

ANALYSIS ON AVERAGE DAILY GAIN OF HOLSTEIN FEMALE CALF FROM BIRTH UNTILL FIRST CONCEPTION MAINTAINED BY LARGE SCALE DAIRY FARM ON HIGH AND MIDDLE PLAIN IN WEST JAVA

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Abstract

In Indonesia the dairy cows are maintained by the large scale dairy farms on the high and middle lands. However, how far, the empirical data of average daily gain of Holstein female calf from birth till first conception in Indonesia is not yet clearly known. Based on the above description is very interesting to perform the analysis of average daily gain of a female dairy calf that is kept in the high and middle land in West Java. The research method was observationally conducted on from the birth weight until the first conception weight of Holstein female calf. The population from the high and middle plain are respectively 127 and 211 heads of Holstein female calves. The data collected are descriptively analyzed and compared to the references. Based on the result and discussion it is found out that is a better growth of Holstein female calf maintained on high plain. There is the empiric data of average daily gain 0.73 ± 0.19 and 0.71 ± 0.12 kg/h/d respectively for high and middle plain. It is suggested that the Holstein female calf should be maintained on higher plain.

Key words: Daily gain, Female calf, High plain, Middle plain, Holstein

INTRODUCTION

The future of the dairy farm business success depends on maintaining the calf. The calf maintained will become the mature dairy cows and she will produce the milk. Therefore, the maintenance of a calf needs a high accuracy. Maintaining the new born female calf is the beginning of the maintenance of dairy cow. The healthy and strong new born calf is more easily maintained. The maintenance purposes is to get a healthy and active replacement stock, has great body capacity for the consumption of forage, and to be bred at the age of 18 months or 2-3 oestrus after puberty. The heifer is bred at this age when it has reached the body weight which it is ready for his first mating.

The situation occurred at the dairy farm is a problem of the calf body weight. The body weight for the first mating is not achieved even the calf has a good quality. The target of

this first mating weight is largely determined by the growth of the calf began from the new born until ready to be bred. The growth is influenced by genetic potential, environmental condition, feed intake, and maintenance management. In addition there is no standard for optimum growth of the dairy calf, so that the breeder is difficult to determine the fulfilment of the condition of the calf at the minimum or below minimum weight limit of a certain age to achieve the expected weight of the first mating. Furthermore, this achieved body weight affects the progress of dairy farm business.

In Indonesia the dairy cows are maintained by the large scale dairy farms on the high and middle lands and some more of them on the low lands. The climate directly or not has an effect in weight gain. It is known that there is a tendency a calf kept in a cold environment consumes more feed than calf maintained in a hot environment and furthermore the feed consumption effects in the weight gain. However, how far, the empirical data of average daily gain of Holstein female calf from birth till first mating in Indonesia is not yet clearly known.

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The manuscript was received: 14.04.2012

Accepted for publication: 22.05.2012

Based on the above description it is very interests to perform the analysis of average daily gain of the female dairy calf that is kept in the high and middle land in West Java.

EXPERIMENTAL PROCEDURE

The research was the survey and used the technique of purposive sampling method. The research method was observationally conducted on from the birth weight until the first conception weight of Holstein female calf. The data used are from the large scale dairy farm. The variable observed is the body weight. The data collected are descriptively analyzed and compared to the references.

The data collected are then selected and need to have the complete data on birth and first conception weight. And so, the data are tabulated for each research location. The new born calf immediately was weighed to determine its weight. The measurement of body weight at first conception is carried out on one month before the heifer is ready to be bred for the first time (15-20 months of age). The data of average daily gain is from the result of dividing the weight difference between the first conception weight and birth weight with the age of first conception. The cow’s population from the high and middle plain are respectively 127 and 211 heads of Holstein female calves.

RESULTS AND DISCUSSIONS

The research shows the average daily gain of Holstein female calf from birth until first conception maintained on high and middle plain in West Java as showed in Table 1.

