AGRISOCIONOMICS
Jurnal Sosial Ekonomi dan Kebijakan Pertanian
ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

ADOPTION OF INNOVATION IN CORN: ADOPTION DIVERSITY AND ASSOCIATED CHARCTERISTICS OF FARMERS IN GORONTALO, INDONESIA

Zulham Sirajuddin*, Asda Rauf, and Ririn Lole
Agribusiness, Faculty of Agriculture, Universitas Negeri Gorontalo, Gorontalo, Indonesia

*Correspondence Email: zulham@ung.ac.id

Submitted 14 April 2024; Approved 20 August 2024

ABSTRACT

Gorontalo Province in Indonesia is known for its corn production, yet it falls short of the national productivity average. This shortfall is attributed to the minimal use of technological advancements in corn farming. This study aims to (1) identify the components of innovation in corn farming as recommended in Good Agricultural Practice, (2) explore the diversity in adopting innovations in hybrid corn farming, and (3) examine the relationship between farmer characteristics and the adoption of innovations to enhance corn productivity. Findings indicate that several recommended innovations in corn farming have been widely adopted by farmers, with adoption influenced by demographic factors such as age and farming experience, as well as socio-economic variables including farmer participation in farmer groups and agricultural extension activities. Encouraging active adoption of innovations among farmers is thus crucial for improving corn yields.

Keywords: *adoption of innovation, agricultural extension, gorontalo, hybrid corn, innovation*

BACKGROUND

Corn plays a significant role in Indonesia's agricultural landscape, reflecting its status as one of the world's foremost food-producing nations. Across diverse regions of Indonesia, corn emerges as a prominent staple crop alongside rice. Its importance extends beyond its role as an industrial and animal feed ingredient; corn serves as a vital dietary component for local communities. Notably, in certain areas, collaborative efforts between corn farmers and industries have emerged, aimed at catering to industrial demand (Azzam & Rahman, 2023). Production of corn spans various provinces in Indonesia, with Gorontalo Province standing out as a hub for corn cultivation, boasting a populace largely engaged in corn farming activities. Presently, corn processing transcends mere industrial and animal feed applications, branching out to serve as an alternative staple food for local consumption. Throughout Gorontalo's history, corn has served as a staple food substitute, deeply ingrained in local culinary traditions. Various dishes, such as the popular *binthe biluhuta* or corn soup, highlight the integral role of corn in local food. This culinary reliance underscores corn's stature as a leading commodity within Gorontalo Province. Further accentuating its importance, corn serves as a primary source of income for Gorontalo residents, as highlighted by Sirajuddin (2021b).This dual significance of corn, both as a dietary staple and an economic mainstay, underscores its enduring importance within the cultural of Gorontalo Province.

Bone Bolango Regency, situated within Gorontalo Province, emerges as a notable corn-producing district, hosting a substantial population engaged in corn farming. The district's corn production stands at an impressive 14 tons, covering a harvest area spanning 9,576 hectares (Badan

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

Pusat Statistik, 2022). Despite being one of the provinces in Indonesia actively involved in corn production, Gorontalo Province still grapples with relatively low productivity levels, falling short of the national average. Presently, corn productivity in Gorontalo Province stands at an average 5 tons per hectare, trailing behind the national average of 5.47 tons per hectare (Badan Pusat Statistik, 2022). The situation exacerbates further in the face of crop failures induced by pest infestations, where corn productivity plummet to a mere 2-3 tons per hectare. The underlying cause of this productivity disparity largely stems from the insufficient integration of innovative practices within corn cultivation across the province. Within Gorontalo Province, conventional farming techniques persist, such as the lack use of organic fertilizers and unproper spacing between plants as identified by Suhana et al. (2023). These rudimentary methods underscore the prevailing low-tech approach adopted by local farmers. Therefore, Good Agricultural Practice (GAP), which encapsulates the proper and effective implementation of corn farming innovations, was recommended. Bridging the gap between traditional practices and modern advancements, agricultural extension emphasizes the adoption of innovative methods to increase corn productivity. In efforts to disseminate knowledge and promote the adoption of innovation in GAP principles, the local government spearheads training and assistance initiatives through agricultural extension programs. These programs serve as crucial platforms for enhancing farmers' understanding and utilization of agricultural technologies, particularly in regions with predominant agricultural activities such as Gorontalo Province. By maximizing corn yields through the application of innovative practices, it serves as a pivotal conduit for uplifting agricultural productivity within the province. Training and advisory sessions pertaining to innovations in corn cultivation are predominantly facilitated by specialized agencies within the agricultural sector. Entities such as the Agricultural Extension Center (*Balai Penyuluhan Pertanian* or BPP) and the Agricultural Instrument Standardization Agency (*Badan Standarisasi dan Instrumen Pertanian* or BSIP), formerly known as the Agricultural Technology Assessment Agency (*Badan Pengkajian Teknologi Pertanian* or BPTP) at the provincial level, along with private sector stakeholders such as the corn seed industry, actively engage in disseminating GAP implementation guidelines. These guidelines serve as invaluable resources, furnishing farmers with the requisite knowledge and guidance to cultivate high-quality hybrid corn crops in adherence to recommended standards. Encouraging the adoption of these innovations not only promises to optimize harvest yields but also signifies a concerted effort towards sustainable agricultural development in Gorontalo Province (Tahir et al., 2024).

