Article

Dairy Milk Distribution Network and Its Impact on the Income of Dairy Farmers in Wukirsari Village Community, Sleman

Komunitas: International Journal of Indonesian Society and Culture
17 (1) (2025): 53-62
DOI: 10.15294/komunitas.v17i1.18618

p-ISSN 2086-5465 | e-ISSN 2460-7320
https://journal.unnes.ac.id/journals/komunitas

Didi Pramono*, Elly Kismini, Fajar Fajar, Nadia Luki Martanti, Lesa Fauzi, Darel Viko Adiansyah

Department of Sociology and Anthropology Education, Faculty of Social and Political Sciences, Universitas Negeri Semarang, Indonesia

Submitted: December 23, 2024; Revised: February 27, 2025; Accepted: March 22, 2025

Abstract
This study aims to explain the distribution network of cow's milk and its impact on farmers' income on the slopes of Merapi. The research uses a qualitative approach. The research is located in Wukirsari Village, Cangkringan District, Sleman Regency, Yogyakarta. The subject of this research is the farmer-herder community in the Cangkringan District. The informants consisted of 7 farmers, eight distributors, and three koperasi employees, and the study was conducted for 2 months. The data collection techniques were interviews, observations, and documentation. The validity of the data is tested through source and method triangulation techniques. Data is analyzed qualitatively, including data collection, condensation, presentation, and conclusion. Farmers are assisted by cooperatives in the milk production process, from cow care to milking. The co-operative is a means of supporting the income of dairy farmers. Milk distribution in Wukirsari is carried out by cooperatives to milk agents, milk processing industries, culinary milk, and directly to consumers. Farmers' income in Wukirsari depends on the daily milk farmers' deposit or value. However, the income is still insufficient to meet the needs because the cost of cow care and cow feed cuts it. Therefore, farmers make up for the lack of needs with part-time jobs such as collecting wood, selling calves, and selling grass.

Keywords
cow milk; distribution network; farmers; income; Merapi Slope

***Corresponding author**
Sekaran, Gunungpati, Semarang
Email
didipramono@mail.unnes.ac.id

INTRODUCTION

Animal husbandry is one of the crucial sectors that support the people of Indonesia's need for animal protein consumption. The level of animal protein consumption in Indonesia is still lower than in other ASEAN countries (Soetanto, 2019). Per capita protein consumption of Indonesian citizens decreased by 2.27 grams in 2022 to 62.21 grams (BPS, 2022). This is due to domestic livestock's low productivity, which cannot keep up with the demand for livestock products. In Indonesia, milk production is a big problem; so far, the dairy products circulating in the community are imported products, and the contribution of domestic milk is minimal (Rusdiana and Sejati, 2007). Indonesia still imports cow's milk, which amounts to 80% of national consumption (Gandhy and Kurniawati, 2018). According to the Secretary General of Agriculture, Indonesia imported 339,182 tonnes of whole milk and derivative products in 2017. The high import of milk is due to the non-optimal development of animal husbandry in Indonesia (Setiyowati, 2020).

Milk is a drink that has so many nutrients and content, ranging from protein, fat, vitamins, and minerals (Siswanto, etc, 2018). Milk contains valuable nutrients all ages need to maintain growth, health, and intelligence. So important is milk that it can be said that it is essential to build a bright and healthy nation (Rusdiana and Sejati, 2019). The importance of milk in the world of life makes Indonesia strive to ensure its availability. Indonesia is one of the countries in the world that produces milk. Its natural resources support this. Geographical conditions that make some people work as farmers and breeders. That way, some areas can produce milk. One of the abundant milk-producing areas is Cangkringan, Sleman, Yogyakarta.

