

BREEDERS' LEVEL OF KNOWLEDGE IN DETECTION OF OESTRUS TO SUPPORT THE SUCCESS OF ARTIFICIAL INSEMINATION (AI) ON CATTLE IN TUBBI TARAMANU DISTRICT, POLEWALI MANDAR

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ABSTRACT

Artificial insemination (AI) is one of the biotechnologies in the field of livestock reproduction that allows humans to mate female livestock without the need for a male, the purpose of this study was to determine the extent of knowledge of breeders on the symptoms of oestrus in cattle to the linkage of artificial insemination (AI). The purpose of this study was to determine the extent of knowledge of farmers on the symptoms of lambing in cattle to the linkage of artificial insemination (AI). this research was conducted in the form of a field survey, while data collection was carried out by interview. In this study, the analysis technique used was descriptive analysis. Based on the results of the study, it was found that the level of knowledge of farmers on the detection of oestrus in livestock to support the success of IB in cattle is out of 100 respondents who know 2.47%, know enough 0.53%, and do not know 4.71%. This value is influenced by several factors, one of which is age, the higher the age of the breeder, the more difficult it is to accept new technology, namely AI, because the breeder already feels comfortable with the knowledge they get from generation to generation.

Keywords: Artificial insemination, Knowledge, Oestrus, Cattle

INTRODUCTION

The livestock business in Indonesia has bright prospects in the future due to population growth, increased income, and community demand for animal protein nutrition (Susanti *et al.*, 2023; Sukoco *et al.*, 2024). Livestock is one of the strategic commodities to be developed and able to support food security in provide the need for animal protein nutrition (Sukoco *et al.*, 2023). One of the livestock developed by the people of Indonesia is cattle, especially beef cattle (Sukoco *et al.*, 2023). Cattle have an essential role as a source of livelihood and in improving the nation's intelligence by providing nutritious food such as meat and milk. Indonesians consume only 2.66 kilograms (kg) per capita per year, or below the world average of 6.4 kg per year (Indonesia.go.id, 2023). Improving the quality of human resources in Indonesia will only happen if it is followed by increased livestock

production to provide nutritious food (Salasia, *et al.* 2011).

The current condition of cattle farming in Indonesia is still experiencing a shortage of local cattle supply because the increase in population is not balanced with national needs, so imports of feeder cattle and meat are increasing (Fuady *et al.*, 2023). Indonesia's beef demand is currently generated from three suppliers: smallholder livestock (local livestock), smallholder livestock industry (fattening ex-imported cattle), and importing. Furthermore, it is explained that smallholder livestock businesses remain the main focus to maintain the balance between supply and demand for beef cattle (Siregar, 2015). In order to support the achievement of the national cattle self-sufficiency program, it is necessary to increase the domestic cattle population, one of which is making the UPSUS SIWAB program.

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The UPSUS SIWAB program is an effort to increase the population of cattle and buffaloes in order to provide sufficient livestock and meat availability. It has been outlined in the Minister of Agriculture regulation No. 48/permentan/pk210/10/2016 concerning special efforts to accelerate the increase in pregnant cattle and buffaloes (Setiawan, 2018). One of the UPSUS SIWAB programs is artificial insemination (AI).

Artificial insemination (AI) is one of the biotechnologies in the field of livestock reproduction that allows humans to mate female livestock without the need for a male. AI is a series of planned and programmed processes because it concerns the genetic quality of livestock in the future. A way to accelerate the increase in broiler cattle population by optimising AI technology. AI that supports efforts to increase population and improve the genetic quality of livestock. AI is a new breakthrough technology that is currently being developed in Indonesia which aims to increase the amount of production in livestock and the quality of genetic quality in livestock. (Setiawan, 2018).

Problems in the field related to the spread of AI technology can stem from weaknesses in the service system, weaknesses in the resources of AI officers (inseminators), weaknesses in the human resources of breeders, and difficulties in reaching remote areas (Taufik, *et al.*, 2023). Apart from these weaknesses, the most crucial element is the acceptance of the technology by the breeders. The critical step in implementing AI technology in cattle is detecting lambing accurately. Inaccuracy in performing lambing detection leads to failure in implementing mating in livestock (Dawit *et al.*, 2021). This is due to the time of ovum release from the ovary (ovulation) or the productive time for cattle mating (Hafizuddin *et al.*, 2012).

Tubbi Taramanu District is one of the districts in the Polewali Mandar Regency. Most breeders in Tubbi Taramanu district make cattle a side business with a maintenance system that needs more attention. This can

cause a decrease in cattle productivity and can also affect the level of increase in the cattle population. The influence on cattle is one of them due to the need for knowledge about the application of AI technology found on cattle farms in Tubbi Taramanu District.

To date, AI technology has been applied in the Tubbi Taramanu district. However, the community's knowledge about AI is minimal and needs improvement. The knowledge of the community about lambing and the success of AI is still minimal, and this is often due to the attitude of breeders who do not want to do what has been explained by the extension agent. From these data, researchers are interested in further examining the level of knowledge of cattle breeders in the Tubbi Taramanu district towards artificial insemination technology.

