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# ICTAFF 2018

**International Conference  
on Tropical Agrifood, Feed, and Fuel**  
Sustainability of Food, Feed, and Fuel Tropical Resources for Quality Future

**PROCEEDING**

**Samarinda, 13-14 November 2018  
MESRA Bussines Hotel**

# **PROCEEDING**

## **INTERNATIONAL CONFERENCE ON TROPICAL AGRIFOOD, FEED, AND FUEL (ICTAFF) : SUSTAINABILITY OF FOOD, FEED, AND FUEL TROPICAL RESOURCES FOR QUALITY FUTURE**

**Samarinda, 13-14 November 2018**



**Publisher**

**Department of Agricultural Products Technology  
Agriculture Faculty, Mulawarman University  
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## PROCEEDING

### International Conference on Tropical Agrifood, Feed and Fuel (ICTAFF) : Sustainability of Food, Feed, and Fuel Tropical Resources for Quality Future Samarinda, 14-15 November 2018

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## PREFACE

The greatest regards should be expressed only to God the Almighty, Allah SWT. We have finished the Proceeding book of International Conference on Tropical Agrifood, Feed, and Fuel (ICTAFF) after the conference which was held on 13-14 November 2018 in Mesra bussines Hotel Samarinda.

The conference takes "Sustainability of Tropical Food, Feed, and Fuel Tropical Resources for Quality Future" as the main theme. This international conference is aimed at resolving problems and bringing together scientists, researchers, professionals, and students from multidisciplinary agriculture-related fields to share the latest findings or ongoing research activities.

There are 6 sub themes emphasized in the ICTAFF 2018, including halal, safe, and healthy food, improving quality food and nutrition, security and sustainability food and agriculture, innovation in feed technology to increase animal production, sustainable and renewable fuels based on tropical resources, and empowering of agribusiness based on community.

We would like to thank all keynote speakers for their contributions to the Conference, they are Asst. Prof. Dr. Somsak Maneepong from Walailak University Thailand, Prof. Xuming Huang from South China Agricultural University, Prof. Irwandi Jaswir from International Islamic University Malaysia (IIUM), Prof. Ali Agus from Gadjah Mada University, Dr. Dadan Rohdiana from Research Institute of Tea and Cinchona Indonesia, and Widi Sunaryo, Ph.D from Mulawarman University Indonesia.

Finally, we would like to thanks all of the proceeding team who have dedicated their constant supports and countless time to bring these scratches into a book. The ICTAFF 2018 proceeding is a credit to a large group of people, and everyone should be proud of the outcome.

Editors

## Welcome Speech

### Welcome Note From ICTAFF 2018 Committee



*Assalamu'alaikum Warahmatullah Wabarakatuh*

I would like to express the greatest regard to the Almighty God, Allah Subhanallahi Wa Ta'ala, for the Successful of International Conference of Food, Feed and Fuel 2018. I also would like to welcome all the audiences to Samarinda Kota Tepian.

Food security is very important to strengthen and support sustainable development in agriculture. Food, not only from plant but also from animal, should be available for all resident of Indonesia. It is urgent to provide quality feed to support food animal development to fulfill people needs of nutrition.

We would like to report that about sixty participants are attending the conference. Researcher and lecturer from some universities and research institutions will disseminate their research in this conference. This number is beyond our expectation when we were arranging the conference.

This conference will present international speakers from Wailailak University, Associate Professor Somsak Maneepong, Prof. Irwandi Jaswir from International Islamic University of Malaysia, Prof Xuming Huang from South China Agricultural University, Prof Ali Agus from Gadjah Mada University, Dr. Dadan Rohdiana from Research Institute of Tea and Cinchona Indonesia, and last but not least, Widi Sunaryo, Ph.D from Mulawarman University.

The morning session is designed to keynote speeches and the afternoon session is for parallel sessions. The parallel sessions will be focused into six topics: Halal, safe and healthy food; Security and sustainability of food and agriculture; Innovation in feed technology to increase animal production; Sustainable and Renewable fuel based on tropical resources; and Empowering of agribusiness based on community.

Faculty of Agriculture as conference organizer would like to thank Agrivita, the Journal of Agricultural Science on an agreement for publication of the selected papers from ICTAFF participants, and special thank Dr. Haviludin for helping our communication to the agreement. I also would like to thank to STIPER Kutai Timur, especially Prof. Juraemi, for cooperation in organizing and special thanks to PT. Kaltim Prima Coal and PT. Pupuk Kaltim for strong support to this conference.

