



**Evaluation of
Artificial Insemination of Beef Cattle UPSUS SIWAB Program Based on the Calculation of
Non-Return Rate, Service Per Conception and Calving Rate
In The North Kayong Regency**

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Abstract

This study aims to Determine the success rate of the Artificial Insemination in North Kayong Regency of West Kalimantan Province roomates has been done by IB officers. Artificial insemination is the process of introduction or delivery of cement into the genitals of female cows by means of made devices. North Kayong districts Regency is one of the which is administratively established Republic of Indonesia based on Law no. 6 of 2007 is an area that is developing cattle. The location that Became the focus of the evaluation of the success of Artificial Insemination is in three districts of Maya Island district, Sukadana and Seponti. Data used in this research is secondary Data Obtained from inseminator. The parameters used in this evaluation are the Non Return Rate (NRR), Service per Conception (S / C) and Calving Rate (CvR). The results Showed that the average of the three sub-districts in North Kayong district was for the highest 90% NRR in Sukadana district and the Lowest score of 67% in the Mayan Island district. S / C Obtained the highest number of 3.4 in Maya Island district and the Lowest S / C number district of Seponti 1.8. The highest score was 92% CvR in Sukadana district and the cancel CvR score was 64% in the Mayan Island district. The Conclusions Obtained based on the value of NRR, S / C, and CvR on artificial insemination evaluation with the best artificial insemination implementation are Sukadana district, followed by district of Seponti and last is Maya Island district.

Keywords: Artificial Insemination, Non Return Rate (NRR), Service per Conception (S / C) and Calving Rate (CvR).

Background

The government Department of Agriculture is trying to increase the population of cattle breeding program a special effort required pregnant cows (UPSUS SIWAB). West Kalimantan province has a population of as many as 156 943 cattle tail with a number of cutting as much as 53 611 individuals per year by bringing in cattle as much as 38% of the island of Madura, East Java and are still experiencing a shortage of cattle. Regency of North Kayong is one of the regency in West Kalimantan province seeks to increase beef production by increasing the number of holdings beef and genetic quality of livestock, this can be done by applying artificial insemination (AI) in beef cattle, because the cement used against artificial insemination bulls are derived from both genetic and figures services per conception are average smaller than natural mating. Artificial insemination is a form of reproductive biotechnology in an effort to

increase production and productivity of beef cattle. The mandate of the Law of the Republic of Indonesia Number 41 of 2014 on the Amendment of Act No. 18 of 2009 on Livestock and Animal Health, the development of livestock sub-sector is part of a national development that is getting considerable attention from the government, to meet their food needs and nutrition through livestock development efforts, to achieve these objectives will be pursued business development and implementation of appropriate technology, among others, the advancement of science and technology is developing very large.

Geographically, North Kayong district is in the South side of West Kalimantan province or be in position 0° 43 '5.15' 'South latitude up to 1° 46 '35.21' 'South latitude and 108° 40 '58.88' 'East Longitude up to 110° 24 '30.05' 'East Longitude, has six districts, namely district Maya Island, Sukadana, Simpang Hilir, Teluk Keramat, Seponti, and Karimata

islands. North Kayong Regency conditions have the potential cattle development, livestock development ironically very limited data, the beef production in January to December 2016 reached 39.100 Kg /year (North Kayong BPS, 2016). North Kayong regency has a population of as many as 5,568 female cattle tail, the female parent as much as 3,742 tails and target UPSUS SIWAB in 2017 was as much as 1,323 targeted acceptor tail 860 tail gestation (Dirjen PKH, 2017). In fact happened in the district of North Kayong artificial insemination process cannot be run properly. Sometimes there are some animals that require more than one artificial insemination, causing losses to the farmers. Therefore, do research on the evaluation of the success of artificial insemination in three districts in North Kayong so as to improve the success rate of artificial insemination by evaluating artificial insemination. Artificial insemination evaluation in research in North Kayong District is comprised of some of them are *non-return rate* (NRR), *service per conception* (S/C) and the *calving rate* (CvR).

