International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 04 April 2024
DOI: 10.47191/ijcsrr/V7-i4-29, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Relationship between Body Condition and Colostrum Production in Crossbred Friesian Holstein Dairy Cattle: A Case Study at KUD Anjasmoro Dairy Farm

Ike Mawarni Handayani[1], Puguh Surjowardojo[2*], Tri Eko Susilorini[3]
[1]Postgraduate, Faculty of Animal Science, Universitas Brawijaya, Jl. Veteran Malang, 65145. Indonesia
[2,3]Animal Production, Faculty of Animal Science, Universitas Brawijaya, Jl. Veteran Malang, 65145. Indonesia

ABSTRACT: This study aims to evaluate the relationship between the body condition of crossbred Friesian Holstein (PFH) dairy cattle and colostrum production, focusing on Body Condition Score (BCS) and vital statistics such as chest circumference, body length, and height. The research was conducted at the KUD Anjasmoro dairy farm in the Wonosalam District of Jombang from November 2022 to April 2023. A case study method was used by observing 42 PFH cows during lactation periods 1 to 5. The results show that BCS and vital statistics have a strong relationship with colostrum production. The analysis indicates that colostrum production increases with increasing BCS and vital statistics. Although the relationship between body length and colostrum production is not significant, body height has a significant influence on colostrum production. In conclusion, proper nutrition and care management can increase colostrum production in dairy cows, which will positively impact overall dairy farm productivity.

KEYWORDS: Body Condition Score, Crssbred Friesian Holstein, Colostrume Production, Vital Statistics.

INTRODUCTION

Dairy cattle are bred primarily for their milk production. In Indonesia, the common breed of dairy cattle developed is the Crossbred Friesian Holstein (PFH), a crossbreed of original FH cattle from the Netherlands with local Indonesian cattle. PFH cattle's physical characteristics are similar to FH cattle, with a black and white hair color pattern and white area on the forehead. However, their distribution is limited to certain areas in Indonesia due to their productivity being highly influenced by environmental temperature (Kurnia et al., 2015).

The age at first calving of PFH cows varies, and this difference impacts the total milk production per lactation. The age of the cow at first calving or first lactation determines the amount of milk production in subsequent lactation periods. After calving, on the first day, cows produce colostrum, an important fluid containing passive immunoglobulins to enhance the immunity and health of newborn calves. The composition of colostrum is influenced by various factors such as individual animal characteristics, cattle breeds, pre-partum feeding patterns, and the time and method of colostrum collection (Atabany et al., 2022).

The performance of dairy cows can be assessed by their ideal body size and normal appearance. The standard parameters for good dairy cow performance include aspects such as animal age, shoulder height, body weight, chest circumference, hair color, udder, horn presence, and twin birth history. Individual dairy cow performance is divided into qualitative and quantitative aspects, with quantitative traits such as body height and chest circumference being measurable. Vital statistic measurements such as chest circumference, body height, and body length are used to assess normal body shape in dairy cows. Body Condition Score (BCS) and vital statistics are believed to have a relationship with dairy cow colostrum production. BCS is an important parameter used to evaluate the nutritional condition and health of dairy cows, especially during lactation and dry periods (Poczynek et al., 2023). The body condition of dairy cows directly influences milk production and the quality of colostrum produced. Cows with optimal BCS tend to produce more milk with better nutritional content, including higher-quality colostrum.

A good understanding of the relationship between BCS, vital statistics, and colostrum production and quality can help farmers make the right management decisions to improve animal welfare and overall production outcomes. This study was conducted to evaluate the relationship between BCS, vital statistics, and production and quality of colostrum in PFH cows raised at KUD Anjasmoro in the Wonosalam District of Jombang.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 04 April 2024
DOI: 10.47191/ijcsrr/V7-i4-29, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

MATERIALS AND METHODS

Sample Selection: 42 PFH cows, the subjects of the study, were randomly selected from the cow population at the KUD Anjasmoro dairy farm.

Body Condition Score (BCS) Measurement: BCS measurement was conducted using established standard methods, where a scale from 1 to 5 was used to assess the cows' body condition.

