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DYNAMICS OF DAIRY COW MILK PRODUCTION IN SEMARANG REGENCY DURING THE NEW ORDER PERIOD

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ABSTRACT

During the New Order era, the Indonesian government introduced the Green Revolution as a primary mechanism to enhance agricultural production. Subsequently, this model was adapted into the livestock sector, specifically within the dairy industry. This study aims to describe the implementation of intensification programs in the dairy sector and the dynamics therein, within the spatial scope of Semarang Regency and the temporal framework of the New Order. This research utilizes both primary and secondary sources. The primary data includes archival materials from the "Suara Merdeka" newspaper, statistics from the Central Bureau of Statistics (BPS), documents from the Central Java Provincial Archives and Library Office, and oral history interviews. Secondary sources consist of books and scholarly articles relevant to the research theme. The study reveals historical evidence that the golden age of dairy production in Semarang Regency during the New Order occurred in the 1980s, specifically following the implementation of the "Bukti Serap" (Absorption Proof) regulation. This policy incentivized local farmers to increase productivity by providing market certainty. However, subsequent mandates from the IMF forced the termination of this regulation, as it was deemed inconsistent with free-market principles. This research offers significant novelty, as studies specifically addressing the dynamics of dairy production in Semarang Regency during the New Order have not been previously conducted. Thus, this study serves as a foundational framework for further exploration of related themes within the context of historical research. The analysis focuses on three central questions: the early development of the dairy industry in Semarang Regency during the New Order, the impact of the *Bukti Serap* regulation on milk production, and the factors contributing to the mass mortality of dairy cattle in the late 1980s.

Keywords: Livestock intensification, Dairy production, New Orde Era

ABSTRAK

Pada masa Orde Baru, pemerintah Indonesia memperkenalkan Revolusi Hijau sebagai mekanisme baru dalam memingkatkan produksi di bidang pertanian. Pada perkembangannya, model ini kemudian diadopsi ke dalam bidang peternakan, salah satunya pada sektor industri persusuan. Kajian ini bertujuan mendeskripsikan pelaksananaan program intensifikasi pada sektor persusuan serta bagaimana proses dinamika di dalamnya pada lingkup spasial Kabupaten Semarang dan lingkup temporal Orde Baru. Kajian ini menggunakan sumber primer dan sekunder. Dari segi sumber, data yang digunakan di antaranya yaitu surat kabar Suara Merdeka, data BPS, data Dinas Kearsipan dan Perpustakaan Provinsi Jawa Tengah, dan wawancara. Sedangkan sumber sekunder kajian ini menggunakan buku dan artikel ilmiah yang relevan dengan tema kajian. Kajian ini menemukan fakta historis bahwa era kejayaan produksi susu sapi perah

masa Orde Baru di Kabupaten Semarang terjadi pada dekade 80-an, secara spesifik setelah diterapkannya regulasi Bukti Serap yang mendorong para peternak lokal lebih produktif karena adanya kepastian pasar yang disediakan dalam regulasi tersebut. Namun, aturan baru dari IMF memaksa regulasi ini untuk dihentikan karena dianggap tidak sejalan dengan prinsip pasar bebas. Kajian ini memiliki keunggulan berupa kebaruan di mana tema penelitian yang secara spesifik berbicara tentang dinamika produksi susu sapi perah di Kabupaten Semarang era Orde Baru belum pernah dilakukan sebelumnya, sehingga kajian ini dapat menjadi pondasi awal untuk mengeksplorasi tema terkait secara lebih mendalam pada konteks penelitian sejarah. Kajian ini menekankan pada tiga pertanyaan utama meliputi perkembangan awal industri susu perah di Kabupaten Semarang masa Orde Baru, pengaruh regulasi Bukti Serap terhadap produksi susu, dan penyebab kematian massal pada ternak sapi perah pada akhir dekade 80-an.

Kata Kunci: Intensifikasi peternakan, produksi susu sapi perah, masa Orde Baru

INTRODUCTION

Indonesia's economic structure under the New Order government was characterized by great ambitions to achieve food sector independence through structured and technocratic policies. One of the government's main focuses in the early 1970s was to ensure national food sovereignty, which culminated in the success of rice self-sufficiency in 1984. However, this achievement only reflects the fulfillment of carbohydrate nutrition, while in terms of animal protein, Indonesia has not been able to achieve the desired target. In fact, the New Order government has introduced the concept of the Green Revolution not only aimed at agriculture, but also applies the model to livestock areas which are then better known as Panca Usaha Livestock (PUT) (Adriani, 2021). The Green Revolution was then adopted in a wider sector, for example in the dairy sub-sector. From the perspective of the dairy industry, this step is a transformative action where there has been no initiative to change the procedure system for increasing milk production through the use of modern technology.