The number of dairy cows in the Cangkringan sub-district is 2,446, more than that in other sub-districts in the Sleman district (BPS, 2017). The number of dairy cows continues to increase due to long-term business through more promising milk production. This shows that the Cangkringan sub-district is the center of the largest milk producer and distributor in the Sleman district, Yogyakarta. Cangkringan sub-district is located on the southern slopes of Merapi, so dairy cattle farming has been done for generations (Andarwati, 2017). This happens because the dairy cattle business is a mainstay subsector in agribusiness activities, which are part of the agribusiness sub-system (Alviawati, 2013). However, dynamics cannot be avoided, especially after the eruption of Mount Merapi some time ago. In the Cangkringan Sub-district, Sleman Regency, most people work as farmers and are called farmer-farmers.

The community of Merapi slopes in Kapanewon Cangkringan has been on a long journey with the development of cattle farming. In the late 1990s, the Cangkringan sub-district, one of which was in Wukirsari village, became the village with the most significant income in Yogyakarta Province from the development of cow's milk. Until now, cattle farming has survived as one of the sources of livelihood for the people of the Merapi slopes spread in several communal cages in the Permanent Residence area and outside the Permanent Residence area, and not a few dairy farmers in traditional cages scattered in each house. Dairy farming on the slopes of Merapi has high productivity. Almost 70% of the farmers' milk production is delivered to the Milk Cooperative, becoming the primary raw material for the large-scale dairy industry. In its development, dairy farming is seen as having strategic prospects.

In the commodity distribution process, there is a distribution network. A distribution network is a group of intermediaries closely related to each other to channel products to buyers (Nofianto, 2018). Networks are friendships formed based on long-standing social ties (Iqlima and Wijaya, 2022). Usually, this network has an interdependent relationship, so they expect mutual benefits from cooperation (Malik and Asma, 2015). In addition, some actors have their respective roles and responsibilities in the distribution network. So, the distribution network has a vital role in the distribution of

cow's milk because the actors cooperate to distribute pineapple commodities to consumers smoothly (Wijaya, etc. 2017).

The interesting thing about Cangkringan is that although they produce milk, they do not consume much of it themselves. They only work to produce milk and then hand it over to the co-operative (Rusdiana and Soeharsono, 2019). The existence of dairy cooperatives for farmers has a role in coaching, training, providing credit, providing production inputs, and marketing milk (Leo, etc. 2021). The co-operative then hands the milk from farmers to the MPI (Dairy Processing Industry), where this scheme has been going on for generations. In addition, several actors from outside parties form the cow's milk distribution network, such as loopers and brokers. This milk distribution network makes the difference in income earned due to differences in packaging and milk processing capabilities in each milk distributor unit. As a result, independent milk processing has not developed much despite the many programs encouraging the community to make dairy products (Sulastri, etc. 2021).

From the explanation above, this research wants to see how the cow's milk distribution network affects dairy farmers' income. Therefore, this research is essential to support the quality of health that impacts the quality of human life. This research also supports the 2020-2024 UNNES Research Strategic Plan that carries conservation values in the socio-economic theme. Therefore, the objectives of this research are as follows: (1) to examine the milk production process produced by dairy cows; (2) to identify the distribution network of cow's milk in Cangkringan District, Sleman, Yogyakarta; and (3) to describe the income level of dairy farmers within that distribution network.

The study in this research was analyzed using the Actor-Network Theory proposed by Rosenthal (1985) (Ritzer and Goodman, 2007). This theory explains that (1) the bonds between actors are usually symmetrical in degree and intensity. Actors supply each other with different things, essentially exchanging something; (2) the bonds between individuals must be analyzed in the context of a broader network structure; (3) non-random networks are formed if a network is formed between A and B and C, there is also a possibility of a bond forming between A and C; (4) cross-links are created between network groups as well as between individuals; (5) asymmetric bonds are also formed, causing limited resources to be unevenly distributed; (6) this subsequently leads to cooperation and competition.

METHODS

This research uses qualitative research methods as the basis of its research. Qualitative research is used because it produces descriptive data in written or spoken words from people and observed behavior (Sugiyono, 2019). By relying on phenomenology, this research is expected to understand the meaning of events and their links to specific situations so that the data about the cow's milk distribution network on the slopes of Mount Merapi will be described in more depth.