Measurement of Vital Statistics: Chest circumference, body length, and height measurements were taken for each cow using appropriate measuring equipment.

Data Recording: Data related to BCS, vital statistics, and colostrum production for each cow were meticulously recorded.

Observation During Lactation Periods: Observations were made on the cows during lactation periods 1 to 5 to record behavior and colostrum production.

Measurement of Colostrum Production: Colostrum production from each cow was measured by considering the volume and quality of the colostrum produced.

Research Method

This research used a case study method by observing intentionally selected samples, namely PFH dairy cows in lactation periods 1, 2, 3, 4, and 5. This method was used to answer questions about the relationship between measured variables, such as BCS, vital statistics (chest circumference, body length, body height), and colostrum production of PFH dairy cows directly in the field. Data were analyzed using simple correlations to determine the strength of the relationship between BCS, vital statistics, colostrum production, and colostrum quality of PFH cows using the following formula:

$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{(n\sum X^2 - (\sum X)^2)\,(n\sum Y^2 - (\sum Y)^2)}}$$

Explanation:
r = Correlation
X = BCS and Vital Statistics (chest circumference, body length, body height)
Y = Milk production
n = Sample size

To facilitate interpretation of the relationship strength between two variables, Jonathan (2006) provides the following criteria:

- 00: No correlation between two variables
- >0−0.25>0−0.25 : Very weak correlation
- >0.25−0.5>0.25−0.5 : Weak correlation
- >0.5−0.75>0.5−0.75 : Moderate correlation
- >0.75−0.99>0.75−0.99: Strong correlation
- 1 : Perfect correlation

The magnitude of the influence of BCS *(Body Condition Score)* as a vital statistical measure on the milk production of dairy cows (PFH) can be determined by the coefficient of determination, with the formula as follows (Sugiyono, 2007).

R^2 = r2 x 100%

Explanation : R2 = Coefficient of determination
R = Correlation coefficient

Interpretation of Results: The analysis results were used to evaluate the relationship between cow body condition and colostrum production and to draw conclusions regarding the research findings.

RESULTS AND DISCUSSION

Overview of the Research Location

The Wonosalam District is part of the Jombang Regency government. The astronomical location of the Wonosalam District is between 112º 21' 05" - 112º 23' 22" east longitude and 07º 44' 59" - 07º 40' 01" south latitude. The boundaries of the Wonosalam District are as follows: North: Mojokerto Regency, South: Kediri Regency. East: Malang Regency. West: Mojowarno District, Mojoagung District. The Wonosalam District is divided into 9 villages: Galengdowo, Wonomerto, Jarak, Sambirejo, Wonosalam,

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 04 April 2024
DOI: 10.47191/ijcsrr/V7-i4-29, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Carang Wulung, Panglungan, Wonokerto, Sumberjo. The distribution of dairy cows in the Wonosalam District is spread across 9 villages with a total of 924 dairy cow breeders. The village with the highest number of dairy cow breeders is Galengdowo with 186 individuals. The village with the fewest dairy cow breeders is Wonokerto with only 8 individuals. The Wonosalam District can be said to have a fairly large potential as a workforce. The majority of the population's livelihoods in the Wonosalam District are in the livestock sector (Central Bureau of Statistics of Jombang Regency, 2023).

Livestock productivity is influenced by genetic and environmental factors, such as climate, diseases, and management. This management includes feed management, maintenance, and other aspects. Providing feed that meets the needs of dairy cows in terms of both quality and quantity will optimize dairy production. Dairy cow milk production can reach optimal levels if the feed consumed by the cows meets their needs in terms of both quality and quantity. The feed provided in this study consists of fresh forage and additional feed in the form of concentrate. The types of forage provided include elephant grass (Pennisetum purpureum), napier grass (*Pennisetum purpureum cv. Mott*), kolonjono grass (Brachiaria mutica), and corn stover. Forage is given alternately according to the availability of forage in the field. Forage is given to the livestock twice a day after feeding the concentrate, and the concentrate feed is presented in the form of a comb or wet. According to Nugraha et al., (2024) providing feed in the form of concentrate and forage can increase milk production capacity, and proper feeding will support livestock in achieving the highest level of milk production.

