

## **Brahman Cross Development in Village Breeding Centre of the *Sarjana Membangun Desa*: Pitfall and A Lesson Learned**

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**Abstract.** This study was conducted to evaluate the cattle development regarding the pitfall to be lesson learned on cow-calf operation of Brahman Cross (BX) of farmer groups in Village Breeding Centre (VBC) in Central Java province. Data on productivity of BX were compiled from 547 Brahman cows of 43 VBC of The *Sarjana Membangun Desa* (SMD) program years 2008-2009 distributed in 10 regencies. Dynamic population, calf-crop, calf and dam mortality, rate of second calving, and service per conception (S/C) were recorded. Quantitative and qualitative descriptive analyses were applied in this study. Cow-calf operation of Brahman Cross in 43 VBC was unsuccessful in terms of low reproductive rate for the second pregnancy and calving as well as a high rate of calf and dam mortality. The rate of the second calving was 2.89%. Calf and dam mortality were 17.27 and 12.23% for the SMD year 2009, meanwhile 25.67 and 7.08% for the SMD year 2008, respectively. Cow-calf development of BX in 43 VBC with the goal of increasing cattle populations was not significant. Some experiences on unsuccessful cow-calf development of BX must be taken into account and become a lesson learned for policy and program formulation in terms of cattle development through cow-calf operation of BX. The real actions through synergism and collaboration among parties (stakeholders) to solve the problems in BX development should be implemented in order to increase farmers' income, and to achieve the main goal in the acceleration of self-sufficiency in beef production.

**Key Words:** Beef cattle development, Brahman Cross, breeding, calf-crop.

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### **Introduction**

Beef cattle business in Indonesia can be grouped into several interrelated activities, namely; (i) preservation or conservation, (ii) breeding or genetic quality improvement, (iii) proliferation or cow-Calf Operation (CCO), and (iv) growth and fattening (Deptan, 2010). Beef breeding stocks have an important role increasing production and productivity of beef cattle industry. Aspects of livestock breeding in the sub sector of livestock have a strategic role as breeding stocks are the beginning of a series of animal production process (Samariyanto, 2004). To ensure the availability of breeding stocks and to meet the demand of beef cattle in good quality and sufficient quantity, research and development are required. Now days, a high demand for dams and yearling cattle cannot be fulfilled by beef cattle breeding farms in Indonesia.

In Indonesia, the breeding of beef cattle are mainly conducted in the Village Breeding Centre (VBC) which is the main supplier of cattle for fattening. In addition, cows imported from Australia are another source of supply. However, the main source of beef for domestic consumption is highly dependent on breeding farms in the form of VBC in the country (Hadi and Ilham, 2002). An effort to develop breeding cattle in Indonesia is a strategic step for the provision of national breeding stocks in order to face the era of free markets and to reduce dependence on imported feeder cattle. Starting in 2006, BX cattle was developed, which was originally imported from Australia as feeder cattle to be slaughtered, but some 10-15% were young cows and pregnant cows.

Breeding Stocks are one of the means of livestock production which is strategically influential in increasing production and productivity of livestock so that they must be

produced and distributed according to standard quality and minimum technical requirements (Ditjennak, 2007). Good Breeding Practice Guidance has been issued under Agriculture Ministry regulation No 54/Permentan/OT.140/10/2006 (Deptan, 2006). Various problems of beef cattle breeding business in Indonesia have been reported by Hadi and Ilham (2002), which were crucial finding, namely; (1) very small ownership per farmer (1-3 heads).

with simple rearing technology, (2) breeding are generally carried out in low-land areas with limited feed availability, (3) low breeding productivity due to high service per conception, long calving interval, high pre-weaned calf mortality, and the presence of parasites, (4) need strong integration between breeding as a yearling supplier with fattening farms and (5) Artificial Insemination programs needs to be improved by providing semen of Simmental or other breeds in sufficient quantities. Samariyanto (2004) reported that decreasing cow performances was caused by inbreeding that resulted in low resistance to diseases, low fertility rate, an increase in the occurrence of disability, a decrease in feed conversion. Another cause was inappropriate replacement system not followed by a good selection and culling. In consequence, the best dams and sires are not used to improve beef cattle quality. Even, the use of poor quality breeding stocks has been accelerating the decline in animal performances.

This study was aimed at evaluating beef cattle development program mainly the pitfall and lessons learned from BX breeding program in farmer groups in VBC of the SMD program year 2008-2009.