This research is located on Mount Merapi's slopes in Wukirsari Village, Cangkringan Sub-district, Sleman Regency, Yogyakarta Special Region. This location was chosen for the following reasons: (1) The impact of the eruption of Mount Merapi caused tremendous socio-cultural changes in the mountain slope communities, including local knowledge and how they fulfill their needs by raising livestock. (2) Dairy farmers only benefit from their livestock by distributing milk without processing it into dairy products. The subjects of this research are dairy farmers, cooperatives, milk traders, and milk processing industries in Wukirsari Village, Cangkringan District, Sleman Regency, Yogyakarta Special Region.

This research uses primary and secondary data. Primary data is data obtained directly in the field in the form of survey results, observation results, interview results, and documentation. At the same time, secondary data is an indirect data source that can support primary data in the form of

books, journals, and documentation. Data is collected through observation, interviews, documentation, and literature studies. The data collection techniques were carried out in several ways, as follows. First, semi-structured in-depth interviews. Tools such as question guides, questionnaires, and recording devices will be used. Informants in this study were obtained using purposive sampling and snowball sampling methods. Purposive sampling is a method that determines informants by the research objectives, and the information obtained from them can be used to respond to the research case (Lenaini, 2021). At the same time, snowball sampling is a method of continuously identifying and selecting informants from the previous informant's instructions in a relationship or network (Nurdiani, 2014). The primary informants are the farmer-rancher community members of the Sarono Makmur Cooperative in Wukirsari village in Cangkringan District. The interviewees are dairy farmers, buyers, and cooperative administrators. The informants consisted of 7 farmers, eight distributors, and three koperasi employees, and the research was conducted for 2 months.

Second, observation of the activities of farmers in Cangkringan District. Researchers can make observations about farmers on the slopes of Mount Merapi about the activities of production and milk distribution, and researchers can make observations by visiting the informant's place directly. Additional observations were made to compare the milk production process in the next stage after farmers in milk cooperatives, processing industries, and milk traders sold the milk. Third, document analysis in the form of reviewing documents, both journal articles with related topics and research results documents, such as Village Monographs, Work Plans, and Annual Reports of associated agencies. Data will be collected for three months, from May to July 2023. The collected data will be analyzed using an interactive qualitative descriptive analysis method. This process starts with reducing the collected data, presenting the data narratively, verifying the data, and simultaneously interpreting the data.

RESULTS AND DISCUSSION

Cow Milk Production Process

Dairy cattle are often found in Indonesia, especially in areas with an altitude of 800 masl (Siswa, etc. 2020). One area that falls into this category is Wukirsari Village because most of the people are dairy farmers. The cows kept mainly by the community are Friesian Holstein cows, often called FH cows. Dairy cows are very suitable for the Wukirsari environment because the cool and cold air is very suitable for cattle farming. Dairy cattle can thrive and produce optimally at 750m above sea level and 1,200 m above sea level. Comfortable air temperature for dairy cattle is between 13°C and 18°C (Soribasya, 1996). In addition, the amount of empty land that can be planted with grass also makes it easier for people to find cattle feed.

Figure 1. Cow milk production process and packaging of cow's milk by koperasi employees

Working as a dairy farmer has been done by the people of Wukirsari for a long time. Being a farmer is a hereditary occupation. There was a change in the placement of the cage system, and the community did not mind the change in the cage system to a communal or shared cage after the Merapi eruption. The cages are provided to house the community's livestock together, so the cage management system is taken care of by farmers who have their livestock there. One of the communal cages on the slopes of Mount Merapi is the communal cage in Kepuharjo village. This enclosure has seven groups of dairy farmers with different locations in each group.

The cattle groups in Kapanewon Cangkringan consist of the Kepuh, Manggong, Petung, and Ngudi Raharjo groups. Each cattle group in the Kepuharjo communal cages has different characteristics when raising cattle. This arises because of the various views of the community on how to breed cattle. The difference can be seen in the way farmers produce milk. Ngudi Raharjo has the characteristic of milking cows traditionally by hand. Farmers there prefer to milk cows manually because it can reduce the risk of many bacteria in cow's milk and consider the cows' health. Meanwhile, when milking cows using tools, there is still milk left in the cow, so the bacteria in the cow's milk will develop, multiply, and impact the nipple or udder of the cow that dies.

