DIVERSITY AND GREEN TYPES CARRYING CAPACITY BALI BEEF IN OIL PALM PLANTATION IN KOLAKA DISTRICT

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ABSTRACT

This study aims to observe the diversity of species and forage dominance while analyzing the carrying capacity based on the area of forage produced in the area of oil palm plantations. The research sample was carried out by way of tapping which was carried out at 3 different locations namely Watubangga District, Tanggetada District and Polinggona District which were the basis for the development of oil palm plantations. The results showed that there were 24 forage species divided into 9 families, namely Gramineae, Cyperaceae, Polypodiceae, Rubiaceae, Verbenaceae, Aspleniaceae, Asteraceae, Mimosaceae, and Leguminaceae. As for types of forage that can be used as animal feed for 3 families, namely Gramineae, Cyperaceae, and Leguminacea. The results of the carrying capacity analysis show that oil palm plantations can only accommodate as many as 59.30 cattle of Bali cattle (ST).

Keywords: Forage Type, Carrying Capacity, Palm Oil, Bali Cattle

INTRODUCTION

Forage is a very basic fodder for the life and survival of ruminant livestock populations both large and small livestock. So that one in providing forage is the area of oil palm plantations. The types of plants in oil palm plantations vary between plantations. The oil palm plantations of Kolaka Regency have an area of 13,600.62 ha which is spread into 12 districts and the population of Bali cattle is 29,055 heads divided into two parts, male and female (Central Statistics Agency of Kolaka Regency, 2019). So that to meet the needs of livestock feed is impossible if it is not supported by the availability of abundant forage (Musrum et al, 2019). Some types of forage can be a source of forage for fodder, although not all plants are favored by livestock (Ginting, 2011). Forage is one of the determinants of the success of ruminant farms, so special attention needs to be paid to the availability and quality of forage in an area (Abdullah et al, 2013). One of the forage sources of animal feed is from oil palm plantations. Oil palm plantations have enormous potential for the development of ruminant farms with the integration of cattle oil (Sisriyenni and Soetopo, 2013). Some forages can be given to livestock such as grass, legume or local forage types in an area (Hamdan, 2012). The low productivity of local forages, among others, nutrient content, and limited development (Alviyani, 2013), so that the optimization of the potential of the region in providing sustainable forage throughout the year (Utomo and Widjaja, 2012).

RESEARCH METHODS

Location, Time, Data and Research Samples

This research took place for 3 months from October to December 2019 in the oil palm plantation of Kolaka Regency. The research location was chosen purposively and divided into 3 subdistricts namely Tanggetada sub-district, Watubangga sub-district, and Polinggona sub-district with the consideration that in the three sub-districts it was one of the bases for the development of oil palm plantations and Bali cattle farms.

Data collection

Collecting data using survey methods. Namely gathering information from a sample to represent the entire population. Respondents will be given several questions (questionnaire). The data in this study are primary data and secondary data by research needs. Primary data
is used to identify the types of forages found in oil palm plantations. Meanwhile, secondary data was obtained from BPS, Agriculture, Animal Husbandry and other related institutions.

**Population and Research Samples**

The population of this research is all areas of oil palm plantations in Kolaka Regency. The sample in this study was oil palm plantations spread across three districts namely Tanggetada District, Watubangga District and Polinggona District which are directly adjacent to the oil palm plantation area in Kolaka Regency.

**Data analysis**

Data analysis techniques used in this study include:

- **Vegetation analysis**, carried out by the quadrant method to get the composition of the type and structure of vegetation. The selected land area is 10% or 10 ha and divided into 5 blocks that represent various land conditions. Observation sampling in each block based on the number of cultivated land plots, plant age and types of plants in each plot, the plot used is 1 x 1 m.

