

## Technical Guidance on The Integration of Cattle and Food Crops in Sindang Kasih Village, South Konawe District

Harapin Hafid<sup>1</sup>, Siti Hadrayanti Ananda<sup>2</sup>, La Ode Arfan Dedu<sup>3</sup>, La Ode M. Aslan<sup>4</sup>, Eko Harianto<sup>2</sup>, Andi Murlina Tasse<sup>1</sup>, Fadli Ma'mun Pancar<sup>1</sup>

<sup>1</sup>Department of Animal Science, Faculty of Animal Science, Halu Oleo University, Kendari, Indonesia.

<sup>2</sup>Department of Nutrition Science, STIKES Karya Kesehatan, Southeast Sulawesi, Kendari, Indonesia.

<sup>3</sup>Department of Agribusiness, Faculty of Agriculture, Halu Oleo University, Southeast Sulawesi, Kendari, Indonesia.

<sup>4</sup>Department of Aquaculture, Faculty of Fisheries and Marine Sciences, Halu Oleo University, Southeast Sulawesi, Kendari, Indonesia.

\*Corresponding Author: [harapin.hafid@uho.ac.id](mailto:harapin.hafid@uho.ac.id)

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### ABSTRACT

This technical guidance aims to provide understanding to cattle breeders regarding the benefits of integrating cattle and food crops in one area so that participants are motivated and encouraged to carry out integration between cattle and food crops. This technical guidance was implemented at Sindang Kasih Village, West Ranomeeto District. Implementation of technical guidance uses lecture and discussion methods. The tools and materials used are vehicles, cell phones, and laptops. In general, Cattle Farmers in Sindang Kasih Village already understand the integration of cattle and food crops and its benefits and are committed to implementing this integration as indicated by the ability of all participants to answer questions correctly at the end of the activity session (100%). The challenges and problems of beef cattle farming include maintenance and waste processing systems. Integrating livestock with food crops in Sindang Kasih Village has been implemented well. The livestock in Sindang Kasih needs to be further improved to become one of the breeding and fattening centers in Southeast Sulawesi.

**Keyword:** technical guidance, integration, cattle, food crops

### ABSTRAK

Bimbingan teknis ini bertujuan untuk memberikan pemahaman kepada peternak sapi mengenai keuntungan mengintegrasikan ternak sapi dan tanaman pangan pada satu kawasan agar peserta termotivasi dan terdorong untuk melaksanakan integrasi antara ternak sapi dan tanaman pangan. Pelaksanaan bimbingan teknis ini dilaksanakan di Desa Sindang Kasih, Kecamatan Ranomeeto Barat. Pelaksanaan bimbingan teknis menggunakan metode ceramah dan diskusi. Alat dan bahan yang digunakan adalah kendaraan, handphone dan laptop. Secara umum Peternak Sapi di Desa Sindang Kasih sudah memahami integrasi ternak sapi dan tanaman pangan serta keuntungannya dan berkomitmen untuk melaksanakan integrasi tersebut ditandai dengan kemampuan seluruh peserta menjawab pertanyaan dengan benar disesi akhir kegiatan (100%). Tantangan dan permasalahan peternakan sapi potong berupa sistem pemeliharaan dan pengolahan limbah. Sistem integrasi peternakan dengan tanaman pangan di Desa Sindang Kasih telah diterapkan dengan baik. Peternakan yang ada di Sindang Kasih perlu di tingkatkan lagi agar dapat menjadi salah satu pusat pembibitan maupun penggemukan di Sulawesi Tenggara.

**Keyword:** bimbingan teknis, integrasi, sapi, tanaman pangan



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## 1. Introduction

Beef cattle are one component of farming that plays a significant role in supporting the realization of rural agribusiness in supporting national meat self-sufficiency. The beef cattle population in South Konawe in 2022

will be 69,274 heads [1]. One of the sub-districts that contributes significantly to the cattle population is West Ranomeeto, with a total of 3,294 heads. Sindang Kasih is the second contributor to the highest population increase in West Ranomeeto District, following Jati Bali Village with 960 individuals. This population is expected to continue growing due to government support for programs aimed accelerating the increase in beef cattle population and reducing dependence on imports. These programs include designating locations for developing national agricultural areas as per Minister of Agriculture Decree Number: 830/Kpts/RC.040/12/2016 and the Special Effort for Mandatory Pregnancy of Beeding Cattle (UPSUS SIWAB) program, which has now been continued with the National Mainstay Commodity Buffalo Cattle (SIKOMANDAN) program. One of the areas designated for implementing this program is South Konawe Regency, which focuses on providing seed sources.

