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The Adoption Rate of Reagent Masofilm Innovation as Teat Dipping to Prevent Mastitis in Kemiri Village, Jabung District, Malang Regency

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ABSTRACT

The research purpose was to identify the dairy farmer's characteristics and analyze the innovation in the adoption of innovative technologies, which as reagent masofilm teat dipping to dairy cattle in Kemiri Village, Jabung District, Malang Regency. Data was obtained by observation participation and direct interview with 39 dairy farmers from KAN Jabung active members from February - March 2020. This research uses primary and secondary data, with participation observation, direct interviews with respondents with a Likert scale (score 1-3), and documentation as a data collection method. Data was then analyzed by using simple statistics and descriptive analysis. The results showed that the majority of dairy farmers in Kemiri Village are productive ages ranging from 25-38 years old, graduated from elementary school, have experience keeping livestock for around 21 years with several livestock ownership around 11-15 head/farmers and using 2 devices to find the information regarding the reagent masofilm as teat dipping. In addition, the adoption rate of dairy farmers in Kemiri Village, Jabung District, Malang Regency was 76.92% in the fast category, 15.39% in the medium category and 7.69% in the slow category.

1. Introduction

Livestock agribusiness is a business activity which makes a great contribution to driving the national economy as well as increasing the income of the villagers through a set of activities from upstream to downstream (on the farm, processing, off-farm and supporting system). The livestock sub-sector has contributed to the Indonesian economy as shown by the contribution of the Gross Domestic Product (GDP) of the livestock to the national economy. Data from the Central Bureau of Statistics (2009) showed that GDP in the livestock sector increased by 4.07% between 2008 and 2011.

Livestock agribusiness, which is the potential to be developed, is dairy farming. The development of dairy agribusiness in Indonesia is still dominated by a subsistent farming system, which faces various limitations of resources (land, knowledge, capital/finances, labour, access to technology and information) so that it must be triggered to produce dairy products, which will be able to meet the national dairy needs. As suggested by Karuniawati and Fariyanti (2012), domestic dairy products are only able to meet 1/3 of the domestic demand, so the rest still has to be met from imports.

The dairy production rate determines the success of the dairy cattle development, which indirectly determines the cattle farmers' income. In general, dairy production in Indonesia is relatively low that ranging from 8-10 litre/head/day. Sarwiyono, *et al*., (1990) suggested that

there are many factors, which affect dairy production, such as breed, age of the dairy cattle, lactation rate, milking method, dairy secretion rate, lust cycle, cattle dry period, feed, environment, and disease (mastitis).

Mastitis is an udder inflammatory reaction caused by germs, chemicals, thermal injuries (burnt) or mechanical injuries, which increase protein contained in blood and leukocyte in mammae tissues (Surjowardojo, 2011). Mastitis may emerge due to the reaction of the mammary gland to an infection on the mammary gland. The reaction was characterized by inflammation of the udder to neutralize the stimulation caused by the wound and to fight germs that enter the mammary gland so that it can function normally. Mastitis may reduce the dairy product quality due to physical and chemical changes as well as bacteriology in the dairy products and pathological changes in glandular tissues. The most noticeable change is the discolouration of the milk, the presence of clots and the appearance of large numbers of leukocytes, as well as an increase in the pH of the milk (Hungerford, 1990, in Suryowardojo, 2011; Solehah *et al*., 2020). The Standard of Total Plate Count (TPC) of fresh milk based on SNI (1992) is a maximum of 1 x 106 cfu/ml and pH 6.3 – 6.8. Meanwhile, the quality of the dairy products resulting from the subsistent farming system is low, on average with bacterial contamination 6.6 x 106 cfu/ml (Arjadi, et. al., 2017). Based on the results of the research by Suryowardojo (2012), the higher the mastitis value, the lower the protein and fat content of the milk would be.

Moreover, the cattle farmers suffered huge losses due to the disease because of the increased costs for care and treatment and dairy production decreased by 15-20% out of total production (Bray and Shearer, 2003, in Suryowardojo, 2011), even other studies showed a decrease in production up to 30% (Taylor and Field, 2004) and a decrease in milk quality (Suryowardojo, 2011).

