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Farmers' Adoption Rate of Hybrid Corn Seed Innovation in Tlanakan, Pamekasan District, Indonesia

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Abstract
The hybrid corn seed innovation is designed to increase corn productivity in Indonesia. In order to accelerate the increase in corn production, the government launched a hybrid corn seed assistance program to all areas with high corn crop potential, including Pamekasan District, Indonesia. In 2023, groups in Tlanakan, Pamekasan District, Indonesia, will receive hybrid corn seed assistance from the government with the aim of increasing corn production in Pamekasan District, Indonesia, especially in Tlanakan. However, in its journey, hybrid corn has not been fully accepted by farmers; thus, the author feels compelled to undertake this study that aims to determine the level of farmers' adoption of hybrid corn seed innovations in Tlanakan, Pamekasan District, Indonesia. The research method used an instrument in the form of a Likert scale questionnaire on a scale of 1-5, where respondents were asked to answer statements with 5 alternative answers. Samples were selected deliberately from 13 farmer groups that received hybrid corn assistance; each farmer group was selected with 5 people, so that the total sample was 65 people. The data is analyzed descriptively and quantitatively, and the results are presented in the form of tables and graphs. The results showed that the rate of farmers' adoption of hybrid corn seed innovations in general was in the medium category (59.23%). The highest scoring indicators were the level of knowledge (77.85%), followed by the level of implementation (61.44%) and the level of decision (60%). Meanwhile, the indicator with the lowest score was the confirmation rate (42.15%), followed by the persuasion rate (56.10%).

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1. Introduction

The purpose of this study is to understand how the level of farmers' adoption in terms of knowledge, persuasion, decision, implementation, and confirmation of farmers towards hybrid corn seed innovation in Tlanakan, Pamekasan District, Indonesia. Government assistance in the form of hybrid corn seeds does not necessarily increase farmers' adoption of hybrid corn seed innovations. Farmers are still evaluating the extent to which the yield of hybrid corn seeds, both in terms of productivity and economically, after implementation, is able to improve the welfare of farmers. The results of this evaluation are ultimately the basis for farmers to adopt or reject innovation. In terms of corn development in Tlanakan District, it is very important to consider the level of farmer adoption to determine what development policies will be carried out to increase corn production in Tlanakan District.

Corn is an important food crop that plays a strategic role in national development. In Indonesia, corn constitutes about 60% of feed rations. It is estimated that more than 55% of the country's corn supply is allocated for feed, while only around 30% is consumed as food, with the remainder serving various industrial purposes. Thus, corn now functions more as an industrial raw material than as a staple food (Kasryno *et al*., 2007) [3].

Indonesia's corn production centers are spread across various provinces, and the largest of which is East Java Province, whose production ranks first nationally. In the last five years (2020-2023), the development of corn production in East Java has experienced significant growth, which is 15.98% with an average production of 4,468,696 tons per year (BPS, 2023) [2]. Based on its productivity, East Java Province has low corn productivity when compared to other corn-producing provinces, which is in the range of 6.3 tons/ha and is still far below West Java at 7.5 tons/ha, Banten at 7.4 tons/ha, and West Nusa Tenggara at 7.2 tons/ha (BPS, 2023) [2].

Pamekasan is the district with the 8th highest planting area in Indonesia, which is 22,086 hectares. With this potential, Pamekasan should be able to contribute significant production to East Java, but in reality, it is still far behind the district that has cultivated hybrid corn because corn productivity in Pamekasan is still low. The low productivity of corn in Pamekasan is caused by farmers in several sub-districts still cultivating local corn.

Tlanakan District is one of the sub-districts with a corn planting area of 1,409 hectares. From this area, the production is still around 3,500 tons, meaning that the productivity is still very low in the range of 2.5 tons per hectare; the productivity is still far below the national average corn productivity of 6 tons per hectare.

For generations, farmers in the Tlanakan sub-district have cultivated local corn by intercropping with cayenne pepper, large chili, peanuts, and green beans. Farmers do not rely on one commodity in their cultivation to get a higher income for daily living expenses. In their cultivation practice, after a week of planting corn, farmers also plant cayenne-in-law/large chili, so that when the chili harvest is approaching, it is already in the generative phase, and after the corn is harvested, farmers take care of the chili that has borne fruit. On another occasion, farmers plant green beans or peanuts under the corn when the corn begins to turn yellow, so that when the corn is harvested, farmers begin to take care of the plant's underneath, namely green beans or peanuts.