Historically, this transformation of the dairy sector has established Java Island as a production center, with the main buffer areas covering areas such as Boyolali, Malang, Bandung, and Semarang. In Central Java, Semarang Regency has emerged as one of the largest contributors alongside Boyolali Regency (Haloho et al., 2013). The selection of Semarang Regency is based on topographical aspects dominated by highlands and mountainous slopes, such as Mount Merbabu, Ungaran, and Telomoyo with an altitude of 500 to 1,500 meters above sea level. These environmental conditions create a microclimate with average air temperatures ranging from 13 to 25 degrees Celsius. Biologically, this condition is an absolute prerequisite for the success of imported dairy

cattle cultivation to achieve the *thermal neutral zone*. In addition, mountainside areas ensure abundant water supply and highland fertility that supports forage production for animal feed.

Prior to formal intervention, smallholder farmers in Semarang Regency had been working on milk production on a household industrial scale. However, an efficient production system only began to be implemented seriously in the 1970s through the insemination program. In accordance with the principles of the Green Revolution, the implementation of the Five Livestock Business (PUT) program is carried out by adopting modern technology as the main instrument, which consists of five business pillars, namely, the use of superior seeds (Artificial Insemination), the provision of quality feed, cage management (housing system), marketing techniques, and disease prevention (Somanjaya et al., 2014). In Central Java, the existence of this insemination program has succeeded in encouraging the growth rate of the dairy cow population in a number of central areas. For example, according to the BPS report, in 1976, the number of dairy cows in Boyolali Regency was at 6,426 heads, while in the following year, the number increased to 7,867. The phenomenon of this increase also occurred in Semarang Regency, where there was a population surge of 25.9 percent in the same year.

However, the productivity rate of the dairy industry in the late 1970s was still relatively low. The main obstacle lies in the limitation of transportation modes that are not equipped with *cooling unit facilities*, so that milk without a cooling system easily spoils during the delivery process. This condition causes farmers to only make this work a side hustle. The lack of production capacity puts local farmers in a position that is less looked at by the Dairy Industry (IPS). The Dairy Processing Industry at that time had set certain standards for foreign products to enter so that practically only foreign suppliers could meet the demand where they had better bargaining power with their products in the form of milk powder (skim milk powder) which was cheaper. In response to this phenomenon, the government conducted a comparative study to India and formed the Indonesian Milk Cooperative Association (GKSI) in 1979. The purpose of GKSI is to provide market certainty and credit assistance for the procurement of imported dairy cows and the results of Artificial Insemination (IB). In Semarang Regency, this credit assistance is manifested in the form of FH cows, where the installments are paid by depositing milk during the lactation period.

The next strategic step is the issuance of the Decree of the Three Ministers which regulates the ratio of milk raw material imports to local milk absorption by IPS. This regulation requires IPS to absorb local fresh milk through cooperatives as a condition for imports, known as the concept of BUSEP or Proof of Absorption. This policy was strengthened by Presidential Instruction Number 2 of 1985, which made cooperatives the sole body for collecting people's milk and set the National Basic Milk Price to protect farmers from price games by IPS. The effectiveness of this regulation is clearly seen in production data. In 1988 and 1989, Semarang Regency experienced a drastic increase in production to touch 14.9 million and 21.9 million liters. Entering the 1990s, the dairy industry in Semarang experienced a consolidation phase due to the emergence of anthrax disease which caused mass deaths in dairy cows owned by smallholder farmers. This population decline was also experienced by neighboring areas such as Boyolali. This dynamic reached a turning point in 1998. In the midst of the crisis, the International Monetary Fund (IMF) urged the abolition of the Proof of Absorption policy because it was considered protectionist and hindered the free market. The event showed that the BUSEP regulation played an important role in the governance of the dairy industry in Indonesia, where when the regulation was revoked, it made local production sluggish.

Research with the theme of dairy farming in the context of the development of the New Order in Indonesia has been carried out before. One example is Christiana Nurcahyanti's research in 2017 entitled "Dairy Farming in Pujom District in 1990-2010". Broadly speaking, although it carries the theme of dairy farming, this study highlights the aspect of contribution of the existence of the dairy industry to the economic welfare of the community in the Pujon area. However, the study is still lacking in highlighting the role of BUSEP regulations as an instrument in an effort to increase milk production and how it correlates with the dynamics of dairy milk productivity. In addition, in the context of historiography about the dynamics of milk production during the New Order period in Semarang Regency, it has still never been done before. This can be evidenced by the lack of research on this theme in online searches on the internet. Therefore, through this article, the study will focus on how the dynamics of the development of cow's milk production within the framework of the New Order policy in Semarang Regency. This study is expected to provide intellectual property for historiography in the context of the Semarang Regency area.

