

Evaluation Analysis of Agricultural Extension of Vegetable Fungicides for Rice Plants in Sidomojo Village, Krian District, Sidoarjo Regency

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ABSTRACT: The evaluation of extension practices pays close attention to the changing mindset in agriculture. This evaluation can strengthen understanding of the relationship between the use of plant-based fungicides and the concept of sustainable agriculture. This study was conducted to determine the effectiveness of vegetable fungicide extension for rice plants in Sidomojo Village, Krian District, Sidoarjo Regency with a focus on evaluating extension results to improve understanding and practical application in local agriculture. The determination of the research area was carried out purposively, namely in Sidomojo Village, Krian District, Sidoarjo Regency, for the reason that it is one of the rice plant centers in Krian District, Sidoarjo Regency. The sample was taken from 20 respondents who had participated in previous extension activities. The analysis method uses quantitative descriptive analysis with Likert scale. The evaluation of the extension program on the use of vegetable pesticides in Krian sub-district also shows that most farmers are satisfied with the extension materials and facilities, but there is still a need to improve the competence of extension workers. Overall, the extension program was rated as effective, with 60% of farmers responding effectively.

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INTRODUCTION

Agriculture is one of the main sectors that sustain people's lives, because the agricultural sector is the livelihood of most of the Indonesian population. This makes the need for agriculture in Indonesia to be improved, in maximizing it but there are challenges to be able to achieve it. Increasingly narrow agriculture, climate change, as well as the presence of pests and plant diseases, and technology in agriculture that farmers do not yet know because of a lack of insight in this regard. Farmers need. Information in agriculture in order to facilitate the running of farming. Information obtained by farmers is of course from agricultural extension workers, information can be obtained by farmers in agricultural extension activities.

The agricultural sector itself, in terms of extension services, there is an evaluation session. The need for evaluation of agricultural extension services is essential to ensure the effectiveness and positive impact of these extension activities. The evaluation provides insight into the extent to which agricultural information is delivered to farmers efficiently, the extent to which understanding has been achieved, and how the implementation of new agricultural practices can be improved (Nona & Sagajoka, 2021). By evaluating agricultural extension, we can identify areas that need improvement, measure program success rates, and ensure that information delivery matches farmers' needs and knowledge levels.

Evaluation is an approach to assess the achievement of a particular activity, with the intention to make improvements or improve achievements that have been achieved previously (Mahfud, 2018). Evaluation in agricultural extension activities is a management instrument focused on actions and processes. The collected data is then analyzed in a systematic and objective way, so that its relevance, effects, and consequences can be determined. Evaluation of agricultural extension is used to improve current and future activities, such as in program planning, decision making, and program implementation, with the aim of achieving better extension effectiveness.

The evaluation of extension practices pays close attention to the changing mindset in agriculture. This evaluation can strengthen understanding of the relationship between the use of plant-based fungicides and the concept of sustainable agriculture. Evaluation of these practices is useful to determine the extent to which this knowledge is integrated into everyday agricultural practices. Not only measuring the effectiveness of plant-based fungicides in controlling plant diseases. However, this evaluation

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also includes aspects of acceptance, farmer readiness, and their influence on sustainable agricultural strategies. It is hoped that this evaluation can provide a comprehensive view. Such is the extent to which the field practice of plant-based fungicide extension for rice has driven the change towards more environmentally friendly agriculture and providing sustainable solutions. This study was conducted to determine the effectiveness of nabatai fungicide extension for rice plants in Sidomojo Village, Krian District, Sidoarjo Regency with a focus on evaluating extension results to improve understanding and practical application in local agriculture.

RESEARCH METHODS

The type of research used in this study is quantitative research. The determination of the research area was carried out purposively, namely in Sidomojo Village, Krian District, Sidoarjo Regency, for the reason that it is one of the rice plant centers in Krian District, Sidoarjo Regency. Respondent collection is carried out by census method (saturated sampling), which involves all members of the population as a sample. This is often done when the population is relatively small, less than 30 people. Saturated samples are also often interpreted as samples that are maximum, plus any amount will not change representation (Fatria, et al, 2017). The sample was taken from 20 respondents who had participated in previous extension activities. Sampling aims to examine the relationship between the distribution of variables in the target population with the relationship between the distribution of the same variable in the survey sample (Firmansyah, 2022). The data used for this activity is based on survey techniques and personal interviews with local farmers. Data collection techniques are based on pre-designed questionnaires. Sampling is carried out using purposive sampling techniques or by taking data based on certain aspects such as the nature or identity of previously known populations (Otoatmodjo, 2010 in Lenaini, 2021). The reason for data collection using purposive sampling techniques is to determine research samples that require certain criteria to ensure that the samples used are in accordance with the research objectives.