## Materials and Methods

Data was collected from the compilation of 547 BX cow productivity records of Village Breeding Centre (VBC) which have been developed since 2008, involving 43 VBC of the

SMD program years 2008 and 2009 spread over 10 districts. Population dynamics, calf production, calf and cow mortality and the rate of second calving were evaluated in each VBC. Service per conception (S/C) was evaluated for pregnant cows. Quantitative and qualitative descriptive analysis was applied in this study.

## Results and Discussion

### Pitfalls of Brahman Cross breeding program

The development of breeding industry is generally directed to meet the needs of stocks in sufficient quantity and quality in accordance with domestic and export demands (Samariyanto, 2004). In Indonesia, there are three actors of animal breeding, namely; (a) breeding center owned by community in rural areas (village breeding center), (b) breeding center owned by private companies / cooperatives/NGOs, and (c) breeding center owned by national or local government. Objectives of breeding are among others as follows: (a) to provide stocks that have technical, economical and social requirements in sufficient quantity and quality that is easily obtained, and (b) to build institutional capacity of rural breeding centers. The main focus of quality improvement is to plan breeding program in line with the strategy of national breeding policies that are purification/conservation, crossing and the creation of new breeds.

Beef cattle breeding conducted by community in rural areas (VBC) is characterized by unstructured, small-scale, simple management, the use of improvised technology. The role of government is intended to encourage the VBC be directed to breeding activities (Samariyanto, 2004). The development program of beef cattle in the form of VBC for BX has been conducted by the Directorate General of livestock services in several locations. Development of BX in VBC has been conducted since 2006 in some areas of Central Java province, the southern part of

the province such as the district of Banyumas, Purbalingga, and Banjarnegara. BX development and distribution are conducted by farmer groups with different models of revolving as well as profit sharing according to the agreement between a farmer group and technical officer of the local directorate of livestock services in charge in each district.

Through the *Sarjana Membangun Desa* (SMD) programs, the development of BX was extended to several districts and provinces began in 2008. The SMD, a group of farmers accompanied by a Bachelor/honor in Animal Husbandry or veterinarian, 12 BX cows were granted to produce calves (increasing population). Besides, they could rear other breeds (local or crossbred) for fattening. Population dynamics and performance of BX cows of SMD program in 43 VBC for years 2008 and 2009 spread over 10 districts of Central Java province are presented in Table 1. Analysis was conducted on data records up to the period of September 2010 derived from the record of 547 BX cows.

Table 1 shows that the rate of calf production of the first pregnancy (cows were pregnant when received by farmer groups) was relatively high, an average of 77.08 percent for groups 1-19 and 83.81 percent for group 21-43. The occurrence of return to pregnant and the second calving were low with calve crop of 2.89 percent for SMD program year 2008. This fact was in agreement with the statement of Hadi and Ilham (2002) that problems in beef cattle breeding among others are as follows (1) service per conception (S/C) was quite high, reaching up to 2.60, (2) calving interval was too long, and (3) pre-weaned calf mortality rate was relatively high, reaching up to 50%. The index of S/C of BX cows in VBC ranged 1-7 with a relatively high average of 3.25. Luthan (2009) reported that the reproductive rate of BX was relatively low, reaching up to 40.8 percent and return to pregnant after calving was low. In general, cows in VBC observed was very thin

with body condition score (BCS) of 2-3, range 1-6. This condition was associated with factors of feed, insufficient feed given. Inefficient reproduction of beef cattle in Indonesia was mainly caused by the delay of post-partum estrus. The relationship between nutrient content of diets and the cow's body energy reserves affect the appearance of estrus (Winugroho, 2002) which can be evaluated through the Body Condition Score (BCS) (Moraes et al., 2007; Bridges and Lemenager; Drennan and Berry, 2006). BCS is also correlated with rebreeding efficiency (Selk, 2007) and could be used for optimizing production, health evaluation and nutritional status evaluation (Neary, 2007; Clay et al., 2007; Lamb, 1999). It is suggested by Winugroho (2002) that additional feeding was determined by the body condition of cows. Supplemental feed should be given for two months before and after calving when body conditions of cows below or just at the reference. Furthermore, additional feed was given after calving when cows have body condition above the reference.