METHOD

This study takes the location of Semarang Regency, the New Order era period, with a specific theme focusing on the issue of the dynamics of dairy cow milk production. This study uses a historical approach, namely historical methodology consisting of; heuristics, source criticism, interpretation, and historiogy (Wasino & Hartatik, 2018). The first step in this study begins with the process of collecting sources. The primary sources in this study use a number of data, including BPS reports for Central Java Province and Semarang Regency, data from the Central Java Provincial Archives and Library Service, the Suara Merdeka newspaper and an interview with one of the members of the Andini Luhur Cooperative management. In terms of secondary sources, the data used comes from online search results through the Google Scholar website and journal sites to obtain relevant books and articles. The process of tracing related sources has been carried out since the beginning of November 2025. After that, verification steps were carried out by conducting comparison/*cross-checking* between sources, especially the primary sources because they are the main components of the study. It does not stop there, the comparison is carried out by comparing with reports from other regions, for example with Boyolali Regency in the case of increasing production after the establishment of the Insemination Center in 1976, where the two reports have similarities in the essence of data that collectively show an upward trend. In the interpretation step, a narrative-chronological analysis was carried out on secondary sources such as books and journal articles that serve as a reference as well as a flow in understanding how the process of implementing the livestock intensification program in Indonesia during the New Order period in the dairy sub-sector was carried out. The study was then closed by conducting a historiographic process by presenting the data that had been sorted in writing.

The purpose of this study is to describe how the role of dairy policy in relation to the dynamics of dairy milk production in Semarang Regency during the New Order era. This study found that the phenomenon of fluctuations in Semarang Regency related to dairy cow milk production occurred dynamically from year to year, especially after the implementation of the Proof of Absorption regulation in 1982, which required the dairy processing industry (IPS) to take raw materials from local farmers, the production trend tended to increase. Not only that, the establishment of the Indonesian Milk Cooperative

Association (GKSI) also played a major role in providing supporting facilities for the implementation of intensification programs. As a result, in the 1980s, Semarang Regency managed to achieve a production rate that relatively increased consistently, with the peak occurring in 1988 and 1989. Although there was a decline in the yield aspect in 1990, in the years that followed, people's milk production experienced *a take-off* position again. In 1998, when international trade transformed into a free market form, the IMF urged the Indonesian government to immediately stop regulations related to the absorption ratio required of social studies because they were considered too protectionist to a few parties (Farid & Sukesi, 2011). Thus, this study can provide benefits in the form of scientific treasures that are important for future research.

DISCUSSION

Early development of dairy cow milk production in Semarang Regency

Before the introduction of the livestock intensification program by the New Order government, smallholder farmers in Semarang Regency had first tried to produce milk even though it was still in a household-scale industry. Then, in the 1970s, the government began to pay serious attention to the national dairy industry through an intensification program. This program was pursued by making several regions as centers for milk production with the introduction of superior cattle seeds. As is known, the New Order government had great ambitions that were known to be structured in taking policy steps. One of the policies that received attention at that time was the food sector, where the government had the goal of making Indonesia a food-self-sufficient country (Syaifudin et al., 2016). In 1984, Indonesia had received the title of a food independent country, but it was still only limited to the ability to meet rice needs. Meanwhile, in the aspect of animal protein, Indonesia has not been able to achieve the desired target. Nevertheless, the dairy sector continues to have a progressive impact as evidenced by a decrease in the ratio of milk imports throughout the implementation period of the livestock intensification program.

Basically, the intensification program carried out during the New Order government was the result of adaptation of Mexico's success in increasing wheat yields. The success achieved is none other than the implementation of the Green Revolution concept where intensification is carried out through modern technology-based efforts. In

the Indonesian context, the Green Revolution does not only focus on agriculture, but also targets other fields including livestock. In the field of livestock, the principle of the Green Revolution is enforced into the main element in the implementation of the intensification program. At that time, the Green Revolution procedure was directed at various sub-sectors of livestock where one of the beneficiaries was the dairy industry. In its implementation, Java is an area that is projected as a central area for milk production where the buffer areas include Boyolali, Malang, Bandung, and Semarang.