An innovation of technology used to prevent mastitis is teat dipping, which uses bactericidal after the milking process, such as iodine, chlorhexidine, and chlorine (Siregar, 2010 in Kurniawan *et al*., 2010), or teat dipping used alcohol 70% for a few minutes post-milking (Rahayu, 2007). Dipping is a process of dipping the dairy cows' teats into an antiseptic solution post-milking process to coat and protect the teats as well as the udders of the cows from contamination by harmful bacteria and microorganisms. Line with Sasongko et.al., (2012) described that dipping is intended to prevent the entry of bacteria and the surrounding air which may reduce the quality of dairy products and mastitis. Results of the research by Kurniawan, *et al*., (2010) indicated that teat dipping with antiseptic can reduce the mastitis score from an average of 0.6 to 0.15.

Mastitis prevention in Kemiri Village, Jabung District, Malang Regency through teat dipping was coordinated by KAN Jabung in early 2003 using reagent iodine, but it had not been able to prevent mastitis optimally, so it turned to use reagent series in 2010. However, this reagent has a side effect, which irritates the cow's udder, making it hard and swollen, so in 2018, KAN Jabung endeavoured to use innovations, reagent masofilm, which is easy to obtain, relatively inexpensive, does not irritate the udder, and it is also optimal in covering the teats so that it would minimize the occurrence of mastitis. Based on data from KAN Jabung, there were 289 occurrences of mastitis (2017) before using the reagent Masofilm. After KAN Jabung coordinated the dairy farmers as its members using the Reagent Masofilm, the occurrence of mastitis decreased to 131 (2019). Kemiri Village was selected as the location of the research because it is the largest dairy-producing village in Jabung district, Malang Regency.

The application of reagent masofilm innovation adoption as teat dipping depended on the characteristics of the dairy farmers (age, education, experience in dairy farming, number of dairy cattle ownership, and activity in looking for information) as well as characteristics of the introduced innovation including relative superiority (benefits), compatibility, complexity, trialability, and observability (Alam, 2010; Hanafi, 1987)

Objectives of the research were: 1) know the profile or characteristics of the dairy farmer who accepts the adoption of reagent Masofilm innovation as teat dipping, and 2) analyze the adoption rate of the dairy farmers toward innovation of the reagent masofilm as teat dipping to prevent mastitis on dairy farming in Kemiri Village, Jabung District, Malang Regency. It is expected that the results of the research can be used to enrich references for the dairy farmers and the wider community for the development of dairy industries in Indonesia so that it is free from mastitis, therefore, the quality of the national dairy would be better.

2. Methodology

2.1 Location and Time of the Research

The research was conducted in Kemiri Village, Jabung District, Malang Regency, East Java. The location of the research was determined purposively with the consideration that Kemiri Village is the largest dairy-producing centre in Jabung District, which has applied different system development concerning the adoption of teat dipping innovation using reagent masofilm and actively attend the extension activity concerning the implementation of teat dipping on dairy farming management that have been run by dairy farmers as the members of KAN Jabung. Data was collected for approximately a month from February to March 2020

2.2 Method of the Research

The method of the research was a survey taking a sample from a population using questionnaires to collect data (Singarimbun and Effendi, 1999; Sugiyono, 2014). The collected data was primary and secondary data. Primary data was derived through observation in the field, direct interviews with respondents using structured questionnaires and closed-ended questions, as well as documentation methods. While, the secondary data was obtained through data searching from various references, statistical data from the related institution/agency such as the Central Bureau of Statistics, Animal Husbandry Department, the annual report of KAN Jabung, the website of KAN Jabung and information from the internet, which is relevant to the topics that being observed.

2.3 Respondent Determination Method

Respondents of the study were dairy farmers. The method of determining respondents was carried out purposively with the criteria of being an active dairy farmer incorporated as a member of KAN Jabung and followed by using snowball sampling. Numbers of the population are 297 dairy farmers. Samples of the research were 39 respondents or 13% of the total population that include active members. Besides that, the selected respondents were considered to have the information needed for the research. The respondents are as follows: 3 OC (Organizational Coordinators), 3 MCs (Member Coordinators) in each OC, and 3 members in each MC.

Determining the number of respondents is intended to meet the minimum general rules of statistical data ≥ 30 respondents because they have been normally distributed and can be used to predict the population that is being observed. The determination also refers to the statement by Arikunto (2010), if subjects are less than 100, then all should be used. But if the subjects are more than 100, 10-15% or 20-25% more can be used.