Data processing uses the scoring method to determine the role of agricultural extension workers that have been implemented. Data was collected using the Likert scale and the final scores of respondents were summed. According to Endang Mulatiningsi (2013) in Graduation (2020), the Likert scale is often used in research surveys to express a person's attitude and perception of a situation. The data analysis technique we used was using a Likert scale from 1 to 5, where each question was scored as follows: 5 for the 'strongly agree' category, 4 for the 'agree' category, 3 for the 'undecided' category, 2 for the 'disagree' category, 1 for the 'disagree' category. According to Sugiyono (2014) in Kurniawati et al (2022), the Likert scale is used to assess attitudes, responses, and views on individual or group social phenomena. This technique is not only effective in demonstrating the effectiveness of the field concerned, and a large number of respondents can provide good survey results, but there is also an observation method, which is to examine and observe what is happening and then document it in the form of pictures to provide clear visual evidence of the atmosphere.

The use of the Likert scale helps researchers or data collectors to quantitatively measure and analyze respondents' perceptions, opinions, or attitudes towards certain topics (Amrullah, 2019). Likert scale method is a measurement method that is useful for determining the scale of attitude towards a particular object. On this Likert scale, the questionnaire assigns a score to each answer, which is 1-5. A score of 1 for the strongly disagree answer while 5 for the strongly agree answer. After getting the respondents' answers, total the scores using the formula:

Total score = $T \times P_n$

Information:

T = total number of respondents;

P_n = Choice of likert score numbers

Index % = $\text{Total Score} / Y \times 100$

Information:

Y = Highest score of likert x number of respondents x number of questions

Before completing the Likert results we must know the interval and percent interpresentation in order to know the assessment by the method of finding the Interval score percent (I).

Interval formula:

$I = 100/5 = 20$

Thus, the interval of the distance from 0% to a high of 100% is as follows:

- 0% - 19,99% = Strongly Disagree (SD)
- 20% - 39,99% = Disagree (D)
- 40% - 59,99% = Doubt (DB)
- 60% - 79,99% = Agree (A)
- 80% - 100% = Strongly Agree (SA)

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RESULTS AND DISCUSSION

Agricultural extension workers have a big role in supporting the progress of agriculture. This can be done through the impartation of knowledge and the application of evolving technology to farmers. Farmers can implement best practices that can ultimately contribute to increased agricultural productivity. The success of extension activities does not only depend on the technical knowledge of extension workers, but also depends on the support of extension workers in conducting extension services that are in accordance with the needs of farmers (Widakdo et al., 2021). Agricultural extension activities are expected to be able to provide effective guidance to farmers and help farmers improve their quality of life.

Agricultural extension on the use of plant-based pesticides is needed to educate farmers about more environmentally friendly and sustainable alternatives in pest and plant disease control. Vegetable pesticides are one way of controlling pests and plant diseases that use natural ingredients (Sutriadi et al., 2019). Plant-based pesticides can control pests and plant diseases, reduce the risk of environmental contamination, and improve food safety. Through this counseling, farmers can learn how to make, apply, and optimize vegetable pesticides, especially in dealing with fungi or fungi according to their agricultural needs. Extension evaluation on the use of vegetable fungicides in Krian sub-district is very important to measure the effectiveness and acceptance of farmers to this concept. In the evaluation process, farmers can measure their knowledge before and after extension, as well as the extent to which they apply the techniques taught in the use of vegetable fungicides. In addition, evaluation also helps in identifying the challenges farmers face in implementing these solutions, so that extension services can be adjusted to provide more effective support.

Interviews with 20 rice farmers related to the success of vegetable fungicide extension using questionnaire instruments. A questionnaire is considered a tool or method for gathering information using a form containing a number of questions submitted to specific individuals or groups in an organization. The purpose of using questionnaires is to get responses or answers that will then be analyzed by related parties, which have specific objectives related to the evaluation or research being carried out (Cahyo et al., 2019). This interview aims to understand farmers' perceptions and understanding of the use of plant-based fungicides, as well as to gauge the extent to which they apply the information provided in extension.