In the context of the dairy industry, Semarang Regency is one of the largest producers of milk from Central Java besides Boyolali Regency (Al-Farizqie et al., 2020). This production phenomenon cannot be separated from the relatively dynamic topographic aspect of the Semarang area. The geographical condition of Semarang Regency is dominated by highlands and slopes of a number of mountains, including the slopes of Mount Merbabu, Mount Ungaran, and Mount Telomoyo where all three have an altitude ranging from 500 to 1500 meters above sea level. This altitude plays a role in producing an average air temperature climate in the range of 13 to 25 degrees Celsius (Suherman & Purwanto, 2015). In turn, this situation forms an ideal climate for Frisian Holstein cattle to reach a *thermal neutral zone* so that livestock do not experience stress due to hot air. The psychological condition of dairy cows has an important role in the milk production activities of imported dairy cows, where when the metabolism of the bodily body of livestock is processed optimally, this will produce a concrete impact on the quality and quantity of milk production produced. Therefore, local climate criteria are an absolute prerequisite for imported dairy cow farming activities from four seasons. In addition to climatic characteristics that are crucial factors for imported dairy cow farming, mountainside areas are also known to store abundant water supply and have a high level of soil fertility so that sustainable and high-quality feed stocks can be fulfilled properly (Andarwati et al., 2017). This situation makes the landscape of Semarang Regency meet the geographical criteria to develop dairy farming which is oriented towards fulfilling the needs of animal protein proclaimed by the government during the New Order period.

Long before the issuance of Presidential Instruction No. 2 of 1985, the New Order government had issued a policy that specifically regulated livestock governance through a program called Panca Usaha Ternak (PUT). Similar to the Panca Usaha Tani, the principle of this program adopts modern technology as the main instrument in order to

realize a national vision that seeks to produce with more intense results. Regarding dairy milk production, PUT became the technical basis for the implementation process before the emergence of market protection in the late 1970s. There are five main pillars that directly affect milk production, namely; a) the use of superior seeds through the Artificial Insemination program and the import of Frisien Holstein cows, b) the provision of quality feed, c) structured governance through *the housing system*, d) effective marketing techniques, e) disease prevention through vaccination and regular treatment. The beginning of this program was manifested in the Artificial Insemination (IB) program implemented by the government through the import of 10,000 doses of frozen semen from New Zealand (Nurcahyanti & Pamungkas, 2017). In addition, in order to increase the population of dairy cows from FH crossbreeding, the government also established an Insemination Center in Bandung in 1976 to accelerate the population spread. As a result, exactly a year after the procurement of the facility, there was an increase in the population of dairy cows in several regions, including in Central Java. For example, according to a BPS report, in 1976, the number of dairy cows in Boyolali Regency was at 6,426 heads, while in the following year, the number increased to 7,867. In line with this increase, the dairy cow population in Semarang Regency also increased by 25.9 percent from the previous year.

Although there has been a population surge after the establishment of the artificial insemination center in 1976, national dairy cow milk production is still classified as low production levels. The lack of this amount of production is due to the limited number of transportation modes which at that time still relied on traditional modes as a tool for smallholder farmers to deliver their milk products to prospective dairy processors. In terms of time duration, this method of delivery is less efficient because milk sent without a cooling system will more easily become stale when exposed to hot air during daytime delivery. Therefore, this condition makes smallholder farmers prefer to make dairy milking work a side job to earn additional income (Sumaryana et al., 2022). In data collected from the Indonesian Dairy Cooperative Association (GKSI), in 1977, national dairy cow milk production only touched 1.3 million liters (Susilla, 2003). This phenomenon then became the basis for policy makers, especially the cooperative minister at that time to look for ways to increase national milk production which became a common goal.

This step to accelerate production was finally realized through a foreign visit that ordered three Indonesian delegations to visit India to directly review the milk production process in the country. Armed with this knowledge. The government through the Minister of Cooperatives began the first step by presenting a number of representatives from 11 dairy cooperatives throughout Indonesia which then inspired the formation of the Indonesian Dairy Cooperative Coordinating Board (BKKSI) which became the embryo for the birth of a cooperative organization known as the Indonesian Dairy Cooperative Association (GKSI) (Gandhy & Kurniawati, 2018). The purpose of establishing the cooperative was none other than to provide a more secure market space for smallholder farmers as well as provide assistance in the form of credit for the procurement of imported dairy cows and Artificial Insemination (IB) products. The existence of this dairy policy was then immediately followed by the realization of the procurement of imported dairy cows in 1979. The goal is so that the intensification program in the dairy sector can be implemented as soon as possible and make it easier for smallholder farmers to get quality dairy cows with a credit scheme that has been prepared in advance. It is noted that during the period between 1979 and 1986, the government has imported 125 thousand cows (Sembada et al., 2020) from several countries such as New Zealand, Australia, and the United States to be then distributed to various dairy center areas including Semarang Regency.

