has been also impeded by non-continuous provisions of a qualified persons and inconsistency of supporting budgets/equipments. In farm level, the status of the coordination among the farmers, dairy cooperative personnel and the PPL (Penyuluh Pertanian Lapangan/Field Extension Workers) could be hampered the sustainability of the post project performance.

4.7 Other Factors that will Influence the Impact and Sustainability of Project

The important factor that influences the impact and the sustainability of the project and post project performance is the pricing and the collecting system of the product (fresh milk). The milk produced by the farmers is mostly to be sold to the milk processing industry owned by big private company and the price is relatively low. The recent milk collecting procedures and pricing system doesn’t yet give an incentive to the farmers for producing the best quality of milk that they can produce.

CHAPTER V
LESSONS LEARNED

To adopt a mature appropriate technology at the farm level by farmers, a lot of integrated consistent effort needs to be taken appropriately, such as training, guidance and monitoring time to time on the real implementation of the technology.

The most powerful motivator for the farmers in adopting the technology is financial factors, hence the dairy farming business development to realized increase of income shall be taken proportionally.

CHAPTER VI
OVERALL CONCLUSSION

In general the impact of “Dairy Technology Improvement Project” is substantial; the sustainability of the post project is likely sustainable. The negative impact is negligible. The economical impact had been dominant in making the post project performance to be sustainable. As most of the dairy farmers are smallholder farmers (with the average ownership less than five (5) heads of cattle / farmer), there are some problems come up such as : technical problems on collecting, handling and examining the quality of milk , unfairness in individual price determination and from then on there is an unfairness in giving price to the individual farmer. This condition will impede adopting new technology and in the long run, this could hold back the achievement of “overall” goal of the project.

CHAPTER VII
RECOMMENDATIONS

a) The Government of Indonesia should make a consistent provision of a qualified counterparts/PPL/staff of livestock services to motivate and to guide the farmer to improve their dairy farming management through adopting appropriate dairy technology provided by ex Project. It is also recommended that such technologies should be up dated accordingly to the new mature technologies that came from the Research Institution.

b) To provide a sufficient amount of budget and improve the capacity of the counterparts personnel of BPT HMT Cikole and Bunikasih for continuing or even extending its mission as the dairy training centre not only for the national but hopefully for the regional areas as well.

c) To make a continue provision of the necessary spare parts of equipments of cooling unit, milk processing facilities, laboratories etc to make the work of UPT Cikole and Bunikasih in a good sustainable operational condition.

d) To intensify the coordination and cooperation among PPL/Staff of the Livestock services, Dairy Cooperative Units the village and key farmers to encourage the farmers to implement the appropriate dairy technology (provided by ex. Project).

e) To improve the collecting milk procedures and to revised the fresh milk pricing system so that, it will make an incentive to farmers to produce a better quality of fresh milk through the improvement of their dairy farming management.

f) The Government of Indonesia is recommended to provide a guidance and assistant to the dairy farmers (it could be as a “Small Dairy Farming Business Empowerment Program) so that the small farmers may increase their business capacity up to the economical dairy farming size.

ANNEX 1
List of Persons Interviewed

Annex -1

LIST OF PERSONS INTERVIEWED

No.	Name	Position in Present
A	**JAKARTA**	
1.	Ir. Soepodo Budiman	Former Project Manager (retired), DGLS
2.	Ir. Mathur Riay MA	Director of Livestock Farming Division, Directorate General of Livestock Services.
3.	Ir. M. Yasin	Head of Sub- directorate of Dairy Farming Directorate Livestock Farming Division Farming, Directorate General of Livestock Services.
4.	Drh. Dwi Wahyuni	Head of Dairy Technology Section Sub-directorate of Dairy Farming, DGLS
5.	Ir. A. Wahab Asyari	President Director of PT. Industri Alam Murni Milk Processing Plant.
6.	Ir. Yoyok Sunaryo	Chairman of the Gabungan Koperasi Susu Indonesia (GKSI)/ National Dairy Cooperative Union.
B.	**BANDUNG - CIKOLE - BUNIKASIH, WEST JAVA**	
1.	Ir. Iman Nugraha	Head of Provincial Livestock Services,West Java
2.	Ir.Susilawasi	Head of Veterinary Public Health Section Provincial Livestock Services, West Java
3.	Drh.Arief Hidayat	Staff of Veterinary Public Health Section Provincial Livestock Services, West Java
4.	Ir. Rukmantoro Salim	Head of Section Development Division Provincial Livestock Services, West Java
5.	Ir. Dade Sudjana	Head of Dairy Cattle Breeding Development, West Java
6.	Ir. R. Abdullah Fathul Alim	Head of Breeding Evaluation Section Dairy Cattle Breeding Development , Cikole
7.	Amirudin, S Pt	Staff of the Dairy Cattle Breeding Development , Cikole, West Java
8.	Drh. Pammusureng	National Project Coordinator of "Dissemination of Appropriate Dairy Technology Utilizing Local Resources " (July 2004 - June 2007)
9.	Drh. R. Henry Eko Suwarno	Head of Bunikasih Dairy Center, Provincial Livestock Services, West Java
10.	Ir. Asep Ali Fuad	Staff of Bunikasih Dairy Center, Provincial Livestock Services, West Java

C.	**SUMEDANG, WEST JAVA**	
1.	Pupung Purwana	Chairman of the Tandangsari Cooperative (Dairy Cooperative Unit). Tanjungsari, Sumedang
2.	Yayah Sofiah	Secretary of the Tandangsari Cooperative (Dairy Cooperative Unit) Tanjungsari, Sumedang
3.	H. Toni Kartobi	Manager of Tandangsari Cooperative (Dairy Cooperative Unit) Tanjungsari, Sumedang
4.	Maman	Pilot farm - Pilot area Haurngombong, Pamulihan Sumedang

ANNEX 2
List of Photograph of Current Situation

A. Ex-main site of the Project Dairy Center, Cikole Bandung, West Java

Starting 2002, to be named “Dairy Breeding Development Center”,
Cikole Bandung, West Java

Stable of lactating cows

Time for milking the lactating cow, using milking machine

Place for weighing milk yield

Milk Quality Control Laboratory

Vehicle used for transportation of Ciko milk, products of Cikole
(Milk is pasteurized in small scale milk processing unit Cikole, Bandung
to be sold to Bandung and Jakarta)

Milk cooling unit has been well operated

Truck used for forage transportation (is well functioning)

B. Ex Sub-main site of the project Bunikasih Dairy Center

Developing the institution capacity, through the improvement of genetic offspring (using embryo transfer).

Hay was made in Bunikasih Dairy Center for training purpose (adopted from the project technology)

Good quality fertilizer (using adopted technology).

Old type cow shed for heapers with separated place for drinking water and feed

C. Pilot farmer Maman and his group of farmers. At present they continue to implement the dairy technology that has been adopted since 1998/1999.

Farmers rent a sufficient size of land to grow Napier grass

Farmers give their cattle a chopped Napier grass (using grass chopper)

Calves pen using local resources

Cow shed provided with simple drinking pail equipment separate from forage/feed facilities

Map of West Java, the Project's Main Site (Cikole, Bandung) and Sub-main Site (Bunikasih, Cianjur)

1. **Cikole dairy center**

Input:

- ✓ Dispatch of Japanese expert.
- ✓ Training of counterpart
- ✓ Provision of Equipment and machinery.

Activities:

- Improvement of feeding management
- Improvement of reproductive health management.
- Improvement of forage production and utilization
- Training for technical staff as well as selected farmers/KUD.

2. **Bunikasih dairy center**

Similar to Cikole

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