Relationship between BCS and PFH Cow Colostrum Production From the results of the research that has been conducted, there were 42 PFH dairy cows divided into 5 groups of livestock. The first group consists of 12 PFH cows in the 1st lactation period, with an average BCS of 2.56 and an average colostrum production of 5.79 liters per cow per day. The second group consists of 8 PFH cows in the 2nd lactation period, with an average BCS of 2.81 and an average colostrum production of 5.52 liters per cow per day. The third group consists of 11 PFH cows in the 3rd lactation period, with an average BCS of 2.95 and an average colostrum production of 5.85 liters per cow per day. The fourth group consists of 7 PFH cows in the 4th lactation period, with an average BCS of 2.82 and an average colostrum production of 5.60 liters per cow per day. The fifth group consists of 4 PFH cows in the 5th lactation period, with an average BCS of 2.94 and an average colostrum production of 5.66 liters per cow per day. The body condition of dairy cows during lactation will undergo changes, so BCS is used as a method to maintain balance in lactating cows. The average colostrum production based on lactation period and BCS is shown in Table 1.

Lactation Period	N	BCS	BCS Category	Colostrum production	r	R^2 (%)	Correlation
1	12	2,56±0,43	Moderate	5,79±1,66	0,37	13,57	Fair
2	8	2,81±0,12	Moderate	5,52±0,43	0,56	31,91	Strong
3	11	2,84±0,17	Moderate	5,85±0,87	0,74	54,51	Strong
4	7	2,82±0,12	Moderate	5,60±1,33	0,73	53,55	Strong
5	4	2,69±0,13	Moderate	5,66±1,30	0,72	51,31	Strong
Average		2,74±0,12	Moderate	5,68±0,14	0,62	38,94	Strong

Description: N = Number of Data, R = Correlation Coefficient, R^2 = Coefficient of Determination

The information presented in Table 1 indicates the average values of body condition scores (BCS) falling into the moderate category for each lactation period. The analysis of BCS and colostrum production at the research site shows positive values. In the first lactation period, the correlation value is the lowest at 0.37 with a coefficient of determination of 13.57%. The second lactation period shows an increase in the correlation value to 0.56 with a coefficient of determination of 31.91%. The third lactation period shows the highest correlation value at 0.74 with a coefficient of determination of 54.51%. The correlation value decreases in the fourth lactation period to 0.73 with a coefficient of determination of 53.55%, and further decreases in the fifth lactation period to 0.72 with a coefficient of determination of 51.31%. The research data demonstrates varied correlation values across lactation periods, starting from low values in the first lactation period and steadily increasing until reaching the peak in the third lactation period, followed by a decline in the fourth and fifth lactation periods.

The research results show that the average BCS value is 2.74, with an average colostrum production of 5.68 liters per day per head, a correlation coefficient of 0.62, and a coefficient of determination of 38.94%. Thus, the average BCS value has a strong relationship

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 04 April 2024
DOI: 10.47191/ijcsrr/V7-i4-29, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

with the colostrum production of PFH cows. Pujiastuti (2019) explains that the assessment of body condition in dairy cattle is divided into five scales, with a value of 1 indicating very thin, 2 indicating thin, 3 indicating moderate, 4 indicating fat, and 5 indicating very fat.

Relationship Between Vital Statistics and Colostrum Production The average values of vital statistics including chest circumference, body length, and height of PFH dairy cows obtained from the research site are shown in Table 2 below :

Table 2, Mean values of vital statistics: chest circumference, body length, and body height of PFH dairy cows.

