



Analysis Of The Potential For Beef Cattle Development With An Extensive System In The Savana Fields Of Pekat District, Dompu Regency, West Nusa Tenggara Province

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ABSTRACT

The purpose of this study was to determine the profile of beef cattle farming in Padang Savana, Pekat District, Dompu Regency and also to analyze the potential for developing beef cattle farming in Padang Savana, Pekat District, Dompu Regency. The method used in this study was a qualitative descriptive approach. This research was implemented from September 1, 2024, to September 30, 2024 , taking place in Padang Savana, Pekat District, Dompu Regency . The results of this study show that the savannah in Pekat District, Dompu Regency has an area of 2000 hectares with a total population of 46,177 animals consisting of cattle, goats, horses, and buffalo spread across 12 villages. The total carrying capacity of the savannah in Pekat District, Dompu Regency is 154,922 animals. The SWOT analysis of the savannah in Pekat District, Dompu Regency consists of Strengths of the grazing fields which have a land area of 2000 hectares , the grazing fields which have the largest population in Dompu Regency , the grazing fields which have the largest contribution to the livestock economy in Dompu Regency. Weaknesses of the grazing fields which are only covered by grass with low nutritional content , the grazing fields which have a drinking water crisis for livestock in the dry season , suboptimal disease prevention management. Opportunities for planting superior grass seeds that have high nutritional content to meet the needs of livestock green fodder , procurement of irrigation systems or drilling water sources , sustainable grazing programs . Threats for attacks animal cruelty to livestock , less than optimal security , conversion of land into agricultural land, causing conflict between livestock breeders and farmers.

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1. Introduction

Beef is a source of animal protein needed to meet the community's nutritional needs. Demand for beef increases annually due to population growth. Furthermore, public awareness of dietary balance and the importance of animal protein contributes to the increase in beef consumption. However, this increase in demand is not matched by an increase in beef supply or production. According to data from the Central Statistics Agency (BPS), total beef demand in 2020 reached 686,270 tons, while beef production in 2020 reached 490,420 tons, meaning a further 195,850 tons are needed to meet demand.

Several factors contribute to Indonesia's suboptimal beef production, including suboptimal development, low human resources for livestock breeders, limited cattle breeding, poor distribution, and the lack of technology utilization in animal feed .

The potential of beef cattle as a superior commodity shows that the commodity has quite high growth and the contribution given is quite large , such as meat as the main product, manure as a source of organic fertilizer and biogas sources, skin as a material for making chips and so on. The beef cattle business development program can be achieved by utilizing resources optimally and appropriately which are adjusted to natural conditions, the socio-economic conditions of the local community, infrastructure, developing livestock technology and supporting institutions and policies (Prawira, 2015). An extensive husbandry system is one in which livestock are kept free-range in pastures. An extensive husbandry system is one in which livestock are kept free-range in pastures during their rearing (Hernowo, 2006).

The Pekat District Savanna Field, Dompu Regency, is a place for releasing beef cattle consisting of buffalo, cows, and horses for the Dompu and Bima communities in the Sumbawa island region. The condition of the Pekat District Savanna Field, Dompu Regency is suitable for releasing large livestock which has been known as the Pekat District Savanna Field, Dompu Regency. Beef cattle commodities in the Pekat District Savanna Field, Dompu Regency are a basic sector, meaning they can meet the needs of their own region as well as supply to other regions, both at the district, provincial, and national levels. The area of the Pekat District Savannah, Dompu Regency, covers 2,000 hectares. Meanwhile, the number of beef cattle in Pekat District, Dompu Regency, is 32,283 (BPS, Dompu Regency).

2. State of the Art

Beef cattle development in Indonesia is part of the national food security and meat self-sufficiency strategy. One potential but underdeveloped approach is the extensive system, a livestock rearing system that utilizes natural grazing as the primary feed source. This system is a rational choice in areas with extensive open land, such as savannas, including the Pekat District Savannah in Dompu Regency, West Nusa Tenggara (NTB).

Previous studies have shown that extensive systems offer advantages in terms of cost efficiency and environmental sustainability. For example, Susilawati (2018) stated that open grazing can reduce feed costs by up to 60% compared to intensive systems. Meanwhile, Putra et al. (2020) noted that extensively raised Bali and Sumbawa beef cattle exhibit a high degree of adaptation to dry tropical climate conditions. However, research gaps remain in aspects of geospatial-based regional potential mapping, forage quality dynamics throughout the seasons, and institutional governance of livestock farmers in open savanna areas such as Pekat, Dompu. Furthermore, most research focuses on intensive and semi-intensive systems, resulting in few studies examining the potential of savannas as a basis for sustainable smallholder livestock development.