Table 1 Average Daily Gain of Holstein Female Calf from Birth until First Conception Maintained on High and Middle Plain in West Java

Plain	Weight gain ---kg---	Time to first conception --days--	Average daily gain --kg/h/d--
High	268-295	328-533	0.73±0.19
Middle	239.4-280.8	408-432	0.71±0.12

Table 1 above shows that female calf produce 268-295 kg weight gain and need the time 328-533 days to get her first conception. So, the average daily gain is 0.73±0.19 kg/h/d

on the high plain. On the middle plain the female calf produce 239.4-280.8 kg weight gain and need the time 408-432 days to get her first conception and so the average daily gain is 0.71±0.12 kg/h/d. The animal production is effected by genetic, feed, environment, and management. This condition is accorded to Anggoro (2011) and Beef (2011).

The calf in this period is sought to achieve average daily gain 0.7 kg [6]. At the age of 15-18 months the heifer is inseminated (Beef, 2011). The heifer is bred at 18-21 months old for the first time and she is expected to give a calf and produce milk at the age of 28-30 months [5].

The whole area of Indonesia belongs to the tropical zone so that in Indonesia there are rainy and dry season which it lasts for certain months. The rainy season occurs in October to March, while the dry season from April to September [7]. The West Java Province is a part of Indonesian territory. The role of climate in this region is a tropical climate [10].

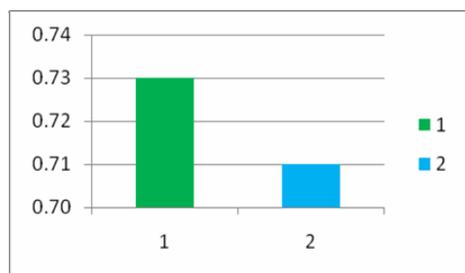
Climate consists of various components, such as temperature and relative humidity. The tropical temperature ranges between 20°C and 30°C and rarely to exceed 40°C. The hottest temperatures in the dry season and the coldest in rainy season is different in range 1-5°C even up to 13°C. Humidity in the dry and rainy seasons is respectively 55% or more and 75-95% [7].

In West Java a lot of cow farms keep Holstein dairy cow. The dairy cattle are kept primarily for milk production to meet human needs. The Holstein has been known that it has low heat tolerance. The Holstein cows require optimal temperatures in order to produce milk in high quantity [9]. At the time of producing milk, dairy cows produce a lot of heat that spreads throughout the body. This heat must be absorbed by the surrounding environment, especially through the body of the cow. The increasing temperature causes the cow’s body heat could not be absorbed by the environment. As a result, cows suffer the stress. The effort made to overcome this stress is with the mechanism that the cows reduce the consumption of feed and at last the feed consumption contributes to milk production [4].

In the meantime, to keep a constant body temperature, the dairy cow drinks plenty of water at the high ambient temperatures. Evaporation causes the cow's body temperature relative constant. The both of gastric capacity and the addition of water consumption make a limit in the amount of feed intake [8]. On the other hand, the climate plays a profound effect on grass production. Total rainfall and its distribution affect the quantity and quality of grass production. During the dry season, precipitation occurs is very low. Thus, the quantity and quality of grass production during the dry season can be said to be low [7, 9].

The feed consumption causes milk production of dairy cows. The feed consists of forage and concentrate [2, 8]. The forage is harvested from the surrounding land. And, the concentrate is bought from the cooperative. The feeding system relatively appears the quality and quantity of ration the same throughout the year.

The average daily gain of Holstein female calf is figured in Figure 1.



1 = High plain. 2 = Middle plain.
 Figure 1 Average Daily Gain of Holstein Female Calf on High and Middle Plain

Figure 1 shows that the Holstein female calf on high plain performs average daily gain is better than middle plain.

CONCLUSIONS

Based on the result and discussion it is found out that is a better growth of Holstein female calf maintained on high plain. There is the empiric data of average daily gain 0.73 ± 0.19 and 0.71 ± 0.12 kg/h/d respectively for high and middle plain.

The research gives a recommendation that the Holstein female calf should be maintained on higher plain.

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