

## **Diversification of Superior Forage Feed and Ration Formulation Techniques for Etawa (PE) Goats**



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**ABSTRACT:** Singapadu Kaler Village is a village located in Sukawati District, Gianyar Regency, Bali Province. This village was formed in 1991. Singapadu Kaler Village consists of five (5) service hamlets namely Silakarang, Kederi, Samu, Belang and Belang Kaler. The population of Singapadu Kaler Village until 2020 totals 6645 people consisting of 3,271 men and 3,374 women. Most of the villagers' livelihoods are farmers so that the village is proclaimed as an agro-tourism. In Singapadu Village there is a Suka Tawa Farmers Group which is a group that raises Etawa Peranakan PE goats which are dairy goats to produce goat milk products. However, this group does not yet know and provide quality or superior forage forage, so they still make use of the forages / leaves around them. In addition to raising goats, varied forage is also needed of good quality, knowledge of good feed formulation techniques for dairy goats is needed so that they can provide optimal milk production. Group members wish to get superior forage seeds, as well as assistance with planting them and also appropriate feed formulation techniques for PE goats, so that quality forage will be available throughout the year. The activity will be carried out at the Suka Tawa Farmer Group in Singapadu Kaler Village, Sukawati District, Gianyar Regency, Bali. The Suka Tawa Livestock Group is familiar with several superior forages, masters the cultivation technology, ration formulation and understands and understands the nutritional needs of Etawa Breeding Goats. Technology mastery is almost 80%, so it is necessary to provide further assistance to the group during the first, second cutting and forage maintenance and presentation techniques so that the forage remains of good quality.

**KEYWORDS:** Forage, formulation, Etawa crossbreed goat, Singapada kaler, ration, Pakchong grass, odot grass

### **1. INTRODUCTION**

Singapadu Kaler Village is an administrative government area located in the Sukawati District, Gianyar Regency, Bali Province which was formed in 1991. It has an area of 3.25 km<sup>2</sup>. Based on the 2011 village profile, Singapadu Village consists of five (5) Pakraman villages, namely Silakarang, Kederi, Samu, Belang, and Belang Kaler. Singapadu Village also consists of five (5) service hamlets, namely the Kederi service hamlet, the Belang service hamlet, the Samu service hamlet, the Belang Kaler service hamlet, and the Silakarang service hamlet. The boundaries of Singapadu Village are to the north of Singakerta Village, to the east of Lod Tunduh Village, to the south of Central Singapadu Village and to the west of Mekar Buana Village, Abiansemal District [1].

The population of Singapadu Kaler Village until 2020 is 6,645 people consisting of 3,271 men and 3,374 women. Singapadu Kaler Village is an area with a population that has varying characteristics, there are civil servants, farmers, traders, craftsmen and so on. However, some of them work as farmers so that in 2015 Singapadu Kaler Village was proclaimed an agro-tourism village, because apart from that the most prominent activity of the population is sculpture and art, one of which is dance [14].

Geographically, the Singapadu Village sub-district includes a plain area with an altitude of 400m above sea level. Singapadu village includes a tropical climate which has a dry season with east winds from May-September and a rainy season with west winds from October-April, with temperatures of +- 25-31c with maximum temperatures falling in August and minimum temperatures in December [14].

The development of a goat farm in Singapadu Kaler Village started with the Covid 19 pandemic. During the pandemic all sectors were affected, also those working in the tourism sector were the most affected because in Bali tourism actors had to change their ways to survive [15]. This is the beginning of the development of PE goats in Singapadu Kaler Village with the hope that raising PE goats will produce quality milk products, which are needed by all levels of society. From the results of the location assessment, we found problems with the availability of superior and quality feed for goats in Singapadu Kaler Village.

The Suka Tawa Farmers Group is a group of dairy goats (PE) in Singapadu Kaler Village with 10 members. Provision of forage for this farmer group is obtained from those around the area, namely gamal, lamtoro and also industrial waste. The availability of forage during the rainy season is very sufficient but during the dry season the availability is limited. In addition, the availability of

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superior forage seeds does not yet exist, while to produce goats with optimal production, quality forage and concentrates are needed which can be obtained from agro-industrial wastes with processing methods or techniques such as fermentation techniques.