Lactation period	N	PB	TB	LD	Colostrum production
1	12	156 ±6,25	159,25±19,49	163,80±18,09	5,79±1,66
2	8	156±7,03	149,38±17,11	165,94±16,76	5,52±0,43
3	11	157,55±10,61	139,64±12,35	189,18±21,99	5,85±0,87
4	7	157,29±5,82	162,86±21,58	168,71±11,80	5,60±1,33
5	4	159±5,94	168±1,41	159±4,97	5,66±1,30
Total	**42**				
Average		**157,17±1,25**	**155,82±11,33**	**169,18±11,74**	**5,68±0,14**

Description: PB = body length, TB = body height, LD = chest width

The results of the study show that the average values of vital statistics of dairy cows at the research location are as follows: body length (PB) 157.73 cm, body height (TB) 157.36 cm, chest width (LD) 178.83 cm. The Indonesian National Standard (SNI) (2008) stipulates that the minimum requirements for Indonesian dairy cows are a minimum age of 15-20 months, with a minimum shoulder height (TP) of 115 cm, minimum chest width (LD) of 155 cm, minimum body length of 125 cm, chest width of 29 cm, and hip width of 36 cm.

Externally, the physical characteristics of certain parts of a dairy cow's body determine its milking type. A good milking type determines the capacity of milk production. The size of a dairy cow's body influences milk production; cows with larger body sizes have longer bone lengths and larger stomach sizes, allowing them to consume more food than cows with smaller body sizes. Typically, a high milk yield is indicated by the volume and depth of the udder as well as the chest width of a cow, which determine the animal's feeding capacity. The results of the correlation analysis between vital statistics and colostrum production can be seen in Table 3.

Table 3. Correlation values of vital statistics with colostrum production of PFH cows

Parameter	N	r	R^2 (%)	Correlation Relationship
LD – colostrum production	42	0.32	10.15	Enough
PB - colostrum production	42	0.20	4.11	Enough
TB - colostrum production	42	0.35	12.40	Enough

Description : N = Number of Data, r = Correlation Coefficient, R2 = Determination Coefficient

The statistical analysis of vital statistics and colostrum production at the research site indicates a positive relationship between vital statistics and colostrum production. The correlation value between chest circumference (LD) and colostrum production is 0.32 with a coefficient of determination of 10.15%. The correlation between body weight (PB) and colostrum production is 0.20 with a coefficient of determination of 4.11%, while the correlation between body height (TB) and colostrum production is 0.35 with a coefficient of determination of 12.40% (Maylinda & Basori, 2004). A high level of correlation in dairy production is shown in the volume, chest circumference, and width of the chest (Filian, et al., 2016). FH cows require an ideal body weight to produce milk optimally, which can be estimated through body measurements such as chest circumference, body height, body width, and body length.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 04 April 2024
DOI: 10.47191/ijcsrr/V7-i4-29, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

The relationship between chest circumference (LD) and PFH cow colostrum production

The chest circumference of dairy cows is measured around the chest cavity behind the shoulder joint using a measuring tape in centimeters. This method is performed to visually determine the ideal body shape of the animal (Syawal et al., 2013). Chest circumference is a visual representation of the animal's body shape, where an increase in its value correlates with increased body weight, which in turn correlates with the animal's basic needs and production (Susilorini et al., 2014). It is stated that not all body sizes of an animal have a high level of correlation with milk production. A high level of correlation is shown in the udder size, chest circumference, chest width, chest depth, and udder circumference.

Table 3 shows the results of the analysis of the relationship between chest circumference and PFH cow colostrum production, with a coefficient of determination (R2) of 10.15%, indicating that chest circumference contributes 10.15% to PFH cow colostrum production, while the remaining 89.85% is influenced by other factors. The correlation coefficient (r) is 0.32, indicating a moderately strong relationship between chest circumference and PFH cow colostrum production. This suggests that colostrum production increases with increasing chest circumference.

Chest circumference parameter in dairy cows shows a positive relationship with PFH milk production capacity. Chest circumference is also closely related to body weight, with body weight and height having a positive correlation with milk production. Livestock production reaches its peak when basic nutritional needs are met. The difference between basic needs and nutrient intake affects harvest results that approach genetic potential. Chest circumference not only reflects body weight but also indicates the capacity of the digestive system. The larger the cow, the greater its ability to consume feed, and the supply of nutrients for milk production increases. A study by (Kusmayadi K., 2018) confirms the correlation between chest circumference and milk production because it reflects the stomach capacity of the animal, which is important for evaluating the capacity of forage as a milk fat constituent.