The initial milestone for the structural transformation of the national industry in the New Order era began in 1978. The government at that time initiated the establishment of a cooperative that integrated all regional milk cooperatives in Indonesia into one forum to facilitate coordination in the technical implementation of intensification programs. Before this organization was formed, the Milk Processing Industry (IPS) in Indonesia had absolute dominance in determining the price and standard of preferred absorbed milk, where they tended to prioritize imported products in the form of milk powder (*skim milk powder*) which was cheaper in price compared to milk produced by people's farms. In turn, this condition created market uncertainty for local milk producers so that the production produced was forced to be sold to middlemen at a lower price, even in the worst conditions the milk that did not sell well had to be thrown away due to the lack of adequate milk cooling media. In Semarang Regency, the presence of cooperatives that function as a forum for tunngal has its own urgency.

In a number of production center areas such as Getasan and Ungaran, there have actually been signs of a significant increase in population, especially since the establishment of the Artificial Insemination Center since 1976. However, this increase does not necessarily have a constructive impact on the welfare of smallholder farmers due to the absence of coordination that actively directs farmers in striving for quality production to penetrate the market in accordance with the standards desired by the Dairy Processing Industry (IPS). Since then, the government has established a national dairy cooperative that combines all local cooperatives into one organization which was later known as the Indonesian Dairy Cooperative Association (GKSI) which was officially formed in 1979. At the beginning of its development, GKSI had a membership of 17 cooperative units from all over Indonesia. The urgency is clear, namely improving communication between cooperative members and building a system to support various kinds of Indonesian dairy businesses including supplying dairy cows, milk marketing, technical training, feed production, and so on (Sembada, 2018).

On the one hand, in an effort to respond to the need to accelerate the growth of the dairy population among smallholder farmers, the government has implemented a credit policy through bank funding (BRI) to make it easier for smallholder farmers to obtain imported dairy cows (Mahendra & Anwari, 2024). This credit system works with a unique mechanism, namely smallholder farmers do not receive cash assistance, but in the form of Fresien Holstein dairy cows that have previously been imported by the Cooperative. Instead, installments are paid by depositing part of the dairy products to the cooperative in portions of 1-2 liters during the lactation period. Basically, this credit system procedurally not only provides loans to bring in imported cows or insemination products, but also provides other assistance packages such as the cost of making cages in accordance with health standards and concentrate purchase credits for the early adaptation of cows.

In Semarang Regency, thanks to credit assistance and market certainty, this has led to a significant increase in the dairy cow population owned by smallholder farmers. According to data from the Central Java Provincial Livestock Office, in 1979, the population of cattle spread across Semarang Regency reached 6,384 heads. This figure is the highest compared to previous years during the implementation of the Five Livestock Businesses which began in the early 1970s. This increase in population is also directly

proportional to the productivity of dairy cows in Semarang Regency, where in the same year, the collective production produced by smallholder farmers reached a production figure of 792,014 liters.

Table 1. Dairy cow population and milk production in Semarang Regency in 1979-1982

Year	Dairy Cow Population	Milk Production (ltr)
1979	6.384	792.014
1980	4.153	901.097
1981	4.776	1.405.369
1982	5.424	1.617.948

Source: Central Java Provincial Livestock Office, Semarang Regency BPS in 1981 figures, Semarang Regency BPS in 1984 figures

The effect of Proof of Absorption regulations on milk production

The government's steps in advancing the dairy industry in Indonesia did not stop at the establishment of GKSI. The next policy taken by the government at that time was to issue another regulation in the form of a three-ministerial decree which was the result of cooperation between ministries consisting of the Minister of Trade and Cooperatives, the Minister of Economy, and the Minister of Agriculture. The decree is the official legal basis of the state that regulates the ratio of milk raw material imports by the Dairy Processing Industry to milk absorption from smallholder farmers. In other words, this regulation requires the absorption of fresh milk from local extraction through cooperative bodies as a condition for importing raw materials from abroad. At that time, it was known as the concept of BUSEP or Proof of Absorption which became a legal document as well as indicating that the dairy factory concerned had absorbed milk production from smallholder farmers with a certain ratio in accordance with applicable regulations (Dhaifullah, 2017). This ratio was dynamic by adjusting to how much production was produced by people's farms.

At the beginning of its implementation, the ratio applied by the government was quite loose where the ratio between local and imported absorption was only at a ratio of 1:7. However, as the people's dairy farming industry became more productive, this ratio then changed from time to time, where regulations related to the ratio of milk absorption by smallholder farmers to imports were constantly updated. In line with the spirit of the

Ministerial Decree which seeks to increase the production of people's expressed milk through the Proof of Absorption scheme, its realization was followed by quite satisfactory results. In Semarang Regency, the BUSEP regulation received a positive response from smallholder farmers who during the implementation of the livestock intensification program had never experienced such a situation where they obtained market certainty in terms of supplying the needs of milk raw materials for the Dairy Processing Industry. In its development, this Proof of Absorption rule plays a role in encouraging the people's dairy industry to continue to strive for large-scale production by increasing the dairy population through cooperatives. The courage to increase the number of dairy cows is none other than because since the establishment of the existence of the dairy cooperative, there has been a sense of trust from smallholder farmers in related cooperatives which have been considered to have helped provide a lot of facilities and infrastructure in the people's dairy business in Semarang Regency.