Forage is the main feed for dairy goats, but the provision of booster feed (concentrate) is needed so that livestock can produce optimally [2]. Forages for livestock are all forms of feed ingredients derived from plants or grass, including legumes, both uncut and cut from fresh ingredients. This includes the forage feed group, namely grass (graminae) leguminosae and forage from other plants such as jackfruit leaves, hibiscus leaves, cassava leaves and so on. Forage plants are classified as a source of crude fiber, a source of energy and a source of protein. Which is classified as a source of fiber and energy is grass (graminae), which is classified as a source of protein is legumes (leguminosae) [3]. In the ruminant feed component, forage always gets the largest portion, which is 60-100% [4]. Several types of forages such as indigofera, odot grass, biograss grass, zanzibar grass and pachong [5].

Indigofera (*Indigofera* sp) includes leguminous trees. *Indigofera* or tarum, indigo, or indigo are plants that produce a natural blue color, have high productivity, have dense leaves with good nutrient content, especially their high protein content [6]. The nutritional value of indigofera leaf meal is 27.97% crude protein (contains amino acids that correlate well in the rumen), 15.25% crude fiber, 0.22% Ca and 0.18% P, contains xanthophyll and carotenoid pigments. *Indigofera* is highly favored by ruminants and can be propagated by seeds [7]. The characteristics of indigofera plants are the plant height ranging from 3 - 4.5 m, having odd and compound leaves, when viewed more closely it resembles a bush and the seeds are in the form of pods. Crop harvesting can be done with optimum cutting at 0.75 -1.5 m from the ground surface. Cutting intervals are 60-70 days depending on plant density [8].

Odot grass or Dwarf Elephant grass (*Pennisetum purpureum* cv. Mott), is a variety of elephant grass, including superior grass originating from the Philippines. This grass has a fairly high production, produces many tillers, has strong roots, stems are not tough, and has many leaf nodes and a young leaf structure so it is highly favored by livestock [9]. The height of this grass is around 1-1.5 m, but the number of tillers is more, namely 20-30 stems/clump. This plant is able to grow during the dry season with low soil fertility. During the rainy season the cutting interval is between 30-40 days with 20 tillers at each harvest. The nutritional content of odot grass such as 12-14% protein [10]. Odot grass can be planted in 2 patterns. The first is monoculture where in a field only odot plants are planted. The second planting pattern is to plant it on the sidelines of other plants. Odot grass propagation can be done by vegetative method, namely by using branches that grow best. This grass is harvested for the first time at the age of 70-80 days, when the stem segments reach 15 cm. Furthermore, it can be harvested 35-45 days during the rainy season or 40-50 days during the dry season with a production capacity of 350 tonnes/ha/year [11].

Pakchong grass, is a superior type of grass that was first planted by Prof. Dr. Krailas in the Pak Chong area, Thailand. Has a long life that can reach 9 years, can be harvested every 40-50 days. Resistant to drought and not thorny. The nutritional content of Pakchong grass is higher than that of Odot grass, especially the protein content, which is 16.45%, while the protein content of Odot grass is 13%. Pakchong grass production capacity is 1500 tons/ha/year [12].

With community service activities, the Suka Tawa Farmers Group hopes to become familiar with technology and have knowledge of diversifying forage forage, have skills in providing and strategies for providing forage through counseling, donation of forage seeds, demonstration plots on how to cultivate it and direct application to livestock.

Appropriate and correct feed formulations are also needed in raising dairy goats, for example by providing feed that has been fermented, in addition to making the feed durable, it can last longer, feed difficulties in the dry season will be overcome by the fermentation method [13]. Feeding with fermentation technology can increase body weight and quality and growth of goats. In providing feed for pregnant dairy goats, 60% grass and 40% legumes are needed with additional feed with a crude protein content of 14-16%. As much as 0.5-1 kg/day of concentrate feed can be substituted from tubers or tofu dregs or fermented industrial waste.

With community service activities, the Suka Tawa Farmers' group hopes to get to know ration fermentation technology and the provision of continuous and nutritious forage feed through superior feed seeds.

