

ANALYSIS OF FARMERS' ATTITUDES AND SATISFACTION IN USING CERTIFIED POTATO (*SOLANUM TUBEROSUM* L.) SEEDS IN KARO DISTRICT

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Abstract

The use of certified potato seeds is relatively very low because the price of seeds is expensive when compared to the prices of potato seeds made by the farmers themselves. The purpose of this study was to analyze the attitudes of farmers, farmers satisfaction, in using certified potato seeds in Karo District. The research method used is Fishbein multi-attribute to determine farmer attitudes, Customer Satisfaction Index (CSI) to determine farmer satisfaction levels and Importance Performance Analysis (IPA) to map attribute interests and performance. The results of the research on farmer attitudes were 176.45 with interpretations of liking to use certified potato seeds and a farmer satisfaction index of 76.74% with satisfied criteria while the results of the Importance Performance Analysis (IPA) analysis showed several attributes that needed to be maintained, namely resistance to pests and diseases, seed germination, yield selling price and temporary productivity that require attention are plant age, variety type, plant characteristics and seed size while attributes that need to be improved are seed price attributes, seed availability and seed labels.

Keywords: *attitude, certified, farmer satisfaction, potato seeds*

1. INTRODUCTION

Domestic potato productivity is still relatively low at 10-20 tons per hectare. The main reason is the limited number of high-yielding seed potato varieties available in the market. Of the 70,000 hectares of potato crop in Indonesia, only 15% use certified seed potatoes. (Lestari et al., 2015) showed that seed potato is the largest cost component in potato cultivation so far in meeting the needs of seed potato farmers rely on several sources, namely from certified superior varieties, imported seeds and from farmers' own plantings without known origin. Potato production potential can reach 30 tons/ha (Sani, 2021)

Potato farmers who use good quality seeds will have the potential to be able to produce greater productivity. The effect of using certified seeds can increase rice production and technical efficiency (Fianda et al., 2016). Requirements that are met in the selection of quality seeds, namely: Correct varieties, meaning that the varieties are not mixed or in accordance with the certificate issued by the Seed Certificate Supervisory Agency), quality (healthy seeds, no defects or mechanical damage, attacked by pests or diseases), size (appropriate seed size, not too large or too small), seeds have broken dormancy or have sprouted with and good budding conditions (vigor / bloom), seed price in accordance with the class of seeds, seed distribution right with planting time (Balitsa, 2014)

Agricultural products, including potatoes, are still faced with several problems of high price fluctuation and sensitivity, mainly due to changes in demand and supply. One of the constraints in producing potatoes is the unavailability of high-quality seed potatoes that are affordable to farmers. Adoption of certified seed potatoes in many parts of Indonesia is relatively low. The relatively high price of certified seed potatoes when compared to the price of seed potatoes made by farmers themselves is one of the main reasons.

The annual average seed potato requirement is 3,372,200 kg for a potato cultivation area of 3878 ha, while seed potato production in North Sumatra only reaches 156,978 kg. This situation shows that the availability of certified seed is still very far from the need and causes the price of certified seed to be very expensive because supply and demand differ greatly. The need for seed

Analysis Of Farmers' Attitudes And Satisfaction In Using Certified Potato (*Solanum Tuberosum L.*) Seeds In Karo District*Relli Karosekali, Salmiah, Iskandarini*

per hectare in Karo District is 1,000-1,200 kg per hectare at a price of Rp. 25,000/kg - Rp. 30,000/kg so that for one hectare it costs Rp. 25,000,000 - Rp. 30,000,000. The result of analyzing the cost of potato production using certified seed in Karo district is Rp. 78 million per hectare. The cost of purchasing certified seeds accounts for 35% of the total production cost. The high price of certified seed makes farmers rarely use certified seed in a single use. They usually buy certified seed in small quantities and develop it for several generations or choose to use sorted seed from consumer seed which they think is still good growth from the previous crop. But farmers do not realize the risk of diseases that make it difficult for them to control pests and diseases and the low yields in production they get in potato cultivation. The attributes that determine farmers' attitudes are production potential, durability, seed germination, seed uniformity, seed size, seed availability, seed purchase price, production origin, and certification label (Wicaksana et al., 2013).