Farmers wield significant influence in enhancing agricultural production through the adoption of innovative practices. Consequently, fostering farmer proficiency in utilizing innovation is imperative as it can improve land productivity and positively impact farmer income. Various demographic attributes of farmers, such as age, farming experience, and landholding size, may sway their inclination towards adopting innovative techniques in farming activities. Moreover, farmers' socio-economic characteristics, including their involvement in farmer groups and engagement with agricultural extension services, may also play pivotal roles in determining the extent of innovation adoption. Hence, conducting comprehensive research on the adoption of innovation in corn cultivation, along with identifying the variables influencing it, becomes essential to strengthen agricultural extension strategies aimed at increasing corn land productivity. Thus, this study aims to (1) identify the components of innovation in corn farming as recommended in Good Agricultural Practice, (2) explore the diversity in adopting innovations in corn farming, and (3) examine the

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

relationship between farmer characteristics and the adoption of innovations to enhance corn productivity.

RESEARCH METHODS

The research methodology employed in this study followed an exploratory sequential design, a methodological framework combining qualitative and quantitative approaches sequentially (Creswell & Clark, 2017). Initially, the research embarked on a qualitative phase, aimed at acquiring insights into the implementation of innovations within the hybrid corn Good Agricultural Practice (GAP). To facilitate this, agricultural agencies such as BSIP and PT Restu Agropro Jaya Mas (PT Raja), a corn seed industry, underwent in-depth interviews, delving into their perspectives and practices regarding GAP-recommended innovations. These interviews served as a foundation for developing a comprehensive questionnaire tailored for subsequent interviews with farmer respondents. The questionnaire encompassed inquiries concerning the adoption and implementation of GAP-recommended innovations on farmers' lands. Then, face-to-face interviews were conducted with farmers utilizing the questionnaires formulated based on insights garnered from the preceding in-depth interviews with agricultural agencies and industries. Employing an accidental sampling technique, face-to-face interviews were conducted with hybrid corn farmers living in Butu Village, serving as respondents for the study. The study population comprised 146 corn farmers in Buhu Village, from which a sample size of 107 hybrid corn farmer respondents was determined utilizing the Slovin formula with a 5% margin of error, situated in Tilongkabila District, Bone Bolango Regency. Data collection from respondent farmers covered a duration of one month, spanning from August to September 2023. A structured questionnaire was utilized to collect pertinent data, encompassing a comprehensive array of topics including the demographic and socio-economic profiles of farmers, as well as the diversity of innovation adoption within the GAP framework. Employing a five-level Likert scale, ranging from "never use" to "always use" responses were quantified accordingly to provide nuanced insights into the extent of innovation adoption among respondents. Through this research design, the study unraveled the intricate dynamics underlying innovation adoption within the hybrid corn agricultural landscape, thereby enriching the understanding of agricultural extension strategies aimed at fostering sustainable farming practices and enhancing productivity.