The Dukuh Tanjung and Huntap Pagerjurang cattle groups did something different. Farmers in these areas chose to use milking machines. Livestock groups that use cow milking machines from cooperatives are considered to be able to milk in large quantities and quickly. According to farmers, this is more efficient and effective. Farmers can focus on other activities, such as finding grass to feed the cows. Of course, different ways of farming will affect the amount of milk produced and allow farmers to maximize the potential of their farms. Although there are differences in milking methods, neither will affect the quality of milk produced. This means that milking manually or by machine remains the same. This is in line with Mrs Yuli's statement,

'..... If you use a tool, it must be thoroughly utilized. Otherwise, the nipple will be swollen, and then the mastitis will die. If it's manual, it runs out.

Milk that has been milked traditionally or using a machine will be put into a 25-litre milk can. Furthermore, farmers will deposit the milk to be tested for specific gravity (BJ) using a lactodensimeter and alcohol test. Testing is carried out by farmers who are on picket so that each farmer will have the task of testing the quality of cow's milk according to their picket schedule. If all farmers have deposited milk and it has been tested, it will be put together in a 40-litre milk can. Then, the cow's milk will be picked up by the cooperative officer and taken to the milk cooler or cooling.

Milk that has been milked is transferred to the cooler and tested again for BJ and Acidity Level (TS). If there is low-quality milk, it will be separated from the high-quality milk. The last step in the milk production process is to mix all the good quality milk in the cooling room, which a milk transport truck immediately sends to the dairy processing industry (DPI). The low-quality milk will not be sent but processed into pasteurized milk and yogurt so that it can still be consumed and the cooperative will not lose money. This kind of processing can be an alternative way of dealing with milk quality problems.

Distribution Network of Cow Milk in Cangkringan District, Sleman, Yogyakarta

So much milk production in the Cangkringan Sub-district has led to a milk distribution network. The distribution network of cow's milk starts when farmers milk the milk until consumers can enjoy the milk. During this time, the milk is not immediately purchased freely.

'It is sold directly to the co-operative. Before the co-operative, it is put into Dawung cooling near Pagerjurang, close to my cage too...' said Mrs Yuli.

Based on the informant's explanation

above, several parties and actors have their respective roles in the network process.

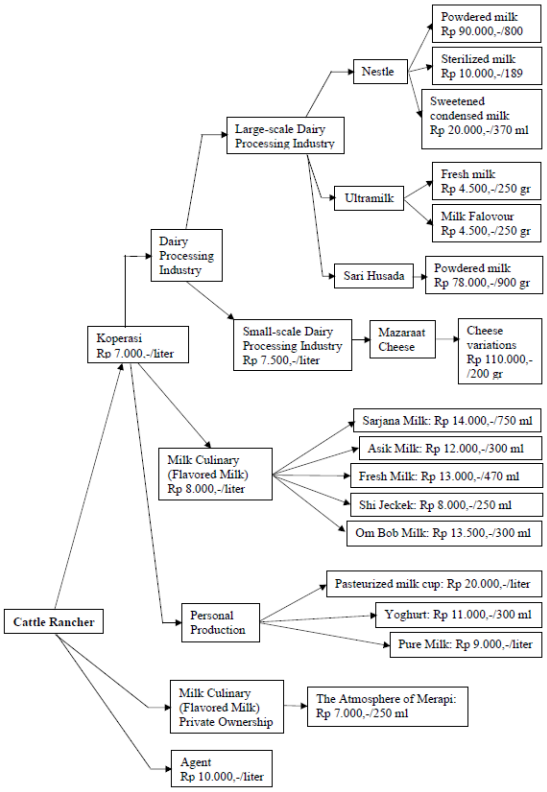

Figure 2. Milk Distribution Process and Profit Receipt of Each Milk Distribution Actor

The image above depicts the actors and network in the distribution of cow's milk in Wukirsari Village. The social processes within the network align with the Actor-Network Theory proposed by Rosenthal (Ritzer and Goodman, 2007). This theory explains that the bonds between actors are usually symmetrical in degree and intensity. Actors supply each other with something different; essentially, something is exchanged. The exchange occurs in the form of cow's milk and purchase money.