Farmer characteristics

Table 1. Recapitulation of Characteristics of Respondent Farmers

No	Description	Sum (people)	Percentage (%)
1	Gender		
	Male	18	90
	Woman	2	10
2	Age		
	<40 years	5	25
	41 – 60 years	10	50
	>60 years	5	25
3	Education		
	SD	9	45
	SMP	6	30
	SMA	5	25
4	Long Farming Experience		
	<5 years	1	5
	5 – 10 years	1	5
	>10 years	18	90

Source: primary data processed, 2023

Table 1 displays the characteristics of respondents consisting of gender, age, education, and length of effort as farmers. The majority of respondents were men compared to women. In terms of age, the majority of respondents are in the range of 56-65 years (50%), followed by the age group of 66-75 years (25%). In terms of education, as many as 55% of respondents have a junior high school education background. While 45% with elementary education. When viewed from the length of effort as a farmer, almost all of them with a percentage of 95% have been in this profession for more than 10 years, with a small part, namely 5% having experience between 5-10 years.

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Extension Materials

Table 2. Recapitulation of Extension Material Evaluation Results

No	Statement	SD (1)	D (2)	DB (3)	A (4)	SA (5)	Sum	
1	I have adequate knowledge of the use of plant-based pesticides		4	4	7	5	20	
2	The counseling I received helped improve my understanding of the safety of plant-based pesticides			5	4	11	20	
3	I consider the use of plant-based pesticides as an environmentally friendly alternative			3	6	11	20	
4	I feel able to apply the technique of using plant-based pesticides on my farm	2	5	3	7	2	20	
5	I felt the need to get more training related to the use of plant-based pesticides			4	3	13	20	
6	I feel confident that plant-based pesticides can help reduce the negative impact on the environment			3	6	11	20	
Total Score = T x Pn		2	18	66	132	270	488	
Index (%) = Total Score / Y x 100		488 / 600 x 100					81,33 %	(Strongly Agree)

Source: primary data processed, 2023

Counseling material is the subject of the learning process that will be received by groups or individuals who are the target of counseling (Syarif, 2020). This material is designed to provide relevant knowledge, required skills, as well as deep insight into specific topics, such as plant-based fungicides. There are 6 questions in the respondents' recapitulation table on counseling materials. Farmers have adequate knowledge rated SA by 5 farmers, 7 A farmers, 4 DB farmers, 4 D farmers. Counseling to increase understanding of the safety of vegetable pesticides received 11 SA farmers, 4 A farmers, and 5 DB farmers. Farmers considered as an environmentally friendly alternative obtained as many as 11 farmers chose SA, 6 A farmers, 3 DB farmers. Farmers are able to apply the technique of using assessed 2 SA farmers, 7 A farmers, 3 DB farmers, 5 D farmers, 2 SD farmers. The majority of 13 farmers assessed SA on the need for training related to vegetable pesticides, the remaining 3 A farmers, 4 DB farmers. Finally, farmers believe in reducing negative impacts on the environment is considered positive with 11 farmers choosing SA, 6 A farmers, and 3 DB farmers.

An index of 81.33% was obtained from this evaluation which indicates that the majority of respondents showed strong approval of the material presented in the counseling session. However, through variations in the level of knowledge reflected by farmers' responses, it can be seen that there are differences in each individual's understanding of the use of plant-based pesticides. This highlights the importance of revisiting extension approaches in order to respond to specific needs. There are also indications that some farmers feel they still need further knowledge. Therefore, additional training is needed to strengthen farmers' understanding and skills related to the use of vegetable pesticides. This counseling has the success of most of the extension materials, but there are still certain aspects that require further attention and adjustment to make the extension more effective and relevant for all parties involved.

Extension Competence

Table 3. Recapitulation of Extension Competency Evaluation Results

No	Statement	SD (1)	D (2)	DB (3)	A (4)	SA (5)	Sum
1	Extension workers have adequate knowledge of the types of pests and plant diseases		3	6	8	3	20
2	Extension workers have good communication skills in conveying information about vegetable pesticides		1	9	6	4	20
3	Extension workers can provide information about the dosage and how to use plant-based pesticides appropriately				17	3	20
4	Extension workers are able to explain the advantages and risks of using plant-based pesticides clearly			3	11	6	20
5	Extension workers have the ability to motivate farmers in adopting the use of plant-based pesticides		6	3	5	6	20

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Total Score = T x Pn	0	20	63	188	110	381
Index (%) = Total Score / Y x 100	381 / 500 x 100					76,20 % (Agree)

Source: primary data processed, 2023

According to Sumardjo (2008) in Rais (2022), the competence of extension workers is the traits or abilities possessed by an extension worker which is a determining factor in how effective the extension worker is in carrying out extension duties. The competence of extension workers covers various aspects, this aspect includes in-depth knowledge of agriculture, good communication skills, skills in designing extension programs that suit the needs of farmers, and the ability to manage relationships with farmers and other related parties. The respondents' recapitulation table on the competence of extension workers has 5 questions.