Thematic analysis, a method embraced in qualitative data analysis, served as a tool to discern patterns or themes within the dataset collected by researchers (Sugiyono, 2018). This approach involved the systematic categorization of data through coding, with a specific focus on sorting information pertinent to innovation components in corn farming. Subsequently, these findings played a pivotal role in designing questionnaires for the survey phase, transitioning from qualitative to quantitative analysis. The frequency distribution, expressed numerically on a scale from 1 to 5, was then aggregated into a mean to analyze the degree to which farmers adopt innovation as in recommended GAP and to pinpoint the specific components they adopt. Moreover, to ascertain the overall extent of adoption, an adoption index formula was deployed, generating a numerical value ranging from 1 to 100, calculated according to the following formula (Chelang'a et al., 2023; Lamichhane et al., 2022).

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

$$\text{Adoption index} = \frac{Adoption\ score}{Maximum\ score} \text{ x } 100$$

Following this calculation, the results of the adoption index was analysed using correlation coefficients. This analytical approach aimed to discern any potential correlations between farmers' demographic and socio-economic characteristics and their propensity to adopt innovations in corn farming. Through this comprehensive data analysis process, this study aimed to uncover nuanced insights into the factors influencing the adoption of innovative practices in agricultural settings, facilitating informed decision-making and the development of targeted interventions to enhance agricultural productivity.

RESULT AND DISCUSSION

The study was conducted in Butu Village, situated within the Tilongkabila District of Bone Bolango Regency, located in Gorontalo Province. With a population of 906 individuals and a population density of 76.20 km^2, the village covered an area spanning 11.89 km^2. The predominant livelihood in Butu Village revolved around farming, with corn serving as the primary agricultural commodity. The selection of Butu Village as the research site was influenced by the active involvement of farmer groups and agricultural extension services within the community, coupled with the significant potential of corn farming as the village's main agricultural commodity.

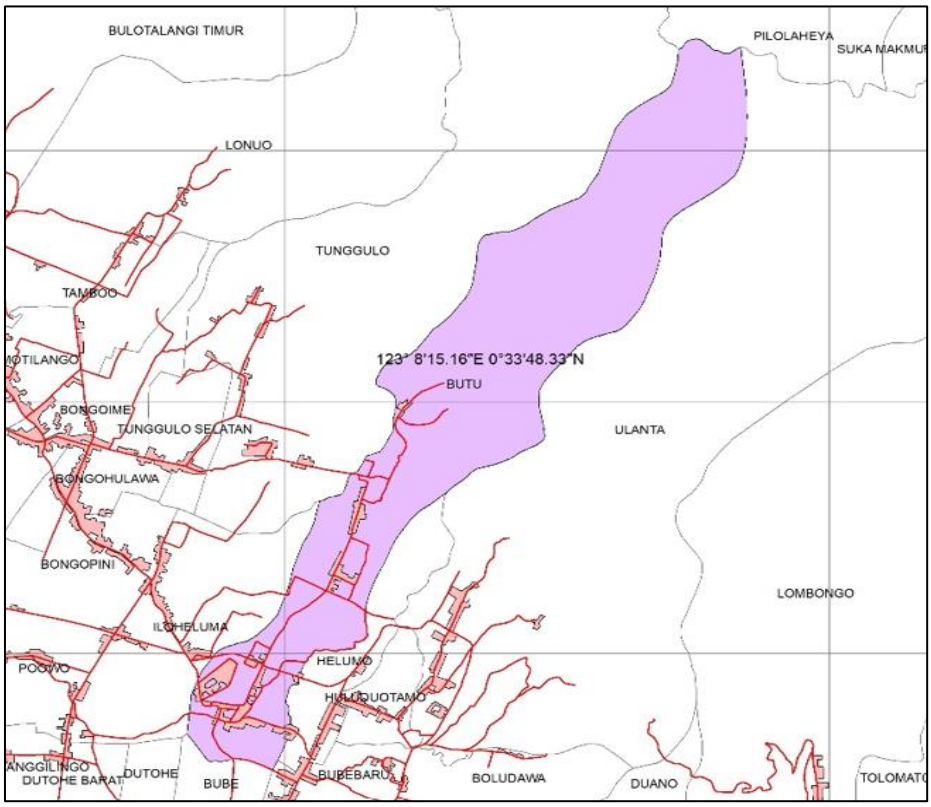

Figure 1. Research Site
Source: Primary Data (2023)

Geographically, as depicted in Figure 1, Butu Village was predominantly characterized by corn farming areas, interspersed with residential zones. Furthermore, some corn farming communities

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

also partook in other agricultural commodities such as horticulture, focusing on crops such as chilli peppers and tomatoes, as well as coconut plantations. In this study, a total of 107 corn farmers participated as respondents, contributing valuable insights through structured questionnaire interviews. These farmers were selected to provide a diverse representation of individuals engaged in corn farming practices in Butu Viallage. The questionnaire served as a comprehensive instrument to gather essential data encompassing the identity information, as well as the demographic and socio-economic backgrounds of the respondents. These details, recorded and organized, are presented in Table 1, providing a detailed overview of the participants' profiles.