LITERATURE REVIEW**Potato seed certification**

These seed classes are not based on generation, but rather on qualities such as pest and disease freedom, cultivar purity, general plant appearance, and isolation from other potato crops. The current potato seed system in Indonesia consists of five seed classes, namely G0, G1, G2, G3, and G4. Seed classes G0 to G3 are source seed classes, while seed class G4 is scatter seed (Mulyono et al., 2017).

Customer Satisfaction

Customer satisfaction is a feeling of pleasure or disappointment that arises after comparing the perceived performance (results) of the product against the expected performance or results. According to this definition, the satisfaction or disappointment of these potato farmers arises after they compare the products they use now with the products they use certified seeds by comparing the results they get when they do not use uncertified potato seeds (Armstrong, 2015).

Consumer Attitude

Understanding farmers' attitudes towards seed/variety attributes is very useful as input for technology development and diffusion strategies. In terms of research and development, this understanding is an important input in developing contextual variety breeding programs, designing breeding program priorities, planning diffusion targets and strategies, and projecting the potential success of a plant breeding program (W et al., 2014).

Productivity

Potato productivity is influenced by several factors, such as land area, the amount of fertilizer used and the cost of pesticides as well as farmers' level of technology. The cause of low potato productivity in Indonesia is due to the low quality and quantity of seeds, conventional cultivation techniques still used by farmers, limited areas suitable for potato cultivation, and pest and disease attacks. In addition, high capital and good planning are needed to increase potato productivity (Hendra & Wulandari, 2020)

Seed Price

The longer the seed potato generation used it is likely that the quality will decline. Potato farmers are reluctant to use certified seed due to the higher price of certified seed compared to non-certified seeds. The price of certified potato seed obtained by farmers in this study was between IDR 15,000 to IDR 25,000 per kilogram, while the price of non-certified seed potatoes ranged between IDR 10,000 and IDR 20,000 per kilogram. The cost of seed procurement in potato farming is the largest component compared to other input costs which amounted to 37% of the total cost (Nugraheni et al., 2022).

Land Area

Land area is the most responsive variable to potato production, but increasing production through extensification is difficult given the decline in agricultural land. The decline in potato planting area is caused by several factors such as land conversion, production risks experienced by farmers. Increasing the planting area of potato commodities also has its own challenges because potato plants tend to be able to produce on highland land. Therefore, increasing potato production is encouraged through land intensification (Maryanto et al., 2018).

2. IMPLEMENTATION METHOD

The research location was conducted in Karo Regency. The research was conducted from June 2022 to December 2022. The population in this study were potato farmers who used certified seeds, the number of samples used was calculated using the slovin method and obtained a sample of 84 potato farmers who used certified seeds. The types of data used are primary data and secondary data. Primary data was obtained from potato farmers using certified seed potatoes by conducting interviews using questionnaires and direct observation of the study object. Secondary data were obtained from the Karo District Agriculture Office, the Potato Seed Development Center (BPBK) and the Food and Horticultural Plant Seed Monitoring and Certification Center (BPSBTPH). The analytical method used is Fishbein to analyze respondents' attitudes towards certified potato seeds. Customer Satisfaction Index (CSI) was used to analyze the overall satisfaction level of respondents. Importance Performance Analysis (IPA) is used to map the level of importance and performance of each attribute offered and the gap between performance and expectations of respondents. The first objective was analyzed using Fishbein's multi-attribute model. Fishbein's attitude model explains that a person's attitude can be formed by components of beliefs and feelings. Ratings of likes and dislikes as well as positive and negative assessments of certified seed potato attributes (Mulyanti & Fachrurrozi, 2017).

$$A_0 = \sum' bi. ei$$

- A_0 = Attitude towards the object, i.e. certified seed potatoes
- bi = Level of belief in certified seed potato has the i-th attribute
- ei = Evaluation of the importance of attribute i
- n = Number of salient attributes