This increase is in line with waste produced from livestock, where this waste must be managed so that it does not pollute the environment around the livestock. Livestock waste can also be used as organic fertilizer for plants; apart from that, agricultural crop waste can also be used as animal feed. This activity of utilizing livestock waste and agricultural plants is known as the livestock crop integration system. According to [2] and [3], the integration of crops and livestock is part of the farming system, which consists of several subsystems, such as the subsystem of the farmer's household, land, crops, livestock, and others. These subsystems are integrated and interdependent with each other.

Apart from being breeders, most of the people of South Konawe Regency work as farmers, and many farmers even have food crops and cattle. Still, in the management of raising livestock and food crops, they seem to be separate and have no relationship, even though this could be an advantage if management integration were carried out. between cattle and food crops in one area [4].

So far, cattle breeders in Sindang Kasih Village, West Ranomeeto District, have not integrated cattle and food crops. Even if integration is carried out, it is still limited to the feed used because it is obtained from waste residues of harvested food crops such as sweet potato leaves, banana leaves, and so on. This is still rarely done. Farmers do not yet understand the importance of integration between cattle and food crops; apart from that, breeders also do not have the knowledge, information, and skills to carry out integration between cattle and food crops. This technical problem also causes the management and management of integration between cattle and food crops to not exist at all in the minds of breeders.

Based on the problems faced by breeders, several solutions are offered, including providing technical guidance on the benefits and procedures for integrating cattle and food crops.

## **2. Methods**

### *2.1. Place of activities*

This technical guidance was implemented at Sindang Kasih Village, West Ranomeeto District, South Konawe Regency, in the Gemah Ripa livestock group, which has 48 members.

### *2.2. Approach method*

The implementation of technical guidance utilizes lecture and discussion methods. This approach ensure that farmers understand the theoretical aspect of integrating cattle and food crops, including its benefits and management, enabling them to apply this knowledge in the field.

### *2.3. Tools and materials*

The tools and materials used are vehicles to get to the location, cellphones to document technical guidance activities, and laptops to store and display technical guidance materials.

### *2.4. Implementation Procedure*

The target audience in Sindang Kasih Village, Rano Meeto Subdistrict, Konawe Selatan District will engage in activities similar to those previously conducted by [5],[6],[7] which include:

a. Lecture/counseling/discussion

Food crop farmers and cattle breeders, youth, and other communities interested in the integration of cattle and food crop farming businesses as well as local village government elements were given lectures/counseling on the technology of integrating cattle farming with food crops.

b. Demonstrations and technical guidance follow the instructions in the form:

- selection of breeding stock for cattle,
- way of cultivation and maintenance,
- disease prevention and treatment of sick animals,
- waste management,
- processing rice straw and other agricultural waste into cattle feed.

### 2.5. Service method

To streamline the course of mentoring activities, the determination of guidance participants is based on the community of farmers (owners and carers) who have an interest in the activity. The number of participants is set around 48 people as a model that is expected to be able to apply and other community examples. Determination of the implementation schedule is determined based on the conditions (free time) of the participants.

In this activity, a SWOT analysis was carried out on the condition of farmer groups and the potential of natural resources in the location villages. So that a development strategy can be obtained based on optimizing existing strengths and opportunities and minimizing the risk of weaknesses and challenges which at any time could become obstacles.

## 3. Results and Discussion

### 3.1. Technical Guidance

According to [8], technical guidance involves training activities designed to improve participants' competence. This technical guidance was attended by the Gemah Ripah livestock group, consisting of 48 members, though about 30 members we present. This farmers group has land planted with food crops. Before starting the participants' technical guidance, a pre-test was first held to find out the participants' initial understanding regarding the integration of beef cattle and food crops. After a pre-test was held, technical guidance was held. Afterwards, a post-test was administered to evaluate the participants' final understanding after the training.



Figure 1. Implementation of technical guidance.

The pre-test and post-test results can be seen in Tables 1, 2, and 3 below:

Table 1. Participants' responses regarding knowing the integration of cattle and food crops.

Knowing the Integration of Cattle and Food Crops	Pre-tes		Post-tes	
	Person	%	Person	%
Yes	10	33,33	30	100
No	20	66,67	0	0
Total	30	100	30	100

Table 1 above shows that before the technical guidance, only 10 people, or around 33.33%, had heard of and knew about the integration of cattle and food crops, and 20 people, or 66.67%, had never heard of or knew about the integration of cattle and food crops. But after attending the technical guidance, 100% of participants know.