We hope you will enjoy the tropical climate as long as staying in Samarinda. Thank you

*Wassalamu'alaikum Warahmatullah Wabarakatuh*

Committee,

Aswita Emmawati  
Chairman

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## ANALYSIS OF BEEF CATTLE BUSINESS IN SWAMP LAND IN KECAMATAN KOTA BANGUN KABUPATEN KUTAI KARTANEGARA

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### ABSTRACT

Livestock development is currently constrained by land availability. Kota Bangun has widespread swamp land, utilization of swampland by local community as cattle grazing area due to lack of availability of dry land in the coastal river. This study aims to determine the extent of swamp land that is utilized and the profit of beef cattle farming in swamp land. The sources of data in this study are primary and secondary data, then they were analyzed and calculated the area of land used for beef cattle business, the amount of costs, revenue and profits obtained.

The swamp land used by the farmers as a whole for beef cattle business ranges from 5-10 ha for each farmer. The profit of beef cattle business in swamp land is Rp. 36,543,430, - / respondent/ year and R / C ratio obtained at 1.99. The value is greater than 1, so that economically business beef cattle in Kecamatan Kota Bangun feasible.

*Keywords: Swamp Land, Beef Cattle, Profit, R / C Ratio*

### INTRODUCTION

Land can not be used as feed for ruminant breeders as well as a roaming space. Kota Bangun is one of the districts located in the middle of Kutai Kartanegara Regency. Kota Bangun has a large swamp area, an area utilized by the local community as a livestock breeding area due to lack of land on the river plains. Most of the beef cattle are from Bali Cow and also some of the cross cattle.

Currently there is no profit found in the cattle business in the swamp area in Kecamatan Kota Bangun Kabupaten Kutai Kartanegara. Doing so requires research In Kecamatan Kota Bangun Kabupaten Kutai Kartanegara.

The purpose of this study were:

1. To know the area of swamp land that is used as a business of beef cattle.
2. To know the profit of farmers who use swamp land.

### MATERIALS AND METHODS

This study was conducted from July 2017 until September 2017 in Kecamatan Kota Bangun Kabupaten Kutai Kartanegara. The determination of research location used purposive sampling technique (criteria deliberately), criteria, and others; 1) the survey location has a large population of cattle, 2) the chosen site is a swampland located in an agricultural area called breeding ground for beef cattle. Kecamatan Kota Bangun has 21 villages, named 3 villages,

namely; a) Sebelimbangan Village, b) Liang Village, c) Liang Ulu Village.

The determination of the number of respondents is done by proportional random sampling method using Slovin formula according to Hoddi *et al.*, (2011). The number of samples used as the respondents were 34 respondents, because the non-homogeneous population is the number of different breeders can be taken proportional samples (proportional random sampling).

The sources of data in this study are primary and secondary data, then they were analyzed and calculated the area of land used for beef cattle business, the amount of costs, revenue and profits obtained.

### RESULTS AND DISCUSSION

Cattle are generally maintained cow Bali, because Bali cattle easily can adapt to the environment. This is in line with the opinion Mahdi *et al.*, (2013) states that Bali cattle easily adapt in a bad environment and not selective to food. In addition, Bali cows are quick to bear, benign, easy to control and have good digestibility of food.

#### An overview of the business of beef cattle farms in swamplands

Utilization of swamp land by farmers in Kecamatan Kota Bangun due to the geographical condition of existing land in the research site is

tidal swamp land, which experienced annual floods in every May or June, for 3-4 months.

When the river water recedes, the livestock will be maintained on an extensive system, i.e the cattle will be released freely and allowed to feed themselves on the grasslands or in places where there are many sources of feed. Livestock was given a guardrail because of the condition of wet grazing land and the availability of grass is still small and aimed for livestock not too far away when it will be released freely and still be known to exist. In these circumstances breeders are still routinely watching the livestock and when the pasture is completely dry, the farmers will release their livestock from the guardrail. When this situation happens, farmers only visit the cattle two to four times a week.

The maintenance of semi-intensive system of farmers in Kota Bangun District is done by the farmers when the river water condition starts to rise (overflow). At this time, the livestock that was previously released will be put into the stage cage (Kalang). In the cowshed they will be separated by sex. In other words, the bulls and cows are separated. Cattle that are still small and mature will also be separated unless the calf is still feeding from its mother. At this time breeders should perform routine activities including cleaning the cage, collecting dirt, providing green feed, giving additional feed and drinking water.

According to Suryana (2009), the cage can be made in the form of double or single, depending on the number of cows owned. In single-type cages, the placement of cows is done on one row or one row, while the double-type enclosure is placed on two opposite or opposite ranks. Between the two ranks a path is usually made for the road.

The types of cages used at the research site are Stage Cage (Kalang) and Floating Cage. The material enclosure on walls, floors and poles are made of wood. On the roof of the cage, the material is in the form of a tin roof or tarpaulin. Inside the cage barriers are made to separate the parent and child, male and female. At this time, the cows are in semi-intensive cage, in the stage cage the condition is more easily watched and noted. The treatment of livestock will be easy to do during the flood season because the livestock that had been released already in the cage.