Furthermore, with the number of categories determined, the class interval in the attitude of farmers is obtained. Then the attitude of farmers towards certified seed potatoes is:

Table 1. Farmers' attitudes towards Certified Potato Seed

No.	Score	Interpretation
1.	$11 \leq A_0 \leq 63,8$	Strongly Dislike
2.	$63,9 < A_0 \leq 116,7$	Dislike
3.	$116,8 < A_0 \leq 169,6$	Neutral
4.	$169,8 < A_0 \leq 222,6$	Like
5.	$222,7 < A_0 \leq 275,5$	Strongly Like

Measurement of the level of evaluation and level of trust is done using a Likert Scale, the lowest intensity is given a value of one and the highest is given a value of five (Sugiyono, 2016). The second objective is analyzed using the Customer Satisfaction Index (CSI) which is to determine the overall level of farmer satisfaction by looking at the level of importance of the attributes of certified seed potatoes. To determine the amount of CSI, the following steps can be taken:

1. Determine the Means Important Score (MIS) and Mean Satisfaction Score (MSS). This value is obtained from the average value of the level of importance and the average value of the performance of each respondent.
2. Creating Weight Factors (WF). This weight is the percentage of the per-attribute MIS value to the total MIS of all attributes.
3. Creating Weight Score (WS). This weight is a multiplication of the Weight Factor (WF) with Mean Satisfaction Score (MSS) $WS_i = WF_i \times MSS_i$. The total of the Weight Score (WS) of the 1st attribute (a-1) to the last attribute (a-p) is called the Weight Average Total (WAT).

Based on this scale range, the satisfaction criteria are as follows:

Analysis Of Farmers' Attitudes And Satisfaction In Using Certified Potato (Solanum Tuberosum L.) Seeds In Karo District

Relli Karosekali, Salmiah, Iskandarini

Table 2. Customer Satisfaction Index Criteria

CSI Value	Criteria
0 % < CSI ≤ 20%	Very dissatisfied
20% < CSI ≤ 40%	Not satisfied
40% < CSI ≤ 60%	Quite satisfied
60% < CSI ≤ 80%	Satisfied
80% < CSI ≤ 100%	Very satisfied

The third objective is analyzed with Importance Performance Analysis (IPA) where this analysis refers to performance where the level of consumer interest is measured in relation to what the company should do. IPA consists of two components, namely, gap analysis and quadrant analysis. Each attribute is positioned in a diagram. The average score of the assessment of the level of performance \bar{X} shows the position of the attribute on the X axis, while the position of the attribute on the \bar{Y} axis is indicated by the average score of the level of consumer interest on the Y axis.

$$\bar{X} = \frac{\sum X1}{n}$$

$$\bar{Y} = \frac{\sum Y1}{n}$$

- X1 = Average value of performance level attribute i
- Y1 = Average value of importance attribute i
- Xi = Total performance level score attribute to i
- Yi = Total score of importance level attribute to i
- n = number of consumer data

Furthermore, each of these attributes is described in a Cartesian diagram.

3. RESULTS AND DISCUSSION

Results

Farmers' Attitudes towards Certified Potato Seeds

Attitude is one of the important components in purchasing behavior. In the decision-making process, attitude is one of the two thinking variables in the psychological side of a consumer (Qomariyah et al., 2018). The results of the purchase decision show that the purchase of certified potato seeds has different attributes. The attributes of certified potato seeds are productivity, seed price, resistance to pests and diseases, plant age, type of variety, seed growth rate, seed size, availability of seeds in the market, selling price of seed products, plant characteristics and seed labels. The results of the multiatribut fishbien calculation can be seen in table 3. Based on the total attitude assessment, it can be seen that the total value of certified seeds is 176.45, which is at 169.8 <Ao< 222.6 with an interpretation of like.