Table 2. Participants' responses regarding having implemented the integration of cattle and food crops.

Implementing the Integration of Cattle and Food Crops	Pre-tes		Post-tes	
	Person	%	Person	%
Yes	0	0	30	100
No	30	100	0	0
Total	30	100	30	100

Table 2 shows that before the technical guidance, no one had ever implemented the integration of cattle and food crops, and now all participants are willing to implement the integration of cattle and food crops.

Table 3. Participant responses regarding having participated in technical guidance on the integration of cattle and food crops.

Have Participated in Technical Guidance on the Integration of Cattle and Food Crops	Pre-tes		Post-tes	
	Person	%	Person	%
Yes	0	0	30	100
No	30	100	0	0
Total	30	100	30	100

Table 3 shows that before the technical guidance, none of the participants had ever taken technical guidance on the integration of cattle and food crops, whereas now all participants have taken this technical guidance.

### 3.2. Challenges and problems of beef cattle farming

#### 3.2.1. Waste treatment

The livestock group in Sindang Kasih village processes livestock waste mostly by simply drying feces, and only a small number of farmers process it into bokashi. The waste processing technology is still poorly adopted in this livestock group. The small adoption of waste technology can be caused by a lack of labor and the time required. This is by the opinion of [9] and [10], which states that the low adoption of waste processing technology may be due to technological difficulties such as the need for more labor and the need for more materials (such as bacteria and other organic materials). Also added by [10] and [3], waste processing practices, apart from being troublesome, can also be related to the complexity of the technology and farmers having almost no free time.

#### 3.2.2. Raising system

Sindang Kasih Village Farmers are breeders who have been accustomed to raising beef cattle for generations. According to the results of interviews with livestock groups, the general maintenance system used is a semi-intensive maintenance system. During the day, the cows are released into grazing fields or rice fields that have been harvested using a moving tie system. In the afternoon, the tentacles are moved to the cage, and in the morning, feed is prepared in the rearing cage. Before the cattle are directed to pasture, they are first given additional feed in the form of limited rice bran or tofu dregs.



Figure 2. Semi-intensive rearing system (cage and grazing).

### 3.3. Productivity levels of farmers and livestock groups

#### 3.3.1. Waste treatment

The livestock group in Sindang Kasih has implemented an integration system between livestock and agricultural and horticultural crops, where the crops are rice and corn, while the horticultural crops are mustard greens and celery. The integration between animal husbandry and agricultural and horticultural crops can be seen in Figure 3.



Figure 3. Integration between livestock and agricultural and horticultural crops.

The use of cattle dung can replace the use of inorganic fertilizers on agricultural and horticultural crops in Sindang Kasih, and livestock dung is no longer considered detrimental because it can be used as organic fertilizer. Apart from that, agricultural and horticultural plant waste is used as feed for beef cattle. Integrity practices carried out by livestock groups in Sindang Kasih can increase income because they reduce costs incurred in terms of animal feed as well as fertilizer for agricultural and horticultural crops. This is by the statement of [11], which states that the dependence of farming businesses on inorganic fertilizers (commercial), which are increasingly expensive and rare, can be reduced because organic fertilizer (compost) can be used as additional fertilizer and has the potential to increase the efficiency of maintenance costs for horticultural crops.

The presence of cow dung can reduce the cost of procuring fertilizer, which can also reduce production costs as well as preserve organic matter in the soil.

### 3.3.2. Breeding system

The breeding system applied to livestock groups is the artificial insemination (AI) breeding system, where the AI system in this livestock group has a success rate of up to 80% where failure is very small. The level of AI success can be one way to determine high levels of livestock productivity. The presence of an inseminator in the middle of the livestock group is one of the determining factors for the success of AI where control of AI activities is better. This is in line with the opinion of [12], where the success of the AI program is influenced by several things, including the female livestock itself, inseminator skills, timeliness of AI, heat detection, semen handling, and semen quality. [12] and [13], stated that the success of AI is very dependent on the time of insemination. For the cost of mating and raising cattle to be efficient, an inseminator is needed who is skilled and able to guide livestock owners so that they can detect it themselves correctly [12]. The IB officers in Sindang Kasih can be seen in Figure 4.



Figure 4. Sindang Kasih Village inseminator.

