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Diversification Product of Buffalo Milk on Buffalo Farmer in Tanjung Garbus II Village Lubuk Pakam

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Abstract

Buffalo milk produced by Murrah buffalo in Tanjung Garbus Village, Pagar Merbabu District, Deli Serdang Regency is only sold in fresh milk with traditional handling. This is because the Murrah buffalo farmer has limitations in the knowledge of how to process buffalo milk. Therefore, the community service team does training activities about handling fresh buffalo milk and buffalo milk diversification for Murrah buffalo farmer. The training was carried out by giving material about handling fresh buffalo milk and practice of making yogurt drink from buffalo milk with the addition of natural fruit. Murrah buffalo farmer in Tanjung Garbus II Village Lubuk Pakam is expected to be able to apply fresh milk handling in appropriate with the Standard Operational Procedure (SOP) and to increase knowledge for buffalo farmer in processing buffalo milk to yogurt drink. The results of the activity showed that Murrah buffalo farmer had understood good handling of fresh buffalo milk and how to make yogurt drink from buffalo milk with addition of natural fruit so that they could apply this knowledges to maintain the quality of buffalo milk produced and increase value added of buffalo milk.

Keywords: buffalo farmer; buffalo milk; diversification; yogurt drink

1. Introduction

Murrah buffalo farmer is located in Tanjung Garbus Village, Pagar Merbabu District, Deli Serdang Regency. Murrah buffaloes in Tanjung Garbus II Village are cared in a cage. Buffaloes Tanjung Garbus Village consists of 1 male buffaloes, 19 female buffaloes, 12 little buffalo and 18 lactation buffaloes. Murrah buffalo is fed cassava pulp, coffee cake and coconut pulp. After being fed, the buffalo is taken out from the cage at 9 am and 2 pm so that the buffaloes get feed from the field grass and bath in the river. Murrah buffalo milk production is approximately 36 liters per day in the buffalo farmer of Tanjung Garbus II Village.

Buffalo milk is collected in aluminium containers and packed using plastic packaging per liter. Murrah buffalo farmer has buffalo milk processing knowledge that is still minimal. Therefore, buffalo milk produced by Murrah buffalo in Tanjung Garbus II Village is usually only sold in fresh. Fresh buffalo milk is sold at a price of Rp. 15,000 per liter. Some Batak buyers process buffalo milk into *dali ni horbo* which is a typical food of Batak people.

The number of murrah buffaloes in Tanjung Garbus II Village currently decrease. This is because buffalo farmer prefer to sell buffaloes that was cut their meat than to maintain buffaloes to get the milk. Buffalo farmer does this because the production costs cannot be fulfill from the sale of buffalo milk alone as a result of buffalo milk produced is not all sold. Fresh buffalo milk is less attractive to the public and people prefer to drink cow's milk than buffalo milk. Whereas based on literature studies found that the nutritional content of buffalo milk is greater than cow's milk. It can be seen that the protein and fat content in buffalo milk is greater than cow's milk. The protein and fat content of river buffalo milk are 4.68% and 4.13% respectively [1], while protein and fat content of cow milk are 3.4% and 4.0% respectively [2].

According to the conditions, it is necessary to conduct training in good handling of buffalo milk to produce good quality buffalo milk and diversification of buffalo milk which has added value, namely processing buffalo milk into probiotic drink, which is called yogurt drink with fruit flavor so that people are interested in the product and can add farmer income. Probiotic drink has benefits, namely give antibacterial activity against *Escherichia coli* and *Bacillus cereus* [3], the effect of improving the quality of bowel movements and intestinal health [4], and maintain the balance and composition of intestinal flora, enhance immunity, and increase resistance to invasive pathogens [5].

The expected aim of this community service is that partners are able to handle buffalo milk and processing buffalo milk into yogurt drinks that have flavors so partner can sell it and help fulfill buffalo handling costs and increase partner income.

2. Method

The method used are several activities such as motivating buffalo farmer by interview method, training of good handling of buffalo milk, and training of making yogurt drink from buffalo milk with various flavors by practicing in the field involving partner. The community service team gives yogurt maker equipment to the partner for supporting in making yogurt drink. The training is expected to increase knowledge of farmers in good handling of buffalo milk and processing buffalo milk to yogurt drink. The activities that will be carried out to resolve the problem in accordance with the needs of the partners of the community service, this is necessary so that the active participation of the partner in the activity takes place. This activity was carried out at the murreh buffalo farm in Tanjung Garbus II Village, Pagar Merbabu District, Deli Serdang Regency, which is 6 km from Lubuk Pakam, 40 km from Medan city, North Sumatra Province, and 38 km from Universitas Sumatera Utara.