This interpretation of like is supported by the results of interviews where from the results of production there are already 11% of respondents who get an average production of 25-35 tons / ha and 37% with an average production of 20-25 tons / ha which is far above the national production average, in terms of handling pests and diseases there are also 25% of farmers who have been able to reduce the cost of controlling pests and diseases by 50% and 57% of farmers have been able to reduce the cost of controlling pests and diseases by 25% this value is a good enough value in increasing farmers' income where the increase in crop production will increase income and reduce production costs in controlling pests and diseases will also add benefits to farmers using certified potato seeds. The value of farmers' attitudes towards certified potato seeds at the seed price attribute with an importance level of 4.10 (important criteria) and performance of 2.25 (not good) needs serious handling. Improving the performance of this attribute can be done by strengthening and establishing breeders in the region. The attribute of seed availability in the market has an importance value of 4.12 (panting criteria) but the implementation (performance) is only 2.63 (not good) this means that seeds are not always available in the field. The availability of

seeds in the field is a difficulty for producers because farmers' needs are difficult to predict and the shelf life of certified ketang seeds is very limited. Other attributes such as productivity, resistance to pests and diseases, plant age, type of variety, seed growth rate, seed size, selling price, plant characteristics and seed labels have good importance and performance values so they need to be maintained (Kashenge-Killenga et al., 2014).

Table 3. Calculation of the importance and performance levels of farmer attitude analysts towards the use of certified potato seeds

No	Attribute	Importance	Performance	
		Bi	Ei	bi.ei
1	Productivity	4,29	4,08	17,50
2	Seed price	4,10	2,25	9,21
3	Resistance to pests and diseases	4,43	4,30	19,03
4	Plant life	4,17	4,58	19,10
6	Seed germination	4,37	4,25	18,57
7	Seed size	4,08	4,02	16,43
8	Availability of seeds in the market	4,12	2,63	10,84
9	Selling price of seed yield	4,33	4,23	18,31
10	Crop characteristics	4,11	4,23	17,36
11	Seed label	3,89	3,10	12,05
Total				176,45

*169<Ao<222,6 interpetasi suka

The data shows that the most important attribute is according to farmer respondents is resistance to plant pests and diseases, namely the importance of 4.43 and the performance is 4.30 although the performance is slightly lower than the importance but still in the same criteria, namely very important and very good and the lowest is the price of seeds where the importance of 4.10 and the performance is only 2.25.

Farmer Satisfaction with Certified Potato Seeds by Customer Satisfied Index (CSI)

The overall level of customer satisfaction can be analyzed with the Costumers Satisfied Idex (CSI) analysis tool where this analysis is a quantitative analysis of the percentage of happy customers in a customer satisfaction survey CSI is used to determine the level of satisfaction of farmers who use potato seeds in Karo Regency.

Table 4. Results of the Customer Satisfied Index (CSI) calculation for certified potato seeds

No.	Attribute	Mean	Mean on	Weighting	Weight Score (WS)
		Importance Score (MIS)	Satisfaction Score (MSS)	Factors (WF)	
1	Productivity	4,29	4,08	9,31	38,02
2	Seed price	4,10	2,25	8,90	20,02
3	Pest and disease resistance	4,43	4,30	9,62	41,35
4	Age of crop	4,17	4,58	9,05	41,49
5	Type of variety	4,14	4,36	9,00	39,22
6	Seed germination	4,37	4,25	9,49	40,35
7	Seed size	4,08	4,02	8,95	36,01
8	Seed availability	4,12	2,63	8,95	23,55
9	Yield selling price	4,33	4,23	9,42	39,79
10	Seed characteristics	4,11	4,23	8,92	37,71
11	Seed label	3,89	3,10	8,46	26,18
Total		46,02			

Analysis Of Farmers' Attitudes And Satisfaction In Using Certified Potato (Solanum Tuberosum L.) Seeds In Karo District

Relli Karosekali, Salmiah, Iskandarini

No.	Attribute	Mean Importance Score (MIS)	Mean on Satisfaction Score (MSS)	Weighting Factors (WF)	Weight Score (WS)
	WT	383,70			
	CSI	76,74			

