# The Analysis of Ruminant Cattle Potential as a Source of Meat Production in East Nusa Tenggara Regency

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*Abstract*

East Tenggara Timur (NTT) Province that was often called by cattle source mastering ruminant livestock commodity including: beef cattle was 803.450, dairy cows was 39 and buffalo was 133.122, totally was 936.611. In regarding to the land area that was managed by household including: not agricultural land area was 396,19 $m^2$, agricultural land area i.e. rice field land area was 1.228,38 $m^2$, not rice field land area was 7.616,50$m^2$, the land area totally was 8.844,88 $m^2$ (agricultural sense, 2013). Based on the ability, the research was conducted by the writer toward three regencies in NTT, those regency were: Kupang, Timur Tengah Selatan (TTS) and Belu. Belu regency has ruminant cattle that looked after of food land, horticultural and plantation. The result of this research were: (1) Math relation between food land (X) towards beef cows population (Y), it was obtained Y = 110, 23238792-1,7048432552 X and $R^2$ = 0,9838238238085. (P<0.01). (2) Math relation between plantation land area (X) towards beef cows population (Y) was Y = 116,59960539 – 2,4734723692 X and $R^2$ = 0,983288695 (P<0.01). (3) Math relation between horticultural land area (X) towards beef cows population (Y) was no significantly differ (P>0,05). (4) The buffalo *Location Quotient* (LQ) value was 6,291957 in Kupang regency, next to the buffalo LQ value was 4,94106 in TTS regency and the buffalo LQ value was 2,076242 in Belu regency. The dairy cows LQ value was 1.457694 found in TTS regency. This research result was able to be concluded that livestock population towards food land and plantation high reality positive relation ($R^2$ = 0,98  P<0,01). LQ value of buffalo cattle was continuously highest obtained in Kupang regency, TTS and Belu, thus it could become buffalo cattle central for other district in NTT province. As well as, in TTS regency it could be central of dairy cattle therefore it was larger than one.

*Keywords: LQ, Ruminant, Food land, Horticultural, Plantation.*

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## I. Introduction

Suryana (2000) stated that was inability livestock production in country to fill full domestic need was influenced by some limitation included: (a) technology ability, even more in production field as well post-harvest handling, (b) the ability of livestock capital, (c) the human resources quality and (d) food availability.

NTT province is located in east of Indonesia that has been the most ruminant livestock population, therefore, it was dubbed as cattle shed. NTT area might be suitable to implement Cattle Rice Integration System that is an effort production increasing of meat livestock, it merely increased effort food production through the activity of looking cows after at integrating food plantation area that supported national needs meat (Yusdja, dkk. 2004). According to Dr. Ronny Rahman Noor (2004) in IPB seminar of Environmental Livestock Development stated that SIPT activity was agriculture system that environmental friendly sustainable, to optimal resources utilizing, keep and increasing human healthy and protecting environment and producing an enough food for population. It means 2/3 of poor people looked after cattle in developing country and almost 60% included depending on system of cattle-plant. Agricultural sense result at NTT in 2013 the large of non-agriculture is 396,19 m$^2$, those are: rice field land area is 1.228,38 m$^2$, non-rice field area about 7.616,50 m$^2$, the house hold amount that efforts subsector of food plantation about 701.852 peoples, horticultural subsector about 426.970 peoples and plantation subsector is 581.242 peoples. The amount of cow and buffalo were noted about 936.611 i.e. 803.450 beef cattle, dairy cows are 39 and 133.122 of buffalo. NTT regency has the most of cow and buffalo located in TTS regency, there are 162.342 cattle. Whereas East Flores regency, Location Quotient Analysis (LQ) Hendayana (2003):

$$LQ: \frac{pi / pt}{Pi / Pt}$$

(3) Location Density Analysis

$$KW = \frac{\text{Beef cows population (ST)}}{\text{Location large (Km2)}}$$

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2

The criteria that is used i.e. a very solid category > 50, solid> 20 - 50, middle is 10 - 20 and seldom < 10.

This research was intended to know: (1) Math relation model of population towards ruminant cattle (2) Math relation model among food land types, horticultural and plantation land area (3) Relation math model towards cattle type to the agricultural land types and plantation land area (4) LQ value of ruminant cattle.

## II. Material and Method

### 2.1  Population and Sample

This research population was located in Kupang regency, TTS regency and Belu regency. The survey was conducted to know dairy beef potential, beef cattle and buffalo, measurement of food plant land, horticultural and plantation land area that analyzed based on critical studies and the existence of secondary data.

LQ (parameter value for determining the cattle population towards one location that shows the ability of population competence whether can be or not become cattle central)

$p_i$ = cattle population 'i' in regency or city level

$p_t$ = total population of cattle group in regency level

$P_i$ = cattle population 'i' in province level

$P_t$ = total population of cattle group in province level.

The criteria that is used is LQ>1 means 'i' cattle in one location mastering comparative superiority (its population need over in location itself, therefore, it can be shelled or exported to another location). LQ = 1 means 'i' cattle in one location there is no mastering comparative superiority (population is merely enough for consuming itself). LQ<1 means 'i' cattle in one location cannot fulfill their need therefore needs a supply from another location.

### 2.2  Location characteristic

#### a) Location spacious

NTT location consist of mainland about 47.349,90 km$^2$ and water is about 200.000 km$^2$. NTT province location comprehensively, the land area large non agriculture and agricultural land agriculture land Kupang regency 7661.55 km$^2$. The

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3

large of food land and horticultural is Kupang regency, whereas the largest plantation in Belu regency.

### b) High place

The most location of NTT province consist of mountain and hills, the high is 100-1000 m above the marine surface is about 73,13%, and the other location is bellowed 100 m and 1000 m above at the sea.

