**Empowerment of Breeders Through the Introduction of Sorghum sp as Animal Feed.**

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**ABSTRACT**

Development of cattle ranches in East Lampung Regency is expected to develop in supporting the economy of rural communities, however the provision of animal feed is still a major obstacle, namely the unfulfilled amount and adequacy of nutritional value, among other things availability of feed that is not continuous throughout the year. The purpose of this activity was to empower farmers and breeders in Rantau Fajar Village, Raman Utara District, East Lampung Regency in developing Sorghum sp as an alternative to forage for livestock. In order to achieve these objectives, the method of approach applied was (1) counseling on the cultivation and benefits of sorghum, and (2) demonstration plots for planting sorghum. The method used in this activity was the andragogy method (education methods for adults), the active participation of participants (farmers and breeders) is prioritized in order to find out their potential and increase motivation. The material is presented in the form of lectures, discussions and demonstrations of the plot and post harvest sorghum. Sorghum can grow on less fertile soils in dry seasons, the risk of failure is small, can be leveled, and the cost (input) is relatively low. When sorghum is harvested and fed to cattle, sorghum has high palatability. From the results of this activity, it can be concluded that farmers and breeders can take advantage of all parts of the sorghum plant (stems, leaves and fruit) for animal feed.

Keyword: sorghum sp, animal, feed, rantau fajar

**Introduction**

Beef cattle farming in Indonesia is predominantly fattening, as is very little investment in breeding. This is related to the lack of economic incentives in the nursery business. The government in this case is only the *keeper* and *user*, so if at any time there are problems upstream (in the country of origin of the seed importers) it will also become problems downstream. **Development of upstream businesses (nurseries) in the country is needed**. The high demand for seeds is a great opportunity for the development of beef cattle breeding agribusiness, but to attract (inspire) the interest of farmers, the majority of which are small-scale smallholder farms to carry out nurseries, need government intervention in facilitating and advocating, especially in terms ofsupport **capitaland technological innovation**. In this regard, the government has facilitated livestock farmer groups to carry out cattle breeding in terms of capital by involving banks that provide credit schemes as executing banks for central government programs such as Beef Cattle Breeding Business Credit (KUPS) with subsidized interest rates (burden on actors business 5% per year). Where the target is cattle breeding business actors including livestock companies, cooperatives, farmer groups / associations. The maximum ceiling for beef cattle business actors is Rp. 65,124,500,000 (sixty-five billion one hundred and twenty-four million five hundred thousand rupiah) with the requirements of obtaining a technical recommendation from the Head of the service in charge of the district / municipal animal husbandry and animal health functions and being recognized by the Head of the Provincial Service

Beef cattle business is very potential and profitable if done correctly and the market is good (has bright prospects). Factors that must be considered in order to run a nursery business efficiently and profitably are: (i) ***Selection of seedlings*** so that their offspring and reproduction are good (S / C and good *calving interval* ); (ii) ***Feed management:*** Providing adequate feed will result in poor reproduction of cattle which will cause the cattle to not become pregnant; (iii) ***Breeding system:*** A good breeding system arrangement will avoid *inbreeding* so that the results of the offspring are of good quality; (iv) **Health Management**; and (v) **Marketing Management**.

On the other hand, the role of the government in facilitating and encouraging nursery businesses needs to be continuously improved by looking at the existing potentials and challenges, such as 1) Nursery businesses are mostly carried out by the community with a small number (capital) and scattered; 2) Guidance and implementation assistance that still needs to be improved; 3) Central, regional and cross-sector coordination still needs to be improved; 4) There is no guaranteed market price for nursery products; and 5) The company has not been interested because of the low alignments of the banking sector because of the long business period and there is no economic incentive so that it tends to run a fattening business.

**General Condition of Raman Utara**

**Condition of Geographical**

Raman Utara sub-district is one of the sub-districts in East Lampung Regency. Raman Utara sub-districts is an area with a wavy to hilly area. Administratively, the location of Raman Utara sub-districts is bordered by: a.

In the north it is bordered by Central Lampung Regency.

b. South side is bordered by Batanghari Nuban District.

c. East side is bordered by Purbolinggo District and Way Bungur District.

d. West side is bordered by Central Lampung Regency.