### 3.3.3. Disease control

Disease control measures carried out by livestock groups are prevention, namely always carrying out sanitation of the pens in the form of cleaning the pens from livestock waste. Apart from that, livestock groups have also made insurance for each livestock, where when the livestock dies, the insurance company will pay for the livestock that has died. With this livestock insurance system, it is hoped that farmers will not experience losses even if their livestock dies.

The action taken when livestock experiences health problems is that the farmer will immediately separate the sick livestock to another location or pen so that it does not affect other livestock. Then sick livestock are immediately treated by administering medicines so that they recover quickly. According to [14], the application of biosecurity is intended as an action to prevent the entry and spread of disease agents to vulnerable animal populations in a farm or area, for example, cleanliness of pens, equipment, and the environment, as well as separating new livestock from old livestock and sick livestock from healthy livestock. Cleanliness is the most important word and action in a livestock business, so there is a need for a disease prevention program [15].

Maximum performance in cows will be achieved if the cow is healthy, feels comfortable with its environment, and will give and experience weight gain according to target; however, breeders are required to understand the pests and diseases that often attack livestock and how to treat and prevent them [15].

### 3.3.4. Feed

The animal feed given to livestock groups in Sindang Kasih is forage in the form of elephant grass, odot grass, and agricultural waste. Using agricultural waste as feed, several farmers have carried out fermentation to improve feed quality and preserve feed so that it can be used during the dry season. The feed given to livestock is in the form of natural forage, superior forage to support livestock productivity needs. The forage

provided by breeders can be seen in Figure 5.



Figure 5. Prepare forage for cattle feed.

Feed improvements are often carried out on livestock that are difficult to get pregnant because officers provide knowledge and understanding to farmers about the benefits of good-quality feed. Apart from that, breeders also provide additional concentrate feed in the form of tofu dregs during the day only, then continue with providing forage. According to [15] and [16], giving concentrates is not recommended excessively; it is better not to give concentrates continuously but instead alternate them with giving forage.

#### 3.4. Potential and opportunities

The internal factors that are the biggest strength in this livestock business are the ever-increasing population, which will have an impact on increasing breeders' income, agricultural waste as a source of feed in the dry season and paying attention to the health of the surrounding environment, which can have an impact on paying attention to continuous cage cleanliness. The beef cattle farming business that has been carried out for generations or with experience will influence how much the farmer's ability and chances of success are in managing the beef cattle farming business. With the level of experience that breeders have, they can identify the quality of livestock through its external appearance and overcome problems that arise. Meanwhile, the biggest weakness in the beef cattle business is harvesting livestock waste during the rainy season.

The external factors that are the highest business opportunities for beef cattle in Sindang Kasih Village are that new breeds continue to develop, fertilizer marketing across districts, and the presence of PPL in the field are very much needed by farmers. A semi-intensive rearing system will increase farmers' opportunities to improve their businesses because it can increase income from an economic perspective. Meanwhile, the biggest threat facing beef cattle farming is the lack of skills possessed by farmers, so training related to beef cattle cultivation is needed.

#### 3.5. Development strategy

The development strategy for livestock groups in Sindang Kasih is:

##### a. SO Strategy (Strengths – Opportunities)

The strategy used to develop beef cattle groups in Sindang Kasih is to use strengths to take advantage of opportunities as follows:

- The beef cattle population continues to increase, supported by forage planting areas that are still supportive and fertilizer marketing is increasingly widespread.
- Farmers' income continues to be increased by processing livestock waste.

b. WO Strategy (Weakness-Opportunities)

The strategy used to minimize weaknesses to take advantage of opportunities is as follows:

- The ever-increasing population is hampered by a workforce that only relies on family members.
- Forage planting and waste processing practices require additional labor.

c. ST Strategy (Strengths-Threats)

The strategy used to use force to overcome threats is that the agricultural waste produced can be used as feed, but livestock businesses can compete with other farming businesses.

d. WT Strategy (Weakness-Threats)

The strategy carried out is to minimize weaknesses to avoid threats as follows, namely that business development requires good knowledge and also depends on the availability of labor.

#### **4. Conclusions**

The conclusions from this technical guidance activity are:

- a. Cattle breeders in Sindang Kasih Village already understand the integration of cattle and food crops and its benefits and are committed to implementing this integration.
- b. The challenges and problems of beef cattle farming include maintenance and waste processing systems.
- c. The system of integrating livestock with food crops in Sindang Kasih Village has been implemented well.
- d. The livestock in Sindang Kasih needs to be further improved so that it can become one of the breeding and fattening centers in Southeast Sulawesi.

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