PRODUCTIVITY OF MURRAH BUFFALO IN INDONESIA

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ABSTRACT
A study was conducted on the productivity of Murrah buffaloes raised by small holders in the rubber estate crops areas of North Sumatera. Milk production was measured the 24 hour sampling method at monthly intervals. Calves were weighed 1 to 4 days after birth. Average birth weight was 30.7±1.30 kg, and was not influenced by parity of cow and month of birth. Milk yield per lactation was 1999.1±67.3 kg with lactation length of 8.8±0.25 months. Milk production was affected by month of calving while lactation length was influenced by month of calving and parity.

INTRODUCTION
Buffaloes in Indonesia have an important role as a meat producers and draught power. In some areas they are milk producers as well. The buffalo population in Indonesia is about 2.4 million, and mostly consists of swamp buffalo. There are only few river buffalo (Murrah) which are found largely in North Sumatera. Murrah buffalo were imported from India in the beginning of 20th century. In 1958 the total number of Murrah buffalo was about 2250 head (Nasution, 1958), however in 1980 the total number had declined to about 1000 head. (Direktorat Jenderal Peternakan, 1980).

Although, the total number is low, Murrah buffaloes have good potential for milk production in North Sumatera, especially in the estate crop areas. Nasution (1958) and Siregar and Gani (1975) reported that the productivity of Murrah buffalo is low, but detailed data characterizing of this animal is limited. The objective of this study is to analyze data in order to find out the productivity of Murrah buffalo.

MATERIALS AND METHODS
The study was carried out in 1983 on 75 Murrah buffalo cows raised by small holder farmers in rubber estate crop areas of North Sumatera. All animals were grazed under rubber plantations during the day and confined in the barn at night. Lactating cows were supplemented by coconut oil meal and rice bran.
The data collected were birth weight, milk yield and lactation length. Birth weight was measured within 1 to 4 days of birth. Milk yield was measured by 24-hour sampling method at monthly intervals.

The data were analyzed using a least squares method for unequal subclass numbers (Harvey, 1977). The constants fitted for birth were parity of cow, month of calving and linear regression on lactation length. The constants for lactation length were parity and month of calving.

RESULTS AND DISCUSSION

The average birth weight of Murrah buffaloes is shown in Table 1, and indicate that parity or season (month of birth) does not influence birth weight. However, there is a tendency that birth weight increases with advancing lactation period then declining. The peak of birth weight is attained at the fifth parity.

The overall mean birth weight found in this study (30.7±1.30 kg) is similar to that of Murrah buffaloes in India (Fahimuddin, 1975).

Table 1. Least squares means of birth weight.

<table>
<thead>
<tr>
<th>Variables</th>
<th>No.</th>
<th>Birth weight± SE (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall mean</td>
<td>73</td>
<td>30.7 ± 1.30</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>23</td>
<td>28.6 ± 1.89</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>27.9 ± 2.52</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>32.8 ± 2.10</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>33.5 ± 2.47</td>
</tr>
<tr>
<td>≥5</td>
<td>5</td>
<td>30.6 ± 3.85</td>
</tr>
<tr>
<td>Month of birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January - March</td>
<td>8</td>
<td>30.3 ± 3.10</td>
</tr>
<tr>
<td>April - June</td>
<td>9</td>
<td>25.9 ± 2.92</td>
</tr>
<tr>
<td>July - September</td>
<td>26</td>
<td>34.3 ± 1.82</td>
</tr>
<tr>
<td>October - December</td>
<td>30</td>
<td>32.1 ± 1.67</td>
</tr>
<tr>
<td>Regression on age at first recording (kg/d)</td>
<td></td>
<td>0.596 ± 0.620</td>
</tr>
</tbody>
</table>
Milk Yield.— Milk yield per lactation is presented in Table 2, and indicate that there is a tendency that milk production increase with advancing parity, although statistically is not different (P>0.05).

Table 2. Least squares means of milk yield per lactation.