Discussion

Level of Consumer (Farmer) Importance of Certified Potato Seeds with Importance Performance Analysis (IPA)

The satisfaction index of potato farmers who use certified seed potatoes is 76.74%, this value is in the scale range of 60 to 80 with satisfied criteria. But farmers' satisfaction with this attribute must still be improved so that it can approach 100%. Cartesian diagrams can be made is a chart that is divided into four parts that are limited by line boundaries that intersect perpendicularly at points X and Y. after getting the average value of the importance and performance of the attributes, a cartesian diagram is made using SPSS 24.

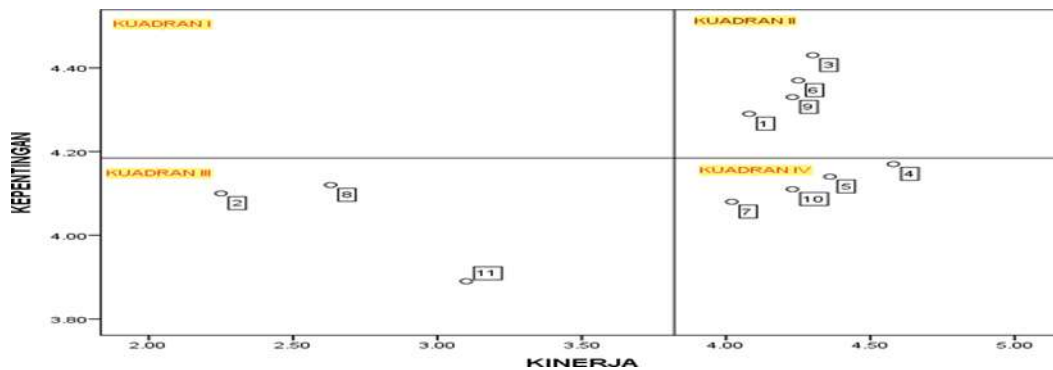


Figure 2. Cartesian Diagram of Performance Analysis of the Use of Certified Ketang Seeds **Quadrant I**

Attributes in quadrant one on the Cartesian diagram are quadrants that show a high level of importance but a low level of performance on the results of the data in making this diagram it can be seen that there are no attributes in quadrant I.

Quadrant II

Attributes that are in quadrant two are attributes that have a high level of performance and high importance so that the attributes that are in this quadrant are attributes that can satisfy farmers well. Resistance to pests and diseases is an important factor in potato cultivation, especially since potato farming centers in Karo Regency are highland areas with fairly extreme weather. The diseases most avoided by farmers planting potatoes are malignant disease (phytophthora infestans) bacterial wilt (erwinia sp and ralstonia sp) fusarium wilt (Fusarium Oxyxyforum) and the most dangerous pest is cyst nematode attack (NSK). The results of this study are in accordance with research (Wicaksana et al., 2013), which states that the durability of certified potato seeds in Bumiaji sub-district is in quadrant II.

Seed growing power is something that is considered important for farmers who use certified potato seeds in Karo Regency because the uniformity of potato seed growth will make it easier for farmers in terms of plant care, especially in terms of plant bulking, meaning that farmers feel this attribute is important and seed producers can also fulfill the wishes of farmers so that the performance of this attribute is in the high category (Ningsih et al., 2018).The price of seed results in the survey results show a position in quadrant II, which means that this attribute is an important thing that farmers consider and in its implementation provides high performance results, meaning that this attribute can be fulfilled by breeders according to what potato farmers want as consumers.

Productivity is crop yield compared to land area. This attribute is in quadrant II on the Cartesian diagram. This position states that productivity is one of the most important attributes for farmers in determining the seed potatoes they use. The productivity attribute has a high level of importance and the performance level is also high, stating that the certified seed potatoes used by the community have been able to meet the needs and satisfaction of potato farmers.