Table 1. Respondent Demographic and Socioeconomics Characteristics

Items	Responses	
	n	%
Age		
Below 20	2	1,87
20-29	11	10,28
30-39	18	16,82
40-49	31	28,97
50-59	24	22,43
60 and above	21	19,63
Gender		
Male	89	83,18
Female	18	16,82
Education level		
Uneducated	50	46,73
Primary school	26	24,30
Middle school	9	8,41
High school	17	15,89
College	5	4,67
Land owned/managed		
Below 0,5 Ha	0	0
0,5-1 Ha	94	87,85
Above 1 Ha	13	12,15
Land ownership		
Owned	57	53,27
Rent/profit sharing	50	46,73
Other income from onfarm activities		
Yes	86	80,37
No	21	19,63
Other income from off-farm activities		
Yes	85	79,44
No	22	20,56

Source: Primary Data (2023)

Table 1 illustrates that the respondents' average age is 40 years, with a predominant educational background marked by a lack of formal education. This aligns with the findings of Arsyad & Sirajuddin (2024), explaining that a significant portion of farmers in Gorontalo show low levels of education. Such a demographic composition holds the potential to hinder the adoption of agricultural

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

innovations. As expounded by Sirajuddin & Kamba (2021), individuals with limited educational attainment are inclined to avoid the adoption of innovative practices due to perceived complexity. Furthermore, the research reveals that the average landholding per farmer in Butu Village amounts to less than 1 hectare, underlining the significance of land area as a determinant of income growth. This indicative data underscores the prevalence of land scarcity among corn farmers in the region. Sirajuddin (2021a) contends that the extent of land ownership correlates with farmers' propensity to embrace technologies, emphasizing the imperative of safeguarding existing landholdings to avert further diminishment. In addition, a considerable proportion of corn farmers in Butu Village engage in polyculture, concurrently having diverse sources of income besides corn farming. These findings parallel those of Sirajuddin (2021b), indicating a prevalent trend among corn farmers in Gorontalo to diversify their agricultural income by cultivating other crops such as coconut and chilli pepper. Moreover, a significant number of farmers supplement their income through alternative off-farm income, including trading, workshops, construction, and local public transportation services called *bentor*.

Components of Innovation as Recommended in Good Agricultural Practices

In-depth interviews with informants have revealed several key innovations in corn farming aimed at enhancing yields and reducing the risk of crop failure. These innovations were recommended for adoption by farmers:

1. Land preparation. Preparation of the land was advised as it was crucial for maximizing root growth in corn plants. Sevral methods were available to enhance the growth of corn plants, such as cultivating the soil, ensuring proper fertilization, and applying specific pesticides to control weeds on the prepared land before planting. However, according to Lisanty et al. (2023) land preparation in terms of applying tillage depends on the needs of farmers, as farmers may choose not to use conventional tillage system to reduce operational cost as well as to prevent soil degradation.
2. Single seed planting. The practice of placing one seed per planting hole was also advised by infromants, as it was essential to utilize a single seed in each planting hole for corn plants. This recommendation stemed from the high nutrient requirements of corn, hence planting one seed per hole was deemed necessary to optimize seed growth.
3. Proper plant spacing. Utilizing plant spacing as recommended by the informants entailed two main approaches: the 70x20 cm and the 50x20 cm spacing for couples with 90 cm separation between rows (*jajar legowo* method). The objective behind adhering to these spacing recommendations was to guarantee adequate air circulation and nutrient availability for corn plants.
4. Timely and proper fertilization. Applying fertilizers at the appropriate quantity and timing, as per the recommendations of informants, will significantly influence the growth of corn plants. The informants advised fertilizing when corn plants reach 7 days old and then again at 45 days old. The recommended fertilizers were *urea*, applied during the first fertilization at a rate of 200kg per hectare, and *ponska*, administered during the second fertilization at a rate of 400kg per hectare.
5. Weed management. Weed management involved the removal of unwanted vegetation from agricultural areas to ensure the growth of desired plants without competition. Informants recommended two weed control methods. Traditional weeding method involved manually removing weeds and parasites from agricultural land. While effective and not detrimental to soil nutrients, it was less commonly practiced in modern times due to its time-consuming nature and high labour requirements. Pesticide-Based Weed Control approach entailed the use of pesticides