Extension workers' knowledge about the types of pests and plant diseases obtained 3 farmers who chose SA, 8 A farmers, 6 DB farmers, and 3 D farmers. The communication skills of the extension workers obtained 4 farmers choosing SA, 6 A farmers, 9 DB farmers, 1 D farmer. Information about the dosage and how to make the majority of farmers chose A with a total of 17 farmers and the remaining 3 farmers chose SA. The ability of extension workers to explain the benefits and risks of 6 farmers chose SA, 11 A farmers, 3 DB farmers. Finally, the motivation for farmers was 6 farmers choosing SA, 5 A farmers, 3 DB farmers, and 6 D farmers.

The total score obtained was 381 out of 500 with an index of 76.20%. Farmers feel that extension workers do not have a deep enough understanding of vegetable fungicides. This may be due to farmers' perceptions that the level of knowledge of extension workers about vegetable fungicides still needs to be improved or has not reached the level of understanding expected by farmers. Although most respondents were satisfied with some aspects of extension workers' competencies, there was still room for improvement. These improvements are mainly in communication skills, understanding of plant pest and disease types, as well as the ability to motivate farmers in adopting the use of plant-based pesticides. This evaluation provides a clear picture that extension workers need to be improved in several aspects to improve the effectiveness of extension services in the future.

Extension Facilities

Table 4. Recapitulation of Extension Facility Evaluation Results

No	Statement	SD (1)	D (2)	DB (3)	A (4)	SA (5)	Sum
1	Extension facilities are equipped with adequate presentation materials and equipment		2	2	8	8	20
2	Counseling facilities provide promotional materials and Literature related to vegetable pesticides		1	2	12	5	20
3	The plant-based pesticide extension facilities in my area are easily accessible				2	18	20
4	I felt comfortable when I attended counseling sessions at the facility		1	0	10	9	20
Total Score = T x Pn		0	8	12	128	200	348
Index (%) = Total Score / Y x 100		348 / 400 x 100					87 % (Strongly Agree)

Source: primary data processed, 2023

In terms of extension facilities, it shows positive things. Extension facilities are physical facilities or infrastructure used as a place to carry out agricultural extension activities. There are 4 questions about the extension facility. Adequate presentation materials and equipment were assessed 8 SA farmers, 8 A farmers, 2 DB farmers, 2 D farmers. Regarding promotional materials and literature, as many as 5 farmers chose SA, 12 A farmers, 2 DB farmers, 1 D farmer. The easily accessible extension shop has a majority with 18 farmers answering SA and 2 farmers A. Convenience of extension session, 9 farmers choose SA, 10 farmers A, and 1 farmer D.

The index was obtained 87%, which is very agreeable, it can be seen that the majority of respondents strongly agree with the quality of the extension facilities provided. However, there is some minor dissatisfaction regarding the completeness of the presentation material that needs attention. Plant-based fungicide counseling that has been carried out only uses leaflets, does not use PPT or projectors because previously counseling would be held in an open room that did not allow presentation equipment. So that supporting infrastructure and facilities are needed so that the success of counseling is achieved. In addition, it also provides a comfortable and supportive environment for the audience or farmers to be involved in the extension process.

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Effectiveness of Agricultural Extension

Table 5. Recapitulation of Overall Results of Agricultural Extension Effectiveness

Interval	Category	Frequency (People)	Percentage (%)
64 – 75	Highly Effective	7	35
52 – 63	Effective	12	60
40 – 51	Quite Effective	1	5
28 – 39	Less Effective	0	0
15 – 27	Very Effective	0	0
Total		20	100

Source: primary data processed, 2023

Overall, this extension program managed to achieve a satisfactory level of effectiveness. As many as 35% of respondents stated that the counseling was very effective, while 60% of them saw it as an effective program. Despite this, only 5% consider it quite effective. A large proportion of respondents who describe a high level of effectiveness (highly effective and effective) reflect that extension has successfully achieved its main goal of conveying information and producing a positive impact on the audience.

