

Production Trait of Crossbreed Cattle and Reproductive Disorders in Brahman Cross (BX) Breeding Program at PT Lembu Jantan Perkasa

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INTRODUCTION

The feedlot industry in Indonesia has developed very rapidly, along with the increase in meat consumption. Brahman Cross (BX) is an imported beef cattle from Australia which is widely used by feedloters as broodstock. Feedloter chooses BX cattle because besides the price is quite cheap, this breed also has a very good growth factor [1].

In order to support the self-sufficient of beef meat, feedloters who imported BX from Australia have to conduct breeding program as part of the Ministry of Agriculture decree no. 02/PERMENTAN/PK.440/2/2017 related to the import of ruminants into Indonesia. BX Cattle is often crossed with other breeds through artificial insemination programs, in order to provide calving ease and to produce high-weight cattle.

Beside the target to produce good body weight and average daily gain (ADG) of the calf from crossbreeding, the feedloters have also to manage the breeding efficiently by taking care of the reproductive disorder that might be affected the production.

Good reproductive efficiency will have a positive impact on increasing livestock production [2]. In various breeding programs, there are many factors that can affect the reproductive efficiency of cattle, such as reproductive disorders. Reproductive disorders can be a major economic problem in a farm. These reproductive health problems can be the bottleneck in the production process and productivity in the livestock sector [3].

Therefore, this study will discuss the production performance in various cross-breed cattle and reproductive disorders in a feedlot breeding program.

MATERIALS AND METHODS

The research data were obtained based on the breeding program of PT Lembu Jantan Perkasa. PT Lembu Jantan Perkasa (LJP) is one of fattening company established in 1990, which has been

engaged in the breeding program since 2004.

1. Production Performance.

Data from the study were obtained based on the production data of PT LJP's breeding program. Production data were data of crossbred calves from BX and various bulls (Limousine, Simental, Brahman, Bali). Production performance data was focused on data of birth weight, weaning weight and average daily gain (ADG) from 2013 to 2017. Data regarding the appearance of livestock production is expected to be the basis for selection of livestock related to the crossbreeding results with the best level of production. Measurement of birth weight, weaning weight, and ADG calculation was carried out by the breeding program officer at PT LJP.

2. Reproductive Disorders.

Data from the study were obtained based on the database of the evidence of reproductive disorder cases at PT LJP's breeding program. Reproductive disorders were cases of reproductive problems that occurred from 2013 to 2017. Health examination of reproductive organs and diagnosis of reproductive disorders are carried out by veterinarians from PT LJP. Data regarding reproductive disorders is expected to provide scientific information regarding the most common reproductive problems. In addition, it is expected that it can be the basis for management evaluation, prevention and treatment.

Data was analyzed using Microsoft Excel. Data was presented in the mean and standard deviation.

RESULT AND DISCUSSION

Production Performance.

The total sample used in the production performance assessment is 256 calves from various crossbreeding. The results of data analysis of birth weight, weaning weight and average daily

gain of calves in various breeds are presented in Table-1.

The average of calf birth weight shows varied results. The birth weight of cross-bred calves between Brahman Cross and Limousine has the highest birth weight (24,76 ± 2,62 kg), followed by Brahman (24,74 ± 2,54 kg), Simental (24,73 ± 2,65 kg), and Bali (24,53 ± 2,94 kg). Abdullah (2011), reported that the cause of differences in birth weight is genetic from the bulls and cows, age and size of the cow's body condition when conception, quality and maturity of the egg when fertilized, the number of calves, nutrition from the cows during pregnancy, the presence of disease infection, and the stress level [4].

Table-1. The average of calf birth weight, weaning weight, and daily gain in various crossbreed cattle.

Breed	Calf Birth Weight (kg)	Calf Weaning Weight (kg)	ADG (Average Daily Gain)
BX x Limousine	24,76 ± 2,62	73,81 ± 8,93	0,523 ± 0,10
BX x Simental	24,73 ± 2,65	73,66 ± 8,91	0,521 ± 0,09
BX x Brahman	24,74 ± 2,54	73,22 ± 8,17	0,520 ± 0,09
BX x Bali	24,53 ± 2,94	73,32 ± 7,15	0,546 ± 0,08

The average age of weaning in the PT LJP breeding program is ± 3 months. The weaning weight of cross-bred calves between Brahman Cross and Limousine has the highest weaning weight (73,81 ± 8,93), followed by Simental (73,66 ± 8,91), Brahman (73,22 ± 8,17), and Bali (73,32 ± 7,15). Lu, (2002) reported that weaning weights varied depending on genetic influences, weaning age, health and maintenance management, especially the aspects of feeding which greatly influenced the ability of the cows to produce milk during the period of pre-wean growth [5].

The weaning weight of cross-bred calves between Brahman Cross and Bali has the highest daily gain (0,546 ± 0,08). This is in line with what was reported by Purwantara *et al.* (2012), that Bali cattle have a fast growth rate compared to other breeds [6].