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

to eradicate weeds. While relatively simple and efficient, excessive and continuous pesticide use could deplete soil nutrients over time.

6. Using of organic fertilizers. Incorporating organic fertilizers into plant cultivation, according to the informants, offered significant benefits for enhancing growth and boosting agricultural yields in terms of both production and productivity. Nonetheless, prolonged reliance on organic fertilizers may have repercussions on soil nutrient levels and could potentially lead to an increase in weed growth. Organic fertilizer in Gorontalo might use combined waste of agricultural and animal residues (Sudiarta et al., 2022).
7. Covering corn roots through hilling. Informants in this study recommended corn roots covering. This practice involved piling up soil around the roots to enhance soil nutrients and promote better drainage. However, this process may result in less robust root systems, as corn plants possess fibrous roots rather than a single dominant root.
8. Pest and disease management. Effective management of pests and diseases affecting corn plants, according to the informants, could be achieved through the implementation of integrated pest management (IPM) strategies. Several approaches can be employed, including selecting pest and disease-resistant seeds, adhering to recommended planting distances provided by agricultural extension agents, utilizing biological pest control methods, such as employing spiders to prey on planthoppers and snakes to control mice populations, implementing mechanical control measures, such as deploying mouse traps, to mitigate pest infestations, and employing chemical control methods, involving the targeted application of pesticides directly onto plants affected by pests and weeds. These diverse strategies, when integrated appropriately, offer effective solutions for managing pest and disease pressures in corn cultivation, contributing to improved crop health and yields.
9. Harvest and post-harvest management. The post-harvest phase marked the culmination of the harvesting process, ultimately influencing the profitability of the yield. This stage, according to informants, encompassed several key activities, including: timely harvesting in accordance with the instructor's guidance to optimize yield outcomes, removal of husks from the harvested corn, separation of corn kernels from the cobs, and transporting the harvested corn to storage facilities or buyers for further processing or distribution. By executing these post-harvest procedures, farmers could maximize the value and quality of their corn harvest, ultimately impacting the overall success of corn farming. The aim of promptly drying corn after harvest was to preserve its quality and prevent mold and rot. This drying process consisted of two stages, including dried immediately after husking, and cobs separation and drying. This secondary drying stage was recommended to optimize the dryness level and yield of corn kernels.

Farmers' Attitude in the Adoption of Innovation as Recommended in Corn Farming

Qualitative data was utilized to construct a questionnaire for the quantitative phase, involving interviews with 107 corn farmers residing in Butu Village. The interview data revealed a high level of adoption of recommended innovations under the Good Agricultural Practices (GAP) framework within the village. A summarized overview of the adoption index is provided in Table 2.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

Table 2. The Average Adoption of Innovation Scores in Butu Village

No	Components in GAP	Mean
1.	Pest management	4,80
2.	Weeding	4,69
3.	Timely drying	4,64
4.	Timely harvesting	4,57
5.	Timely and proper fertilization	4,38
6.	Using organic fertilizer	4,37
7.	Using certified seeds	4,17
8.	Roots hilling	3,81
9.	Single seed planting	3,58
10.	Proper spacing	3,51

Source: Primary Data (2023)

Table 2 presents the average adoption index in Butu Village. The predominant innovation adopted by corn farmers was pest and disease control, indicated by a mean score of 4.80. This widespread adoption was attributed to the significant impact of pest control on corn production levels, with concerns raised over potential crop failure in its absence. Integrated pest control was a crucial strategy for enhancing corn production and minimizing the risk of crop failure. Research conducted by Handayati et al. (2022) showed that application of integrated pest management could help the farmers to increase yield as well as income generated from corn farming.