The bond between cattle ranchers, distributors, and consumers of cow's milk must be analyzed in the context of a broader network structure, including cooperatives, dairy-based culinary businesses, and agents. The cooperative will redistribute the cow's milk to large-scale dairy processing milk companies such as Nestle, Ultramilk, and Sari Husada. The cooperative also distributes cow's milk to small-scale Dairy Processing Milk such as Mazaraat Cheese. In addition, the cooperative also serves the sale of cow's milk to individual consumers.

This distribution network also allows for the formation of non-random networks. Suppose a network is formed between cooperatives and Dairy Processing Milk, a culinary business based on cow's milk and personal production. In that case, there is also a possibility of forming a bond between cooperatives and personal output. Cross-relationships can also form between network groups or between individuals. This pattern of relationships will give rise to cooperation or even competition if the resources of cow's milk are not distributed evenly.

If we look at the distribution network above, it can be said that cooperatives play an essential role in the distribution of cow's milk in Wukirsari Village. It is not wrong to say that cooperatives are the backbone of Indonesia's economy. Fadilla et al.'s (2024) research further emphasizes the crucial role of cooperatives in community empowerment.

Milk Distribution Process by Farmers

Farmers sell milk directly to consumers with a price range between IDR 6,000 and IDR 10,000. The price of milk sold privately certainly experiences price instability, which causes losses for farmers. This caused farmers to start selling milk to cooperatives that provided stable prices to farmers. Farmers milk twice, namely in the morning and evening. At that time, the cooperative also took milk stored by farmers to cool around their cages. The cooperative in question is Sarono Makmur Breeders Cooperative. The price given by the cooperative for the milk produced by farmers per liter is IDR 6,000 to IDR 7,000. The cooperative will later appreciate and buy milk from farmers in Wukirsari. The cooperative pays farmers for the milk produced every month around Rp.2,000,000.

There are also farmers in Wukirsari who sell their milk as culinary milk. The culinary milk sold by one of the Wukirsari community is 'Nuansa Susu Merapi.' This

milk culinary provides flavored milk with a cafe-like concept. The milk processed at Nuansa Susu Merapi comes from farmers in Wukirsari. This milk culinary product was one of Wukirsari's milk sales innovations. Wukirsari farmers rarely sell milk privately to fellow Wukirsari or surrounding communities because they think milk smells fishy. Wukirsari community farmers have the potential to process milk through community empowerment programs. However, limited costs and tools have caused this empowerment not to be able to run until now. So, farmers' income through milk sales in Wukirsari is more dependent on cooperatives.

Milk Distribution Process by Cooperative

Of course, the first role is the co-operation in the milk distribution network. Co-operatives have a tremendous impact on farmers. The co-operative is likened to a container or link between farmers and IPS. Cooperatives in Kapanewon Cangkringan aim to create a prosperous farmer-farmer community. It began to emerge in the 1990s. The co-operative is one of the alternative ways for dairy farmers to sell their milk and care for livestock. Treatment is carried out when one of the farmer's cows is sick; the cooperative will swiftly bring in a free doctor. In addition, the cooperative provides animal feed that will never run out in each communal cage. The feed is placed in a warehouse not far from the pens. This condition is what was explained by the Head of the Tanjung Dukuh Group,

'Each cage must have a warehouse to store concentrate. The warehouse in Tanjung Hamlet can hold up to 90 sacks and will last a month, Mr. Sunarto (Group Leader of Tanjung Hamlet).