In its development, the Decree of the Three Ministers in 1982 was then strengthened by the existence of Presidential Instruction Number 2 of 1985 (Agustia et al., 2026). Actually, legally this Decree is sufficient to implement rules related to the ratio of milk absorption by smallholder farmers to social studies. However, with the enactment of the Presidential Instruction, the position of cooperatives as the only single body that has legal force as a reservoir for milk harvested by the people becomes stronger because hierarchically, the existence of Presidential Instruction has a higher position in the dimensions of the Indonesian constitution. In other words, the function of Presidential Instruction Number 2 of 1985 is as a legal reinforcement for the previous Decree of the Three Ministers. In addition, the existence of this Presidential Instruction is a determining factor in determining the National Basic Milk Price. The goal is so that producers at the dairy processing industry level do not bid arbitrary prices so that smallholder farmers can still get decent profits which in turn can make the people's local milk production activities continue to take place sustainably. The strengthening of this legal side becomes a powerful instrument which then leads to an increase in people's dairy production in a number of dairy center areas, especially Semarang Regency where in the 1980s, especially after the enactment of the Decree of the Three Ministers which has been effective since 1983, there has been a significant surge in the dairy population and people's milk production.

In addition, in 1983, the Government through the Livestock Service carried out vaccinations to prevent the spread of foot and mouth disease infections that had entered a number of sub-districts including Getasan, Salatiga, Ambarawa, and Susukan. Therefore, in Tengaran District, vaccination of 461 livestock consisting of cows and buffaloes was held to anticipate the spread of FMD infection. The existence of this medical action then encouraged smallholder farmers to increase the population which had an impact on the increase in the number of dairy cows in Semarang Regency in 1984 (Merdeka, 1983). However, in 1986, the dairy cow population in Semarang Regency had decreased due to bad credit caused by the lack of expressive yield which was only able to produce three liters of milk production per head every day. This condition is contrary to what is expected, where the cows are projected to be able to produce milk production of up to five liters per day like in their home region of New Zealand. Meanwhile, in reality, the Banpres cows that are credited to the people can only produce after two to three years after being in the hands of the people's farmers. As a result, to cover the credit bill, some smallholder farmers are forced to sell their dairy cows to cover the bad loans that have befallen them (Merdeka, 1985).

Table 2. Dairy cow population of Semarang Regency in 1983-1989

Year	Dairy cattle population
1983	5.255
1984	6.177
1985	8.476
1986	7.280
1987	9.610
1988	24.367
1989	17.908

Source: Central Java Provincial Livestock Service

In the aspect of dairy cow milk production, after the implementation of absorption ratio regulations strengthened by Presidential Instruction Number 2 of 1985, the production of dairy cow milk produced by smallholder farms began to show an increase in production. The increase in production occurred consistently from 1983 to 1989. Even in two consecutive years, from 1988 to 1989, there was a drastic increase in production until it touched the numbers of 14,901,704 and 21,967,480 liters, respectively. In those

two years, Semarang Regency managed to become the number one production center in Central Java, beating Boyolali Regency which usually sits at the top position in the milk supply chain in Central Java. The phenomenon of a significant increase in production in Semarang is inseparable from two main factors, namely the procurement of insemination programs and the provision of quality or conventional feed with concentrates. According to the admission of one of the members of the Andini Luhur Cooperative board and a 51-year-old smallholder named Rasyid, the use of concentrated feed with a ratio of 60% forage combined with 40% selective concentrate can increase the production of superior quality dairy cow's milk. He also added that concentrates with the same level (40%) if they do not meet nutritional quality standards will not be able to produce maximum expressing production.

In the aspect of procurement of superior dairy cows, as mentioned earlier, the government has established a cooperative whose purpose is to provide imported quality cows. However, not all smallholder farmers choose the option of buying imported dairy cows, but rather follow another program contained in the cooperative, namely insemination. In the process, the insemination program in Semarang Regency has been going on since the establishment of the local insemination center in 1983. Previously, in order to meet the needs of increasing the cattle population, farmers used to gather in the field collectively by allowing their cows to make biological contact with each other. However, the results of these biological processes often meet unsatisfactory results where the cow seeds produced often have small physical conditions. Therefore, through the local insemination program, superior dairy cow populations can be produced through the method of inserting acceptors for female cows that have entered productive age. As a result, in the following years, the insemination program can encourage the growth of the dairy cow population in Semarang Regency which reached its peak in 1988 to 1989.