2.4 Data Analysis

Data analysis used a descriptive analysis and a simple statistical test. Measuring the adoption rate of the teat dipping innovation using reagent masofilm was carried out by paying attention to 2 items as follows:

1. The dairy farmers know the innovation for the first time
2. The dairy farmers adopt the innovation for the first time.

The adoption rate of innovation is measured using the equation below (Hanafi, 1987)

$$\text{Adoption Rate (\%)} = \frac{\text{Total score}}{\text{Total ideal score (the highest)}} \text{ X } 100\%$$

$$\text{Adoption Rate High Score} = \frac{\text{Total score}}{\text{Total ideal score (the highest)}} \text{ X } 100\%$$

$$= 3 / 3 \text{ x } 100\%$$
$$= 100\%$$

$$\text{Adoption Rate Medium Score} = \frac{\text{Total score}}{\text{Total ideal score (the highest)}} \text{ X } 100\%$$

$$= 2 / 3 \text{ x } 100\%$$
$$= 66.67\ \%$$

$$\text{Adoption Rate Low Score} = \frac{\text{Total score}}{\text{Total ideal score (the highest)}} \text{ X } 100\%$$

$$= 1 / 3 \text{ x } 100\%$$
$$= 33.34\ \%$$

According to Hanafi (1987), the adoption rate of technology is divided into 3 (three) categories as follows: high, medium, and low. However, the high adoption rate took 1-8 months to adopt (score 3), the medium adoption rate took 9-16 months to adopt (score 2), and the low adoption rate took 17-24 months to adopt (score 1).

Prior to data analysis, reliability and validity tests were carried out on the research instruments. The validity test is used to measure whether the instruments or questionnaires of the research are valid or not, and it is done with a two-sided test with a significance level of 0.05 (Ghozali, 2011). If r-count > r-table, the instruments or items of the questions have significantly correlated to total scores (valid), and vice versa. While the reliability test was

measured using a coefficient of *Cronbach's alpha* (*α*). Gujarati (1978) described that items of questions in the questionnaires are reliable if *Cronbach'c alpha* is higher than 0.60 ($\alpha > 0.60$).

3. Results and Discussion

3.1 General Description of the Research Location

Kemiri Village lies at an altitude of 800 - 1500 km above sea level. Administratively, the area lies around 26 km from Malang. Kemiri Village is the largest dairy-producing centre in Jabung District. Dairy production per year may reach 2,737,500 litres or an average of 7,500 litres per day, and today, its production reaches 20,000 litres per day. Geographical conditions of the location include an altitude of 600-1050 meters above sea level, temperature ranges of 22-25℃, and average rainfall is 2000-2300 mm/y. Areas of the unirrigated field/dry field are 639,677 Ha, subsistence agriculture covers 257,2 Ha; meadow for feed) is around 78 Ha, and the forest area is about 711 Ha. The demographic condition of the total population is 6,249 people with the main livelihood as farmers and cattle farmers (breeders). Populations of dairy cattle potencies are 2.012 heads, followed by beef cattle for about 1,244 heads, and free-range chicken is 45,600 heads (Prayitno and Khusnul, 2011).

Koperasi Agro Niaga Jabung (KAN Jabung) was established on 27th May 1979, whereas at the time this research was conducted, the total employees of KAN Jabung are 199 with composition based on the status: permanent employees (48%), contract employees (10%), and freelance employees (42%).

3.2 Profile of the Dairy Farmers in Kemiri Village, Jabung District, Malang Regency

Characteristics of the dairy farmers as respondents of this research include age, formal education level, experiences in dairy farming, activity in searching for information that relates to innovations that are being introduced, and some dairy cattle ownership. The profile of the dairy farmers in Kemiri Village, Jabung District, Malang Regency is presented below (Table 1).

Table 1. Characteristics of the dairy farmers

No.	Variable	Interval Score	Respondent (person)	Percentage (%)
1.	Age	25 - 38 years old	26	66.67
		39 - 52 years old	10	25.64
		53 - 67 years old	3	7.69
2.	Formal education	Senior High School/equivalent	4	10.25
		Junior High School/equivalent	14	35.89
		Elementary School/equivalent	21	53.86
3.	Experience in cattle farming	> 21 years	20	51.28
		1-20 years	11	28.21
		< 10 years	8	20.51
4.	Activity in searching for information	> 2 Media	29	74.37
		1 Media	6	15.38
		No Media	4	10.25
5.	Number of livestock ownership	11-15 Head	29	74.37
		6 -10 Head	7	17.96
		1 - 5 Head	3	7.69

Source: Primary Data Processed (2020)

3.2.1 Characteristics of Age

Table 1 shows that the majority of the respondents (dairy farmers) are in productive age, 25-38 years old (66.67%). Mardikanto (2009) suggested that age may affect the perception of a dairy farmer in deciding to accept or reject the innovation or anything new. The more productive a person's age will be directly proportional to the willingness and ability to develop a business. In line with Ban and Hawkins (1999), they described that age affects one's physical ability to work or do an activity, and the ability to think and make decisions, as well as affect one's rate of adoption of innovation.