The dense savannah has favorable ecological characteristics, such as natural vegetation (grass, tropical savanna), seasonal water access, and adapted local livestock populations. However, to date, there has been no integrated research identifying feed availability, natural , land carrying capacity , socio-economic structure of livestock breeders , and infrastructure support simultaneously in the context of extensive system development. Thus, this research is important to fill this gap and provide a scientific basis for local policy-making. in open land-based livestock management, as well as contributing to the achievement of national targets in the livestock sector.

3. Method

In this study, the author used a qualitative descriptive approach. Qualitative descriptive research is a problem formulation that guides the research to explore or portray the social situation to be studied comprehensively, broadly, and in-depth. According to Bogdan and Taylor, as quoted by Moleong (2007), a qualitative approach is a research procedure that...

produces descriptive data in the form of written or spoken words from people and observed behavior. Qualitative research focuses on social phenomena, giving voice to the feelings and perceptions of the participants under study.

This is based on the belief that knowledge is generated from social settings and that understanding social knowledge is a legitimate scientific process. This qualitative approach aims to obtain complete

information about "Analysis of the Potential for Beef Cattle Development with an Extensive System in the Savannah Field, Pekat District, Dompu Regency, West Nusa Tenggara Province". The time used by the author to conduct observations and interviews in collecting data related to the research that the author did was from November 1, 2024 to November 30, 2024. This research was conducted in the Savannah Field, Pekat District, Dompu Regency, West Nusa Tenggara Province.

Primary data is data obtained from the first source either from individuals or individuals. This data is obtained through interviews, documentation, observation and answers to questions given in the questionnaire to informants. Secondary data is data obtained from second or secondary sources. Secondary data sources do not provide data directly to data collectors, for example through documents or through other people. The secondary data sources in this study are the Dompu Regency Animal Husbandry Service and the UPT (Technical Implementation Unit) of Padang Savana, Dompu Regency as key informants. In this case, the researcher conducted direct observations in Padang Savana, Pekat District, Dompu Regency, West Nusa Tenggara Province to collect data on "Analysis of the Potential for Beef Cattle Development with an Extensive System in Padang Savana, Pekat District, Dompu Regency, West Nusa Tenggara Province". This method is used to interview informants to obtain data on "Analysis of the Potential for Beef Cattle Development with an Extensive System in Padang Savana, Pekat District, Dompu Regency, West Nusa Tenggara Province". Documentation is a record of information or objective conditions of the research location and the sample studied by recording all data directly from references that discuss the research object. Sugiono (2010) states that activities in qualitative data analysis are carried out interactively and continuously until complete, so that the data is saturated. Activities in data analysis include data *reduction*, data *display*, and *conclusion drawing/verification*.

Data display (*presentation of data*). After data reduction, the next step is data display, a method for presenting data in detail and institutionally after analysis in a prepared format. However, the data presented is still in a temporary form for the benefit of re-examination for further careful examination until its level of validity is obtained. Initial conclusions drawn are all temporary and will change if strong supporting evidence is not found in the next data collection stage. However, if the conclusions put forward in the initial stage are supported by valid and consistent evidence when the researcher returns to the field to collect data, then the conclusions put forward are credible conclusions and become the final conclusions. To test the validity of the data obtained at the research site, the data validity method is very important to use. The data validity used in this study is through the triangulation technique. This is a re-examination of previously obtained data with different techniques or sources than before. With this method, researchers will directly test the credibility of the data during the data collection process. The technique used in this study is source triangulation. This is a technique for checking the validity of data that has been obtained from a particular source, then comparing data obtained at different times and using different tools as shown in the following image. **This stage is the final stage of the author's research. This stage involves creating a written report summarizing the research findings. This report will be written in the form of a thesis.**

4. Results and Discussion

Results

Based on the research results in this study, data on the carrying capacity of beef cattle in the savannah of Pekat District, Dompu Regency can be seen in the table below:

Table 3. Capacity of Beef Cattle in Padang Savana, Pekat District

No	Name Village	Average Production Greens (ton)	Need BK%	Average Weight Cow (ST)	Average Duration Maintenance Beef cattle	BK Greens (%)	Capacity (ST)
1	Beringi Jaya	15	2.5%	375 kg	8 months	100/12	6,148
2	Calabai	28	2.5%	298 kg	7 months	100/12	7,962
3	Doropeti	14	2.5%	335 kg	7 months	100/12	4,475
4	Kadindi	21	2.5%	387 kg	7 months	100/12	7,755