<table>
<thead>
<tr>
<th>Variables</th>
<th>No.</th>
<th>Milk yield ± SE (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall mean</td>
<td>75</td>
<td>1999.1 ± 67.30</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>23</td>
<td>1933.5 ± 97.59</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>2017.1 ± 131.41</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>1972.2 ± 107.18</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>1921.6 ± 121.18</td>
</tr>
<tr>
<td>&gt;5</td>
<td>5</td>
<td>2151.3 ± 206.13</td>
</tr>
<tr>
<td>Month of calving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January - March</td>
<td>8</td>
<td>2257.0 ± 176.53</td>
</tr>
<tr>
<td>April - June</td>
<td>10</td>
<td>2043.9 ± 145.11</td>
</tr>
<tr>
<td>July - September</td>
<td>27</td>
<td>1693.6 ± 93.71</td>
</tr>
<tr>
<td>October - December</td>
<td>30</td>
<td>2002.4 ± 32.44</td>
</tr>
</tbody>
</table>

Season (month of calving) is an important source of variation (P<0.05) for milk production per lactation (Table 2). Cows that calve from July to September tend to have lower milk yields per lactation than cows that calve in other months. It suggests that during the dry season, the availability of forages decrease and it influences milk production.

Linear regression on lactation length is significant statistically (P < 0.01), and indicates that increasing lactation length by 1 month will increase the milk yield per lactation by 288.4 kg.

Milk yield per lactation of this study ranged from 1933.5 - 2151.3 kg with an overall mean 1999.1 kg. The values are slightly lower than those reported by Ranjahn (1983) who indicated that in the Philippines milk production ranged from 2000 - 2500 liters per lactation. Fahimuddin (1975) reported that selected animal could achieve 2270 - 3178 kg milk yield per lactation, while the average animals produced 1589 - 2093 kg milk per lactation. Cockrill (1976) indicated that milk production of buffaloes in China ranged from 1980 - 2355 kg with the average of 2221 kg.
Compared with previous studies on the milk yield of buffaloes in North Sumatera, the present values are high suggesting that milk yield is increasing. Nasution (1958) reported that milk production of Murrah buffaloes were only 2 - 7 liters per day with lactation length of 8 - 11 months. Siregar and Gani (1975) indicated that the average of milk production was 3.75 liters per day with lactation length of 7.4 months.

**Lactation length.** Lactation length as a component of milk yield per lactation is presented on Table 3, which shows that parity had a significant effect on lactation length (P < 0.05). Lactation length tended to be shorter in older cows. In this study the shortest lactation length was the fifth.

Table 3. Least squares means of lactation length

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>Lactation length ± SE(mo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall mean</td>
<td>73</td>
<td>8.8 ± 0.25</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>23</td>
<td>9.5 ± 0.37</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>8.0 ± 0.50</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>9.3 ± 0.41</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>9.7 ± 0.49</td>
</tr>
<tr>
<td>≥5</td>
<td>5</td>
<td>7.4 ± 0.75</td>
</tr>
<tr>
<td>Month of calving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January - March</td>
<td>8</td>
<td>6.7 ± 0.60</td>
</tr>
<tr>
<td>April - June</td>
<td>9</td>
<td>10.2 ± 0.59</td>
</tr>
<tr>
<td>July - September</td>
<td>26</td>
<td>9.8 ± 0.36</td>
</tr>
<tr>
<td>October - December</td>
<td>30</td>
<td>8.4 ± 0.32</td>
</tr>
</tbody>
</table>

Season (month of calving) was an important source of variation on lactation length (P < 0.01). Buffaloes that calved from January to March tended to have the shortest lactations. It suggests that dry season during the end of lactation period has great influence.

The average length of lactation was 8.8 ± 0.25 months. This result is in agreement with the result by Nasution (1958) who found that lactation length of Murrah buffaloes were 8 - 11 months. However, it is longer than lactation length reported by Siregar and Gani (1975) who found 5 - 11 months.
REFERENCES


Harvey, W.R. 1977. User's guide for LSML76 mixed model least squares and maximum likelihood computer program. Ohio State Univ., Columbus (Mimeo.).


