



## The Effect of Postpartum Body Condition on the First Oestrus after Calving on the First Simmental Cross (G1)

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### Abstract

The body's condition after calving affects the return of Oestrus postpartum, and minimizing this period is important for several reasons. The study aimed to determine the effect of postpartum body condition on the first Oestrus on the first Simmental-cross (G1) carried out in Koto XI Tarusan and Bayang sub-districts, Pesisir Selatan District, West Sumatra province. The body condition of beef cows during calving dramatically impacts subsequent reproductive performance. The postpartum interval is the time from calving to first Oestrus after calving. Body condition postpartum affected the next first Oestrus. This research was conducted by survey method, using 83 G1, which were grouped based on thin (28 head), moderate (39 head), and fleshy (16 head). The detection of Oestrus is carried out starting after calving until the symptoms of Oestrus using a "heat detector" The data obtained were analyzed descriptively (mean, standard deviation). A comparison test was performed with the t-test. The results showed that the first Oestrus in thin, moderate, and fleshy cows were  $76.00 + 9.82$  days,  $52.63 + 7.79$  days, and  $47.31 \pm 5.50$  days. The results of the t-test showed that the body condition significantly affected the return of first Oestrus postpartum.

**Keywords:** body condition, Oestrus postpartum, Simmental cross.

### A. Introduction

Quantity and quality of cattle were important, and various government efforts have been carried out, including crossbreeding with different breeds, Simmental breeds. Increased production through a qualitative approach can be done with a genetic approach, namely genetic improvement. This genetic quality improvement is expected to increase farmers' income from production and reproduction. Reproductive benefits will be maximized when the calving interval is optimal. Several factors that greatly determine the calving interval were the first Oestrus postpartum.

Physiologically the return of Oestrus after postpartum was closely related to uterine involution. Funston (2014) stated that Body condition score (BCS) correlates with several reproductive events, such as postpartum interval, and is the single most important factor determining when beef heifers and cows will resume cycling after calving. Rasby & Gossey (2007) explained that cows could also separate into thin, moderate, and fat groups. Body condition score is a method used to assess the level of the fatness of a cow (Santosa, 2008). It is also stated that the body condition score is a subjective assessment method through observation and palpation or palpation techniques.

## B. Methodology

The research was conducted using a survey method in 2 (two) sub-districts, "Bayang and Tarusan, Pesisir Selatan District, West Sumatera." The cattle used were 83 cattle of the First Simmental cross (G1), 4 - 5 years old, had more or less 20 days of postpartum, and were classified into three groups. Thin (28 head) has 1-3 score, moderate (39 head) has 4-6 score, and fleshy (16 head) has 7-9 score. Observations were made every day using a "heat detector"(tool for determining the optimal time for insemination) until the cattle were in Oestrus. It has two high sensitive electrodes of refined steel investigate test date from the continuously changing content of vagina secretion. The visual indication showed 0 - 60 ohms. Namely, 0-30 is too early for insemination, 30-40 is optimal, and 41-60 is too late for insemination. The data obtained were analyzed descriptively (mean, standard deviation). A comparison test (to compare groups of thin, moderate, and fleshy cattle) was performed with the t-test according to the formula of Steel & Torrie (1995).

## C. Result and Discussion

### 1. Geographical Condition of Research Area

Koto XI Tarusan and Bayang sub-district, South Coast district of West Sumatera, have a coastal climate. With a flat topography and slightly hilly, with a relatively high temperature ranging from 22 - 31°C, average humidity of 76.19%, an altitude of 2-50 m above sea level, and the average rainfall is 258.025 - 3096.1 mm/month. This area found quite a lot of Simmental cross, and potentially for farming development.

### 2. The Effect of Body Condition on Oestrus Postpartum

The study results on the effect of body condition on Oestrus postpartum are shown in table 1.

**Table 1. The effect of Postpartum Condition (Thin, Moderate and Fleshy) on G1 Simmental Cross to Oestrus Postpartum**

No.	Condition	Oestrus Postpartum $\pm$ SD (days)	Average of BCS
1.	Thin	76,00 $\pm$ 9,82	2.2
2.	Moderate	52,63 $\pm$ 7,79	4.7
3.	Fleshy	47,31 $\pm$ 5,50	7.6

The table above shows that the average Oestrus in thin cows is 76.00 days with a Standard Deviation of 9.82. Data varied from 58 - 91 days, and the average of BCS was 2.2. In moderate conditions, Oestrus began to appear on day 52.63 with a Standard Deviation of 7.79. Data varied from 39 - 69 days, and an average of BCS are 4.7. This condition is better than thin cows. While in fleshy, the Oestrus appear faster on day 47.31 with a standard deviation of 5.50. Data varied from 41 - 60 days, and the average of BCS is 7.6. The length of time for this Oestrus is closely related to the body's ability to recover or restore the condition of the body and reproductive organs to normal and provide food as milk for calves. Affandhy et al. (2010) state that Oestrus postpartum is strongly influenced by beef condition postpartum. Funston (2014) states that the body's condition during postpartum is a factor that determines and controls Oestrus postpartum.