5	West Kadindi	25	2.5%	390 kg	6 months	100/12	7,949
6	Carombo	26	2.5%	380 kg	8 months	100/12	10,755
7	Nangakara	14	2.5%	366 kg	8 months	100/12	5,578
8	Nangamiro	27	2.5%	315 kg	8 months	100/12	9,258
9	Concentrated	48	2.5%	400 kg	7 months	100/12	18,321
10	Sorry Nomo	23	2.5%	396 kg	8 months	100/12	9,915
11	Sorry Tatanga	80	2.5%	400 kg	12 months	100/12	52,326
12	Tambora	32	2.5%	370 kg	9 months	100/12	14,480
Average		29		367 kg	8 months		12,910
Total		353					154,922

Source: Dompu Regency Animal Husbandry Service 2023 (Processed)

Beringi Jaya village produces an average of 15 tons of forage divided by the dry matter requirement (DM) of 2.5% multiplied by the average body weight of cattle, which is 375 kg, then multiplied by the maintenance period, which is 8 months (244 days) and multiplied by 100 per 12 (DM forage) = 6,148 ST (capacity). Likewise, the calculation of the capacity for other villages results in a total capacity of Pekat District of 154,922 ST. A SWOT analysis is a strategic planning method used to evaluate the strengths, weaknesses, opportunities, and threats within a savanna. The following is a SWOT analysis table for the Savannah in Pekat District, Dompu Regency, West Nusa Tenggara Province:

<p>Strengths</p> <ul style="list-style-type: none"> • Shepherd's field which has a land area of 2000 hectares. • The pastoralist field which has the largest population in Dompu Regency. • The grazing fields that have the largest contribution to the livestock economy in Dompu Regency. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Grazing fields that only grow grass with low nutritional content. • Grazing fields have a crisis of drinking water for livestock in the dry season. • Suboptimal disease prevention management.
<p>Opportunities</p> <ul style="list-style-type: none"> • Planting superior grass seeds that have high nutritional content to meet the needs of livestock green fodder. • Procurement of irrigation systems or drilling water sources. • Sustainable grazing program. 	<p>Threats</p> <ul style="list-style-type: none"> • Wild animal attacks on livestock. • Security is less than optimal. • The conversion of land into agricultural land has caused conflict between livestock breeders and farmers.

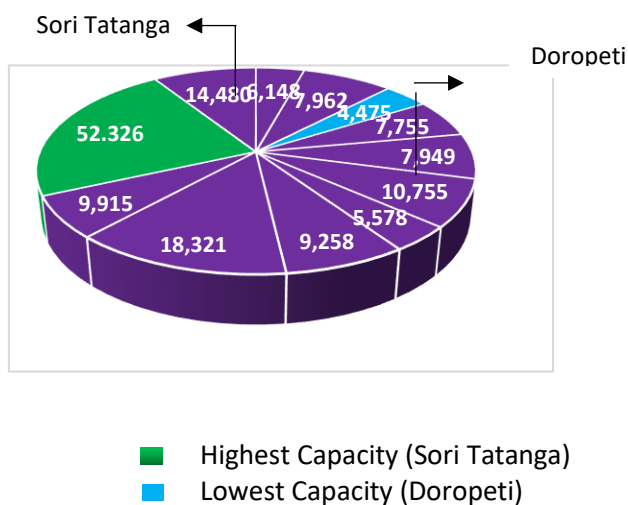
Discussion

Carrying capacity analysis is the ability of a grazing area to accommodate a number of livestock, so that the need for grass forage in 1 year for livestock feed is sufficiently available. In the rainy season, grass forage will be high production than in the dry season. Carrying capacity analysis can also be interpreted as the ability of a pasture to accommodate livestock or the number of livestock that can be maintained per unit area of pasture (Kencana, 2000). According to Susetyo (1980), cited by Wiryasmita (1985) that carrying capacity analysis is a

number that shows a livestock that can be grazed in a certain pasture area, for a certain time, without causing damage to the soil, vegetation or livestock, thus the carrying capacity depends on various factors such as soil conditions, fertilization, climate factors, forage species, and the type of livestock that are grazed or found in a pasture.