A long calving interval is resulted in inefficient productivity of beef cattle in Indonesia caused mainly by the delay of post-partum estrus. Incorrect body conditions of cows not only reduces the production of milk but also prolong the anestrus conditions (day open). The body condition of cows closely related to the status of body energy reserves related to nutrition consumed by the cows before pregnancy and calving. The relationship between nutrient content of diets and body energy reserves influence the appearance of estrus (Winugroho, 2002). It is further recommended that in order for cows have a calf every year, they must be returned to pregnant in 90 days after calving and return to estrous within 35 days after calving so that they could be remated in the next cycle if the first mating is unsuccessful. Estrus is determined by the leutinizing hormone which is influenced by

Table 1. Population dynamics and the production performance of BX in 43 VBC for years 2008-2009

VBC group	Number of BX cows (head)	Number of calves from the first pregnancy (head, %)	Pre-weaning Mortality (head, %)	Cow Mortality (head, %)	Number of calves from the second calving (head, %)
Group 1-19	240	185 (77.08)	66 (35.67)	17 (7.08)	5 (2.89)
Group 20	12	0 (0)	0 (0)	0 (0)	0 (0)
	8*	8 (100)	2 (25)	0 (0)	1 (12.5)
	9	9 (100)	0 (0%)	0 (0)	0 (0)
Group 21-43**	278	233 (83.81)	63 (27.27)	33 (12.23)	0 (0)

\* Seven cows were pregnant (S/C of 1-7, mean of 3.25)

\*\* The number of cows retained was 128 heads (52.46%) and the number of calves was 112 heads (65.88%).

the pituitary, while pituitary activity is determined by body energy status.

An important issue of beef cattle in Indonesia is a decline in population that continues from year to year (Maluyu et al., 2010). The low productivity of livestock and the complexity of problems in beef cattle business systems are a challenge and an opportunity in the development of meat producing livestock. A solution that can be applied is to integrate beef cattle farms with a source of feed. A possible feed source for beef cattle is agricultural and plantation waste which has not been used optimally.

The production system of BX at the study area has adopted the model of integration by utilizing local feed resources for specific locations (Sodiq et al., 2009). Devendra (2007) classified livestock production system into three, namely; (i) the landless, (ii) crop-based, and (iii) rangeland-based. It is recommended to maintain the integration of livestock and crops, rice farming, plantation and grazing land for the development of cow-calf operation in order to sustain growth and intensification (Devendra, 2002). The appropriate innovative technology can transform plant wastes into a source of fiber for beef cattle's feed (Pamungkas and Hartati, 2004; Priyanti and Djajaneegara, 2004).

The utilization of agricultural and plantation wastes locally available in each region coupled with the use of agro-industry waste is one of efforts in developing a cheap feed (Wajyono and Hardianto, 2004). Furthermore, Winugroho and Widiawati (2004) reported that the use of probiotic supplement increased body weight of beef cattle, improve efficiency of low quality feed, increase pregnancy rates and shorten calving interval.

The occurrence of 100% cows returned to pregnant were found in the SMD program year 2008, group 20 (Table 1), the group carried out three stages of buying BX cows. Purchase of the first stage was 12 BX cows, but all cows were not pregnant which was then they were sold and the group made the second purchase of 8 BX cows and then third purchases of 9 BX cows, all cows were pregnant. Cows of the second purchase (8 BX cows have calved) and one cow had a second litter (S/C of 1), while the other six cows were in late pregnancy. Seven cows were mated using AI (average S/C was 3.25) and one cow was naturally mated using a PO sire.

Calf and cow mortality rate were relatively high that were 17.27 and 12.23%, respectively for the SMD program year 2009 and 25.67 and 7.08% for the SMD program year 2008. The

incidence of dam mortality was mostly due to prolapsus uteri. While many calves died due to born in a weak condition or died during pregnancy or stillbirth. Other mortality was due to dam did not suckle, as well as accidents due to being crashed by their mother or other cows.

#### **A lesson learned from BX breeding programs**

Failure (pitfalls) in BX cow development program must become a lesson to learn and considered in determining strategy and policy development in some areas of VBC. Regional Technical Meeting of the *Sarjana Membangun Desa* in 2009 in Cisarua conducted on November 24-25, 2009 (Ditjennak, 2009) recommended that to improve the performance of the SMD and BX cow productivity, the aspect of rearing by the SMD and the farmer groups need an attention by The Directorate of livestock services and Higher Education Institution (Universities). Failures of BX development in some areas need to get the attention of the Directorate General of Livestock services. Further, Deptan (2010) stated that Indonesia is currently experiencing major problems in breeding stocks or cow-Calf Operation (CCO) because it is unable to meet the needs of stocks or feeder cattle. Because of this condition, businessmen have been importing feeder cattle constitute commercial stock from Australia since the 1980s.