This condition certainly makes farmers happy. They do not have to go to the trouble of calling a doctor, paying a doctor, and buying additional concentrate feed, which is very expensive. In addition, tools for milking cows are also provided by the cooperative, either free or for a fee. The cooperative offers a savings and loan system if farmers struggle financially.

Changes in the cooperative system began to be felt from before the eruption to after. Before the eruption of Mount Merapi, which was still privately owned, the cage system resulted in the maintenance system provided by the cooperative to farmers that could not be enjoyed by all farmers working with the cooperative. This was due to the distance between the cages and the cooperative. In contrast, the cooperative system has changed since Mount Merapi's eruption, which established a communal cage system so that the cooperative can quickly check the cows and lend milking equipment. In addition, cooling has been established for temporary milk storage in each communal cage and village in Cangkringan. This also means that farmers still have private ownership of the barn and do not have to travel far to deposit their milk with the cooperative.

The co-operative is the first destination when the milk is milked and then sent to the Ultra factory as the IPS. The milk price sold to IPS depends on the milk content test to determine how much bacteria is contained in the milk. If there are too many bacteria in the milk, the price of the milk will be lower and may not even be valued by the IPS. Apart from being sent to Ultra, the cooperative can sell the milk. The sale of milk to consumers can be through two channels, namely unprocessed whole milk and processed pasteurized milk and yogurt. From the unprocessed milk sold, traders began to emerge in culinary production with milk as the main ingredient. People who want to sell processed whole milk can buy it from the co-operative at a cheaper price than those who buy it for personal consumption.

Cooperatives widely distribute milk production from Wukirsari farmers to several milk breweries in Yogyakarta. Pure milk taken from the Wukirsari cooperative is mainly processed into flavored milk drinks by milk culinary. One of the flavored milk culinary drinks sold in the Yogyakarta area is Susu Perah. Susu Perah can sell as much as 70 cups of milk every day. The size of milk sold is from 350 milliliters to 470 milliliters. Dairy milk marketing uses Instagram promotional media and online sales on Gojek,

Shopee Food, and Grab. So, this marketing method can cover various groups of people because of the easy access to ordering. There is also Susu Om Bob milk culinary in Yogyakarta, whose marketing ranges from teenagers to families. Susu Om Bob was founded in 2021 and has three milk culinary branches. This milk culinary has a semi-outdoor theme and provides trampolines and seats for toddlers. This shows that this place is friendly to visit with the whole family. There are also milk culinary that have a target for students in Yogyakarta, namely undergraduate milk. Sarjana Milk was established in 2018 and has ten outlets in Yogyakarta spread around the university area. In a day, Sarjana milk can sell 80 cups per day at a price range from IDR 12,000 to IDR 17,000. Milk products from milk production in Wukirsari have a target market that has begun to cover all groups, so the fulfillment of animal protein nutrition is already available in Yogyakarta.

Income of Dairy Farmers in the Distribution Network

From producing milk to handing it over to the cooperative, the farmers get income from it. Not only money, they can also get assistance in the form of cow feed and health facilities from the cooperative for their livestock. The community no longer needs to worry about meeting all their needs. The income of farmers in Wukirsari per month can reach IDR 2,000,000, -. However, this result is not comparable to the barn's operational costs, which reach 60% of that income. At Rembangan Dairy Farm, the net income of dairy farmers can reach Rp 38,290,000 per year, so it can be said that this business is feasible and profitable because it has an R/C ratio of 1.98. This means the revenue is higher than the operational costs (Utama, etc. 2024).

The operation of the barn includes transportation fuel, cow care, and cow feed. Farmers in Wukirsari have sufficient income from this milk because the principle held firmly by farmers in Pagarjurang is flexible and welcoming. With this principle, needs that cannot be met with income from milk can be covered with other part-time jobs. Part-time jobs include selling grass, selling wood, transporting grass, and looking for sand. Efforts to process milked milk independently have not been dared to be tried by farmers there.