Materials and Methods

The research material used is cattle owned by ranchers people become acceptors IB in 2015 until mid-2017 in three sub-districts of North Kayong secondary data to calculate the value of *the non return rate* (NRR), *conception rate* (CR), *service per conception* (S/C), and the *calving rate* (CvR).

The method used in this research is observational and descriptive analysis as well as in the test with Test Proportion to know the difference between the two regions, followed by a linear regression analysis to estimate the various parameters. To facilitate the counting procedure and prevent *Humman Error* constat used statistical software.

The parameters measured were (Toelihere, 1985)

- a. Non-Return Rate (NRR), the percentage of animals that do not come back asking to marry or animals that do not return estrus after the implementation of the first insemination. Observations NRR

follow inseminator who are carrying out the task and note the date the artificial insemination. Observations back on the 21-day and 42 the next day if the cattle in the artificial insemination experience lust back or not. Data have been obtained is calculated using the formula Iswanto and Widyaningrum (2008) as follows:

$$NRR = \frac{\Sigma \text{cow in AI} - \Sigma \text{pregnant cow} \times 100\%}{\Sigma \text{cow in IB}}$$

- b. Service Per Conception (S / C), defined as the number of service insemination performed to produce a pregnancy or conception.

$$S/C\% = \frac{\Sigma \text{AI to happen Bunting} \times 100\%}{\Sigma \text{acceptors were pregnant}}$$

- c. Calving Rate (CvR), obtained from the data recording the inseminator then analyzing CvR to see the data that gave birth cattle and livestock were inseminated each year. Data have been obtained is calculated using the formula Iswanto and Widyaningrum (2008) as follows:

$$CR\% = \frac{\Sigma \text{Cattle born} \times 100\%}{\Sigma \text{Cattle were in AI}}$$

analysis of the data using the formula of each of the parameters according to the indicators on the evaluation Insemination Artificial. Data obtained described to compare with relefan studies in evaluating artificial insemination.

Results and Discussion

Non-Return Rate (NRR)

Non Raturtn Rate in three sub-districts in North Kayong be as shown in Table 1. Value NRR in the district of the island Maya, get the results 67% to NRR 21 and 64% for NRR 42. NRR value in the district Sukadana in getting the results NRR 90% to 21 and 87% for 42. NRR NRR value in the district Seponti in getting the results NRR 92% to 21 and 88% for NRR 42. This figure can be assumed that in the district of Maya Island 67 % pregnant at days 21 days

and 64% bunting on a day to 42 days. Sukadana 90% in the district bunting on a day to 21 days and 87% bunting on a day to 42 days. Seponti 92% in the district bunting on a day to 21 days and 88% bunting on a

day to 42 days. Results of this research is still in the range of numbers Non-Return Rate (NRR) IB evaluation research in Kendal district by 83.33% to 86.66% (San *etal.*,2015).

Table 1. Mean Values Non-Return Rate (NRR) in the District of Maya Island, Sukadana and Seponti North Kayong Regency.

No	District	Non-Return Rate (%) 21	Non-Return Rate (%) 42
1	Maya Island	67	64
2	Sukadana	90	87
3	Seponti	92	88

NRR success is influenced by the condition of livestock views of body condition score (BCS), concern for livestock owners to cow inseminator and alertness. Condition of livestock in the district North Kayong still a lot of cows that had a BCS low it will result in thin cows will have difficulty bunting for feed energy will be used for basic living and the growth of meat. Maya Island has NRR lower than other regions because most farmers still maintain in ekstensive herded cattle in the field. Farmers in the district Seponti Sukadana and about 50% have kept cattle with maintenance-intensive system and have BCS better than Maya Island. Factors related to the condition of livestock is the fertility rate including age males and females, season, age cement, diseases, treatment techniques to the cement and the influence of environments more Concern livestock owners on the island of Maya lower than livestock owners in the district Sukadana and Seponti, because the farmers in the Maya island largely made efforts to raise cattle as a sideline for savings. Caring owners of livestock to livestock breeding is

usually determined by experience, the longer raise cattle the more experienced know the cattle have symptoms of lust so it must be done mating injection (Artificial Insemination). Farmers who only made the cattle as a sideline as happened on the island of Maya, the level of NRR low 67% at day 21 and 64% at day 42, because farmers only focus looking grass feed, do not focus on detecting lust and do not understand calendar mating cows. The differences are influenced by several factors such as feeds, environmental, precise estrus detection and age of cattle breeding. Ability to pregnant cows at first insemination is affected by environmental variation such as the state of the cage and the cage temperature (Nuryadi and Wahyuningsih, 2011).