Conversely, the innovation with the lowest adoption rate, scoring an average of 3.51, pertained to the utilization of recommended spacing. This reluctance was often observed among farmers aiming to maximize land usage efficiency, particularly those with limited land plots. However, adherence to recommended spacing was highly recommended as a means to increase corn productivity, as emphasized by Padjung et al. (2020), who stresses the significance of cultivation techniques, including planting distances, in determining corn productivity. Meanwhile, the adoption of organic fertilizers in Butu Village appears relatively high, with a mean score of 4.37. Abdullah et al. (2023) posited that farmers' perceptions regarding compatibility aspects, such as the availability of organic materials for fertilizer, play a pivotal role in influencing their decision to adopt organic fertilizers.

Correlation between Farmer Demographic Characteristics and Adoption Index

This study examined the farmer traits associated with the adoption index. Both Pearson and Spearman Rank correlation tests were employed to explore the relationship between farmers' demographic and socio-economic attributes and their adoption of innovations, as indicated by the adoption index. The study considered variables such as age, landholding size, farming experience, family size, education level, participation in farmer groups, and participation in extension activities. Significance was tested at a 5% level, with results detailed in Table 3.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

Table 3. Correlation between Characteristics with Adoption

Indicators	Correlation Coefficients	*p*-value	Significance
Age	-0,214	0,032	*yes*
Landholding size	0,019	0,845	-
Farming experience	-0,198	0,040	*yes*
Family size	0,012	0,899	-
Education level	0,128	0,186	-
Participation in farmers group	0,349	0,000	*yes*
Participation in ag extension	0,261	0,006	*yes*

Source: Primary Data (2023)

Table 3 illustrates the correlation test outcomes between seven demographic and socio-economic variables of farmers and their adoption of innovation in corn farming, as reflected by the adoption index. The analysis revealed four significant variables influencing the adoption of innovation recommendations among farmers: age, farming experience, involvement in farmer group activities, and engagement in extension activities. These factors exhibited significance levels at .05. Age exhibited a significant negative correlation with the adoption index, indicated by a coefficient of -.214, suggesting that younger farmers tend to embrace innovations more readily than their older counterparts. This aligns with findings from a study conducted by Oyetunde-Usman et al. (2021), which indicated that age was a significant determinant of farmers' decisions to adopt agricultural innovations. Younger farmers display a greater propensity for innovation adoption due to their positive perception towards new practices.

Additionally, farming experience displayed a negative correlation with the adoption index (coefficient: -0.19), with significance below .05 (0.04). This suggests that experienced farmers are less inclined to adopt recommended innovations. This reluctance may stem from perceived profitability issues or compatibility concerns with existing farming practices. For instance, recommendations involving labor-intensive practices such as plowing might be rejected by experienced farmers due to increased operational costs they experienced. Similarly, the adoption of organic fertilizer might be hindered by concerns about its making process, as highlighted by the study of Abdullah et al. (2023), on the influence of perceived compatibility of organic fertilizer on its adoption.

Active participation in farmer groups significantly correlates with the farmer's adoption index, indicating that farmers engaged in such groups are more likely to adopt recommended innovations. Through farmer groups, individuals gain access to information on farming innovations and can collectively implement these practices, leading to improved productivity and increased incomes. Nugroho et al. (2017) further underscored this phenomenon in their research, elucidating the pivotal role that farmer groups play in the adoption of innovative agricultural practices and the subsequent increase of land productivity. Through shared knowledge, collective decision-making, and mutual support, farmer groups create conducive environments wherein innovations are embraced and implemented effectively. Moreover, the synergistic efforts within these groups foster a culture of continuous learning and experimentation, driving iterative improvements in agricultural methods and outcomes (Kadar et al., 2024). As a result, the heightened adoption of innovation facilitated by farmer groups leads to tangible enhancements in agricultural land productivity. This underscores the

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

transformative potential of grassroots-level initiatives in propelling agricultural development and fostering sustainable livelihoods within rural communities.