This is due to the lack of capital to produce dairy products, marketing of dairy products that have not yet been found, and insufficient workforce to make dairy products because they are busy taking care of their livestock. Moreover, they can sell male calves when a sudden need arises that requires money. The system of selling male calves is a common practice for farmers. This happens because male calves do not produce milk, so selling them is better. They prefer to raise female cows so that they can produce cows. Of course, these activities cannot be separated from the participation of cooperatives.

CONCLUSION

In the milk production process, farmers are assisted by cooperatives, from cow care to the process of milking cows. Cooperatives are a means to support the income of dairy farmers. Milk distribution in Wukirsari is carried out by cooperatives to milk agents, milk processing industries, milk culinary, and directly to consumers. The income of farmers in Wukirsari depends on the amount of milk produced each day that is deposited or valued by farmers. However, this income is insufficient to meet needs because it is deducted from cow care and cow feed costs. Therefore, farmers meet the needs lacking with part-time jobs such as looking for wood, selling calves, and selling grass. The distribution network of cow's milk begins when farmers milk the cows until consumers can enjoy the milk. The milk farmers-breeders produce is distributed to cooperatives, agents, and milk culinary shops in this process. Most farmers-breeders distribute it to cooperatives because they have become official members. Only a little milk is distributed to agents or milk culinary shops. Milk that has become the cooperative's property will be sent more to IPS than processed by itself. Even so, there are dairy products processed by cooperatives, such as packaged milk drinks and yogurt.

ACKNOWLEDGMENTS

We want to express our gratitude to the Almighty God for all His grace and blessings

so that this research entitled "Cow's Milk Distribution Network and Its Impact on Dairy Farmers' Income in the Wukirsari Village Community, Sleman" can be completed properly. This research would not have been possible without various parties' support, assistance, and guidance. Therefore, we express our deepest gratitude to the resource persons in Wukirsari Village, Sleman, especially dairy farmers and parties involved in the cow's milk distribution network, for the time, data, and information provided. We also thank Sekolah Riset Satu Kata for accompanying us during this article's research and writing process. Family and friends, for their prayers and moral support, have never stopped being given during this research. We realize that this research is far from perfect. Therefore, we are open to constructive criticism and suggestions for future improvements. Hopefully, this study's results can positively contribute to the development of science and the people of Wukirsari Village.

REFERENCES

Alviawati, E. (2013). Strategi penghidupan rumahtangga peternak sapi perah di Desa Kepuharjo Kecamatan Cangkringan pra dan pascaerupsi Merapi 2010. *Majalah Geografi Indonesia*, *27*(2), 104-117.

Andarwati, S., Rijanta, R., Widiati, R., & Opatpatanakit, Y. (2017). Strategi penghidupan peternak sapi perah di lereng selatan Gunungapi Merapi pasca erupsi. *Buletin Peternakan*, *41*(1), 91-100.

Badan Pusat Statistik. (2017). *Banyaknya ternak menurut jenisnya per kecamatan di Kabupaten Sleman*. Badan Pusat Statistik.

Badan Pusat Statistik. (2022). *Konsumsi kalori dan protein penduduk Indonesia dan provinsi*. Badan Pusat Statistik.

Fadilla, A. N., Indriati, L., & Aditia, P. (2023). Hypothetical model of Indonesian coffee community cooperative (Koperasi Komunitas Kopi Indonesia, KOKOPI) in the framework of community development and interaction design through Kopikita App. *Komunitas: International Journal of Indonesian Society and Culture*, *15*(2), 149-156. https://doi.org/10.15294/komunitas.v15i2.39752

Gandhy, A., & Kurniawati, S. D. (2018). Analisis strategi pengembangan usaha koperasi produksi susu Bogor, Jawa Barat. *Jurnal Maksipreneur: Manajemen, Koperasi, dan Entrepreneurship*, *8*(1), 15-31.

Iqlima, D., & Wijaya, A. (2022). Modal petani nanas daam jaringan distribusi nanas Madu Pemalang. *Jurnal Pendidikan Sosiologi dan Humaniora*, *13*(2), 421-430.