- **SDR (Summed Dominant Ratio) Analysis**, the parameters observed were: Absolute Density, Nisbi Density, Absolute Frequency, Nisbi Frequency, and Moenadir Significance (Moenadir, 1993). With the following formula:

  - Relative density: \( \frac{\text{Absolute density of weed species}}{\text{Absolute density of all species}} \times 100 \)
  - Relative dominance: \( \frac{\text{Absolute dominance value of weed species}}{\text{Total absolute dominance value of all species}} \times 100 \)
  - Relative frequency: \( \frac{\text{Absolute frequency value of weed species}}{\text{Total absolute frequency value of all species}} \times 100 \)

- **Carrying capacity analysis**, the calculation for the analysis of the capacity of forage that in the calculation of carrying capacity always considers the value of PUF (Proper Use Factor) so that natural grass as much as 60% and *Imperata cylindrica* as 10% and forest 40% of intercropping plants are plants that are interrupted plantation crops such as cashew, coffee, cocoa, deep coconut and so on. Intercrop production as much as 20% grassland production 20% X 6,178 = 1,235.6 kg / ha / year (Naifu et al, 2017).

**RESULTS AND DISCUSSION**

**Area and Productivity of Oil Palm Plantation in Kolaka Regency**

Oil palm plants have many uses. The results of this plant can be used in food, textiles (lubricants), cosmetics, pharmaceuticals, and biodiesel. Besides, waste from palm oil mills such as coir, shells and oil palm empty fruit bunches can also be used as fuel and fertilizer (Fauzi et al, 2008). Palm oil (*Elaeis guineensis* Jacq.) Palmae is a source of vegetable oil. The potential of oil palm in Indonesia is very large, the spread of oil palm plantations in Indonesia is now growing in 22 provinces. The area of oil palm plantations in Indonesia continues to increase from year to year (Directorate General of Plantations, 2010). Meanwhile, plantations in Southeast Sulawesi, especially in Kolaka District, have oil palm plantations spread across several sub-districts. For more details on the extent and productivity of oil palm plantations in Kolaka Regency are presented in Table 1.

**Table 1. Area and productivity of oil palm plantations in Kolaka Regency**

<table>
<thead>
<tr>
<th>No</th>
<th>Sub-district</th>
<th>Immature Plants (TBM)</th>
<th>Producing Plants TM</th>
<th>Plants do not produce (TTM)</th>
<th>AMOUNT</th>
<th>Production (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Watubangga</td>
<td>94.50</td>
<td>320.00</td>
<td>-</td>
<td>414.50</td>
<td>231.520</td>
</tr>
<tr>
<td>2</td>
<td>Tanggetada</td>
<td>696.50</td>
<td>821.50</td>
<td>-</td>
<td>518.00</td>
<td>101.222</td>
</tr>
<tr>
<td>3</td>
<td>Toari</td>
<td>325.00</td>
<td>-</td>
<td>-</td>
<td>325.00</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Polinggona</td>
<td>175.50</td>
<td>1.50</td>
<td>-</td>
<td>177.00</td>
<td>267</td>
</tr>
<tr>
<td>5</td>
<td>Pomalaa</td>
<td>102.90</td>
<td>3.50</td>
<td>-</td>
<td>106.40</td>
<td>1.399</td>
</tr>
<tr>
<td>6</td>
<td>Wundulako</td>
<td>461.40</td>
<td>523.00</td>
<td>9.05</td>
<td>993.45</td>
<td>18.275</td>
</tr>
<tr>
<td>7</td>
<td>Baula</td>
<td>226.75</td>
<td>504.75</td>
<td>4.50</td>
<td>736.00</td>
<td>164.750</td>
</tr>
<tr>
<td>8</td>
<td>Kolaka</td>
<td>425.00</td>
<td>922.50</td>
<td>-</td>
<td>134.70</td>
<td>223.372</td>
</tr>
<tr>
<td>9</td>
<td>Latambaga</td>
<td>881.17</td>
<td>2210.83</td>
<td>-</td>
<td>309.20</td>
<td>1.826.600</td>
</tr>
<tr>
<td>10</td>
<td>Samaturu</td>
<td>463.62</td>
<td>1474.98</td>
<td>18.82</td>
<td>195.74</td>
<td>1.250.000</td>
</tr>
<tr>
<td>11</td>
<td>Wolo</td>
<td>208.35</td>
<td>1240.00</td>
<td>-</td>
<td>144.83</td>
<td>1.068.000</td>
</tr>
<tr>
<td>12</td>
<td>Iwoimendaa</td>
<td>216.00</td>
<td>1269.00</td>
<td>-</td>
<td>148.50</td>
<td>1.062.000</td>
</tr>
</tbody>
</table>
Data Table 1. Shows that the area of oil palm plantations in Kolaka Regency has a different area as happened in the research location, Tanggetada District has a plantation area of 518.00 ha with a total production of 101,222 kg. While for Watubangga District it has 414.50 ha of oil palm plantations with a total production of 231,520 kg and for Polinggona District it has an area of 177.00 ha with productivity in 267 kg in the year. Seeing the area of oil palm plantations in the three districts allows the area to provide various types of forages that can be used as animal feed.