Quadrant III

In this quadrant the attribute is in a quadrant where farmers do not consider this attribute important and the performance of the attribute is also low so it needs a lot of improvement. From the survey results the attributes in this quadrant are seed prices, seed availability, seed labels. Seed prices on the Cartesian diagram are in quadrant III which means that farmers' interest in seed prices is low and attribute performance is also very low. The price of certified potato seeds at the farm level in Karo Regency is quite high. This attribute requires attention and treatment so that certified potato seeds can be reached by farmers so that the habit of using quality seeds becomes a habit for potato farmers in Karo Regency.

The availability of certified seed potatoes is also in quadrant III. This is because the number of seed potato breeders in Karo district is very small, so most of the seed potatoes come from Java. The distance between seed providers causes what if the supply of goods is lacking, Javanese island breeders prioritize the needs of seeds in their area. The low performance of this attribute needs to be a concern for local breeders and the government. The seed label is basically a marker of seed quality assurance and data on the existence of seeds such as the region of origin, the name of the producer and the date of seed harvest. The label issued by the seed certification agency (BPSB) is a guarantee that the potato seeds have been cultivated in accordance with the SOP and have been checked for quality. In this study, from the survey results, it was obtained that the seed label attribute on the Cartesian diagram was in quadrant III where people were not so concerned about the labels listed on the seeds and the performance of the seeds was also low.

Quadrant IV

In quadrant IV we can see the importance and performance of attributes where consumer farmers of certified potato seeds do not consider these attributes not so important but in fact consumer farmers feel very satisfied with the performance of these attributes. Attributes that are in this quadrant are crop age, type of variety, seed characteristics and seed size. Plant age is one of the important in cultivation but in this study this attribute is in quadrant IV where potato farmers do not feel the age of the plant is something important to consider this in reality in the field is not a priority because the shorter the age of the potato will help reduce the cost of plant care but in oral interviews farmers mentioned in certain varieties even though the age of the plant Long yields are relatively higher.

In terms of the performance of this attribute, the age of the plant shows quite high performance results so that farmers as consumers feel very satisfied with the age of the potato plant which is more *genjang* and the yield is also high. There are many potato varieties in Karo District but only a few varieties dominate. The most dominating type of variety is Granola potatoes, both granola L and granola K, each variety has its own advantages and disadvantages. This attribute is in quadrant IV which means that farmers are not too familiar with this type of variety but this attribute has a high performance so that farmers are greatly helped by the type of variety they cultivate. Plant characteristics are one of the characteristics of each variety. Plant characteristics that are of concern to potato farmers are generally plant height, leaf thickness and plant vigor. Plant characteristics, although not important to farmers in Karo District, have a high level of performance so that consumers are quite satisfied with the performance results of these plant characteristics (Syamsiah et al., 2013). Seed size at the producer level is something that is highly considered by producers because it is one of the requirements in obtaining a certificate. While at the farmer level it is not a top priority, the performance of this attribute is high because size uniformity also affects the uniformity of growth.

Analysis Of Farmers' Attitudes And Satisfaction In Using Certified Potato (Solanum Tuberosum L.) Seeds In Karo District

Relli Karosekali, Salmiah, Iskandarini

4. CONCLUSION

The attitude of Karo District potato farmers towards certified seed potatoes is 176.45 with the interpretation of like because certified seed potatoes provide better yields and quality assurance. Farmer satisfaction with the use of certified seed potato with an index value of 76.74% means that farmers are satisfied with the performance of certified seed potato attributes. The level of performance and importance of farmers is seen from several attributes that need to be maintained, namely resistance to pests and diseases, seed germination, selling price and productivity while requiring more attention to plant age, type of variety, plant characteristics and seed size while attributes that need to be improved are seed price attributes, seed availability and seed labels.