In order to increase corn productivity in the Tlanakan sub-district, Pamekasan District, Indonesia, the government provides hybrid corn seeds as assistance, but farmers' perceptions of the development of hybrid corn are still diverse; some are excited, some are indifferent, and some do not care. The existence of these diverse perceptions poses its own difficulties for the government to launch programs related to hybrid corn varieties. Therefore, the researcher is interested in conducting a study related to the perception of farmers in Tlanakan, Pamekasan District, Indonesia, towards innovations in hybrid corn varieties.

Hybrid corn is the result of a cross between two different varieties of pure corn. This crossbreeding process produces new plants with a combination of superior traits from both parents. These superior traits include faster growth, resistance to pests and diseases, and more and higher-quality seed production. Hybrid corn has succeeded in significantly increasing agricultural productivity. With faster growth and higher yields, hybrid corn is able to meet the ever-increasing food needs as the world's population grows. Hybrid corn has become one of the important pillars in efforts to realize food security. According to, the resistance of hybrid corn to various types of pests and diseases and its ability to grow in various environmental conditions make hybrid corn a more stable food source. With its high productivity and good selling price, hybrid corn has become a major source of income for many farmers around the world.

Using Hybrid Corn Seeds is often accompanied by the application of modern agricultural technology. This includes the proper use of fertilizers, efficient irrigation techniques, and advanced pest and disease control methods. The combination of superior seeds and modern technology can result in a more productive and sustainable farming system.

One of the obstacles in efforts to improve corn performance is the low rate of farmers' adoption in the use of hybrid corn seeds. The same thing was also said by Suriadi (2012) [13], that one of the obstacles in increasing productivity is the low adoption of farmers for innovation.

This study uses the theory of innovation diffusion by considering that the topic in this study is related to the theory. According to Rogers (2003) [8], diffusion refers to the process of transmitting an innovation over time through particular channels within a social system. This communication involves introducing new ideas. In contrast, an individual's choice to apply an innovation in practice is known as adoption.

Adoption is a process of accepting new ideas received through communication channels. Innovation adoption is said to be the process of accepting new ideas. An adopter is an individual or a group of individuals who accept these new ideas. Rogers (2003) [8] groups adopters into 5 categories based on their speed in adopting an innovation. The five categories of adopters are innovators, early adopters, early majority, late majority, and laggards.

According to Rogers (2003) [8], innovation is an idea, practice, or object that is considered new by an individual or group of adopters. In the adoption process, generally a person goes through several processes, namely awareness, interest, evaluation, and try/reject. However, the decision process to adopt an innovation goes through several stages of the decision model, namely the knowledge stage, the persuasion stage, the decision-making stage, the implementation stage, and the confirmation stage (Rogers, 2003) [8].

2. Research Methodology

2.1. Place and Time of Research

This research was conducted in the Tlanakan sub- district, Pamekasan District, Indonesia, because Tlanakan District is an area with a potential area of large corn plantations, which is 1,409 ha, while productivity is still low, and in 2023, it will receive corn seed assistance from the government. The research was conducted in June- August 2025.

2.2. Determination of Research Object

The object of the research is determined by purposive sampling, where the number of samples is determined deliberately according to the needs of the research, in this case the number of samples determined is 5 respondents in each group, the number is determined to meet the minimum validity of a study, which is 30 respondents, because 13 groups receive seed assistance in 2023, so the overall number of samples is 65 respondents.

2.3. Data Collection

Data collection in this study used an instrument in the form of a Likert scale questionnaire on a scale of 1-5, where respondents were faced with several statements with 5 kinds of choices, namely: Strongly Agree, Agree, Doubtful, Disagree, and Strongly Disagree. The indicators used to

measure the adoption rate are the level of adoption itself, namely: the level of knowledge, the level of persuasion, the level of decision, the level of implementation, and the level of recommendations. The data obtained from the questionnaire, before being analyzed, underwent a reliability test and a validity test. The data was analyzed descriptively and quantitatively by calculating the average score on each indicator; the results were interpreted according to the categories that had been prepared beforehand. The categories that have been determined are: low (1 – 2.33 or 20% - 46.60%), medium (2.34 – 3.66 or 46.61% - 72.20%), and high (3.67 – 5 or 72.21% - 100%). Data are presented in the form of tables and graphs to provide an overview of the research variables.