3.2.2 Characteristics of Education Level

Based on formal education level, most of the dairy farmers (53.86%) have a low education level and graduated from Elementary School (Table 1). Education relates to the level of thinking, reasoning, analyzing problems, and the ability to act/behave, as well as make decisions. These conform to Mardikanto (2009) who suggested that the essence of education is to increase the human ability to be able to maintain or improve the quality of his/her existence so that his/her quality will be better and more empowered. As dairy farmers have a low education level, they should be given an informal education in the form of an extension from KAN Jabung (or Department Animal Husbandry) on a continuous and periodic basis with materials that are adjusted to the needs and problems faced by the dairy farming community.

3.2.3 Characteristics of Experience in Dairy Farming

Based on experiences in dairy farming, 20 dairy farmers (51.28%) have engaged in dairy farming for more than 21 years. It described that dairy farmers in Kemiri Village of Jabung District, Malang regency have more experience in running dairy farming. They have a fairly good level of knowledge, attitudes, and skills. Dairy farmers have already known and understood what they have to do to develop their dairy farming, such as the adoption of innovation that relates to dairy farming. Experiences in dairy farming also affect deciding to accept or reject an innovation or technology. As stated by Murwanto (2008), experience in dairy farming is the best teacher for dairy farmers to develop their knowledge, attitude, and skill. Having sufficient experience in dairy farming will make dairy farmers more careful in developing their businesses and fixing their deficiencies in the past.

3.2.4 Criteria of Activity in Searching for Information

In the activity of searching for information that relates to the innovation of teat dipping, most of the respondents used 2 media or more (74.37%) to search for information completely, such as cellular phones, television, radio, and website (internet). The group of dairy farmers also have a WhatsApp group (wag) to share information including about mastitis and the innovation of teat dipping. Lioberger (1960) in Ban and Hawkins (1999) described that a community that is active in searching for information and new idea, are usually more innovative than passive ones. Along with the results of the research by Sugiantara, *et al*., (2019), the intensity of communication, level of knowledge, perception, skill, attitude, and motivation highly affect on adoption level of innovation of dairy farmers.

3.2.5 Criteria for Number of Livestock Ownership

Based on the number of livestock ownership (Table 1) included in the high category with the number of livestock ownership 11-15 heads (74.37%) with a diverse status of ownership, such as self-owned, bought or inherited, profit sharing, or assistance from the government. The number of livestock owned is not only for savings but also for increasing the social status of dairy farmers in society.

As a whole, the characteristics of the dairy farmers as respondents in Kemiri Village are the description of the subsistent farming system. It is as described by Nurtini and Muzayyanah (2014) that a subsistent farming system is characterized by relatively small-scale dairy farming ownership, 1-4 heads with an average of dairy production 10 litre/head/day. Efforts have done to increase dairy farming by increasing the scale from 2 to 7-15 heads and increasing the dairy production from 5 litre/head/day to 10 litre/head/day on average.
Some obstacles or problems that must be faced by a subsistent farming system are limited forage due to limited land owned, low quality and productivity of dairy products, limited access to capital, and limited adoption of technology (Ramadhan *et al*., 2016). In line with this, Kusumahadi (2008) also stated that a subsistent farming system is usually managed traditionally by dairy farmers with local culture-based skills and knowledge that have been passed down from generation to generation (indigenous knowledge) so that the increase in production of subsistent farming runs slowly. Therefore, an implementation of new technological change is required to increase the development of dairy farming.