Bali Cow Population in Kolaka Regency

Livestock development strategy is an area development based on superior livestock commodities, breeder farmer institutions, increasing business and livestock industry, as well as optimizing the use and safeguarding of the protection of local natural resources, developing appropriate and environmentally friendly technologies (Pambudy and Sudardjat, 2000). In improving human resources, especially animal husbandry can be done through coaching in the form of counseling, training, and other ways that can improve the knowledge and skills of farmers (Hidayati, 2009). According to Sumanto and Juarini (2004), identifying an area of animal husbandry development is carried out through a system approach, which is an approach that is integrated and intact in placing the elements that play a role and process, then support towards the mission of animal husbandry development. Analysis of the potential carrying capacity of the region for animal husbandry development is the characterization of animal husbandry components in the process of animal husbandry development strategies for national development (Saili et al, 2017). The population of Bali cattle in Kolaka Regency has a diverse population spread into 12 districts. For more details, presented in Table 2.

Data Table 2. Shows that the highest population of Bali cattle is in Watubangga District with a total population of 1,766 male cattle and 6,56 female cattle. While Tanggetada District has a livestock population which is divided into two types namely 624 male and 1,714 female and Polinggona District has 1,050 male cattle and 2,384 female. Based on the results of the description above shows that for the study sites contained in the three districts, Watubangga District which has the largest...
population of Bali cattle with a total of 8,522 head of cattle.

Types of Vegetation and Green Vegetables in Oil Palm Plantations

Vegetation types on oil palm plantations in Kolaka Regency are divided into 9 families and 24 species that spread in the plantation area, in addition to the 24 species spread, only 3 species can be consumed directly by Bali cattle, namely the family Gramineae, Cyperaceae and Leguminaceae. The density of vegetation on oil palm plantations which are the study sites in Kolaka Regency is presented in Table 3.

Table 3. Domination of vegetation and forage

<table>
<thead>
<tr>
<th>Latin language</th>
<th>Types of Weed Oil Palm Plantations</th>
<th>Block 1 (10 ha)</th>
<th>Block 2 (10 ha)</th>
<th>Block 3 (10 ha)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gramineae</td>
<td>Echinochloa Indica (L.) Gaertn</td>
<td>16</td>
<td>19</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Axonopus Compresus (SW.) P. Beauv.</td>
<td>13</td>
<td>11</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Brachiaria Matica (Forsk.) Stapf</td>
<td>26</td>
<td>0</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Imperata Cylindrical</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Ischaemum Muticum (L.)</td>
<td>14</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Cyrtococcum Accrenzens</td>
<td>19</td>
<td>27</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Digitaria Ciliaris</td>
<td>17</td>
<td>0</td>
<td>26</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Ischaemum Timorense Canth</td>
<td>0</td>
<td>18</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pennisetum Purpureum Schumach</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Cyperaceae

|               | Cyperus Rotundus L.               | 21              | 0               | 4               | 7     | 0               | 0   | 6               | 7    | 0   | 1   | 0   | 1   | 0   | 0   | 46    | 47  |
|               | Scleria Sumatrensis               | 2               | 16              | 0               | 0     | 1               | 2   | 0               | 0    | 4   | 0   | 2   | 0   | 0   | 0   | 3     | 30  |
|               | Cyperus Distans                   | 0               | 0               | 3               | 0     | 0               | 0   | 0               | 0    | 4   | 7   | 6   | 0   | 4   | 0   | 1     | 25   |
|               | Cyperus Klyngia                   | 0               | 3               | 9               | 4     | 16              | 1   | 7               | 1    | 0   | 4   | 6   | 0   | 2   | 1   | 6     | 60   |

Polypodiaceae

|               | Davilla Denticulata               | 2               | 0               | 0               | 9     | 0               | 0   | 0               | 1    | 0   | 0   | 0   | 0   | 0   | 0   | 0     | 12   |