3. Results and Discussion

Innovation adoption is a process in which a person or group of people begins to know, assess, try, and finally decide to use an innovation sustainably (Rogers, 2003) [8]. In the context of agriculture, the level of farmers' adoption of hybrid corn seed varieties is very important to analyze to find out the extent to which the technology is accepted and applied in cultivation activities by farmers in the field.

The adoption rate of hybrid corn seed innovations reflects the success of the process of diffusion of agricultural technology. Farmers do not necessarily adopt innovations without going through various stages of consideration, such as initial knowledge of innovation, persuasion or belief, decision to try, to implementation in farming practices. According to Soekartawi (2002) [10], the adoption of agricultural technology is influenced by many factors, including the personal characteristics of farmers, education level, farming experience, access to information, and the effectiveness of extension.

3.1. Level of Knowledge

Knowledge is one of the important factors that affect the process of adopting innovations among farmers. The higher the farmers' knowledge of an innovation, the more likely they are to accept and apply it in agricultural practices. According to Rogers (2003) [8], knowledge is the initial stage in the process of adopting innovation, where individuals, in this case, farmers, begin to realize the existence of innovations and obtain information about the ins and outs of these innovations. The following table 1 shows the level of farmers' knowledge of hybrid corn seed innovation in the Tlanakan sub-district as follows.

Table 1: Farmers' Level of Knowledge of Innovation

No	Aspects	Average Score	Category
1	Hybrid Corn Productivity	4.09	High
2	Resistance to OPT	3.69	High
Average	—	3.89	High

Source: Primary data, processed (2025)

Based on Table 1 above, the level of farmers' knowledge of hybrid corn seed innovation is in the high category, with an average score of 3.89. This shows that the majority of farmers have understood the advantages of hybrid corn, especially in terms of productivity and resistance to Plant Pesticide Organisms (OPT). The productivity aspect showed the highest score of 4.09, which indicates that farmers believe that hybrid corn is able to provide higher yields than local varieties. The score on the aspect of resistance to OPT is 3.69, which is also included in the high category, which means that farmers have a fairly good knowledge of the ability of hybrid corn to deal with pest and disease attacks. This finding is in line with the statement of Tapi, T., & Markaboni, Y. Y. (2024) [1], who stated that effective dissemination of technological information, both through counseling, mass media, and between farmers, can increase farmers' understanding of the advantages of innovation. In addition, according to Mardikanto (2010) [4], farmers who have a good knowledge of a technology will be more confident in making adoption decisions because they feel they understand the risks and potential benefits.

Thus, this high level of knowledge is an important capital in pushing farmers towards the full adoption stage of hybrid corn seeds. However, to ensure sustainable adoption, it is necessary to strengthen the capacity of farmers through extension activities, technical training, and the provision of appropriate and easily accessible information.

3.2. Persuasion Rate

Persuasion is an important stage in the innovation adoption process, where individuals begin to form attitudes towards innovations that they are familiar with. After gaining knowledge, farmers will evaluate the information and weigh the benefits and risks that may be posed. According to Rogers (2003) [8], at the persuasion stage, farmers' decisions are greatly influenced by their perception of relative superiority, compatibility with local conditions, and the ease of use of innovation. In the context of hybrid maize seed adoption, farmers' level of persuasion indicates the extent to which they feel encouraged or interested in using hybrid maize seeds based on direct experience and information obtained from the surrounding environment.

Several aspects that affect persuasion include farmers' perception of increased income, ease of maintenance, and support from extension workers or fellow farmers. Mardikanto (2010) [4] emphasized that the formation of a positive attitude towards innovation is inseparable from an effective communication process and farmers' trust in information sources. Meanwhile, Putra, R. A., *et al*. (2025) [6] added that farmers' personal experiences and the success of others in adopting innovation also play an important role in forming a positive attitude towards a technology. The following Table 2 presents the level of persuasion of farmers towards hybrid corn seed innovation.