CONCLUSION

The results of the evaluation of the agricultural extension practice program in Sidomojo Village, Krian District, Sidoarjo Regency, can be concluded that the majority of respondents are men, extension materials are highly rated (81.33%), but the competence of extension workers still needs to be strengthened (76.20%). Although extension facilities are highly rated (87%), there needs to be a need to develop further skills to improve program effectiveness. The evaluation of the extension program on the use of vegetable pesticides in Krian sub-district also shows that most farmers are satisfied with the extension materials and facilities, but there is still a need to improve the competence of extension workers. Overall, the extension program was rated as effective, with 60% of farmers responding effectively. Therefore, increasing the competence of extension workers is an important objective to improve the effectiveness of agricultural extension programs in the region.

REFERENCES

1. Amrullah, M. (2019). Persepsi Petani Terhadap Peran Penyuluh Pertanian Di Desa Lada Mandala Jaya Kecamatan Pangkalan Lada Kabupaten Kotawaringin Barat. *J-Sea (Journal Socio Economics Agricultural)* Vol. 14 No. 1,
2. Cahyo, K. N., Martini, M., & Riana, E. (2019). Perancangan Sistem Informasi Pengelolaan Kuesioner Pelatihan Pada PT Brainmatics Cipta Informatika. *Journal of Information System Research (JOSH)*, 1(1), 45-53.
3. Fatria, M. A., Jahrizal, & Pailis, E. A. (2017). Strategi Pengembangan Industri Rumah Tangga di Kota Pekanbaru (Studi Kasus Usaha Jamur Crispy Industri Pengolahan Jamur Tiram. *JOM Fekon*, 4(1), 283–297.
4. Firmansyah, D. (2022). Teknik Pengambilan Sampel Umum dalam Metodologi Penelitian: Literature Review. *Jurnal Ilmiah Pendidikan Holistik (JIPH)*, 1(2), 85-114.
5. Kurniawati, D., & Judisseno, R. K. (2022). Penggunaan Skala Likert Untuk Menganalisa Efektivitas Registrasi Stakeholder Meeting: Exhibition Industry 2020. In *Seminar Nasional Riset Terapan Administrasi Bisnis Dan Mice*, 10(1), 142-152.
6. Lenaini, I. (2021). Teknik pengambilan sampel purposive dan snowball sampling. *Historis: Jurnal Kajian, Penelitian dan Pengembangan Pendidikan Sejarah*, 6(1), 33-39. Mahfud, K. (2018). Monitoring Dan Evaluasi Penyelenggaraan Pelatihan Dasar Fungsional Penyuluh Pertanian Ahli Angkatan Iv (Thl-Tbpp) Di Bbpp Batangkaluku. *Jurnal Agrisistem: Seri Sosek dan Penyuluhan*, 14(2), 106-114.
7. Nona, R. V., & Sagajoka, E. (2021). Peran penyuluhan pertanian dalam membentuk perilaku petani di kabupaten ende. *Analisis*, 11(2), 210-225.
8. Rais, A. (2022). Pelatihan Peningkatan Kapasitas Penyuluh Pertanian dalam Pembuatan Media Penyuluhan di Balai Penyuluhan Pertanian (BPP) Kecamatan Bone-Bone Kabupaten Luwu Utara. *Abdimas Langkanae*, 2(1), 49-55.
9. Sutriadi, M. T., Harsanti, E. S., Wahyuni, S., & Wihardjaka, A. (2019). Pestisida nabati: prospek pengendali hama ramah lingkungan. *Jurnal Sumberdaya Lahan*, 13(2), 89-101.
10. Syarief, Y. A. (2020). Kajian proses pembelajaran dalam penyuluhan pertanian untuk meningkatkan kompetensi kewirausahaan petani jagung di Kabupaten Grobogan Provinsi Jawa Tengah. *Agritech: Jurnal Fakultas Pertanian Universitas Muhammadiyah Purwokerto*, 21(2), 101-108.
11. Widakdo, D. S. W. P. J., Holik, A., & Iska, L. N. (2021). Efek Usia dan Tingkat Pendidikan terhadap Kinerja Tenaga Bantu Penyuluh Pertanian. *Jurnal penyuluhan*, 17(1), 52-59.
12. Wisudawati, T., & Rizalmi, S. R. (2020). Analisis Metode Marketing Mix 7P Sebagai Strategi Pemasaran Produk Daur Ulang. *Journal Science Innovation and Technology (Sintech)*, 1(01), 26-29.