## 2. IMPLEMENTATION METHOD

The implementation of PKM activities is carried out in several stages, namely:

1. Site surveys for conducting extension activities and locations for conducting demonstration plots.
2. Interviews and questions and answers regarding problems faced by partners, as well as planning activities that demonstrate technical steps for solutions to problems faced.
3. Problems in the production sector will be overcome by handing over seeds and equipment to partners to support and expedite the process of cultivating indigofera, odot grass, pakchong grass, zanzibar grass and biograss.
4. Problems in the field of quality will be overcome by selecting planting sites, good forage seeds, fertilization, care, and timely cutting.
5. Problems in the field of continuity are overcome by selecting forage seeds that are capable of producing throughout the season.
6. The problem of ration formulation is overcome by providing the right feed formulation method



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for dairy goats in order to achieve optimal production.

7. Partners will be given materials prepared by the team in the form of superior forage modules such as indigofera, odot grass, pakchong grass, Zanzibar grass and biograss, cultivation techniques, harvesting and supply for livestock.

Partner participation in the implementation of PKM activities is needed for the smooth process of this activity.

1. Partners are expected to comply with all agreements that have been made
2. Partners are expected to be disciplined and really carry out all series of activities until all planned activities end.
3. After the PKM activity ends, partners are able to continue providing forage so that it is available throughout the season and is able to maintain good forage quality and is able to process waste as feed to increase the growth and production of dairy goats.
4. Assistance, evaluation and monitoring will continue even though the PKM program has ended.

### 3. RESULTS AND DISCUSSION

#### 3.1 Implementation of Activities

The activities of Animal Husbandry Study Program in the Community Partnership Program regarding Diversification of Superior Forage and Ration Formulation Techniques for Etawa Breed Goats (PE) in the Suka Tawa Farmer Group, Singapadu Village, Kaler have been carried out well and smoothly. The activity was carried out online on Tuesday 31 May 2022 in the form of a webinar and theoretical study to provide an understanding of the material for superior types of forage, how to cultivate it, the nutrients contained in forage, the nutrients needed by Etawa Peranakan goats (PE) and formulations proper ration for goats. The next activity was handing over forage seeds and equipment, followed by making a superior forage cultivation demonstration plot on the land provided by the group. Participants who attended this activity were 10 people from the Suka Tawa Farmer Group offline.



Figure 1. Community Service Seminar Activities



Figure 2. Direct Practice of Planting Superior Forage Seeds and Ration Formulation for Etawa Crossbreed Goats

#### 3.2 Obtained Benefits

The group gains knowledge and technology in providing more diverse forage, increasing the quantity and quality of forage, nutritional needs and fulfillment of Etawa Goats (PE) and proper ration formulation for Etawa Goats (PE).

#### 3.3 Inhibiting and Supporting Factors

##### Inhibiting Factors

The current condition of the Covid-19 Pandemic is an inhibiting factor in the implementation of this International PkM. As a result, adjusting the schedule of activities with partners becomes rather difficult and activities become somewhat limited. Because the webinar was held in a location with limited signal strength, the IT team had to bring extra equipment to the location to ensure the smooth running of the event.

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### Supporting Factors

The supporting factor in this activity was the enthusiasm and great desire of the group to take part in all the events that had been scheduled. Partners still want to participate in the continued service program and assistance for the development of the Suka Tawa Farmer Group.

### Solutions and Follow Up

Obstacles encountered in the implementation of PkM can be overcome by communicating with the group leaders and village officials of Singapadu Kaler. Counseling activities and demonstration plots for superior forage and grass cultivation could run smoothly on Tuesday, May 31, 2022 which was attended by 20 group members. The activity carried out has implemented the Covid-19 prevention health protocol.

### The next plan

Furthermore, the PkM team will continue to assist in the development of forage forage, formulation of appropriate rations and the maintenance and health of Etawa Goats (PE). good brood growth.

### Strategic Steps for Further Realization

The strategic steps to realize the next plan are to assist the group in preserving animal feed technology when the production of forage is abundant in the rainy season. With this technology, it is hoped that partners will have adequate and quality feed supplies, when there are traditional or religious activities, preserved feed can be used without having to mow the grass.

## 4. CONCLUSION

The conclusion that can be drawn from this community service activity has been going well and smoothly. The Suka Tawa Livestock Group is familiar with several superior forages, masters the cultivation technology, ration formulation and understands and understands the nutritional needs of Etawa Breeding Goats. Technology mastery is almost 80%, so it is necessary to provide further assistance to the group during the first, second cutting and forage maintenance and presentation techniques so that the forage remains of good quality.

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