3.3 The Dairy Farmers' Assessment of Teat Dipping Innovation with Reagent Masofilm

The terminology of innovation is often analogous to technology. Technology is an indirect design or pattern of action (instrumental) that reduces the uncertainty of the cause-and-effect relationship involved in achieving a desired outcome. Innovation is an idea, action or item, method/way that is considered new by someone. The novelty of innovation is measured subjectively, according to the individual view who perceives it. The adoption process is begun when someone hears a new idea and implements it (adopt). Innovation is required to increase the production and productivity of farming yields/dairy products, both quantity and quality.

The dissemination process of innovation takes place in a social system so that it can be adopted. The renewal agent (for example, the extension officer) is an important aspect in adopting an innovation through a definite communication line as an intermediary. Before the innovation is accepted by most of the community, there are opinion leaders (community leaders) who often act as the key holders or filters for innovations that will spread within the social system. On this occasion, the group leader plays an urgent role as the key person in the social system of the dairy farmer community.

Rogers and Shoemaker (1971) described the adoption of innovation as a mental process or behavioural changes in the form of knowledge (cognitive), attitude (affective), and skill (psychomotor) in a person starting from knowing the innovation to deciding to adopt or reject the innovation. In line with Hanafi (1987) suggested that an innovative decision is a mental process to find out an innovation and make a decision to accept or reject the innovation and then confirm it.

The adoption of innovation or technology is not only in the interest of business modernization, but the transfer of technology is also conducted to improve the business economically so that business productivity will be achieved effectively and efficiently. Factors that affect the adoption rate of innovation are characteristics of the target (social condition, economy, the culture of the target, education level, demographic condition, etc.) and characteristics or properties of the innovation itself. Anas and Heriyanto (2019) described that the characteristic of the target which conforms to the characteristics of the innovation will accelerate the acceptance (adoption) process of innovation and make the innovation to be more effective and efficient when implemented by the community.

Ban and Hawkins (1999); Rogers (2003) suggested that at least 5 (five) properties or criteria of innovation are used as a basis of consideration or determination of whether

someone is fast or not in adopting an innovation, that include: relative benefits, compatibility, complexity, trialability, and observability. Table 2 presents the results of the analysis for characteristics of teat dipping innovation that using reagent masofilm or decision-making process considered by the dairy farmers when they want to adopt an innovation.

Table 2. Characteristic of innovation

No.	Variable	Category Score	Respondent (person)	Percentage (%)
1.	Relative Benefits	High	35	89.74
		Medium	3	7.69
		Low	1	2.57
2.	Compatibility	High	33	84.61
		Medium	5	12.82
		Low	1	2.57
3.	Complexity	High	37	94.86
		Medium	1	2.57
		Low	1	2.57
4.	Trialability	High	30	76.92
		Medium	8	20.51
		Low	1	2.57
5.	Observability	High	31	79.48
		Medium	6	15.40
		Low	2	5.12

Source: Primary Data Processed (2020)

Relative benefits (relative advantages) refer to an innovation offered that is more profitable than the former one so that the dairy farmers will adopt it quickly (Hanafi, 1987). In line with Fliegel *et al*., (1971) who stated that innovation will be adopted by society as the users (the target) if the innovation can give more benefits or relative advantages when technology is adopted. This aspect is taken into consideration and affects the dairy farmers' decision in performing their farming and acceleration process in adopting the innovation of teat dipping to prevent mastitis. Table 3 shows that the relative advantage value is high, 89.74%. It indicates that the dairy farmers perceive the innovation of teat dipping which uses reagent masofilm give more benefits for them and their dairy farming and it is presumed to be able to replace the former type of reagent teat dipping.

According to Kurniawan, et.al., (2014), mastitis prevention can be done by teat dipping that uses bactericide materials such as iodine/povidone-iodine by a concentration of 0.5-2%, chlorhexidine, and chlorine after the milking process.

Compatibility refers to an innovation which still consistent and conforms to the cultural values and needs of the dairy farmers. Table 3 describes that 84.61% respondents of the dairy farmers assume that the innovation of teat dipping with reagent masofilm has conformed to the needs of the dairy farmers and does not conflict with the norms/ cultural values/customs that exist in the dairy farmer community at present.

Complexity refers to an offered innovation that has complicated properties, difficult to be understandable and difficult to be followed/applied/adopted by dairy farmers. 94.86% of respondents suggested that the use of reagent masofilm innovation in the teat dipping process on dairy cattle is easily understandable and applicable/adopted, where its use is only by dipping the teat at the end of the milking process for more than 5 seconds (Mahardika, et.al., 2016). Hanafi (1987) described that the decision to adopt innovation is also affected by the complexity level of innovation when it is applied.