#### Area of respondent's business

The land area becomes one of the factors that affect the livestock business. The area of land used by respondents for livestock business ranges from 0.5-2 ha. This land is used for cages and fences in livestock business. As for the land of

herding, breeders use 5-10 ha of land. In each village farmers generally use free land for their livestock business.

#### Production costs, revenues and revenues

Production costs for beef cattle breeding in swamp land include fixed costs and variable costs (Table 1)

**Table 1.** Details of production cost of beef cattle farm in swamp land in Kecamatan Kota Bangun Kabupaten Kutai Kartanegara Year 2017

Production Cost	Cost (Rp/Respondent/year)
<b>Fixed Cost</b>	
Cowshed Depreciation	485,294
Equipment Depreciation	103,787
<b>Variable Cost</b>	
Cost of Cattle in the beginning of the year	28,000,000
Straw Costs	250,000
Labor Costs	1,040,901
Aditif Costs	703,059
Health Costs	141,667
Operational Costs	6,386,765
<b>Total Production Cost</b>	<b>36,774,217</b>

Source: created from Primary Data, 2017

Fixed costs consist of the cost of depreciation of the pen and the cost of depreciation of the equipment. The cage is a floating cage and a stage cage. The materials used for the manufacture of cages mostly use wood for the wall, floor, and building framework. The roof of the cage uses a tin roof and tarpaulin. Deposits cost of Rp.485,294, - / respondent / year.

The equipment used in this beef cattle business is shovels, buckets, ropes, water pumps, and machetes. Depreciation cost of equipment is Rp.103,787, - / respondent / year.

Fixed costs are costs that are affected by production, including the value of livestock at the beginning of the year, the cost of straw purchases, labor costs, additional feed costs, health costs, and operational costs (transportation).

The value of livestock at the beginning of the year of beef cattle business is Rp.28,000,000,- / respondent/year.

Purchasing Straw is a cost incurred by farmers when the cattle are ready to be mated through Artificial Insemination technology. The cost incurred by a petenak for Artificial

Insemination is Rp.250,000, - / respondent / year. There are 4 respondents who do Artificial Insemination technology. Generally breeders use natural mating for productive female cows.

Labor costs incurred are the cost of feeding, maintenance costs and the cost of cleaning the cage. Labor costs are calculated using HOK with wages of Rp. 75,000, - / day for feeding and maintenance, while the wage for cleaning the cage is Rp.50,000, - / hari. Labor costs of Rp.1,040,901, - / respondent / year.

Additional feed given by breeders in the form of salt. The cost of the farmer for additional feed is Rp.703,059, - / respondent / year.

The cost of livestock health consists of the cost of livestock treatment when ill and the provision of vitamins performed by animal mantris. Costs incurred for animal health are Rp.141,667, - / respondent / year.

Operational costs are the costs incurred for livestock feed during the flood season. Operating expenses incurred amounting to Rp.6,386,765,-/respondent/year.

Revenue in beef cattle farms includes year-endcattleandlivestocksales.

**Table 2.** Revenue of Beef Cattle Farm in Kecamatan Kota Bangun Kabupaten Kutai Kartanegara Year 2017

No	Type of Revenue	Revenue (Rp/respondent/year)
1	Year End Cattle Value	50.294.118,-
2	Revenue	23.023.529,-
	Total	73.317.647,-

Source: created from Primary Data, 2017

Revenue from 34 respondents of beef cattle farming in the amount of Rp. 73.317.647/ respondent/year.

**Table 3.** Income of Beef Cattle Business in Kecamatan Kota Bangun Tahun 2017

No	Income Details	Income (Rp/respondent/year)
1	Revenue	73.317.647,-
2	Production Cost	36.774.217,-
3	Income	36.543.430,-

Source: created from Primary Data, 2017

The income of beef cattle farm business in swamp land in Kecamatan Kota Bangun is Rp.36,543,430, -.

## R / C Ratio

Value R / C Ratio of beef cattle business is 1.99, meaning that every addition of 1.00 expenses incurred by the breeders will generate revenue of 1.99. The value is greater than 1, so that economically business beef cattle in Kecamatan Kota Bangun feasible.

## CONCLUSION

From the results of the analysis and discussion above it can be concluded that:

1. Tidal swamp land area used by farmers for beef cattle business is 0.5-2 ha used for cage and fence in each responder while for joint land use 5-10 ha.
2. The amount of business income from beef cattle farming from 34 respondents in Kecamatan Kota Bangun Kutai Kartanegara Regency is Rp.36.543.430 / responden and R / C Ratio is ratio that is ratio between total revenue and total production cost from 34 respondent is equal to 1,99.

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