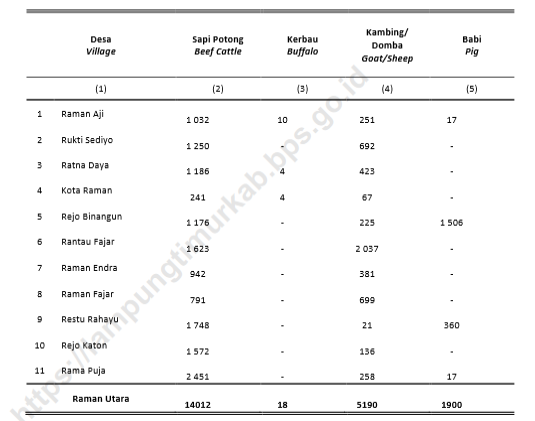
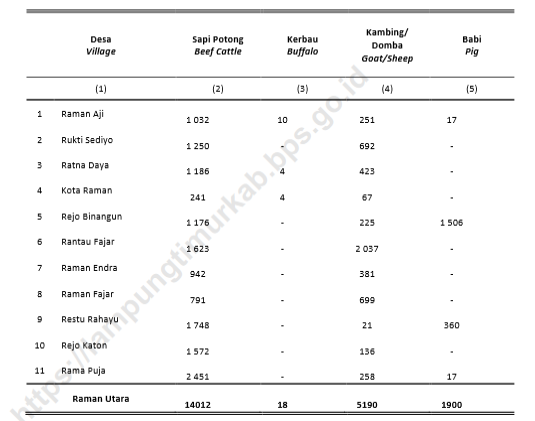
**Conditions of Climate**

climate in Raman Utara District is included in the temperate climate type, with an average rainfall of 414 mm per year. The temperature conditions that occur range from 230C to 290C. Rainfall ranges from 2500-3000mm and the number of rainy days is between 99–3. 121 days per year.

**Condition of Demographic**

North Raman District has a population of 36,049 people consisting of 18,406 men and 17,643 women, with an area of ​​90.58 km2. The capital of North Raman District is located in Kota Raman Village. The area of ​​North Raman District includes 11 (eleven) villages, in table 1 it can be:

Table 1.Villages / Villages and Livestock Population in North Raman District



Source: BPS (2017)

In table 1, it can also be seen, **Rantau Fajar** is one of the villages that have a large enough ruminant population (beef cattle rank 4 and goats / sheep rank 1). This condition illustrates that the people in Rantau Fajar live quite close to livestock, so that it will be easier to accept the adoption of the technology package that will be provided by the implementation team.

the selection of areas to be partners in the development program of **Beef Cattle Center** located in **Rantau Fajar, Raman Utara District is very appropriate**, This condition is supported by the potential that the area has, be it livestock population, natural resources, and its socio-culture. The potential of Kampung Rantau Fajar, Raman Utara District, if it is not managed properly, it will not be able to provide optimal benefits for the community. This condition underlies the implementation team to carry out activities in Rantau Fajar Village, Raman Utara District.

**Partner Problems**

Based on the results of the situation analysis and discussion of concepts and problems between the University of Lampung, the Farmers' Group (Sido Dadi and Adi Jaya) and the head of Kampung Rantau Fajar, priority issues can be formulated in the Mitra Village Development Program, **namely the high cost of production facilities and infrastructure (feed), especially in the dry season**.

**Solutions**

Training and human resource development in improving the ability to cultivate cattle, especially beef cattle, the activities to be carried out are the introduction of superior forage and the Sorghum sp demonstration plot.

**The Method**

Method used is education to the community through

* Holding lectures on cultivation techniques of sorghum sp
* Holding lectures about the benefits of sorghum sp as food, animal feed and energy
* Demonstration of how to select good seeds for planting, planting, maintenance, harvesting, and post-harvest
* Hold discussions and questions and answers about the material that has been submitted
* Regular monitoring to the demonstration plot location.

**Results**

**Sorghum cultivation technique**

**Sorghum (*Sorghum bicolor*L)**not native to Indonesia, but originating from the area around the Niger river in Africa. The domestic sorghum from Ethiopia to Egypt is reported to have occurred around 3000 BC. In Indonesia sorghum has long been known by farmers, especially in Java, NTB and NTT. In Java, it is called Cantel and is often planted as an intercropping or intercropping plant. Sorghum cultivation in Indonesia is still very limited, even not so popular in the community. whereas sorghum has great potential to be cultivated and developed commercially because it has broad adaptability, high productivity, is resistant to pests and plant diseases and is more resistant to marginal conditions (drought, salinity and acid land).

The development of this type of food crop will be successful if it is accompanied by the application of a technology package that includes a simple cultivation and processing unit at the farmer level. The technology package is as follows:

**Tillage Soil**

Tillage for old sorghum with corn, that is, plowed once or twice, harrowed and then leveled. Soil that is ready for planting must be clean from karmic weeds, the growth phase of sorghum is rather slow, about 3-4 weeks so that at the beginning of the growth it is less able to compete against weeds. If necessary, make drainage channels.

**Planting**

1. Plant Populations

In general, sorghum is grown as a seta plant in upland rice, soybean or other secondary crops. When grown in monoculture the plant population per / hectare is around 100,000 - 150,000 plants. The recommended spacing is 75 X 25 cm or 75 X 20 cm with 2 plants per hole each. According to the research results, an increase in population above 150,000 plants / hectare still tends to increase hash although not very large.