Trialability or ability to be tested refers to an innovation that can be tested easily on a small-scale first according to local conditions.

Based on Table 3, 76.92% of the dairy farmers in Kemiri Village assumed that the trial on the innovation of reagent masofilm on a small-scale easily applied on their dairy cattle due to the product being easily gained (coordinated by KAN Jabung) and its application confirmed to condition and needs of the local dairy farmers as the target.

Observability refers to innovation that can be seen obviously and can be observed and perceived as the results. Table 3 shows that 79.48% of dairy farmers assumed that teat dipping with reagent masofilm could suppress and reduce the incidence of mastitis in a dairy farming business. It has been proven that the number of mastitis cases 289 (2017) decreased to 113 (2019).

Soekartawi (2006) suggested that the targets often do not just accept new ideas/innovations the first time they hear or know about them, but it takes a relatively long time until they are willing to adopt or implement these innovations

3.4 The Adoption Rate of Reagent Masofilm Innovation on Dairy Cows

Table 3. The speed rate of adoption

Category	Score	Adoption Rate	Respondent (person)	Percentage (%)
1 - 8 month	100	High	30	76,92
9 - 16 month	66.67	Medium	6	15,39
17 – 24 month	33.34	Slow	3	7,69

Source: Primary Data Processed (2020)

The Teat dipping method has been applied by the dairy farmers in Kemiri Village, Jabung District, Malang Regency since 2003, however, they had not used the reagent masofilm but reagent sirades which caused swelling on the cow's teat, so in 2010, KAN Jabung introduced the teat dipping with reagent masofilm for the first time through extension activity.

Based on Table 3, 30 dairy farmers (76.92%) belong to the adopter category or dairy farmers with high adoption rates (fast in adopting innovation) which takes approximately 1-8 months to accept and implement the introduced innovation. It is due to the properties conformity of the innovation, which answers the needs or problems that have been faced by dairy farmers. 3 out of 39 respondents, 7.69%, belong to the adopter category with a slow adoption rate and take longer time, 17-24 months, to accept and implement the offered innovation. Ban and Hawkins (1999) described that the speed of adoption is the speed of innovation acceptance by the member of the social system in a certain community. The speed is usually measured by the number of acceptors who adopts a new idea in a definite period (Hanafi, 1987).

In the adoption process of innovations, each target, whether farmers or dairy farmers, would be different in speed of accepting/rejecting, and it depends on the criteria and condition of the target, environmental condition, the selected and used media, qualifications and competencies of the extension agents, and characteristics of the technology/innovation. Hanafi (1987) explained that there are several explanatory variables in the speed of the innovation adoption process, which are affected by: [1] innovation decision type, [2] properties of the communication channel used to disseminate innovation in the innovation-decision process, [3] Characteristics of the social system, and [4] efforts of the extension agents in promoting the innovations.

Furthermore, Ediset and Jaswandi (2017) reported that the success of the extension program in the adoption of innovation is highly affected by the socio-economic condition of the target dairy farmers, such as a wide scale of business, level of income, courage to take risks, age of dairy farmers, level of participation and activity in seeking new ideas. The socio-economic condition of the dairy farmers will affect the process and speed of the target dairy farmers in adopting the innovations and indirectly will make it easier for the extension agents to implement the innovations offered.

Rogers and Shoemaker (1971) suggested five stages in the adoption process of innovation as follows: a) awareness, b) interest, c) evaluation of the innovation, d) accepting the new ideas and applying them on a small-scale (trial), and e) adoption in large-scale..

4. Conclusion

Results of the research concluded that the majority of the dairy farmers are in productive age ranging from 25-38 years old, graduated from elementary school, have experience in raising livestock around 21 years, with number of livestock ownership around 11-15 head/farmer and using more than two media in their activities to find the information regarding the innovation of teat dipping that used reagent masofilm. The adoption rate of the dairy farmers to the innovation of reagent masofilm as teat dipping on dairy cattle in Kemiri Village, Jabung District, Malang Regency showed that the majority was in a fast category, 76.92%; 15.39% was in a medium category; and 7.69% was in slow category.

The study recommended some suggestions such as high awareness and curiosity on the innovation of teat dipping with reagent masofilm that must be supported by various media of information, both print and online media, extension activities, and routine discussions between dairy farmers, especially from KAN Jabung.

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