Rubiacae

|               | Rorera Lantulifolia (Aubl.) K. Schum | 6               | 5               | 16              | 0     | 0               | 0   | 9               | 0    | 3   | 3   | 0   | 1   | 4   | 0   | 0     | 47   |

Verbenaceae

|               | Stachyderpheta Indica Vahl        | 0               | 0               | 2               | 0     | 14              | 0   | 0               | 0    | 0   | 0   | 0   | 1   | 0   | 4   | 0     | 22   |

Aspleniaceae

|               | Asplenium Platynuron              | 0               | 2               | 0               | 0     | 0               | 4   | 0               | 9    | 0   | 1   | 0   | 0   | 0   | 0   | 0     | 16   |

Asteraceae

|               | Ageratum Conyzoides               | 0               | 0               | 6               | 0     | 13              | 0   | 2               | 9    | 1   | 0   | 0   | 1   | 0   | 0   | 0     | 32   |
|               | Chromolaena Odorata. L.          | 11              | 6               | 3               | 0     | 2               | 1   | 0               | 1    | 1   | 0   | 0   | 0   | 0   | 0   | 1     | 26   |
|               | Clidemia Hirta (L.) D. Don        | 23              | 0               | 0               | 0     | 0               | 1   | 4               | 0    | 0   | 0   | 3   | 0   | 0   | 3   | 0     | 34   |

Mimosaceae

|               | Mimosa Pudica Linn                | 9               | 0               | 15              | 0     | 0               | 0   | 0               | 4    | 0   | 0   | 2   | 0   | 2   | 0   | 3     | 35   |

Leguminaceae

|               | Calopogonium Mucunoides           | 34              | 11              | 18              | 0     | 0               | 0   | 2               | 0    | 1   | 0   | 0   | 1   | 0   | 0   | 4     | 0    | 71   |
|               | Alysicarpus Vaginatis (L.) DC     | 22              | 0               | 6               | 3     | 32              | 5   | 4               | 16   | 2   | 0   | 1   | 7   | 0   | 4   | 0     | 103  |
|               | Desmodium Triflorum (L.) DC       | 13              | 0               | 2               | 22    | 1               | 5   | 0               | 4    | 1   | 0   | 2   | 0   | 6   | 0   | 0     | 56   |

Source: Results of Primary Data Analysis, 2019

Data Table 3. Shows that the species of Axonopus Compresus (SW.) P. Beauv has the highest dominance of vegetation among all types of vegetation and forages found at the

\[ \text{Ind. J. Anim. Agric. Sci., 1(1) :48-55, 2019} \]
study site. Then for the species *Alysicarpus Vaginalis* (L.) DC has the second-highest density value after the species *Axonopus Compressus* (SW.) P. Beauv. This shows that the dominance of the two forages was more than the other species. So that the use as animal feed is quite potential because weeds are plants that disturb or harm human interests (Sembodo, 2010). Types of weeds include grass weeds, pitched weeds and broadleaf weeds. Some types of weeds that live on oil palm plantations are *Cylindrical Imperata, Cynodon dactylon, Ischaemum timorence, Mimosa pudica* (daughter of shame), *Borreria alata, Ageratum conyzoides*, and *Cyperus rotundus* (Tjokrowardojo and Djauhariya, 2005).

**Summed Dominance Ratio (SDR) Vegetation and Forage Types**

The SDR (Summed Dominance Ratio) value indicates the dominance of a weed that grows in oil palm plantations at the study site. If the SDR value of a weed is high, then the dominance of the weed is high. Vice versa, if the SDR value of a weed is low, then its dominance is low. For more details, it can be presented in Table 4.