Table 2: Farmers' Levels of Persuasion to Innovation

No	Aspects	Average Score	Category
1	Increased Revenue	2.58	Medium
2	Support from extension workers	3.08	Medium
3	Ease of care	2.75	Medium
Average	—	2.81	Medium

Source: Primary data, processed (2025)

Based on Table 2 above, the level of persuasion of farmers towards the innovation of hybrid corn seed varieties is in the medium category, with an average score of 2.81, meaning that even though farmers already know hybrid corn seeds, their positive attitude towards the use of these seeds has not been fully formed or is still in the consideration stage.

In terms of income increase, the score obtained was 2.58, indicating that farmers are not yet fully convinced that the use of hybrid corn seeds can significantly increase their income. This uncertainty may be influenced by fluctuations in the selling price of corn, high production costs, or suboptimal crop yields when using hybrid seeds. In addition, farmers also compare the increase in their income with income if the land is planted interchangeably, meaning that farmers not only get income from corn commodities, but also from other commodities such as chili, tomatoes, green beans, or peanuts that are far from large.

The support aspect from the extension workers received a score of 3.08, which means it is quite positive but still needs to be strengthened. This shows that although there is a role of extension workers in encouraging the adoption of hybrid corn seeds, the intensity and effectiveness of extension in the field are still not optimal. Mardikanto (2010) [4] emphasized that the success of extension does not only depend on frequency, but also on an approach that is in accordance with the characteristics of farmers.

Meanwhile, in the aspect of ease of maintenance, a score of 2.75 indicates that farmers feel that the care of hybrid corn plants is not fully practical compared to local varieties. Some farmers consider that hybrid corn requires additional maintenance inputs such as fertilizers, pesticides, and more intensive land management, thus reducing the perception of its ease (Musa, 2023) [5].

3.3. Decision Level

The level of decision by farmers on the adoption of hybrid maize seeds reflects the extent to which these innovations are considered feasible, profitable, and appropriate to local socio-economic and cultural conditions. Therefore, an in-depth understanding of the factors influencing adoption decisions is essential in designing more effective innovation outreach and dissemination strategies.

Adoption decisions are also closely related to farmers' perception of the immediate benefits they feel, such as increased yields, cost efficiency, or ease of cultivation. According to Wangi P.A.S. (2023) [14], farmers' decisions to use hybrid corn seeds are often based not only on the results of the trials but also on the testimonials of other farmers who have been successful. On the other hand, if farmers fail in trials or face obstacles such as difficulty in obtaining seeds and unstable selling prices, then the decision to adopt will tend to be delayed or even rejected. The following is presented in Table 3 of the level of farmers' decisions on hybrid corn innovation in the Tlanakan sub district.

Table 3: Farmers' Decision Rate Towards Innovation

No	Aspects	Average Score	Category
1	Willingness to try	3.75	High
2	Farmers' attitudes towards innovation	2.92	Medium
3	Selling price of crops	2.32	Low
Average	—	3.00	Medium

Source: Primary data, processed (2025)

Based on Table 3, the level of decision of farmers in adopting hybrid corn seed innovation as a whole is in the medium category, with an average value of 3.00 out of a maximum scale of 5. This indicates that farmers in Tlanakan District have not fully made a strong decision to use hybrid corn seeds consistently and sustainably.

One of the aspects that obtained the highest score was the willingness to try, with an average score of 3.75, which was in the high category. This score shows that most farmers have an interest and initial readiness to try hybrid corn seed innovations. This willingness to try is an initial component in the innovation adoption process, according to the innovation diffusion model proposed by Rogers (2003) [8], where the initial stage begins with awareness and interest in trying before a full adoption decision is finally made. One of the reasons for the willingness to try is because of the government's assistance for hybrid corn seeds.

The indicator of farmers' attitude towards innovation only received a score of 2.92, which is classified as a medium category. This shows that although farmers are quite open to trying innovations, they do not yet have strong beliefs or positive attitudes towards hybrid corn seeds. This attitude can be influenced by a variety of factors, such as unfavorable past experiences, a lack of tangible evidence of crop yields that show hybrid corn seeds are better, or obstacles in both technical and non-technical aspects.

The aspect of the selling price of crops received the lowest score, which was 2.32, and was included in the low category. This score is an indication that farmers feel that there is no market guarantee or favorable economic value from hybrid corn crops. This perception of the uncertainty of selling prices is one of the main obstacles in farmers' decision-making to adopt full innovation. Thus, despite the initial willingness of farmers to try quite high, there are still doubts in attitudes and concerns about aspects of economic outcomes. Therefore, there needs to be stronger intervention from extension workers, local governments, and seed providers to provide more comprehensive information and create a marketing system that better guarantees profits for farmers.