## 2.3 The method of collecting the data

The primary and secondary data were used in this research. The primary data is obtained by doing survey and observation, depth interviewing in field research, whereas, the secondary data is obtained by previously researches that related with conversion nominal of beef cows cattle population, dairy cows and buffalo in food land, horticultural, and plantation land area.

## 2.4 The analyzing of the data

(1) Math model analysis relation among ruminant cattle types, land area types and ruminant cattle towards agricultural land using Stef Wise Regression that is treated through Statistical Costat.

a) Math relation among food land (X) towards beef cows population (Y) is obtained: $Y = 110,23238792 - 1,7048432552 X$ and $R^2 = 0,9838238238085$. (P<0.01).

b) Math relation among plantation land (X) towards beef cows population (Y) are: $Y = 116,59960539 - 2,4734723692 X$ and $R^2 = 0,983288695$ (P<0.01).

c) Math relation among horticultural land area (X) towards beef cows population (Y) non real distinction (P>0,05). Determination coefficient $R^2$ is about 0,98 means that relation between free variable (X) (land area) towards bound variable (Y) (cattle population) is about 98% i.e. the factor of free variable (land area) is to influence bound variable (Y) (cattle) is about 98% and the other is 2%, it is caused by other factors.

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4

## III. Result and Discussion

### Data Collection

The collecting of the research data was conducted as secondary to the veterinary department of NTT province was chosen as sampling included: Kupang regency, TTS regency Belu regency, NTT province. *Tife Descriptive* research is applied in this study that used to analyze the real data.

**Table.1**

Ruminant cattle population at the three regencies in NTT province

| Regency | Beef Cow | Dairy Cow | Buffalo |
|---------|----------|-----------|---------|
| Kupang | 99.607 | 3 | 868 |
| TTS | 109.303 | 28 | 324 |
| Belu | 115.823 | 6 | 51 |

Agricultural sense: 2013.

**Table. 2**

Location spacious of agricultural land area at the three regencies in NTT province

| Regency | Food | Horticultural | Plantation |
|---------|------|---------------|------------|
| Kupang | 575,72 | 1.441,34 | 6.220,60 |
| TTS | 324,22 | 263,35 | 5.640,17 |
| Belu | 521,26 | 1.129,83 | 9.369,39 |

Agricultural sense 2013.

**Figure 1**

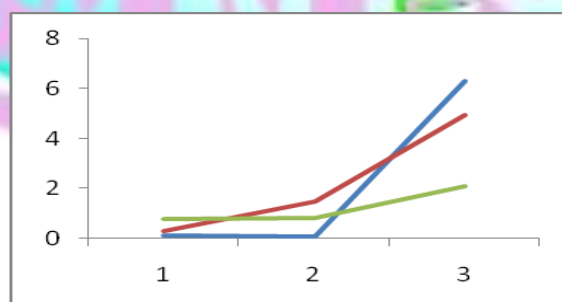LQ value of cattle population at the three regencies in NTT

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5

**Table 3**

Prediction of LQ value calculation (ruminant cattle in NTT province)

| Regency | Beef Cows | Dairy Cows | Buffalo |
|---|---|---|---|
| Kupang | 0.119632 | 0.074229 | 6.291957 |
| TTS | 0.276214 | 1.457694 | 4.941606 |
| Belu | 0.781257 | 0.833766 | 2.076242 |

Descriptions:

LQ = Location Quoting

LQ<1 cattle population is still less

LQ=1 cattle population is merely enough for its location

LQ>1 cattle population can be become cattle central for other location.

(1) Dairy cows in TTS regency is able to be become cattle central due to bigger than one (LQ>1). Math relation among food land (X) towards beef cows population (Y) it was obtained: $Y = 110{,}23238792 - 1{,}7048432552\,X$ and $R^2 = 0{,}9838238238085$ (P<0.01).

(2) Math relation between plantation land area (X) towards beef cows population (Y) are: $Y = 116{,}59960539 - 2{,}4734723692\,X$ and $R^2 = 0{,}983288695$ (P<0.01). Slope: 2,47347 Intercept: 116,59960 cattleman society life to the three regencies above.

The LQ lowest of beef cow population is in Kupang regency, as well as dairy cows LQ population is low in Kupang, however, the highest of buffalo population is in Kupang (LQ=6.291957). Next, it is followed by TTS regency (LQ=4.941606) and Belu regency of buffalo population is (LQ=2.07).

**Table. 4**

Calculation prediction of ruminant cattle location density in NTT province

| Regency | Beef cow | Dairy Cows | Buffalo |
|---|---|---|---|
| Kupang | 130.0023 | 5.08173 | 826.7297 |
| TTS | 142.6532 | 47.4295 | 308.5949 |
| Belu | 151.1667 | 10.1635 | 48.57513 |

Description:

The criteria that was used i.e. very solid category > 50, solid > 20 – 50, middle 10 – 20 and seldom < 10. Dairy cow's population in Belu regency is seldom category. Otherwise, the three regencies are categorized as from solid up to very solid about cattle population.

## IV. Conclusion

The livestock population towards food land and plantation is positive relation in a very real ($R^2 = 0,98$   P<0,01).  LQ value of the sustainable largest buffalo cattle is obtained in Kupang regency, TTS and Belu, therefore, there are can become buffalo cattle central for other district in NTT province. As well as, the regency that has been at least of cow and buffalo is 1.939. The most beef cow is in TTS regency, there are 161.990 cattle, as well as the most dairy cows is 28 cattle in TTS regency. Therefore, the sample is related in location are Kupang regency, TTS regency and Belu regency.

## Acknowledgement

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7