<table>
<thead>
<tr>
<th>Table 4. Summed Dominance Ratio (SDR) at the Research Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Latin language</strong></td>
</tr>
<tr>
<td><strong>Vegetation and forage types</strong></td>
</tr>
<tr>
<td><strong>Gramineae</strong></td>
</tr>
<tr>
<td>Eleusine Indica (L.) Gaertn</td>
</tr>
<tr>
<td>Axonopus Compressus (SW.) P. Beauv.</td>
</tr>
<tr>
<td>Brachiaria Mutica (Forsk.) Stapf</td>
</tr>
<tr>
<td>Imperata Cylindrical</td>
</tr>
<tr>
<td>Ischaemum Muticum (L.)</td>
</tr>
<tr>
<td>Cyrtococcum Accrenscens</td>
</tr>
<tr>
<td>Digitaria Ciliariis</td>
</tr>
<tr>
<td>Ischaemum Timorence Kunth</td>
</tr>
<tr>
<td>Pennisetum Purpureum Schumach</td>
</tr>
<tr>
<td><strong>Cyperaceae</strong></td>
</tr>
<tr>
<td>Cyperus Rotundus L</td>
</tr>
<tr>
<td>Scleria Sumatrensis</td>
</tr>
<tr>
<td>Cyperus Distans</td>
</tr>
<tr>
<td>Cyperus Kylingia</td>
</tr>
<tr>
<td><strong>Polypodiaceae</strong></td>
</tr>
<tr>
<td>Davilia Denticulata</td>
</tr>
<tr>
<td><strong>Rubiacaceae</strong></td>
</tr>
<tr>
<td>Borreria Latifolia (Aubl.) K. Schum</td>
</tr>
<tr>
<td><strong>Verbenaceae</strong></td>
</tr>
<tr>
<td>Stachytarpheta Indica Vahl</td>
</tr>
<tr>
<td><strong>Aspleniaceae</strong></td>
</tr>
<tr>
<td>Asplenium Platyneuron</td>
</tr>
<tr>
<td><strong>Asteraceae</strong></td>
</tr>
<tr>
<td>Ageratum Conyzoides</td>
</tr>
<tr>
<td>Chromolaena Odorata. L</td>
</tr>
<tr>
<td>Clidemia Hirta (L) D. Don</td>
</tr>
<tr>
<td><strong>Mimosaceae</strong></td>
</tr>
<tr>
<td>Mimosa Pudica Linn</td>
</tr>
<tr>
<td><strong>Leguminaceae</strong></td>
</tr>
<tr>
<td>Calopogonium Macunoides</td>
</tr>
<tr>
<td>Alysicarpus Vaginalis (L.) DC</td>
</tr>
<tr>
<td>Desmodium Triflorum (L.) DC</td>
</tr>
<tr>
<td><strong>Total SDR</strong></td>
</tr>
</tbody>
</table>

Source: Results of Primary Data Analysis, 2019

The data in Table 4. shows that the area of weed domination in the oil palm plantations that became the study location shows different values based on the SDR (Summed Dominance Ratio) value as in block 1 has an SDR value of 62.92%, while the SDR value in block 2 is 66.07% and for the SDR value in block 3 it is 76%. This indicates that the SDR value of
block 3 has a higher amount of forage dominance than the other two blocks.

**Extensive Harvesting of animal feed**

The extent of harvesting forage species at the study site is intended to be able to see the amount that can be used as animal feed. At the research location, the amount of forage harvesting was divided into 3 blocks or sections which were then calculated based on the area of oil palm plantations at the study sites namely Watubangga District, Tanggetada District, and Polinggona District for more details presented in Table 5

Table 5. Area of harvesting forage species

<table>
<thead>
<tr>
<th>Species Hijaun</th>
<th>Block 1 (Watubangga)</th>
<th>Block 2 (Tanggetada)</th>
<th>Block 3 (Polinggona)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SDR (Ha)</td>
<td>Luas (Ha)</td>
<td>Luas panen (%)</td>
</tr>
<tr>
<td>Eleusine indica (L) Gaertn</td>
<td>8,49</td>
<td>414,5</td>
<td>35,20</td>
</tr>
<tr>
<td>Axonopus compressus (SW) P. Beauv.</td>
<td>4,05</td>
<td>414,5</td>
<td>16,77</td>
</tr>
<tr>
<td>Brachiaria mutica (Forsk.) Stapf</td>
<td>2,88</td>
<td>414,5</td>
<td>11,94</td>
</tr>
<tr>
<td>Ischaemum muticum (L)</td>
<td>3,12</td>
<td>414,5</td>
<td>12,91</td>
</tr>
<tr>
<td>Cyrtococcum acerencens</td>
<td>2,18</td>
<td>414,5</td>
<td>9,04</td>
</tr>
<tr>
<td>Digitaria Ciliariis</td>
<td>3,89</td>
<td>414,5</td>
<td>16,14</td>
</tr>
<tr>
<td>Ischaemum timorense kunth</td>
<td>4,91</td>
<td>414,5</td>
<td>20,34</td>
</tr>
<tr>
<td>Pennisetum purpureum Schumach</td>
<td>2,10</td>
<td>414,5</td>
<td>8,72</td>
</tr>
<tr>
<td>Imperata cylindrical</td>
<td>0,62</td>
<td>414,5</td>
<td>2,58</td>
</tr>
<tr>
<td>Cyperus rotundus L.</td>
<td>2,49</td>
<td>414,5</td>
<td>10,33</td>
</tr>
<tr>
<td>Cyperus kyllingia</td>
<td>2,49</td>
<td>414,5</td>
<td>10,33</td>
</tr>
<tr>
<td>Alysicarpus vaginalis (L.) DC.</td>
<td>4,91</td>
<td>414,5</td>
<td>20,34</td>
</tr>
<tr>
<td>Dismodium triflorum (L.) DC.</td>
<td>2,96</td>
<td>414,5</td>
<td>12,27</td>
</tr>
<tr>
<td>Total luas pemanenan jenis hijauan</td>
<td>45,09</td>
<td>186,91</td>
<td>49,29</td>
</tr>
</tbody>
</table>