3.4. Implementation Level

The level of implementation is a crucial stage in the innovation adoption process, which shows the extent to which farmers have implemented real innovation in their agricultural practices. In the context of hybrid corn seed innovation, implementation means that farmers not only have knowledge and positive attitudes, but have also applied the seeds in their cultivation process. The level of implementation also shows the success of previous stages, such as knowledge, persuasion, and decision. If the implementation stage is not achieved, then the adoption process cannot be said to be successful as a whole (Mardikanto, 2010) [4].

In reality, many farmers have had the desire to try, but have not progressed to the implementation stage due to various factors such as the risk of crop failure, uncertainty of market prices, and lack of technical support. Thus, evaluation of the level of implementation is very important to know the extent to which hybrid corn seed innovations have permeated the community's agricultural system. This information can be the basis for policymakers and extension workers in designing a more effective mentoring strategy that is in accordance with the needs of farmers in the field. The following is presented in Table 4 on the level of implementation of farmers towards hybrid corn seed innovation.

Table 4: Farmers' Implementation Rate of Innovation

No	Aspects	Average Score	Category
1	Use on farmer-owned land	3.72	High
2	Cultivated according to technical instructions	3.20	Medium
3	Results as expected	2.29	Low
Average	—	3.07	Medium

Source: Primary data, processed (2025)

The results of the analysis of the implementation rate of hybrid corn seed innovation showed that, in general, the implementation was in the medium category, with an average score of 3.07. This reflects that although most farmers have adopted hybrid corn seeds in their farming practices, their application has not been fully optimal in all aspects.

The aspect of using hybrid corn seeds on farmer- owned land received the highest score, namely 3.72, and was categorized as high. This high value indicates that the majority of farmers in the study area have tried to use hybrid corn seeds in their farming ventures. However, this high level of use does not fully reflect the awareness or independent initiative of farmers, but is largely driven by the hybrid corn seed assistance program distributed by the government to farmers through farmer groups, so that most farmers have planted hybrid corn seeds on their respective land. The assistance acts as an initial stimulus to encourage farmers to try innovation, although it is not necessarily accompanied by a deep technical understanding or long- term commitment to the use of the seeds.

This condition is in accordance with the opinion of Rogers (2003) [8], who states that the early adoption of new technologies in developing countries often occurs due to external support, such as subsidies or government assistance. This kind of assistance is indeed effective in increasing the initial participation rate, but it does not always guarantee the sustainability of implementation, especially if farmers do not feel the real benefits of the innovation directly.

This is strengthened by the cultivation aspect, according to technical instructions, which only obtained a score of 3.20, or in the medium category. This means that even though the seeds have been used, the cultivation practices carried out by farmers have not fully followed the recommended technical guidelines, both in terms of planting distance, fertilization, integrated pest control, and harvest time. This shows that there is a gap between seed acceptance and farmers' technical understanding, which can reduce the effectiveness of the innovation itself.

In the aspect of whether the results are as expected, a score of 2.29 shows a score of 2.29, which is in the low category. This indicates that many farmers feel that the results they get from hybrid corn seeds have not met expectations, both in terms of quantity, quality, and selling value. This disappointment is most likely related to inconsistencies in cultivation practices or a lack of technical understanding, and not solely due to the quality of the seeds.

Thus, although the use of seeds in the field is high thanks to government assistance, the effectiveness and sustainability of implementation still require technical assistance interventions and strengthening the capacity of farmers. The role of agricultural extension workers is crucial to bridging the gap between input assistance and the expected output success of these innovations.

3.5. Confirmation Rate

The confirmation rate is the final stage in the innovation adoption process according to the theory of Diffusion of Innovations by Rogers (2003) [8]. At this stage, farmers re-evaluate the adoption decisions that have been taken by taking into account the results obtained, personal experience, and the influence of the social environment. If the results obtained are consistent with expectations, then the decision to continue using innovation will be strengthened; On the other hand, if the results are not satisfactory, the farmer can cancel the adoption (discontinuance).