It was recorded that in 1986, the number of acceptors reached more than 6000 heads with the success of giving birth to 2493 calves. In addition, the supply of animal feed also plays an important role in increasing the dairy cow population. In order to meet these needs, superior types of grass such as elephant, kolonjono, and lamtoro grass are planted. In fact, each village already has a special land for nurseries. Not only from the elements of local breeders, Perum Perhutani is also involved in the process by establishing green *fields* (green belts) planted with elephant grass where smallholder farmers are

allowed to use it on the condition that they must be willing to participate in fostering and securing it (Merdeka, 1987). Support through these cooperatives is a manifestation of integrated counseling to smallholder dairy farmers in order to produce product quality that meets the standards desired by IPS (Festicora et al., 2025).

Table 3. Dairy cow milk production in Semarang Regency in 1983-1989

Year	Dairy Cow's Milk Production (ltr)
1983	1.579.002
1984	1.931.528
1985	2.487.784
1986	2.156.787
1987	3.669.740
1988	14.901.704
1989	21.967.480

Source: BPS Central Java in 1990, Central Java in 1989, Central Java in 1988, Central Java in 1988, Central Java in 1987, Semarang Regency in 1985

Causes of mass deaths of dairy cows in Semarang Regency

The peak of the glory of people's dairy milk production in Semarang Regency during the New Order era occurred during the 1980s. During this period, smallholder farmers benefited greatly from the implementation of the dairy industry which was the result of the manifestation of government policies in the form of regulations such as market certainty, credit schemes, and the determination of the Basic Price of Milk. Although these regulations continued to be implemented for the next few years, in 1990, the dairy sector experienced a new phase of consolidation. The consolidation was marked by the emergence of a zoonotic disease called anthrax. In 1990, there was a deadly outbreak caused by *the bacterium Bacillus Anthracis*. This type of bacteria can change into spores when it encounters oxygen. In the context of dairy farming in Semarang Regency, this disease is widespread when breathing or when eating grass that has been accidentally swallowed until the roots have been contaminated with spores that usually settle in the soil. In Semarang Regency, this type of disease has caused mass deaths in a number of farm animals, including dairy cows. The emergence of this disease may be caused by the arrival of imported dairy cows that have been in sick condition since before

being imported from abroad. Gradually, the diseased cow transmits bacteria in its body through feces which then contaminate the air and soil in densely populated areas of livestock.

In Semarang Regency, anthrax disease has started to spread since September 1989. In January 1990, the number of cases in Semarang had decreased, but in March there was another spike in cases, where every day there must be cases of death in dairy cattle owned by smallholder farmers. To prevent the spread of anthrax disease that occurred in Semarang Regency, the Infectious Animal Disease Eradication Team (TPPHM) institution was deployed to go into the field by conducting counseling. As a result, in July 1990, the ratio of dairy cow deaths per day decreased by only one head (Merdeka, 1990). In addition, Rasyid also specified that one of the protocols used to stop the spread of anthrax was to cut the dead cow into several parts and then burn it in a hole. Then the last step was to bury it in the ground. In a report compiled by the Central Java Provincial Livestock Office, due to the anthrax disease that hit Semarang Regency in 1990, it has had a major impact on the decline in the dairy cow population, where in that year the number of dairy cows was only around 9,892 heads. This figure is much less than the previous year which reached a population of 17,908 heads.

Although it experienced a consolidation phase in the early 1990s. Dairy cow milk production and the increase in the dairy population began to experience an upward trend again. After the mass death since the endemic anthrax disease in the early 1990s, all elements involved in the dairy industry in Semarang Regency began to rebuild dairy farms by adhering to higher health standards than before. This step began to show a progressive impact which was marked by a massive increase in the dairy cow population which experienced a surge to 15,582 in 1991. Although it was hit by difficulties in paying loans that should have been paid in full in 1990, due to the compilation of many factors such as disease outbreaks, longer productive age, and production inconsistencies as projected, caused the payment schedule to be delayed. To overcome this problem, the government took progressive policy steps by paying the debt to the creditor (Bank Rakyat Indonesia) in full. Instead, smallholder farmers can pay the debt in installments and without interest. (Merdeka, 1991).

In the following years, the dairy cow population in Semarang Regency tended to increase every year without any significant obstacles. In the following two years, namely

1992 and 1993, the dairy cow population was 16,891 and 16,894, respectively. In handling imported dairy products, which at that time the ratio between imported and local milk was 3:1, the government continued to boost dairy milk production through the credit system through cooperatives. However, in its development, a number of problems were encountered related to the quality and quantity of milk which in proportion could only produce six liters per head per hari. In order to improve this quality, elements between smallholder farmers, livestock groups, KUD, and IPS held periodic meetings to discuss and evaluate previous performance in order to strengthen the position of local milk production in the country (Merdeka, 1996).