Similarly, a positive correlation was observed between involvement in agricultural extension activities and innovation adoption. The findings from a study carried out by Rusliyadi et al. (2023) which showed the vital role of agricultural extension services in facilitating the adoption of innovative practices within the agricultural sector. Effective extension efforts not only serve to disseminate knowledge and promote the acceptance of innovations but also directly contribute to enhancing productivity levels. By providing farmers with access to timely information, training, and resources, agricultural extension services empower them to implement advanced methods that result in improved yields and quality of produce. Consequently, the heightened productivity achieved through successful extension initiatives translates into increased incomes for farmers (Yunita et al., 2018), thereby driving socioeconomic progress within rural communities. In essence, the relationship between agricultural extension and innovation adoption underscores the pivotal importance of fostering robust extension programs to sustainably enhance agricultural productivity and livelihoods. Farmers actively participating in extension activities show a higher propensity for adopting innovations due to increased exposure to innovation field demonstrations, which enhances their confidence in adopting new practices. This underscores the effectiveness of extension activities in disseminating information and knowledge regarding corn cultivation innovations in Butu Village, serving as a valuable learning platform for farmers to acquire and apply new techniques on their farms. Conversely, variables such as land area, number of family dependents, and education level did not exhibit significant correlations with the adoption index, as their significance values exceeded .05 after statistical testing.

CONCLUSION AND SUGGESTION

The research findings yield several significant conclusions. Within the GAP framework for corn cultivation, there exist ten recommended innovations. These encompass various practices such as using certified corn seeds, using single seed per hole, maintaining optimal plant spacing, timely and appropriate fertilization, effective weed management, application of organic fertilizers, root hilling, pest and disease control, and ensuring timely harvesting followed by immediate drying. While farmers generally integrated these innovations into their practices, the highest adoption rates were observed in pest and disease management. Furthermore, the study highlighted correlations between innovation adoption and several variables, namely age, farming experience, participation in farmer groups, and participation in extension activities. These findings underscored the pivotal roles played by farmer groups and agricultural extension services in promoting innovation adoption within Gorontalo's corn farming community. Thus, there is a clear imperative to enhance the involvement of agricultural extension services and farmer groups to effectively disseminate innovations among corn farmers. Strengthening these avenues of support and communication holds significant potential for improving agricultural practices and enhancing productivity in the region.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

REFERENCES

Abdullah, A. A., Imran, S., & Sirajuddin, Z. (2023). Adopsi inovasi pupuk organik untuk pengelolaan lingkungan berkelanjutan di Kecamatan Tilongkabila Provinsi Gorontalo. Jurnal Ilmiah Membangun Desa Dan Pertanian, 8(3), 102–109. https://doi.org/10.37149/JIMDP.v8i3.362

Arsyad, K., & Sirajuddin, Z. (2024). Pelatihan dan pemberdayaan penyuluh dan petani di Kecamatan Suwawa Timur dalam analisis usahatani sorghum. Jurdimas (Jurnal Pengabdian Kepada Masyarakat) Royal, 7(1), 13–18. https://doi.org/10.33330/jurdimas.v7i1.2778

Azzam, A., & Rahman, R. Y. (2023). Faktor-faktor yang mempengaruhi pendapatan petani jagung pada kemitraan program makmur PT Pupuk Kaltim di Kecamatan Slahung Kabupaten Ponorogo. Mediagro, 19(1), 15–27.

Badan Pusat Statistik. (2022). Luas Panen dan Luas Tanam Jagung Menurut Kabupaten/Kota (Hektar), 2019-2021. Badan Pusat Statistik. https://gorontalo.bps.go.id/indicator/53/329/1/luas-panen-dan-luas-tanam-jagung-menurut-kabupaten-kota.html

Chelang'a, N. C., Kariuki, I. M., Obare, G. A., & Otieno, D. O. (2023). Determinants of adoption of GLOBAL G.A.P. standards: Evidence from smallholder French beans farmers in Murang'a County, Kenya. Cogent Food and Agriculture, 9(1). https://doi.org/10.1080/23311932.2023.2176949

Creswell, J. W., & Clark, V. L. P. (2017). Designing and conducting mixed methods research. Sage publications.