In general, the level of confirmation reflects the confidence and commitment of farmers in continuing the use of hybrid corn seeds based on experience in the field. According to Sari, F. P., *et al*. (2024) [9], positive confirmation is very important for the sustainability of innovation in the agricultural system because it will form new habits in the production process. In addition, factors such as extension worker support, evidence of real results, and social interaction between farmers also greatly influence the formation of farmers' confidence in this confirmation stage (Mardikanto, 2010) [4].

If the confirmation rate is low, then it is likely that adoption will not continue in the long term. Conversely, a high confirmation rate is an important indicator of innovation success because it shows that the innovation has passed the stage of natural selection by the end user, i.e., the farmer himself. The following is presented in Table 5: levels of farmers' confirmation of hybrid corn seed innovation.

Table 5: Farmers' Confirmation Rate of Innovation

No	Aspects	Average Score	Category
1	PDO durability considerations	2.28	Low
2	Continue to plant even without government assistance (sustainability)	1.82	Low
3	Recommend to other farmers	2.23	Low
Average	—	2.11	Low

Source: Primary data, processed (2025)

Based on Table 5 above, the average confirmation score is 2.11, which is included in the low category. This indicates that most farmers are still hesitant or do not have a strong belief in the long-term use of hybrid corn seeds. The level of confirmation in the innovation adoption process reflects the extent to which farmers maintain or cancel their decision to use innovation after going through the implementation stage. In the aspect of consideration of the resistance of Plant Disrupting Organisms (PDO), farmers gave an average score of 2.28, which is also relatively low. This suggests that many farmers do not yet feel confident that hybrid corn seeds are able to cope with pest and disease attacks optimally. As stated by Mardikanto (2010) [4], negative experiences or results that do not meet expectations can cause farmers to cancel their adoption decisions, especially when the effectiveness of innovation has not been consistently proven in the field.

The continuity aspect received a score of 1.82, the lowest of the three indicators. This suggests that the sustainability of adoption is highly dependent on external support such as government assistance, seed subsidies, counseling, or technical assistance. This is in line with Suhaeni's (2025) [11] findings, which confirm that farmers tend to avoid economic risks when external incentives are not available.

The score of 2.23 on the indicator of willingness to recommend to other farmers is also relatively low; this shows that the experience of farmers is not positive enough to be used as a basis for suggesting the use of hybrid corn to colleagues in the profession. In the context of innovation diffusion, the low recommendation among farmers reflects the lack of social influence that supports the continuation of innovation (Rogers, 2003) [8].

Overall, this low confirmation rate is an important signal that innovation has not been fully accepted and trusted by farmers as a sustainable solution. Therefore, a follow-up strategy is needed in the form of increasing proof of real results in the field, as well as consistent assistance, so that farmers' confidence can grow and lead to stable adoption decisions. In general, we can see the level of farmer adoption of hybrid corn seed innovations in Table 6 below.

Table 6: Farmers' Adoption Rate of Innovation

No	Value Interval	Frequency	Percentage (%)	Category
1	1 – 2.33	12	18.46	Low
2	2.34 – 3.66	44	67.69	Medium
3	3.67 – 5	9	13.85	High
Sum	—	65	100	—

Source: Primary Data processed (2025)

Based on Table 6 on the level of farmers' adoption of hybrid corn seed innovations, it can be seen that of the total 65 farmers who participated in this study, most of them were in the medium category, namely 44 people or around 67.69%. These findings indicate that farmers' perceptions and adoption rates of hybrid corn seed innovations tend to be at the intermediate level. At this stage, farmers are generally familiar with the characteristics of innovation, understand some of the benefits offered, and begin to assess their relevance to their cultivation practices. However, this understanding has not fully developed into a strong belief, as some farmers are still waiting for real experience or additional evidence regarding the effectiveness of the innovation. Rogers (2003) [8] explained that positions in the medium category usually describe the evaluation phase, which is a period when farmers weigh the benefits of innovation based on personal experience and information they obtain from various external sources.

In the low category, there were 12 respondents, or equivalent to 18.46% who obtained scores in the range of 1-2.33. This group reflects that some farmers still show limited adoption rates of the use of hybrid corn seeds. Limited technical information, lack of access to extension activities, negative experiences related to the use of previous innovations, and uneven support for production facilities are often factors causing low acceptance of innovations in the field. Mardikanto (2010) [4] emphasized that this kind of condition is common for farmers who do not fully understand the benefits of innovation or who have not received adequate support in the process of introducing new technologies. As a result, their attitude towards innovation tends to be more cautious and slower.

