

1 INTRODUCTION

1.1 Background

Buffalo is one of the agribusiness commodities that has high economic value. The largest populations of buffalo in the world is in Southeast Asia. Philippines is the country that has the most buffalo population in Southeast Asia, as many as 2.9 million. (FAO 2015). This is also supported by the use of buffalo as a symbol of Philippine Agriculture. Now Buffalo, which is usually used as a tool for farmers to plow land, is being replaced by the presence of tractors. Therefore, Philippine's Department of Agriculture began to develop buffalo as a dairy product. One of the products that produced by buffalo is milk. Previously, cattle controlled the market for milk but now it's taken over by a buffalo. This was also reinforced by the holding of The International Conference on CBED in October 2017. The conference stated that in 2016 buffaloes contributed 34.85% for meat and 52.30% for milk compared to cattle. From this it can be seen that buffaloes contribute more to the milk sectors.

Buffalo milk constitutes over 12% of the global milk production. Buffalo milk provides more energy than the milk provided by cow's milk due to its higher fat and protein content. Due to the higher content of total solids, fat, proteins, and colloidal calcium, and the larger size of the casein micelles and fat globules, buffalo milk is well suited for fluid milk supply; fermented products such as yoghurt; fat-rich dairy products such as cream; heat desiccated and acid-coagulated products such as paneer; ice cream; and dairy whitener. The lower heat capacity and the higher thermal conductivity and thermal expansion of buffalo milk clearly indicate that a lower amount of heat energy is required to achieve certain desired heat effects in buffalo milk as compared to cow's milk. Therefore, time-temperature combinations for its heat processing may have to be standardized and suitably modified to get the desired effect. (Sindhu and Arora 2011)

Philippine Carabao Center (PCC) is an agent from the Department of Agriculture. PCC as an agent seeks to develop buffalo farmers by creating a social enterprise, Milka Krem. It receives buffalo milk from small holder dairy farmers around Nueva Ecija. The buffalo milk will be processed in Milka Krem plant into variant food product, such as pasteurized milk, yoghurt, *pastillas de leche*, etc. The products are sold in Milka Krem store in front of the plant. It helps to develop buffalo milk into dairy product.

Buffalo milk reception from small holders around Nueva Ecija turned out to cause various quality of buffalo milk. Milka Krem conduct a quality test for the buffalo milk by doing the physico-chemical test every day before they receive the buffalo milk and process it into variant products. It happens to guarantee the products are made from fresh and good quality of raw buffalo milk. It causes trouble to Milka Krem because some buffalo milk is not passed the physico-chemical test. The buffalo milk that does not pass the physico-chemical test are milk that contains blood, dirt, and there is sediment if it is given alcohol. The buffalo milk those are not passed the physico-chemical test will be rejected and placed into the tank.





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Besides that, Buffalo will be more productive while wet season (May to November). They will produce more milk during wet season because of the low temperature (Upadhyay *et al.* 2007). It causes benefit and trouble for Milka Krem at the same time. Milka Krem will have a lot of inventory for the production. But, like the nature of the agricultural commodities, buffalo milk has a short shelf life and not all of the raw milk can be processed at the same time. It causes expired milk that makes the milk can not be processed anymore. Until now, Milka Krem doesn't have a treatment for the rejected buffalo milk and expired buffalo milk. They just place it into the tank and thrown it away to the ground every month. The rejected buffalo milk and expired buffalo milk are called spoil buffalo milk in Milka Krem. Figure 1 shows the milk condition of Milka Krem from the past six years.

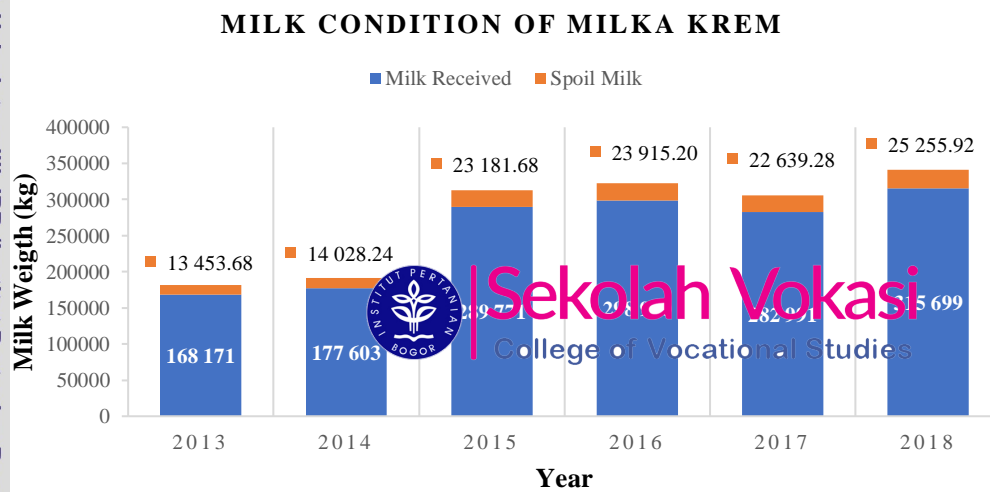


Figure 1 Milk condition of Milka Krem

Source: Milka Krem (2019)

On average, there are increases of received buffalo milk in every year. Even though there are increases in received buffalo milk every year, there is also increases in spoil buffalo milk. The total amount of the spoil milk is 8% of the received milk on Milka Krem. From 2013 to 2018, on average there was an increase of spoil milk. Even though in 2017 there was a decrease of spoil milk, but it can be covered by an increase of spoil milk in previous years. The highest increase of spoil milk occurred in 2015. This was offset with a drastic increase in the amount of milk received. This can ensure that the raw material-- spoil milk-- will always be available. This spoil milk causes a milk disposal because the milk cannot be processed anymore. The milk disposal to the ground might have a good impact for ground fertility. But this will be more profitable for the company if the milk that could be disposed of, is processed into products that provide benefits to the company's finances. It raises a business idea to reduce and might be avoid the milk disposal in vain and could generate additional benefit for Milka Krem. The business