Source: Results of Primary Data Analysis, 2019

Based on the calculation of the amount of harvest in table 5 shows that for the amount of harvesting of forage types in oil palm plantations in Watubangga District has a forage harvest area of 186.91 ha from the area of oil palm plantations of 414.50 ha. This shows a difference in the location of oil palm plantations in Tanggetada District which has an area of forage harvesting area of 255.33 ha from the total area of 518.00 ha of oil palm plantations so it is seen that among the three districts that have oil palm plantations in Tanggetada District which has the widest harvesting for various types of forage fodder because for Polinggona District it has a harvesting area of 105.18 ha with an area of 177.00 ha of oil palm plantation.

**Animal carrying capacity**

Calculation of livestock carrying capacity is an analysis as well as being used to determine the ability of an area to accommodate Bali cattle and other types of livestock based on forage production. By looking at the amount of forage production contained in the research location contained in oil palm plantations to calculate the carrying capacity of livestock can be done. The capacity of Bali cattle in the research location shows different results according to the area of harvesting forage. For more details, the carrying capacity at the study site is presented in Table 6.

Table 6. Carrying capacity of livestock

<table>
<thead>
<tr>
<th>Species Forage</th>
<th>Harvested Area</th>
<th>Dry Weight Production (Kg/yr)</th>
<th>PUF</th>
<th>BK Available (Kg/Ha/yr)</th>
<th>Consumption BK/Ekor/yr</th>
<th>KTT (Ha)</th>
<th>KTT Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eleusine indica (L.) Gaertn</td>
<td>59,08</td>
<td>617,8</td>
<td>60%</td>
<td>370,68</td>
<td>3285</td>
<td>0,11</td>
<td>6,67</td>
</tr>
<tr>
<td>Axonopus compressus (SW) P. Beauv.</td>
<td>108,39</td>
<td>617,8</td>
<td>60%</td>
<td>370,68</td>
<td>3285</td>
<td>0,11</td>
<td>12,23</td>
</tr>
<tr>
<td>Brachiaria mutica (Forsk.) Stapf</td>
<td>22,94</td>
<td>617,8</td>
<td>60%</td>
<td>370,68</td>
<td>3285</td>
<td>0,11</td>
<td>2,59</td>
</tr>
<tr>
<td>Imperata cylindrical</td>
<td>26,43</td>
<td>617,8</td>
<td>10%</td>
<td>61,78</td>
<td>3285</td>
<td>0,02</td>
<td>0,50</td>
</tr>
<tr>
<td>Ischaemum muticum (L) Raeusch</td>
<td>22,78</td>
<td>617,8</td>
<td>60%</td>
<td>370,68</td>
<td>3285</td>
<td>0,11</td>
<td>2,57</td>
</tr>
<tr>
<td>Cyrtococcum accrencens</td>
<td>58,65</td>
<td>617,8</td>
<td>60%</td>
<td>370,68</td>
<td>3285</td>
<td>0,11</td>
<td>6,62</td>
</tr>
<tr>
<td>Digitaria ciliareis</td>
<td>48,91</td>
<td>617,8</td>
<td>60%</td>
<td>370,68</td>
<td>3285</td>
<td>0,11</td>
<td>5,52</td>
</tr>
<tr>
<td>Ischaemum timorense kunth</td>
<td>45,01</td>
<td>617,8</td>
<td>60%</td>
<td>370,68</td>
<td>3285</td>
<td>0,11</td>
<td>5,08</td>
</tr>
</tbody>
</table>
The table below shows the harvested area, dry weight production, and KTT for different species of forage:

<table>
<thead>
<tr>
<th>Species Forage</th>
<th>Harvested Area</th>
<th>Dry Weight Production (Kg/yr)</th>
<th>PUF</th>
<th>BK Available (Kg/Ha/yr)</th>
<th>Consumption BK/Ekor/yr</th>
<th>KTT (Ha)</th>
<th>KTT Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennisetum purpureum Schumach</td>
<td>5.49</td>
<td>617.8</td>
<td>60%</td>
<td>370.68</td>
<td>3285</td>
<td>0.11</td>
<td>0.62</td>
</tr>
<tr>
<td>Cyperus rotundus L.</td>
<td>26.45</td>
<td>617.8</td>
<td>60%</td>
<td>370.68</td>
<td>3285</td>
<td>0.11</td>
<td>2.98</td>
</tr>
<tr>
<td>Cyperus kyllingia</td>
<td>35.23</td>
<td>617.8</td>
<td>60%</td>
<td>370.68</td>
<td>3285</td>
<td>0.11</td>
<td>3.98</td>
</tr>
<tr>
<td>Alysicarpus vaginalis (L.) DC.</td>
<td>59.24</td>
<td>617.8</td>
<td>60%</td>
<td>370.68</td>
<td>3285</td>
<td>0.11</td>
<td>6.68</td>
</tr>
<tr>
<td>Desmodium triflorum (L.) DC.</td>
<td>28.93</td>
<td>617.8</td>
<td>60%</td>
<td>370.68</td>
<td>3285</td>
<td>0.11</td>
<td>3.26</td>
</tr>
</tbody>
</table>

Total carrying capacity: 59.30

Source: Results of Primary Data Analysis, 2019

Based on the results of the analysis of the carrying capacity of livestock in Table 6, shows where the amount of harvest in each block is combined into one section to produce the total harvesting amount. Then for the production of dry weight 617.8 kg/year is the production of natural grass each year which, if converted into hectares, will produce 370.68 kg/ha/year. However, the type of natural grass in the form of Imperata cylindrical has a different value from other types of natural grass because Imperata cylindrical has a correction value (PUF) of 10% which means that the type of natural grass Imperata cylindrical can be consumed by cattle only at the tips of young leaves or shoots. Thus for all types of natural grass found in the plantation area Axonopus compressus (SW.) P. Beauv. has the most carrying capacity among all types of natural grass with a total carrying capacity of 12.23 head of cattle (ST). This is supported by the statement of Hadi et al. (2011) that forage is a feed ingredient derived from plants consisting of leaves mixed with stems, twigs, and flowers, which generally come from grass country plants (Gramineae), and legumes (legumes). For this reason, the total carrying capacity for all types of forages found in oil palm plantations is 59.30 head of livestock units (ST), this indicates that the location of research occurred overgrazing or overgrazing, so to overcome this it is necessary to utilize crop interventions. plantations to cultivate forage types that can be consumed by livestock such as forages in the form of elephant grass (Pennisetum purpureum Schumach) so that the supply of grass can be utilized by livestock to meet the nutritional needs and forage sources of animal feed.

CONCLUSION

Vegetation analysis results by dividing oil palm plantations in three blocks or sections into three sub-districts namely Watubangga Subdistrict, Tanggetada Subdistrict, and Polinggona Subdistrict found 24 forage species which are divided into 9 families. Whereas for SDR (Summed Dominant Ratio) analysis has different values as in Block 1 (62.92%), block 2 with SDR value (66.07%) and in block 3 with SDR value (76.17%). Besides, three families can be used as a source of forage food, namely Gramineae, Cyperaceae and Leguminacea. The results of the carrying capacity analysis show that oil palm plantations can only accommodate 59.30 cattle of Bali cattle so that at that location there is overgrazing or overgrazing. So that we need an alternative to overcome this in the form of planting forage species between palm oil plantations.

REFERENCES