The grazing areas in Pekat District, Dompu Regency, are grazed by beef cattle, buffalo, and horses. The carrying capacity *reflects* the balance between available forage and the number of livestock grazed within the pasture per unit time. Determining grazing pressure based on livestock production is the most appropriate method for producing a more accurate picture of the optimum stocking *rate* of a pasture. The carrying capacity data for Pekat District, Dompu Regency, can be seen in the diagram below:

Diagram 2. Capacity of the Savanna Fields in Pekat District, Dompu Regency



From the diagram above, we can see that the highest carrying capacity is in Sori Tatanga Village with a total carrying capacity of 52,326 ST. While the lowest carrying capacity is in Doropeti Village which has a total carrying capacity of 4,475 ST. A grazing field is declared productive or potential if it has a minimum carrying capacity of 2,500 ST Reksohadioprojo (1981). Thus, the carrying capacity of the savanna grazing field in Pekat District, Dompu Regency is still considered sufficient for the technical standards of grazing fields, because the grazing field in Pekat District, Dompu Regency has a carrying capacity of 4,475 – 52,326 ST.

SWOT Analysis

1. Strengths

- a) Shepherd's field which has a land area of 2000 hectares.

The Pekat District savanna is a livestock release area with an area of 2000 hectares and a livestock population of 46,177. This demonstrates the potential of savannahs for livestock development. In 2017, the Ministry of Agriculture, through the Directorate General of Animal Husbandry, allocated a budget for the procurement of 1,000 local breeding cattle for a population multiplication program in West Nusa Tenggara (NTB) to achieve national meat self-sufficiency. The program has contributed three to five percent of the total national meat demand. In fact, NTB routinely sends 10,000 breeding cattle annually, as stipulated in the NTB Governor's decree.

- b) The pastoralist's field which has the largest population in Dompu Regency .

Data from the Dompu Regency BPS (2023) shows that Dompu Regency has a total population of 236,194 animals consisting of 8 sub-districts and Pekat sub-district

has the largest population, namely 46,177. This indicates that Pekat District has strengths in livestock development. The larger the population and land area an area has, the better its development.

- c) The grazing fields that have the largest contribution to the livestock economy in Dompu Regency .

Regional economic development can improve the welfare of the community by developing potential and addressing existing problems in the area so that added value is obtained which can increase economic growth. One of the supporters of positive economic development is the livestock sector , where the livestock sector plays a very important role in economic development where the results of livestock can increase regional income which can improve and improve the welfare of the community. The potential in Dompu Regency, especially in the livestock sector, holds the second highest contribution in the formation of GRDP (Gross Regional Domestic Product) where livestock production results increase every year .

2. Weaknesses

- a) Grazing fields that only grow grass with low nutritional content.

Feed is a source of nutrition needed by livestock. It is useful for growth and production. Feed categorized as forage (HMT) is forage that has sufficient nutritional value to meet the needs of livestock, especially ruminants (Udding et al., 2014). Thatch is a type of grass that grows abundantly around the savannas of Pekat District. According to Mudita , (2007) *Imperata cylindrica* (fresh mature) as animal feed contains crude fiber (CF), 48.2%, nitrogen-free extract (BETN), 5.4% crude protein (CP), 2-2.5% digestible protein and contains metabolic energy (ME) of 3728 Kcal/kg, so it is still quite good as animal feed. However, the very low palatability of *Imperata cylindrica* causes this type of grass to only be given when there is a shortage of other greens . This type of grass has a fairly high production, so a special strategy is needed, so that the feed material can be accepted by livestock and its nutritional value can be increased.

- b) Grazing fields have a crisis of drinking water for livestock.

One of the weaknesses of the savannah in Pekat District, Dompu Regency, is the shortage of drinking water sources. An interview with the Head of the Pekat District Technical Implementation Unit (UPT) revealed that the 2,000-hectare savannah area has only eight drinking water sources, consisting of drinking water tanks deliberately constructed by the management or sources directly from the river. This indicates that the savannah requires innovation to address the livestock's drinking water needs.

- c) Suboptimal disease prevention management.

Savannahs are areas where livestock are extensively released, meaning they have health drawbacks. According to a report from the Pekat District Technical Implementation Unit (UPT), disease prevention efforts, such as vaccination and vitamin injections, are not intensively implemented. This is due to the difficulty farmers have in managing the large number of livestock in the grazing area.

3. Opportunities

- a) Planting superior grass seeds that have high nutritional content to meet the needs of livestock green fodder.

The Pekat District savanna is a livestock release area with an area of 2000 hectares and a livestock population of 46,177. tail. However, this doesn't have

significant development value if it relies solely on natural resources like thatch for animal feed. One good strategy is to plant superior grasses with high nutritional content, such as elephant grass, setaria grass, odot grass, and others.

b) Procurement of irrigation systems or drilling water sources.

In 2017, the Dompu Regency Government continued to carry out various innovations, one of which was by building an irrigation system in a way that water sourced from reservoirs would be channeled using pipes/hoses that were hung on trees or supported using poles and at the end of the pipe a rotating sprinkler shell would be installed, so that it could reach all parts of the forage plants.

c) Sustainable grazing strategies.