1. Method of planting

When planting, seeds are planted 2 - 3 seeds per hole. Thinning into 2 perforated plants, carried out at the age of 2 weeks after planting. Embroidering can be done by seed or by transplanting old plants by means of rounds.

**Maintenance of plants**

1. Fertilization

Dosage

The main fertilizer needed for sorghum is nitrogen fertilizer with a dose of up to 90 kg of nitrogen or the same as 2 quintals of urea per hectare. The addition of PROS fertilizer as much as 45 kg or 1 quintal of TSP per hectare will provide a better hash. Fertilization with potassium is carried out at a dose of 30 kg K20 per / hectare.

When

Fertilizer N is given twice, namely 1/3 part of the planting time together with all fertilizers. P and K, and the remaining 2/3 of the portion is given at the age of 1 month after planting.

Method

All fertilizer is given by spreading it out in 1 cm deep arrays. For the first fertilization, the distance is 7 cm to the left and right of the row of plants, while the second fertilization is 15 cm.

1. Weeding and stocking.

At the beginning of the growth of sorghum, it is not able to compete with weeds, the karma must be cultivated so that the plant area when the plants are still young must be clean from weeds. The first weeding can be done when the sorghum plants are 10-15 days after planting. The second weeding is done together with the planting after the second fertilization. The filling is meant to strengthen the stem.

**Diseases and control method**

1. Main Diseases

**a. Colletortichum gramini colum (Ces.) GW WildSpot** (LeafDisease). This disease causes blotches on leaves with reddish or purple warmth and causes red rot on the stems where the inner tissues of the books water and change color. This disease spreads freely. Leaf spots cause the leaves to dry out, the karma grains become hollow, while red rot causes the stems to water and break. Immunity to both diseases is controlled by a single dominant gene. with other genes for disease setup.

**b. Helmithosporium turcicum Pass** (Blight's disease). This disease attacks sorghum extensively, especially in humid conditions. The attack of this disease causes reddish purple or brownish spots that eventually merge. Leaf blight can attack both nurseries and adult plants. The cultivars that are resistant are not yet known.

**c. Puccinia purpurea Cooke**, rust disease occurs widely in sorghum. but rarely causes serious loss. the growth karma of disease does not continue when the sorghum plant has reached maturity.

1. Main Pests

**a. Atherigona varia Soccata (Rond.)**(Sorghum Seed Fly). This pest is the main pest in the tropics. The eggs are laid on the young leaves of the seedlings and others burrow into the meristems of Much plants which eventually die. The principle of control is by planting in time (planting simultaneously) and planting cultivars that have the ability to heal wounds after being attacked.

**b. Prodenia Litura F.**(leaf caterpillar); Control by using insecticides with the recommended types and dosages.

**Harvest and Post Harvest**

1. Harvest

-The harvest  
Harvestis done by cutting the stalk ranging from 7.5 to 15 cm below the seed by using a sickle. The results of the trimmings are then tied with a size of about 20 Kg - 40 Kg each.  
  
-Time to harvest  
Sorghum is harvested when the seeds are considered to be fully ripe, usually 45 days after the ovules are formed.

1. Post Harvest  
   Drying Usually the drying is done by drying for 60 hours until the moisture content of the seeds reaches 10-12%. The criterion for determining the degree of dryness of seeds is usually biting the seeds. When it makes a sound, it means the seeds are dry. If it is a rainy day or high humidity, drying can be done by hanging the sorghum sticks over a fire in a room or over a kitchen fire.  
     
   -Traditional threshing beats

It is done with woodenand done on the floor or burlap sack. The beating is carried out continuously until the seeds come off. After that, a sieve is carried out to separate the dirt consisting of leaves, twigs, dust or other debris. A number of seeds are dropped from above with the intention that the dirt can separate from the seeds by blowing rocks

In order to achieve the best and efficient hash it is recommended to use a container to keep the beans clean, try to shed the seeds immediately after harvest to prevent attacks by rats and birds, and the moisture content should not be more than 10 - 12% to prevent mold growth.

-Storage

Simple storage at the farm level is by hanging the starting sorghum in the room above the kitchen fireplace. This method has a double function, namely to continue the drying process and fire smoke also functions as pest control during storage. However, the number of seeds that can be stored in this way is very limited. If the seeds are stored in a special storage room (warehouse), the height of the warehouse must be the same as the width so that moisture condensation in the warehouse does not easily arise. The walls of the warehouse should be made of dense material so that temperature changes that occur in the beans can be reduced. It is not recommended to store rooms made of iron, karma is very sensitive to changes in temperature. Before storing the seeds must be dry, clean and intact (not broken).

**Conclusion**

1. **Sorghum sp** can grow and produce well in Rantau Fajar Village, Raman Utara District, East Lampung Regency,
2. **Sorghum sp**  can be used by breeders as food and feed for ruminants.

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