RESEARCH METHODS

This research was conducted from August to September 2022, located in Pollewani Village, Tubbi Taramanu District, Polewali Mandar Regency, West Sulawesi. The type of research used is quantitative descriptive research. The data sources used are primary data, namely data obtained from the field through direct interviews with cattle breeders, and secondary data, namely data obtained by collecting data from related agencies, such as from the Office, UPTD Wonomulyo.

Population and Sampel

The population in this study were all breeders of AI acceptors in Tubbi Taramanu sub-district who were handled by inseminators. The sample used in this study was 100 respondents. The sampling method in this study used the simple random sampling method.

Data Analysis

In this study, the analysis technique used was descriptive analysis.

RESULTS AND DISCUSSION

Breeders' Characteristics

Based on the answers from 100 questionnaires, it is known that breeders who are classified as productive age aged 20-40 years, as many as 52 people, 43 people aged 41-60 years, and 4 people aged over 61 years are the most productive age with good workability (Tarmizi, 2018). Most of the 86 breeders out of 100 samples of breeder respondents were male and 14 were female with different levels of breeders who had formal education at the elementary level 49 people dominated the highest level of education, 14 breeders at the junior high school level, 26 breeders at the senior high school level and the highest level of education of a 3-year Diploma/ Bachelor breeders as many as 11 breeders being the lowest level of education when compared to elementary, junior high, and senior high school. The level of primary school

education that breeders mainly obtain will affect the management and productivity of the livestock raised. The breeders' education level will affect thinking patterns, learning ability, and intellectual level. Formal and informal education obtained by breeders will have broad knowledge and insight, making it easier to respond to an innovation that is beneficial to their business (Alim and Nurlina, 2007).

A total of 75 breeders have a main job as a farmer, 8 breeders as self-employed, 6 breeders as village officials, 4 breeders as village officials, 4 breeders as housewives, and 3 breeders as sub-district employees (ASN.) This proves (Wirdhayati et al., 2006) that the function of the livestock business is more aimed at savings and will be used for other needs, breeders such as farming, food crops, and civil servants. As found in table 1

Table 1. Breeders' Characteristics

Characteristics	Category	Number of respondent data
Age	20-40	53
	41-60	43
	>60	4
Sex	Male	86
	Female	14
Level Education	No School	0
	Elementary School	49
	Junior High School	14
	Senior High School	26
	a 3-year Diploma/ Bachelor	11
Non Formal	Animal Husbandary Course	0
	Never	0
Job	Village Officials	6
	ASN	3
	Not Job	4
	Self Employed	8
	Farmers	75
	Livestock Farmer	4
Number Of Cattle	1-5	54
	6-10	33
	11- 15	6
	>15	7
Maintenance Method	Intensive	84
	Semi Intensive	11
	Ekstensive	5

Source : Primary Data

Respondents who owned 1-5 cows were 54 breeders, 33 breeders owned 6-10 cattle, 6 breeders owned 11-15 cattle, and above 15

cattle were owned by 7 breeders. The cattle owned by the respondents were kept by stalling as many as 84 breeders, 11 breeders by stalling

and grazing and 5 breeders had released. Cattle owned by breeders with the aim of fattening were kept by stalling. In the same study, breeders grazed cattle mostly in rice fields if it was not planting season. However, there are also cattle grazed in the field and field. According to (Wirdahayati *et al.*, 2006), livestock owned by breeders who are kept in cages with fattening businesses is generally in preparation for marketing in the month of Eid al-Adha

Breeders' knowledge of oestrus

Breeders who know the signs of oestrus in the form of restlessness, vocalizing, and decreased appetite as much as 17%, but breeders do not know the signs of lameness in the form of a swollen vulva, reddish color, warm to the touch, mucus discharge, and riding and being ridden by friends, (Dilla et al, 2019) that it ensures that breeders do not provide oestrus in cattle by checking or checking the external genitals of cattle in oestrus, breeders only mark oestrus in cattle in the form of

changes in attitude by riding other cattle as much as 83%. Breeders usually make observations of oestrus in the morning, afternoon and evening by 6%, breeders who make observations in the morning, or afternoon or evening by 20% and 74% of breeders do not necessarily do when observations of oestrus are made, the length of oestrus is also essential knowledge for breeders, but in this study 67% of breeders did not know the length of oestrus in cattle, breeders who knew the size of oestrus above 18 hours 22%, 14-20 hours 4%, above 20 hours by 7%. According to Rottgen et al. (2018), the length of the normal lambing cycle ranges from 22.6 days in dairy cattle to 18-21 days in local cattle.

The length of the oestrus cycle known to breeders is 21 days for mother cows and 20 days for heifers 12%, 12-25% oestrus cycle as much as 13%, above 25 days 10% many breeders do not know the oestrus cycle in cattle as much as 59%. (Arman, 2014) states that the length of the oestrus cycle in cattle is 21 days.