Reproductive Disorders.

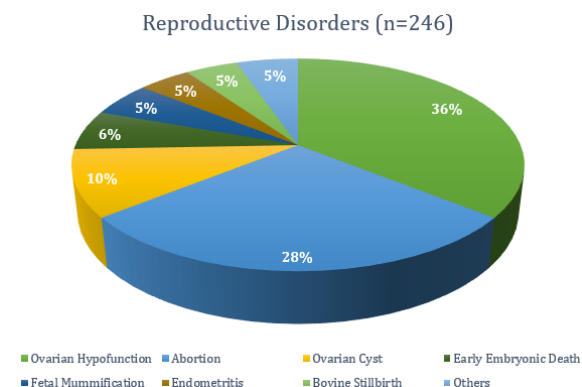
Health examination of reproductive organs is very important in livestock breeding programs, both at the time before artificial insemination and also in cases where pregnancy does not occur after artificial insemination [8]. The total population of productive cows used as the study sample was 1176 cows. Cows affected by reproductive disorders are 246 cows (Table-2).

Table-2. The relative frequency of various

reproductive disorders in Feedlot Company.

Number of Cows Affected	Number of non-Affected Cows	Total Number of Cows Examined
246	930	1176
20,91%	79,09%	100%

Reproductive disorders in beef cattle can generally be caused by several things including reproductive tract anatomic abnormalities, functional disorders, management errors and disease infections [8]. Reproductive disorders that occur in PT LJP are ovarian hypofunction, abortion, ovarian cyst, early embryonic death, fetal mummification, endometritis, bovine stillbirth, and others (dystocia, bovine macerated fetus, mastitis, pyometra, prolapse) (Figure-1). The most common reproductive disorders are ovarian hypofunction (36%), abortion (28%), and ovarian cyst (10%). The rarest reproductive disorders are categorized in other disorders (5%). In this category, reproductive disorders occurred in no more than 5 cases in the five-year period.



*Others: Dystocia, Bovine Macerated Fetus, Mastitis, Pyometra, Prolapse

Figure-1. The relative frequency of various reproductive disorders in Feedlot Company.

Further examination regarding the causes of reproductive disorders is very important for this reproductive health problem prevention program. Providing antibiotics and planning a routine vaccination program is highly recommended for reproductive disorders caused by infectious agents such as endometritis, early embryonic death, etc. Abortion in PT LJP caused by management error such as trauma. There were no infectious agents found that could cause abortion at PT LJP. Abortion is generally caused by management errors such as physical trauma. Reproductive disorders caused by management errors such as ovarian hypofunction, ovarian cyst, etc., improved management especially nutrition is highly recommended [9].

CONCLUSION

The results showed the ADG of Cross breed BX and Bali cattle is higher compare to the others, although the birth weight is the smallest among others. The reproductive disorders can be suppressed by improved management.

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REFERENCES

- [1] Soeharsono, R.A. Saptati, K. Diwyanto. 2010. Penggemukan Sapi Lokal Hasil Inseminasi Buatan dan Sapi Bakalan Impor dengan Menggunakan Bahan Pakan Lokal. Seminar Nasional Teknologi Peternakan dan Veteriner.
- [2] Karnaen dan Arifin J. 2007. Kajian Produktivitas Sapi Madura (*Study on Productivity of Madura Cattle*). *Jurnal Ilmu Ternak Vol 7:2, 135-139*.
- [3] Khan, M.H., K. Manoj., Pramod, S. 2016. Reproductive disorders in dairy cattle under semi-intensive system of rearing in North-Eastern India. *Vet World Vol 9: 512-518*.
- [4] Abdullah, A. 2011. Analisis pola pertumbuhan sapi perah fries holland (FH) betina sampai kawin pertama. Skripsi. Fakultas Peternakan, Institut Pertanian Bogor. Bogor.
- [5] Lu, C.D. 2002. Boer goat production: Progress and perspective. Vice Chancellor of Academic Affairs, University of Hawai'i Hilo, Hawai. (<http://www.uhh.hawaii.edu/uhh/vcaa/>)- Accessed on September 2, 2018
- [6] Purwantara B, Noor RR, Andersson G, and Rodriguez-Martinez H. 2012. Banteng and Bali Cattle in Indonesia: Status and Forecasts. *Reprod Dom Anim 47 (Suppl. 1), 2-6*.
- [7] Hashaider, P. 2007. How To Raise Cattle. USA. Voyageur Press.
- [8] Inounu, I. 2017. Supported Science and Reproductive Technology to Achieve Cows Pregnancy Program Successfully. *WARTAZOA Vol. 27 No. 1 : 023-034*.
- [9] Nurhayati, I.S, R.A Saptati, E. Martindah. 2018. Handling of Reproduction Disturbance for Supporting Dairy Cattle Farming Development. Semiloka Nasional Prospek Industri Sapi Perah Menuju Perdagangan Bebas : 140-147.