Previously Winugroho (2002) argued that the cow's body is too thin, reducing milk production and slowing down Oestrus symptoms. Kumar et al. (2014) stated that anoestrus occurrence indicates inadequate nutrition. A statistical comparison of the body condition of thin, moderate, and fleshy cows can be seen in Table 2.

**Table 2. t-test Body Conditions Thin, moderate, and fleshy**

Comparison between	t stat	t <sub>table 0.05</sub>	n = sample
I <sub>1</sub> – I <sub>2</sub>	10.5334 *	1.9971	29 : 38
I <sub>1</sub> – I <sub>3</sub>	12.3510 *	2.0167	29 : 16
I <sub>2</sub> – I <sub>3</sub>	2.5331 *	2.0066	38 : 16

**Description:** I<sub>1</sub> – I<sub>2</sub> = Comparison between thin and moderate  
I<sub>1</sub> – I<sub>3</sub> = Comparison between thin and Fleshy  
I<sub>2</sub> – I<sub>3</sub> = Comparison between Moderate and Fleshy

The results of the t-test showed that each body condition (thin, moderate and fleshy had a significant effect on the rate of Oestrus postpartum ( $P < 0.05$ ). Affandhy et al. (2010) concluded that Oestrus postpartum is strongly influenced by postpartum conditions. Good feeding will be recovery body condition early. In addition, the restriction of calf suckling will shorten the Oestrus postpartum because cows have sufficient energy to fulfill their reproductive function without reducing their calf's need for milk. Previously Partodihardjo (1992) concluded that the cycle of Oestrus and Oestrus postpartum is influenced by feeding and the suckling process.

### 3. Effect of Feeding

In the research area, generally, farmers who raise thin cattle feed their cows with field grass hay and sometimes concentrate without considering weight, especially quality. This condition also depends on their goals in raising cows, like savings. In moderate conditions, they fed with forage, such as Pennisetum purpureum, king grass with a number variedly 10 – 18 kg per day. They also gave concentrates like fine bran plus tofu dregs and banana peels but not regularly. The purpose of farming is the main livelihood. For fleshy conditions, the maintenance pattern of their cow was not significantly with the moderate condition but different in quality and quantity of forage and concentrates. Adequacy of feeding will be reflected in the body's condition and energy reserves.

The priority of energy use is for maintenance requirements; when the maintenance requirement is sufficient, the energy reserves are used for other activities such as reproduction, milk production, etc. Fat is a reserve that produces a large amount of energy compared to carbohydrates and proteins. One of the most important fat components is cholesterol, the basic ingredient for forming reproductive hormones. Research by Houghton et al. (1990) on cattle crossing "Charolais with Angus" showed that energy in prepartum and postpartum affects the length of anoestrus postpartum, so it is said that thin cows have a longer postpartum interval compared to moderate and fleshy. Astessiano et al. (2011) stated that the livestock body condition describes the nutritional status of livestock. The body condition score of the livestock must be in optimal condition before or after calving to ensure the reproductive cycle run optimally. The negative energy balance affects reproduction adversely. Putro (2008) stated that negative energy balance could cause anoestrus postpartum in Brahman-Cross cattle. At the same time, Pelayun (2009) added that the absence of Oestrus (anoestrus) caused by ovarian hypofunction generally often occurs in cows after calving or heifers with low body conditions or thin cows.

### 4. The Effect of the Suckling

In the research area, there is a tendency for farmers to allow calves to suckle continuously from their mothers, especially for Simmental Cross, in the hope of better calf development so that the selling value is higher. Montiel & Ahuja (2005). Although many factors affect postpartum anoestrus, nutrition and suckling are the major factors influencing the resumption of postpartum ovarian cycles. Kumar et al. (2014) stated that anoestrus in cattle is also a multi-factorial problem, but its occurrence indicates inadequate nutrition, environmental stress, uterine pathology, and improper management. Dirgahayu et al. (2015) state that calves that are weaned for too long will cause a delay in ovarian activity, causing postpartum anoestrus. High levels of the hormone prolactin during suckling are the main cause of persistent corpus luteum, followed by symptoms of postpartum anoestrus so that Oestrus will not occur. Montiel & Ahuja, 2005 said that (1) suckling interferes with the hypothalamic release of GnRH, (2) provoking a marked suppression in pulsatile LH release, and (3) resulting in extended postpartum anoestrus. Dikman et al. (2019) stated that Treatment of suckling restriction and supplementation in cows after calving has a significant effect on Postpartum Anoestrus. Concluded by Socheh et al. (2017) stated that weaning time has a very real influence on the

onset of Oestrus postpartum. A study by Dhayanti et al. (2021) shows that raising management does not affect the emergence of postpartum Oestrus. In addition, the factor of suckling duration and age in Bali cattle can affect the emergence of postpartum Oestrus.

#### D. Conclusion

Body Condition Score influenced by the environment, mainly inadequate nutrition. Postpartum body condition significantly affects the first Oestrus in the first Simmental Cross (G1), the first Oestrus after calving at fleshy faster than moderate and thin conditions because they have energy reserves for maintaining and other activities reproduction, milk production, and so on.

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