In 1998, after the regulation of the absorption ratio to local dairy required for IPS lasted for 15 years since it was effectively implemented in 1983, the Indonesian dairy industry was faced with a new reality in the form of the implementation of a free market which had implications for a decrease in the amount of milk production. Basically, the Proof of Absorption Policy had instilled a new culture in the dairy sector, where the crucial steps taken by the government at that time succeeded in helping to achieve real growth in the livestock sector, especially in the field of milk production. The success of the program encouraged people to be more productive in exploring the natural potential around them. For example, in Semarang Regency, which at that time was working on a dairy business, with a number of policies related to supporting the development of the creative industry aimed at supporting the creative industry, the people there were also carried away by the spirit to develop businesses in accordance with the facilities that had been presented by the government. However, in turn, the policy received direct attention from the international community, which at that time, the International Monetary Fund (IMF) strongly opposed the policy because it was considered protectionist for a few parties and seemed to not give room for free market activities.

With this statement, the IMF unilaterally cut off cooperation with Indonesia which had an impact on the revocation of the Proof of Absorption policy (Priyanti et al., 2004). In turn, the change in regulations made a number of farmers have to lose partners with IPS which had been going on for many years. The relationship between the partners was broken because a number of factories preferred to import, instead of relying on the people's absorption results which sometimes did not meet the quality standards required by IPS. As a result, many farmers finally chose to quit their jobs as dairy farmers because

they were too competitive due to the free market that was tried in Indonesia at that time. This phenomenon also marked the end of the New Order policy in relation to the dairy industry developed by smallholder farmers.

CONCLUSION

The dairy industry in Semarang Regency during the New Order era has started since the implementation of Pelita I, which coincided with the implementation of the Green Revolution to support the Food Self-Sufficiency program in Indonesia. With a similar concept that favors the use of modern technological innovations, efforts to increase dairy cow milk production are included in the Panca Usaha Livestock program. This program began with the implementation of the Artificial Insemination (IB) program which is an effort to improve the quality of cow seeds through the method of crossbreeding between local cows and Holstein frisian cows. After the establishment of the Insemination Center in Bandung in 1976, cross-breeding cows began to be disseminated throughout Indonesia, especially to a number of dairy production center areas. Although it has succeeded in increasing the cattle population, including Semarang Regency, the growth in the quantity of livestock has not been said to have succeeded in achieving the expected target. The problem at that time was that smallholder farmers did not have adequate access to get optimal profits from dairy farming.

Therefore, in 1978, after visiting India to see the process of managing dairy milk production, the Indonesian government through the Minister of Trade and Cooperatives established the Indonesian Milk Cooperative Association which began to be actively established in 1979. The goal is to provide market certainty and provide various other supporting facilities and infrastructure, including credit schemes. As a result, in the period after the implementation of the regulation, the production of dairy cow milk produced by smallholder farmers experienced a consistent increase for four consecutive years from 1979 to 1982. In response to this phenomenon, in 1982, the Minister of Trade and Cooperatives together with two other ministries, namely the Minister of Agriculture and the Minister of Economy, issued a decree containing a new regulation that requires the ratio of local milk absorption to imported raw materials to IPS known as BUSEP. Not long after that, two years later, the government followed up on the policy with another regulation in the form of Presidential Instruction Number 2 of 1985 which strengthened

the position of cooperatives as the only official institution that had the authority to bridge the relationship between smallholder farmers and social studies. As a result, in the following years, the smallholder dairy industry in Semarang Regency experienced a significant increase in production, where in two consecutive years between 1988 and 1989, local farmers managed to produce 14,901,704 and 21,967,480 liters of milk, respectively.

However, in 1990, after undergoing an extraordinary production period in the previous few moments, dairy farms in Semarang Regency were faced with new problems that arose due to the lack of mitigation to control anthrax disease that caused the death of thousands of dairy cattle. Even so, these problems could be overcome quickly, which was shown by the trend of increasing production and the population of dairy cows in the following years. In 1998, the free market situation forced the IMF to urge the Indonesian government to immediately revoke the regulation of the absorption ratio to social studies based on having played a role in limiting the free market mechanism that became the spirit of world trade trends at that time. Thus, the dairy policy during the New Order period, both the establishment of GKSI and the Proof of Absorption regulation and Presidential Instruction Number 2 of 1985, all had a crucial role in increasing dairy milk production in Semarang Regency. This shows that government intervention in the form of policies at certain moments is needed to drive a country's economy. for example, it occurs in the case of the application of the Proof of Absorption rule in the dairy industry area at the level of smallholder farmers, where through it, the milk productivity of dairy cows that are tried to experience a significant increase which has an impact on the welfare of the community in the Semarang Regency area.

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