THE ROLE OF DEMO FARM TO DEVELOP SMALL HOLDER DAIRY FARMING

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Introduction
Koperasi Peternak Sapi Bandung Utara (KPSBU) as a dairy cooperative had been established since August 8th 1971 with work areas in several districts in Northern Bandung West Java. KPSBU has 7,000 members consist of 5,178 active dairy farmers. The KPSBU members is generally a small size with 1 to 4 cows/house hold. The average milk production capability about 10-15 liters/heads/days and the total milk production is about 120 tons/day. KPSBU is one of the biggest dairy cooperatives in West Java province.

Sub district of Ciater is one of expansion working area of KPSBU. Since 2007, in this area has been introduced as a dairy farming. Previously, this area was an area of tea plantation business basis and some small groups of dairy farmers. However, in the last five years, the area had developed various business sizes of dairy cows due to the development impact.

However, its development is still far from what expected. The problem is mainly caused by the less intensive dairy farmers’ development. Therefore, a cooperative has concerned to develop this region into the one of dairy production centre in the working areas of KPSBU that will be measured by increasing the production, productivity level and income through innovation demo farm. This study wants to know the role of demo farm to develop small holder dairy farmers in Ciater area.

Method and Analysis

The study used survey method and Focus Group Discussion. Sample selection of this study using simple random sampling by which 61 farmers (27.11%) will be selected from total population of 225 (sampling frames). From selected respondents, it will be grouped into 2 strata, is as follows: Small Size (1-4 cows/household) and the big Size more than 5 cows/household. The Financial analysis will be used to analyze data collected for existing business conditions of famers in a year. Descriptive analysis will be carried out to explain the resulted data

Result and Discussion

Dairy Farmers Characteristic
The dairy farms have been developed in Ciater area accordance with supporting climate on high plateau. The education level of dairy farmers is mostly until elementary school 73%, junior high school 11%, senior high school 11% and
The average milk production of dairy farmers in Ciater is still low compared to the KPBSU dairy farmers in Lembang. In 2009, the average milk production is not optimal (6.8 liters/heads/days) and still can be improved. Nevertheless, in 2010, the average milk production in this area has increased about 35% from the previous yearly production (9.2 liters/heads/days).

The dairy farmers can derive forage from agricultural or land waste products and rice straw from paddy field areas in North Subang area. During the rainy seasons, farmers usually take forages at 5-10 km from the location of stable. They get the forages for free and only pay for the transportation cost from the collection point to the stable. Meanwhile, during dry seasons the farmers will be look for forages at further location 15-30 km and automatically the transportation cost become more expensive. The farmers used of concentrate mainly due to low quality (crude protein is only about 8-9%), with total price IDR 1,500/kg produced by KPSBU. During dry season when forage is limited, farmers tend to increase given the amount of concentrates. Most of the farmers not provide forage and concentrates but also additional feed from byproduct of tapioca mill industry and waste of tofu, waste of cassava, rice brand and the waste of beer industry and some of the raw material of feed are imported from outside of the area regency.

The Dairy farming business in Ciater Area is efficient, because R/C>1. Nevertheless, the business with 3 heads lactation cows as small size (R/C = 1.37) is more efficient than big size (R/C = 1.03). It has been caused by the structure of dairy population in small size business is better than big size.

The Constraints of Dairy Business
From the results of field study several problems faced by farmers in conducting the dairy activity that can be seen on the graph below:

a. The low productivity of milk cow that is owned by farmers because of 16% low genetic (breed) quality of cow. However, how to provide good breed stock replacement and suitable with the farmers needs is the question that made the problems becomes quite complex. Because in general farmers do not raise a calf.

b. Capital is one of the constraint in dairy farm in which 15% of total farmers needed the capital is in the form of credit with low interest 3-5%, like credit program from government.

c. Dairy health management during the time is supported by KPSBU officers. And approximately 14% of Ciater farmers experienced that it had become constraints of their activity because of lack of knowledge of animal health and unavailability of 24 hours officers in serving farmers to treat their cows.

d. Low feed quality. The availability of sufficiently high quality of raw material feed that can satisfy the needs along with production level.

e. Management of waste treatment is not well organized among farmers. Lots of farmers do not have any knowledge on how to treat dairy waste.
f. Security factor is still considered as constraints for 9% of farmers, this is more on the losing of their milk equipment.
g. Ciater Location, which is an area of hot water containing Sulphur, is also an obstacle for 4% of farmers. Farmers should provide funds for purchasing water.

**Willingness of Farmers on Capacity Building**

In preparing the draft of Demo Farm (DF) model and Dairy Support Centre (DSC), in this study, it will be analyzed the willingness of farmers to follow the required training. The results of the analysis can be seen in the illustration below as follows:

a. Most of the farmers (37%) expect that the desired capacity building is in the management of dairy farming. The scope of this dairy farm training includes: the management of breeding and reproduction, feeding, cattle raising management, housing, and post harvesting.
b. Animal health (25%): including diseases control (preventive) and treating diseases (curative)
c. Waste management (23%): including composting process, vermicompost and its use as energy source (biogas)
d. Group management (15%): including managing group as cooperative members.

The result of these respondents willingness hopefully can be used as material syllabus in developing Demo farm. The role map of stakeholder dairy farm it can be explained the function and role of each institution involved as follows:

1. KPSBU will guide the farmers and groups, coordinating with government and technical implementation unit in the field conducted by the inseminator or veterinarian
2. Group of Farmers administratively coordinate to KPSBU, guide the farmers and coordinate with government and the inseminator or veterinarian.
3. Government will guide KPSBU, groups and dairy farmer as well as coordinating with inseminator or veterinarian.
4. Inseminator or veterinarian as operational technical officer of KPSBU in DF/DSC level give services to the farmer groups and dairy farmer and coordinate with the government.