Handayati, W., Latifah, E., Sugiono, Subagio, H., Sihombing, D., & Fitria, R. U. (2022). Increasing maize yield and farming benefit through integrated plant management in Madura Island East Java. IOP Conference Series: Earth and Environmental Science, 980(1). https://doi.org/10.1088/1755-1315/980/1/012052

Kadar, M., Rauf, A., & Sirajuddin, Z. (2024). Peran kelompok tani terhadap peningkatan adopsi Good Agricultural Pratice (GAP) jagung hibrida di Desa Mongiilo Kabupaten Bone Bolango. Journal of Food Security and Agroindustry, 2(1), 33–43. https://doi.org/10.58184/jfsa.v2i1.289

Lamichhane, P., Hadjikakou, M., Miller, K. K., & Bryan, B. A. (2022). Climate change adaptation in smallholder agriculture: adoption, barriers, determinants, and policy implications. Mitigation and Adaptation Strategies for Global Change, 27(6). https://doi.org/10.1007/s11027-022-10010-z

Lisanty, N., Hadiyanti, N., Pamujiati, A. D., & Probojati, R. T. (2023). Comparative study between conventional and conservation tillage system of corn cultivation in Nganjuk Regency, East Java Province of Indonesia. Agrisocioeconomics, 7(1), 60–70. http://ejournal2.undip.ac.id/index.php/

Nugroho, A. K. B., Sumekar, W., & Mukson, D. (2017). The Factors in Farmer Group activity and the Influence to paddy production in Susukan Semarang District. Agrisocionomics, 1(2), 198–210. http://ejournal2.undip.ac.id/index.php/agrisocionomics

Oyetunde-Usman, Z., Olagunju, K. O., & Ogunpaimo, O. R. (2021). Determinants of adoption of multiple sustainable agricultural practices among smallholder farmers in Nigeria. International Soil and Water Conservation Research, 9(2), 241–248. https://doi.org/10.1016/j.iswcr.2020.10.007

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 9 (1): 211-222, March 2025

Padjung, R., Bdr, M. F., Nasaruddin, N., Ridwan, I., Anshori, M. F., Abduh T, A. D. M., & Fachri, A. A. (2020). Growth and production of corn in various planting distances Systems. Agrotech Journal, 5(2), 89–93. https://doi.org/10.31327/atj.v5i2.1352

Rusliyadi, M., Wahyu, Y., Ardi, Y., & Winarno, K. (2023). The factors influencing technology adoption process of farmers in term of agricultural extension policy case in Central Java Indonesia. Agrisocionomics, 7(2), 250–260. http://ejournal2.undip.ac.id/index.php/agrisocionomics

Sirajuddin, Z. (2021a). Adopsi inovasi jajar legowo oleh petani di Desa Balahu, Kabupaten Gorontalo. Agriekonomika, 10(1), 101–112. https://doi.org/https://doi.org/10.21107/agriekonomika.v10i1.10133

Sirajuddin, Z. (2021b). Diversifikasi pendapatan petani jagung di Desa Isimu Raya, Kabupaten Gorontalo. Manajemen Agribisnis, 21(2), 141–149.

Sirajuddin, Z., & Kamba, P. L. (2021). Persepsi petani terhadap implementasi Teknologi Informasi dan Komunikasi dalam penyuluhan pertanian. Jurnal Penyuluhan, 17(02), 136–144.

Sudiarta, I. M., Prabowo, A., Gubali, S., Buheli, A., & Sirajuddin, Z. (2022). Pengaruh kombinasi bioslurry dan air kotoran lele terhadap tanaman jagung (Zea mays L.). Ziraa'ah, 47(3), 330–341. https://doi.org/http://dx.doi.org/10.31602/zmip.v47i3.8032

Sugiyono. (2018). Metode Penelitian Kombinasi (Mixed Methods). Alfabeta.

Suhana, S., Rauf, A., & Sirajuddin, Z. (2023). Adopsi Good Agricultural Practice (GAP) jagung hibrida untuk meningkatkan produktivitas jagung oleh petani. Ziraa'ah, 48(1), 101–114.

Tahir, N. S., Baruwadi, M., & Sirajuddin, Z. (2024). Skenario peningkatan pendapatan dalam usahatani jagung melalui adopsi teknologi di Desa Tulabolo barat, Provinsi Gorontalo. Jurnal Ilmu Ilmu Agribisnis, 12(1), 31–40. https://doi.org/10.23960/jiia.v12i1.8301

Yunita, F., Satmoko, S., & Roessali, W. (2018). The Influence of Agricultural Extension Centers (BPP) in the application of Technology of Integrated Crop Management (PTT) and the Rice Production Increase in Magelang. Agrisocionomics, 2(2), 127–138. http://ejournal2.undip.ac.id/index.php/agrisocionomics