On the other hand, only 9 respondents or around 13.85% were in the high category, namely in the score range of 3.67–5. This percentage illustrates that a small percentage of farmers already have a fairly strong level of perception and adoption of hybrid corn seed innovations. This group usually has more mature beliefs about the quality of the seeds, the economic benefits obtained, and the ease of integrating new technologies into the cultivation systems they run. In Rogers' (2003) [8] perspective, this group is included in the early adopters, namely farmers who respond faster to innovation and can act as role models or agents of change for other farmers through their shared experiences and best practices.

In general, the distribution pattern shows that although the majority of farmers are in the medium category, a more intensive strategy is needed to increase the number of farmers in the high category. This effort can be carried out through increasing the frequency and quality of counseling, the implementation of demonstration plots that provide direct empirical evidence, and the provision of simple but comprehensive information materials so that they are easy to understand by all farmer groups. This kind of intervention has proven to be effective in strengthening understanding,

increasing trust, and accelerating the adoption process of agricultural innovation in various regions, as conveyed by Slamet (2014).

The level of farmers' adoption of hybrid corn seed innovations can also be seen from the proportion of corn land area planted with hybrid corn and local corn in the Tlanakan sub-district in 2024, which can be seen in the following Table 7:

Table 7: Proportion of Corn Crop Land Area in Tlanakan District

No	Types of Corn	Land Area (Ha)	Percentage (%)
1	Hybrid corn	255	18.10
2	Local corn	1,154	81.90
Sum	—	1,409	100

Source: Pamekasan District, Indonesia Food Security and Agriculture Office (2025)

Based on the data in the table above, it can be seen that the area of corn land in Tlanakan District is 1,409 hectares, consisting of 255 hectares (18.10%) of land planted with hybrid corn, and 1,154 hectares (81.90%) of land planted with local corn. This data shows that farmers in Tlanakan District still plant more local corn than hybrid corn, although in general, farmers know that hybrid corn seeds have higher productivity and more stable crop yields.

The dominance of local corn use indicates that the adoption rate of hybrid corn seed innovation is still relatively low. This condition is in line with the opinion of Rogers (2003) [8] in the theory of Diffusion of Innovation, which states that the process of adopting innovation in agricultural societies is influenced by several factors, including the level of knowledge, perception of the benefits of innovation, social environmental support, and risks felt by farmers. In this context, farmers' preference for local maize can be attributed to several things, such as the availability of easy and inexpensive seeds, the characteristics of local maize that are more adaptive to intercropping patterns, and long experience in cultivating local varieties.

The opportunity to increase the adoption of hybrid corn seed innovations is still wide open if appropriate policy interventions are carried out, such as the selection of more communicative agricultural extension methods, hybrid corn seed assistance, and technical assistance for farmers, both by seed officers from private companies and from local agricultural extension workers. With the support of the government and hybrid corn seed companies, it is hoped that farmers can understand and experience firsthand the relative advantages of hybrid corn, thereby encouraging an increase in hybrid corn planting area in the future.

3. Conclusions and Suggestions

4.1. Conclusion

Based on the results of the research on the level of farmer adoption of hybrid corn seed innovation in Tlanakan, Pamekasan District, Indonesia, it can be concluded that the adoption rate of farmers is still in the medium category. Although farmers already have a good knowledge of the advantages of hybrid seeds, such as high productivity and resistance to Plant Pests (OPT), their attitudes, decisions, and levels of implementation have not consistently supported the full adoption of these innovations. This can be seen from the dominance of local corn use, which reaches 81.90% of the total corn land area, which shows that hybrid seed innovation has not been fully accepted as the main choice by most farmers.

4.2. Suggestions

In order to increase farmers' confidence in hybrid corn seed innovation, a sustainable demonstration plot and technical assistance from agricultural extension workers are needed, so that farmers are confident in the advantages and advantages of hybrid corn seeds. In addition, it is necessary to conduct periodic and thorough evaluations of seed assistance programs so that the assistance is not only consumptive in nature, but also a stimulus for farmers to cultivate better and be more independent in seed procurement, no longer completely dependent on the government.

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