The relationship between Body Length (PB) and PFH cow colostrum production

Body length is measured from the starting point at the anterior edge of the shoulder joint (Lateral Tuberosity of the humerus bone) to the end point at the posterior edge of the pelvic bone humerus (ischial tuberosity). This measurement is taken from a vertical line extending from the lateral tubercle (shoulder joint) to the ischial tubercle (posterior edge of the sitting bone). Various methods are used to measure body length, such as the one used by Syawal et al., (2013), who use a horizontal line from the anterior edge of the shoulder joint to the humerus scapula edge, articulating from the humerus to the humerus using a ruler and recording the results in centimeters. Meanwhile, Heryani L.G.S.S., et al., (2018) measure body length from the outer right edge to the anterior edge of the scapula, the ethmoid mass (sitting bone/ischium), using a measuring tape and recording the results in centimeters.

Table 3 presents the analysis results regarding the relationship between body length and colostrum production in PFH cows. The results show that the coefficient of determination (R2) is 4.11%, indicating that body length contributes 4.11% to PFH cow colostrum production, while other factors influence 95.89%. Although the relationship between body length and colostrum production is not significant, the coefficient (r) of 0.20 indicates a relatively close relationship between the two. Body length is related to the estimation of cattle body weight, which in turn reflects the ability of cattle to produce. The size of the cattle also reflects their ability to produce.

The relationship between Body Height (TB) and colostrum production

Animal height is measured using a measuring stick or measuring tape in centimeters (cm), starting from the highest point of the animal's body to the ground or feet (Agil M., et al., 2016). It is stated that height is measured from the highest point of the shoulder to the ground using a measuring stick in centimeters. This measurement is taken while the animal is standing on a flat surface to ensure the accuracy of the measurement of the height of dairy cows.

Table 3 presents the analysis results regarding the relationship between body height (TB) and PFH cow colostrum production. The correlation coefficient (r) of 0.35 indicates that body height has a significant influence on PFH cow colostrum production. Additionally, the coefficient of determination (R2) of 12.40% indicates that body height contributes 12.40% to colostrum production, while the remaining 87.6% is influenced by other factors. Colostrum production is influenced by genetic factors, environment, and their interaction. Environmental factors such as season, rainfall, temperature, humidity, calving year, and farming practices also significantly affect milk production (Puppel et al., 2019). Roche et al., (2009) explain that there is a relationship between chest circumference and milk production because chest circumference reflects the stomach capacity of the animal. Stomach size is important because it reflects the ability of dairy cows to consume forage, which is a precursor to fat in colostrum.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 04 April 2024
DOI: 10.47191/ijcsrr/V7-i4-29, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

CONCLUSION

1. The Relationship between Body Condition Score (BCS) and Colostrum Production in PFH Cows:
   a. The research indicates a significant relationship between the body condition of Peranakan Friesian Holstein (PFH) dairy cows, measured by Body Condition Score (BCS), and colostrum production.
   b. The results show that higher BCS in PFH cows correlates with higher colostrum production.
   c. Although the relationship between body length and colostrum production is not significant, body height has a considerable influence on colostrum production.
2. The Relationship between Vital Statistics (Chest Circumference, Body Length, Body Height) and Colostrum Production in PFH Cows:
   a. Vital statistics such as chest circumference, body length, and body height are also related to colostrum production in PFH cows.
   b. Chest circumference has a significant relationship with colostrum production, indicating that larger chest circumference leads to higher colostrum production.
   c. Although the relationship between body length and colostrum production is not significant, body height has a considerable influence on colostrum production in PFH cows.