Table 2. Breeders' knowledge of oestrus

Indicators	Breeders' Knowledge of Symptoms of Oestrus	Total Response Data %
Signs of Oestrus	a. Vulva swollen, red in colour, warm to the touch, mucus discharge, restlessness, mounting and riding other cows and decreased appetite	0%
	b. Vulva swollen, red in colour and warm to the touch	0%
	c. Restless, vocalised, hence decreased appetite	17%
	d. Riding other cattle	83%
Oestrus Observation Time	a. Morning, afternoon, evening and night	6%
	b. Morning or afternoon or evening	20%
	c. Erratic	74%
Duration of oestrus	a. < 18	22%
	b. 14-20	4%
	c. > 20	7%
	d. Don't know	67%
Known length of estrous cycle (days)	a. 21 days for parent cattle dan 20 days for heifers	12%
	b. 12-25	13%
	c. > 25	10%
	d. Don't know	59%

Source : Primary Data

Breeder's knowledge of AI

The implementation of AI until the heifers are pregnant can be done once, twice, or even more than twice, the answers from 100% of the questionnaires were 62% once, 25% twice, and 12% more than twice. (Dawit *et al.*, 2021) Livestock that are mated more than once can be caused by several factors including poor or low fertility and quality of frozen semen, poor or unskilled quality of fresh semen of males, breeders who are less skilled in detecting heat and the possibility of

reproductive disorders or health of female cattle.

AI was conducted again after oestrus (month), 41% 3 months, 19% 4 months and 40% of breeders knew the implementation of AI after oestrus (month). The correct implementation of AI is if the first signs of lust are seen in the morning then it should be inseminated on that day, if in the afternoon then it should be inseminated the next day (at the latest in the morning and afternoon) (Feradis, 2010).

Table 3. Breeder's knowledge of AI

Indicators	Breeder's knowledge of AI	Total Response Data %
Age of first heifer mated (Years)	a. 1-1,5	29%
	b. 1,5 – 2	36%
	c. >2	35%
The purpose of artificial insemination	a. Insertion or delivery of semen into the genital tract of females using man-made devices called insemination guns with the aim of improving the genetic quality of livestock.	0%
	b. Insertion or delivery of semen into the genital tract of a female using man-made instruments.	0%
	c. Injectable mating	24%
	d. Don't know	76%
What to do when oestrus occurs	a. Immediately report to the Artificial Insemination Post tying or corralling cattle in heat.	0%
	b. Reporting to the Artificial Insemination Post	0%
	c. Left loose	6%
	d. directly mated	94%
Artificial insemination is carried out until the female is pregnant	a. 1	62%
	b. 2	26%
	c. >2	12%
Artificial insemination performed again after birth (months)	a. 3 month	41%
	b. 4 month	19%
	c. 1 month	40%

Source : Primary Data

Breeders' knowledge level was categorised into excellent, good, fair and poor. Knowledgeable breeders scored 40-50, moderately knowledgeable breeders scored 20-30, and less knowledgeable breeders scored 10-15.

The level of knowledge of breeders based on the value of questionnaire points on the relationship between symptoms of heat and the right time for AI based on the value of the questionnaire out of 100 responses point 40, there are 26 breeders, point 41 there are 33 breeders, point 42 there are 35 breeders, point 43 there are 65 breeders point 44 there are 88 breeders, points between 20-30, point 25 there

are 17 breeders, point 28 there are 24 breeders, point 30 there are 12 breeders and points ranging from 10-15, 15 points there are 15 breeders, 15 points 74 point 10 there are 100 breeders, and point 11 there are 12 breeders who are categorised as knowing, knowing enough, and not knowing. According to Dilla, *et al.*, (2017) that knowledge about berahi and knowledge about the success of AI is influenced by age, formal education and non-formal education, occupation, position in breeding, number of cows, breeding experience, sources of breeding knowledge and breeders, 14 points 67 breeders, 13 points there are 59 breeders, point 12 there are 76 breeders,

Table 4. Breeders' Knowledge Level Based on Questionnaire Score

NO	Point Value	Point	Number of breeders	Description	Total Respondent Data %
1	40 -50	40	26	Knowing	2,47
		41	33		
		42	35		
		43	65		
		44	88		
2	20-30	25	17	Knowing Enough	0,53
		28	24		
		30	12		
		15	83		
		15	74		
3	10-15	14	67	Not Knowing	4,71
		13	59		
		12	76		
		10	100		
		11	12		

Source : Primary Data

CONCLUSIONS

Based on the results of the study, it was found that the level of knowledge of breeders on the detection of oestrus in livestock to support the success of AI in cattle is out of 100 respondents who know 2.47%, know enough 0.53%, and do not know 4.71%. This value is influenced by several factors, one of which is age, the higher the age of the breeder, the more

difficult it is to accept new technology, namely AI, because the breeder is already comfortable with the knowledge they get from generation to generation.

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