REFERENCES

- Armstrong, K. (2015). *Marketing an Introducing Pretiece Hall* (Twelfth Edi). Pearson Education, Inc.
- Balitsa. (2014). *Teknologi Budidaya Kentang di Dataran Medium* (Vol.34). Balitsa.
- Hendra, A., & Wulandari, E. (2020). Sumber Pembiayaan dan Produksi Benih Kentang di Kecamatan Kertasari Kabupaten Bandung. *Mimbar Agribisnis*, 6(1), 113–119.
- Kashenge-Killenga, S., Tongoona, P., Derera, D., & Kanyeka, Z. (2014). Farmers' perception of salt affected soils and rice varieties preferences in the North-eastern Tanzania and their implications in breeding. *International Journal of Development and Sustainability*, 3(6), 1257–1271. www.isdsnet.com/ijds
- Maryanto, M. A., Sukiyono, K., & Sigit Priyono, B. (2018). Analisis Efisiensi Teknis dan Faktor Penentunya pada Usahatani Kentang (*Solanumtuberosum L.*) di Kota Pagar Alam, Provinsi Sumatera Selatan. *AGRARIS: Journal of Agribusiness and Rural Development Research*, 4(1), 1–8. <https://doi.org/10.18196/agr.4154>
- Mulyanti, K. (Kurniawati), & Fachrurrozi, A. (Ahmad). (2017). Analisis Sikap dan Perilaku Masyarakat terhadap Pelaksanaan Program Bank Sampah (Studi Kasus Masyarakat Kelurahan Bahagia Bekasi Utara). *Optimal: Jurnal Fakultas Ekonomi Universitas Islam*, 10(2), 185–198. <https://www.neliti.com/publications/154615/>
- Mulyono, D., Syah, M. J. A., Sayekti, A. L., & Hilman, Y. (2017). Kelas Benih Kentang (*Solanum tuberosum L .*) Berdasarkan Pertumbuhan , Produksi , dan Mutu Produk [Seed Class Potatoes Based on Growth , Production , and Quality Products (*Solanum tuberosum L .*)]. *Jurnal Hort*, 27(2), 209–216.
- Ningsih, N. N. D. R., Raka, I. G. N., Siadi, I. K., & Wirya, G. N. A. S. (2018). Pengujian Mutu Benih Beberapa Jenis Tanaman Hortikultura yang Beredar di Bali. *E-Jurnal Agroekoteknologi Tropika*, 7(1), 64–72.
- Nugraheni, S. S., Tinaprilla, N., & Rachmina, D. (2022). Pengaruh Penggunaan Benih Bersertifikat Terhadap Produksi dan Efisiensi Teknis Usahatani Kentang di Kecamatan Pangalengan. *Jurnal Agribisnis Indonesia*, 10(2), 389–401. <https://doi.org/10.29244/jai.2022.10.2.389-401>
- Qomariyah, N., Santoso, I., & Effendi, M. (2018). Analysis of Consumer Attitudes and Attributes Performance of Sido Luhur Coffee Powder (Case Studies At Ukm Sido Luhur Coffee Powder , Malang). *Industria*, 3(1), 53–61.
- Sani. (2021). Analisis produktivitas tanaman kentang. Institut Pertanian Bogor.
- Sugiyono. (2016). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta.
- Syamsiah, S., Nurmalina, R., & Fariyanti, A. (2013). ANALISIS SIKAP PETANI TERHADAP PENGGUNAAN BENIH PADI VARIETAS UNGGUL DI KABUPATEN SUBANG JAWA BARAT. *Agrise*, XIII(3).

- W, A., Suwandi, & Kartasih, A. (2014). Sikap Petani Terhadap Pilihan Atribut Benih dan Varietas Kentang (Farmers' Attitude Towards Attribute Choices of Potato Seed and Variety). *J. Hort*, 24(241), 76–84.
<http://ejurnal.litbang.pertanian.go.id/index.php/jhort/article/viewFile/3338/2841>
- Wicaksana, B. E., Muhaimin, A., & Koestiono, D. (2013). ANALISIS SIKAP DAN KEPUASAN PETANI DALAM MENGGUNAKAN BENIH KENTANG BERSERTIFIKAT (*Solanum tuberosum* L.) (Kasus di Kecamatan Bumiaji, Kota Batu). *Habitat*, 62(13), 1–9.