Lenaini. (2021). Teknik pengambilan sampel purposive dan snowball sampling. *Historis: Jurnal Kajian, Penelitian dan Pengembangan Pendidikan Sejarah*, *6*(1), 33-39.

Leo, R. E. M., Ratna, W. A., & Suharno. (2021). Keragaan koperasi susu dan pendapatan usaha ternak sapi perah: Sebuah studi di KPSBU Lembang. *Jambura Agribusiness Journal*, *3*(1), 15-27.

Malik, I., Mustofa, M. S., & Luthfi, A. (2015). Modal sosial petani cengkeh dalam mendukung usaha pertanian tanaman cengkeh (Studi kasus di Desa Ketanda Kecamatan Sumpiuh Kabupaten Banyumas). *Jurnal Solidarity*, *4*(1). https://journal.unnes.ac.id/sju/index.php/solidarity/article/view/6042

Nofianto, H. (2018). *Modal sosial dalam strategi akses pasar komoditas jeruk Siam (Studi kasus komoditas jeruk Siam di Desa Sambimulyo Banyuwangi)* [Skripsi, Universitas Negeri Jember].

Nurdiani, N. (2014). Teknik sampling dalam penelitian lapangan. *Jurnal Comtech*, *5*(2), 1110-1118.

Ritzer, G., & Goodman, D. J. (2021). *Teori sosiologi modern* (6th ed.). Kencana. (Original work published 2007)

Rusdiana, S., & Sejati, W. K. (2007). *Produksi susu melalui pemberdayaan koperasi susu measures for dairy cattle agribusiness development and milk production enhancement through dairy co-operatives empowerment*. (pp. 43–51).

Rusdiana, S., & Sejati, W. K. (2016). Upaya pengembangan agribisnis sapi perah dan peningkatan produksi susu melalui pemberdayaan koperasi susu. *Jurnal Forum Penelitian Agro Ekonomi*, *27*(1).

Rusdiana, S., & Soeharsono, S. (2019). Upaya pencapaian daya saing usaha sapi perah melalui kebijakan pemerintah dan peningkatan pendapatan peternak. *Agriekonomika*, *8*(1), 36-50.

Setiyowati, L. (2020). Rantai pasok dan nilai tambah susu sapi perah. *Efficient: Indonesian Journal of Development Economics*, *3*(2), 780-798.

Siska, I., & Anggrayni, Y. L. (2020). Body Condition Score (BSC), tingkat laktasi dan hubungannya dengan produksi susu sapi perah peranakan Friesian Holstein (PFH). *Jurnal Ilmu Ternak*, *20*(2), 115-125.

Siswanto, F. A. J., Rubiyatno, R., & Dwiatmaka, Y. (2018). IbM peternak sapi perah dan pengolahan susu di Pakem Sleman. *Abdimas Altruis: Jurnal Pengabdian Kepada Masyarakat*, *1*(1), 1-7.

Soetanto, H. (2019). *Konsep dan strategi mewujudkan ketahanan pakan nasional*. UB Press.

Soribasya, S. (1996). *Sapi perah: Jenis, teknik penelitian, dan analisa usaha*. Penebar Swadaya.

Sugiyono. (2019). *Metode penelitian kualitatif*. Alfabeta.

Sulastri, E., Haryadi, F. T., Guntoro, B., Andarwati, S.,

& Putra, A. R. S. (2021). Kemandirian peternak sapi perah anggota Koperasi Susu Warga Mulya Sleman, Daerah Istimewa Yogyakarta. *Jurnal Kawistara*, *11*(3), 282-295.

Utama, R. A., Rohmah, A. N., & Rahman, R. Y. (2024). Analisis biaya dan pendapatan peternakan sapi perah Rembangan Dairy Farm. *Wiratani: Jurnal Ilmiah Agribisnis*, *7*(2).

Wijaya, A., Pieter, G., & Surip, M. (2017). The mediated partnership model for sustainable coffee production: Experiences from Indonesia. *International Food and Agribusiness Management Review*, *20*. https://doi.org/10.22434/IFAMR2017.0021