Service per Conception (S/C)

The calculation *Service Per Conception (S/C)* is shown in table 2. Below obtained figures as follows Seponti lowest number in the district was 1.8 and the highest rate in the district of Maya Island at 3.4.

Table 2. Mean Values *Service per Conception (S/C)* in the District of Maya Island, Sukadana and Seponti North Kayong Regency.

No	District	Service Per Conception (S/C)
1	Island Maya	3.4
2	Sukadana	1.9
3	Seponti	1.8

ServicePer Conception (S / C) is the number of insemination services needed by a female until pregnancy occurs. In this calculation, sterile females are not taken into

account. *Service Per conception* or the number of marriages per pregnancy is one factor that affects one reproductive efficiency (Afiati *etal.*,2013). The diversity

of the value of the S / C in the District of North Kayong because of differences in regional characteristics of districts, sub-districts Maya Island has the S / C is as high as 3.4 means less good because it is an island areas that require long travel time for the transport of frozen semen. Handling and storage of frozen semen were far too influential on the existing temperature, making *straw* from *container* the current will be used, how *thawing*, keabseptikan before IB and IB techniques. S / C ideal and normal between 1.6 to 2 (Dyer, 2010). The lower the value of the S/C at sub-district and Sukadana Seponti in point 1.8 and 1.9 of the higher fertility of the parent animals. This value is also not much different from the evaluation report IB in Sambas district, namely 1,7- 3,0 (Setiawan, 2017). S/C closer to the truth when semen derived from bulls of high fertility. It is less meaningful in cow fertility rate comparison when used semen from a number of diverse male fertility.

Good and bad value S / C can be affected by several factors, such as feed, breeders, isiminator skills. Farmers have an important role in the detection and reporting to isiminator lust. Farmers who are less responsive can result in incorrect use in the detection of estrus so late in peleporan sehingga iseminasi less time in doing right. isiminator less skilled are usually less precise in time insemination.

Calving Rate (CvR)

The calculation *calving rate* (CvR) shown in Figure 1. Below are the following figures obtained the lowest number in the district of Maya Island by 64% and the highest rate in the sub Sukadana by 92%.

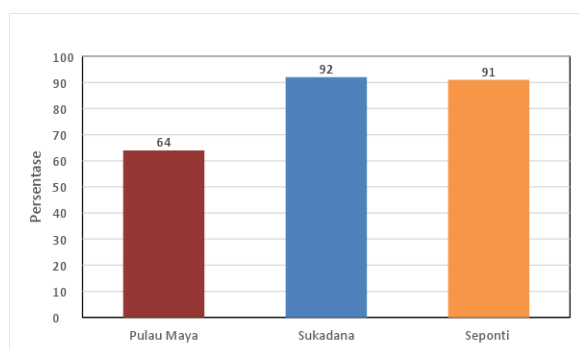


Figure1. *Calving Rate* (CvR) in the District of Maya Island, Sukadana and Seponti North Kayong Regency.

Value CvR in this study is still better than research Ihsan et al (2008) states that the value of the norm CvR which stands at 62%. There are several factors that affect the low value of CvR, among which the death of the embryo, and the females feed their own condition. It also depends on the post in the physiological status of livestock, cattle are still first give birth have a higher risk of failure than those who had repeatedly given birth. Poor nutritional conditions can result in the fetus is in the womb die. This is according to Andi et al., (2014) suggest one factor is high CvR nutrients in feed, resulting in a shortage of protein in the ration of female animals experienced a weak estrus, mating again, early embryonic death and abortion. Fernanda et al. (2013) stated that young animals have a high potential for failure than those already given birth.

Conclusion

The conclusion is based on the value of NRR, the S / C, and CvR on the evaluation of the implementation of IB IB districts and sub-districts Sukadana best, followed by the sub-district and the last is a district Seponti Maya Island.

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