**The Role of Demo Farm**

As mentioned in its field study, its identified several constrains in the current dairy farming situation in Ciater. These constrains are identified at farm level as well as in the business supply and value chains. At farm level farmers experience low productivity, poor animal health condition and low quality breed of the dairy cows in general. On the other hand the study identified also constrains in the quality of dairy...
concentrates, containing too low nutrition, and trading practices in the livestock market resulting in relatively high cow prices. Also in the milk supply chain the fresh milk currently lacks a uniform reference standard in the collection and milk payment chain, which is essential to communicate, understand and improve the interest of each stakeholder.

Dairy farmers thus operate in a poor infrastructure and as a result have in general low marketing incentive and motivation to develop their farming enterprise. In order to address this lack of motivation it is essential that any effort to develop the dairy farming enterprises in the Ciater area does not focus only at the farmers, but also addresses the constrains in the business and value chains. In this study the recommended interventions at farm level are identified and deal with demonstration, required facilities/organization and training method.

In order to reach a high demonstration impact among the dairy farming community in Ciater it is recommended to establish several demonstration farms close to the dairy farming communities. It is proposed to establish one Demo-Farm per village or milk collection point. This enables all farmers to participate easily and actively in the demonstration farm scheme of training and demonstration activities.

As shown in the field study 95% of the farmers own less than 4 dairy cows and consequently the demonstration and training needs to focus to this group by demonstrating a farm unit of 3 dairy cows and young stock. Demonstrating a unit with 10 cows is limited to a maximum of two, while there is no location identified for a larger demo-unit.

The role of establishing demo-farms on develop small holder dairy farms were: (1) very effective way to show farmers improved farming techniques, (2) key facility of meeting & discussion points for all stakeholders, (3) ideal tool to enhance confidence and relationship among the stakeholders, and (4) seeing is believing or learning by doing.

**Farm models.**

There are 3 different farm models studied which vary in size to accommodate 3 up to 25 dairy cows. The differences are evident mainly in the way dairy cows are kept. A Tie-stall is chosen for the smallest farm type because it is easy to operate. Cows are permanently tied and do not need to be collected for milking. A small lecture area is included in this demo-unit to facilitate training activities. All demo-units include a biogas unit and a manure storage system, which are important in relation to environment management. For the farms that have to accommodate 10 up to 25 cows a free walking stable is preferred. This design requires the farmer to collect the cows for milking, but on the other hand cows can walk freely, which has a significant advantage for the farmer in detecting cows in heat. An important aspect in the design is the accommodation for young stock. The rearing of replacement heifers should be promoted, since breeding and rearing are essential for improving the herd milk production capacity. In the different models it is assumed that the farmer keeps the same number of cow and does not increase the number of dairy cows (stable herd situation). In case the farmer wishes to increase the number of dairy cows he is obliged to increase the stable capacity.

Another significant difference is the method of milking. At the S1 type no investment is made in milking equipment, other than some basic milking utensils, because there
are only a few cows to deal with. Assuming a farmer can milk a single cow in 5 minutes it will not take him longer than 25 minutes for a milking session, which is well within the recommended maximum time of 45 minutes to finish milking.

### Table. Models of Dairy Demo Farm

<table>
<thead>
<tr>
<th>Items</th>
<th>S1 MODEL</th>
<th>S2 MODEL</th>
<th>S3 MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy cows</td>
<td>3</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Calves (0 – 3 months)</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Young stock (4 – 6 months)</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Young stock (7 – 12 months)</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Heifers &gt; 12 months</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Stable type</td>
<td>Tie-stall w/ rubber mats</td>
<td>Free walking Raised cubicle w/ rubber mats</td>
<td>Free walking Raised cubicle w/ rubber mats</td>
</tr>
<tr>
<td>Milking method</td>
<td>Hand Milking none</td>
<td>Mobile milking machine none</td>
<td>Fixed vacuum line with 2 buckets None</td>
</tr>
<tr>
<td>Milk cooling at farm</td>
<td>none</td>
<td>Open feed rail</td>
<td>Self locking feed-gate</td>
</tr>
<tr>
<td>Feed gate</td>
<td>none</td>
<td>yes</td>
<td>none</td>
</tr>
<tr>
<td>Milk - Treatment box</td>
<td>Biogas</td>
<td>Biogas</td>
<td>Biogas</td>
</tr>
<tr>
<td>Manure system</td>
<td>Biogas</td>
<td>Biogas</td>
<td>Biogas</td>
</tr>
</tbody>
</table>

### Conclusions

1. The demo farm was built in accordance with the desire or expectations to expand its business, interventions at farm level are identified and deal with demonstration, required facilities/organization and training method.
2. The demo farms were built close to the dairy farming communities. It is proposed to establish one Demo-Farm per village or milk collection point. This enables all farmers to participate easily and actively in the demonstration farm scheme of training and demonstration activities
3. The role of establishing demo-farms on develop small holder dairy farms were: (1) very effective way to show farmers improved farming techniques, (2) key facility of meeting & discussion points for all stakeholders. (3) ideal tool to enhance confidence and relationship among the stakeholders, and (4) seeing is believing! Or learning by doing.

### Acknowledgement

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### References


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