The development of BX cattle for breeding purposes was unsatisfactory. Some breeders at the VBC of the current study site were not able to make profits. The VBC obtained a package of pregnant cows at the end of 2006 (evaluation of the 3 districts) should have obtained some calves from dams that ideally have calved 2-3 times, assuming that calving interval was 15-18 months. The body condition of BX cows after calving was decreased because in sufficient feed given. The tendency of post-weaning price of the cows and the price of BX calves were too low, the price of a cow after weaning ranged from Rp. 3,250,000 to Rp. 6,750,000. Some

groups VBC failed in the aspects of rearing (high calf and dam mortality that had implications on the business aspects (Sodiq, 2009a). Business analysis reported by Harnowo (2010) on the Sari Widodo Farmer Group, a village breeding center supervised by a SMD showed a loss of Rp. 58,193,500. The Loss was caused by the death of the calves and dams, a relatively high feed costs and low selling price of BX dams. The blue Print of P2SDS (Deptan, 2010) noted that BX cows imported from Australia reared under the production system of integration were not able to reproduce like those of local beef cattle. To grow and develop well, BX cows require higher quantity feed and better quality feed. This was resulted in large costs of feeding which was estimated of Rp. 10,000/head/day.

In the perspective of national interest, BX cows will have relatively small contribution to increase cattle population if Calf crop in the level of VBC is very low supported by the tendency of difficulties in return to pregnant after calving. Goals of self-supported farmers groups (VBC) through the strengthening of capital such as the SMD, LM3 and other schemes for the BX cow breeding business will be difficult to achieve. Similarly, opportunities to improve accessibility to the financing through public funds such as bank (Sodiq, 2009b) will be hard. Sodiq (2010) reported that the results of an evaluation of 21 groups of the SMD in the province of Central Java, the value of assets owned by the majority group (86%) decreased. The main cause was the failure of BX cattle breeding and a decrease in the price of beef cattle at the time of trade. In addition, After calving, it is often found that they were difficult to be mated or have a long days open. In general, they have long calving intervals estimated of 500 days. Table 1 shows the number of BX cows retained to be reared by farmers relatively small (52.46%) as well as the number of the calves that remain reared also relatively low (65.88%). This shows that BX breeding for the purpose of increased

population had not yet shown maximum results. Farmers have a variety of reasons and considerations why they did not maintain BX cows, and they tend to refuse to keep these types of cattle. The main reason for refusal was related to BX behavior, external performance, production and reproductive performance, and low selling prices. BX cows imported into Indonesia are the feeder cattle or commercial stock that should be fattened for slaughter. But some of the cows (10-15%) were young cows that could be bred. Purchasing prices of BX cow should be cheaper than the price of BX bulls. Meanwhile, BX bulls sold to the slaughterhouse with a cheaper price than that of local beef cattle on the same size. It is therefore ideally the purchase price of pregnant BX cows to be kept in the CCO should be the same as that of BX bulls or even cheaper (Deptan, 2010). But in fact, the prices paid by farmers (cattle farmer groups) were relatively expensive. BX cattle procurement data of the SMD program year 2008 in the region under The University of Jenderal Soedirman coordination (n = 240 heads) shows that the purchase price per kg live weight of Rp. 23,500-27,500, an average of Rp. 12,559,400 (price per head ranged 10.9 to 14.87 million rupiah). At present, besides the high price of buying the BX dams, the selling price of dams after weaning was very low. The selling price of a BX dam after weaning ranged from 3.25-6.75 million with the average of Rp. 4.52 million. These conditions were very worrying and experienced by almost all cattle farmers in the region of BX development program in Central Java, resulting in failure to achieve goals of economic empowerment of farmers.

## Conclusions

BX cattle breeding through 43 VBC of the SMD program year 2008-2009 in Central Java province demonstrates the failure (pitfall), especially on the aspects of return to pregnant after calving and high calf and dam mortality

rates. The occurrence of second calving is very low (2.89%) with calf and dam mortality are relatively high, 17.27 and 12.23% respectively for SMD year 2009 and 25.67 and 7.08% for SMD year 2008.

The BX cattle breeding of 43 VBC in the region of Central Java province for the purpose of increasing population has not maximum in results. Farmers have a variety of considerations such as behavior, external performance, production and reproductive performance, not to retain the dam of BX (47.54%) and the calves (34.12%).

Failures in breeding experiences in 43 VBC of BX should become a lesson learned and need a serious attention from especially the local Directorate or national directorate of livestock services in charge in setting policy and program development of BX cattle breeding. Real efforts and a synergy with various parties need to be conducted to solve the problems in the development of BX for economic community empowerment and the achievement of the accelerating program of self-sufficient in Beef.

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