Sustainable livestock grazing strategies aim to maintain a balance between livestock needs and environmental sustainability. Here are some strategies that can be applied:

1. Grazing Rotation

Periodically moving livestock to different grazing areas helps prevent excessive damage to one area and allows vegetation to recover.

2. Limited Grazing

Limit the number of livestock grazing in one area to prevent overgrazing.

3. Shepherding Sustainable

Implementing grazing techniques that resemble the natural patterns of herbivorous animals, such as grazing small herds and rapid rotation.

4. Feed Management

Providing additional feed to livestock, such as hay or concentrates, to reduce pressure on pasture.

5. Water Management

Provide adequate water sources for livestock to reduce damage to natural water sources.

6. Pest Control

Controlling pests that can damage vegetation and animal feed crops.

7. Land Restoration

Making soil restoration efforts, such as replanting damaged plants or using organic fertilizers.

By implementing these strategies, we can achieve a sustainable livestock grazing system, which is good for livestock, the environment, and society.

4. Threats

a) Wild animal attacks on livestock.

Wild animals pose a real threat to livestock in grazing areas. According to a report from the Pekat District Technical Implementation Unit (UPT), the most common wild animal threat in the savannah is attacks by feral dogs preying on young livestock or calves. This leaves farmers overwhelmed in guarding their livestock, especially at night.

b) Security is less than optimal.

Inadequate security in livestock grazing areas is a serious issue and requires serious attention. Here are some security threats:

1. Lack of awareness: People are less aware of the importance of security in grazing areas.

2. Lack of infrastructure: Lack of fences, lighting, and surveillance systems such as CCTV.
 3. Low resources: Limited funds and manpower to improve security in the area.
 4. Crime: Possibility of livestock theft, destruction of facilities, or other criminal acts.
 5. Natural disasters: Vulnerability to natural disasters such as floods, landslides, or fires that can harm livestock.
- c) The conversion of grazing land into agricultural land has caused conflict between livestock breeders and farmers.

The conversion of grazing land to agricultural land often leads to conflict between ranchers and farmers. Here are some of the threats posed by land conversion:

1. Lack of communication: Lack of communication and dialogue between ranchers and farmers regarding land use.
2. Unclear land boundaries: Unclear land boundaries between grazing areas and agricultural areas.
3. Differences in interests: Differences in interests between livestock breeders who need large areas of land for grazing and farmers who need land for farming.
4. Lack of regulation: Lack of clear rules and regulations regarding land use.

5. Conclusions

1. The profile of the Pekat District savanna is a livestock pasture with an area of 2000 hectares. hectares with a livestock population of 46,177 units consisting of cattle, goats, horses, and buffalo spread across 12 villages. Soritatanga Village is a livestock base area because it has the largest livestock population compared to other villages, namely 20,250 units. This shows that the savannah in Pekat District, Dompu Regency has potential for development because it is supported by the area's size and livestock population.
2. The carrying capacity of beef cattle in the savannah of Pekat District is 154,922 ST. The highest carrying capacity is in Sori Tatanga Village with a value of 52,326 ST. The lowest carrying capacity is in Doropeti Village with a total of 4,475 ST. According to Reksohadiprojo (1981), a grazing field is declared productive or potential if it has a minimum carrying capacity of 2,500 ST. Thus, the carrying capacity of the savannah grazing field in Pekat District is still considered sufficient to meet the technical standards of grazing fields, because the grazing field in Pekat District, Dompu Regency has a carrying capacity of 4,475 – 52,326 ST.
3. SWOT analysis of the savannah in Pekat District, Dompu Regency consists of:
 - a. Strengths
 1. Shepherd's field which has a land area of 2000 hectares.
 2. The pastoralist field which has the largest population in Dompu Regency.
 3. The grazing fields that have the largest contribution to the livestock economy in Dompu Regency.
 - b. Weaknesses
 1. Grazing fields that only grow grass with low nutritional content.
 2. Grazing fields have a crisis of drinking water for livestock in the dry season.
 3. Suboptimal disease prevention management.
 - c. Opportunities
 1. Planting superior grass seeds that have high nutritional content to meet the needs of livestock green fodder.
 2. Procurement of irrigation systems or drilling water sources.

3. Sustainable grazing program.
- d. Threats
 1. Wild animal attacks on livestock.
 2. Security is less than optimal.
 3. The conversion of land into agricultural land has caused conflict between livestock breeders and farmers.

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