REFERENCES

1. Agil M., Lia B.S., dan H. I. 2016. Charasteristic And Body Size Identification Of Fries Holland Dairy Cow In Kawasan Usaha Peternakan Bogor. *Student E-Journal Fakultas Peternakan Universitas Padjajaran*, *5*(4), 1–12.
2. Atabany, A., Suprayogi, A., Muladno, M., Satrija, F., Tarigan, R., Sugiono, W., & Queen, Y. 2022. Produksi dan Kualitas Kolostrum dan Susu Kolostrum pada Sapi Perah yang Mengkonsumsi Daun Katuk Depolarisasi. *Jurnal Ilmu Pertanian Indonesia*, *27*(2), 263–268. https://doi.org/10.18343/jipi.27.2.263
3. Badan Pusat Statistik Kabupaten Jombang. 2023. Kabupaten Jombang Dalam Angka 2023. *BPS Kabupaten Jombang*, 616. https://jombangkab.bps.go.id/publication/2023/02/28/252ea355997456e48926dfe8/kabupaten-jombang-dalam-angka-2023.html
4. Filian B.V., Sri A.B.S., Dian W.H., W. D. P. 2016. Hubungan Paritas , Lingkar Dada dan Umur Kebuntingan dengan. *Agripet*, *16*(2), 83–89.
5. Heryani L.G.S.S., Ni Nyoman W.S., dan I. W. N. F. . 2018. Variabel Komponen Utama Pada Morfometrik Sapi Putih Taro Berdasarkan Pengukuran Badan. *Buletin Veteriner Udayana*, *10*(1), 93–99. https://doi.org/10.24843/bulvet.2018.v10.i01.p15
6. Kurnia D., Dian W.H., dan Enny T.S. (2015). Produksi Susu Dan Performa Reproduksi Sapi Perah Pada Berbagai Paritas. *Agromedia*, *36*, 1–9. https://doi.org/DOI: https://doi.org/10.47728/ag.v36i1.211
7. Kusmayadi K., dan R. A. 2018. Bobot Badan Dan Ukuran Tubuh Sapi Perah Betina Fries Holland Di Wilayah Desa Cipangramatan Kecamatan Cikajang Kabupaten Garut. *Journal of Animal Husbandry Science*, *3*(1), 29–36
8. .Maylinda, S., & Basori, H. (2004). Parameter genetik bobot badan dan lingkar dada pada sapi perah. *Seminar Nasional Teknologi Peternakan Dan Veteriner*, *1*, 170–174.
9. Nugraha, P., Maskur, C. A., & Ervandi, M. 2024. Review : Faktor – Faktor Yang Memengaruhi Produksi Susu Sapi Perah Review : Factors Affecting Dairy Cow Milk Production. *Jurnal Sains Ternak Tropis*, *2*, 1–11.
10. Poczynek, M. 2023. Associations of Body Condition Score at Calving, Parity, and Calving Season on the Performance of Dairy Cows and Their Offspring Milaine. *Animals*, *13*, 1–9.
11. Pujiastuti, R. 2019. *Perhitungan Body Scoring Condition (BCS) Pada Sapi Perah*. 1–5.
12. Puppel, K., Goł, M., Grodkowski, G., Sl, J., Kunowska-sl, M., Solarczyk, P., & Łukasiewicz, M. 2019. Composition and Factors A ff ecting Quality of Bovine Colostrum : A Review. *Animal*, *9*(1070), 2–14.
13. Roche, J. R., Friggens, N. C., Kay, J. K., Fisher, M. W., Stafford, K. J., & Berry, D. P. 2009. Body condition score and its association with dairy cow productivity, health, and welfare. *Journal of Dairy Science*, *92*(12), 5769–5801. https://doi.org/10.3168/jds.2009-2431
14. Susilorini, T. E., Maylinda, S., Surjowardojo, P., & Suyadi. 2014. Importance of Body Condition Score for Milk Production Traits in Peranakan Etawah Goats. *Journal of Biology, Agriculture and Healthcare*, *4*(3), 151–157.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 04 April 2024
DOI: 10.47191/ijcsrr/V7-i4-29, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

15. Syawal, S., Purwanto, B. P., & Permana, I. G. 2013. Studi hubungan respon ukuran tubuh dan pemberian pakan terhadap pertumbuhan sapi pedet dan dara pada lokasi yang berbeda. *Jitp*, 175–188. https://core.ac.uk/download/pdf/25493665.pdf

Cite this Article: Ike Mawarni Handayani, Puguh Surjowardojo, Tri Eko Susilorini (2024). Relationship between Body Condition and Colostrum Production in Crossbred Friesian Holstein Dairy Cattle: A Case Study at KUD Anjasmoro Dairy Farm. International Journal of Current Science Research and Review, 7(4), 2258-2264