3. Results and discussion

Based on the identification of the problems obtained from the field, the community service team do meeting with buffalo farmer (Figure 3a) and held discussion with partner namely buffalo farmer solve the problem (Figure 3b). During the discussion, the team motivated the farmer to be able to make the community service activities successful so that the buffalo farmer could improve their business. After conducting the discussion, several training activities were carried out to resolve the issue.



(a)



(b)

Fig. 3. The community service team do meeting (a), discussion and giving motivation (b) to buffalo farmer partner

The training activity of buffalo milk handling was carried out practically in buffalo. The buffalo milk was standardized yet, so this training activity is aimed for implementation buffalo milk handling in accordance with the Standard Operational Procedure (SOP) so that it did not affect the low price of farmer dairy who was valued relatively cheap by the Milk Processing Industry by setting milk quality standards towards SNI 3141.1:2011. Handling of fresh milk began with the process of milking, collecting, transporting and storing. That is because these processes were not good can result in milk was easily damaged. The activities that must be considered which greatly affect the quality of fresh milk were sanitation and hygiene of milking, cage cleaning, milking workers, preparation of tools of milking, preparation of animals, milking process, milk collection and transportation, and milk storage. Milk collection equipment must be waterproof, made of non-rusty material (stainless steel; aluminum), does not peel off its parts, does not react with milk, does not change the smell, color and reaction of milk, and is easy to clean.



Fig. 4. Training practices in handling fresh buffalo milk

Buffalo milk produced by Murrah buffalo in Tanjung Garbus Village, Pagar Merbabu District, Deli Serdang Regency was only sold in fresh milk with traditional handling. Murrah buffalo farmer had not yet processed buffalo milk into buffalo milk products that have added value and higher selling value than fresh buffalo milk. This is because buffalo milk farmer had limited knowledge of how to process buffalo milk. Therefore, training in processing fresh buffalo milk into yogurt drinks with natural fruit flavor used automatic yogurt maker equipment (Figure 5). The automatic yogurt maker is an automatic equipment that can make fresh yogurt in 5-8 hours, even variant flavoured yogurt at once. This automatic yogurt maker can make yogurt from variant milk such as cow milk, buffalo milk, soybean milk, etc with controlled operating time in LCD (Liquid Crystal Display) monitor. The specification of automatic yogurt maker can be seen in Table 1.

Table 1. The specification of automatic yogurt maker

Equipment code	RC-H2
Name of equipment	Ez Yo automatic yogurt maker
Material of equipment	Plastic
Material of cup	Acrylic
Capacity	1,5 Liters (10 cup @150 ml)
Time of making yogurt	5-8 hours
Voltase	220 V, 50 Hz
Power	25 Watt electricity



Fig. 5. Handovers yogurt maker equipment (a), explanation (b) and practice of making yogurt drink from buffalo milk (c)

The process of making yogurt drink was according to [6] with some modifications, buffalo milk pasteurized at $\pm 80^{\circ}\text{C}$ for 15 minutes, then the temperature was reduced to $\pm 45^{\circ}\text{C}$. Buffalo milk was inoculated with a freeze starter, where 1 gram of freeze starter into 500 ml - 1 liter of pasteurized buffalo milk. After that, buffalo milk was incubated at $37\text{-}40^{\circ}\text{C}$ for 8 hours which produced yogurt products. This yogurt can also be used as an initial starter. The yogurt was added with water in a ratio of 1: 2 and 5% of sugar was added, and obtained yogurt drink. Furthermore, yogurt drink was added to fruit. The buffalo milk yogurt drink original and fruit flavor can be seen in Figure 6. The resulted yogurt drink was tasted by partners and partners love it (Figure 7). Partner will plan to open yogurt drink business from buffalo milk from buffalo milk.



Fig. 6. Buffalo milk (a), Original buffalo milk



Fig. 7. The community service team and partner tasted the yogurt drink from buffalo milk

4. Conclusion

The community service team had conducted training of handling buffalo milk and processing buffalo milk into a fermented beverage, namely yogurt drink with the addition of natural fruit flavors. In this activities, partner was very enthusiastic to be trained. Giving materials and direct practices in community service activities can give a positive impact to partner and increase the quality of fresh buffalo milk and the selling value of buffalo milk so that it is expected to increase the income of buffalo farmers.

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