Behaviour’s Farmer to the Risk of Broccoli Farming in Kutabawa Village, Sub-District Karangreja, Purbalingga District

by Pujiharto, Sri Wahyuni

Submission date: 07-Oct-2020 07:29PM (UTC+0700)
Submission ID: 1407949281
File name: Behaviour_Farmer.pdf (522.61K)
Word count: 4023
Character count: 21096

International Journal of Advanced Science and Technology
Vol. 29, No. 4, (2020), pp. 2523 - 2529

Behaviour's Farmer to the Risk of Broccoli Farming in Kutabawa Village, Sub-District Karangreja, Purbalingga District

Pujiharto[1*] and Sri Wahyuni[2]

UniversitasMuhammadiyahPurwokerto, Banyumas, Central Java, 53182, Indonesia

[1]p_harto@yahoo.co.id, [2]yuni_7067@yahoo.co.id

Abstract

This research aims to (1) measure the production and income risk of broccoli farm; (2) analyze behaviour of farmers against risk (risk lover, risk-neutral, or risk averter); (3) analyze the factors that influence the behaviour of farmers against the risk of broccoli farming. The study was conducted in the Kutabawa Village Area, Karangreja Sub-district, Purbalingga Regency. The analysis used in this study was by calculating the variance and the smallest real difference test (Ordinary Least Square). The number of samples was 52 broccoli farmers. The results showed that (1) the risk of broccoli production in the rainy season (0.170 or 17.0%), the dry season (0.168 or 16.8%). Meanwhile, the risk of broccoli income in the dry season (0.877 or 87.7%), rainy season (0.808 or 80.8%); 2) broccoli farmers in the research sites are mostly risk-averter; (3) factors that affect the increase of farmers' reluctance towards the risk is the level of pest attack and the risk of production. Meanwhile, the planting area, farmers' education, and non-farm incomes affected to decrease the farmers' reluctance or increase the farmer's courage to face the risk.

Keywords: *risks taking, Broccoli cultivation, Purbalingga.*

1. Introduction

Food is a basic need that plays a crucial role in life [1]. Broccoli is one of the horticultural commodities which are classified as nutrient-rich plant foods for the fulfilment of people's nutrition. Broccoli contains bioactive phytochemicals such as nitrogen-sulfur compounds, phenolic compounds, and nutrients [2]. Many people in Kutabawa Village, Karangreja Sub-district, Purbalingga Regency are starting to work on broccoli plants with the consideration that the selling value of their products will be higher than cabbage, carrots, mustard greens, and tomatoes which have become residents farming. However, there are obstacles when arises broccoli farming in Kutabawa Village, which is low productivity because the farmers are faced with risks and uncertainties. This factor is an externality, a factor that is not under the farmer's control [3]. The risks faced by farmers will be affecting production and income, and also affect the behaviour of farmers in making business decisions [4]. Natural risks and market risks are the main risks for farmers in agricultural production [5]. Farmers, especially small farmers with narrow land, are reluctant to bear risks (risk averter) such as price risk during harvest and production risk. Almost all of the farmers are poor farmers with a low income, so they must be smart to choose the best technique and plant variance that profitable for their farm [6]. Farmer's aversion to risk influences investment behaviour. The amount of investment positively affects the number of products produced, which affects the amount of income [7].

The objectives of this study are: (1) to measure the risk of production and broccoli agricultural income; (2) analyzing the behaviour of farmers towards risk (risk lovers, neutral risks, or risk aversion); (3) analyze the factors that influence the behaviour of farmers on the risk of broccoli farming.

2. Literature Review

2.1. Taking Risk in Agricultural Field

Much of the literature has addressed the issue of how individual risk preferences shape behaviour and decision-making processes. Much research on decisions under uncertainty is focused on individual risk attitudes. Many other factors can mask the relationship between risk attitude and the observed decision to influence decisions under uncertainty [8]. The questionnaires and associated measures of risk are based on theories of risk in economics, finance, management, and psychology. A complication was introduced by defining risk as a chance of loss [9]. Each people has a different way to resolve every problem that involves risk and uncertainty. People are chosen based on risk attitudes that are recognized in many situations [10]. Risk-taking behaviour is divided into three different types. A risk lover takes additional risks in making investment decisions that have a relatively low additional return. The decision is in return for the risk [11]. A risk-neutral to make a decision based on the minimal cost that used, so decision-makers define a set of decisions that are expected to minimize costs. A person who is reluctant to take risks would instead measure risk and determine what qualifies as the worst choice, rather than choosing elements that minimize expected costs [12]. Risk averter behaviour usually the abhorrence of debt, and make a limitation on innovation and adoption of new technology [13]. In practice, most people show a reluctance to risk, preferring low risk to high risk [14] because the term risk-taking refers to the selection of options with higher yield variability and a broader scope of results [15]. The role of taking a risk on an agricultural field, we can control from the economic analysis for the factors that determine such as agriculture investment [16]. Behaviour that toward risk is an essential factor in the study of making a decision of farm and many economic analyzes show that many farmers are reluctant to take risks, and are slow to accept ideas that are not proven. Agricultural behaviour is identified as risk aversion, innovation, diversification, non-agricultural employment, the environment, production, management, law, stress, pessimism, and satisfaction only in the agricultural sector [13].

2.2. Broccoli Cultivation

Genotype, maturity at harvest, weather, cultivation, and storage conditions are factors that can affect the content of bioactive compounds in fruits and vegetables [17]. In the cultivation of vegetable crops such as broccoli, requires a large number of nutritional extracts around 500.0 kg ha-1 N throughout its production cycle. High nutritional demand is related to the low investment capacity of farmers who have improper crop nutrition management resulting in low production yields [18]. Water supply in broccoli cultivation is critical at the planting stage. If the rainfall supply is sufficient to keep the soil moist when plants are planted, the need for irrigation water is zero [19]. Broccoli can be harvested when the flower is still not ripe and the entire sepals around the flower. Immature organs require a continuous supply of water, nutrients and hormones. This need is used to maintain homeostasis. After harvesting, these organs will experience severe stress [20]. Based on previous research, there are different maturity periods after planting in the field; extremely early (less than 55 days), early (55–65 days), middle (65–75 days), late (75–85 days), and extremely late (more than 85 days)[21].

Broccoli and other cole plants are plants that are susceptible to attack by several insect pests and diseases. Insect pests that always interfere with broccoli crops are diamondback moth (*Plutellaxylostella*) that still no resistance is available between germplasm that can be crossed [22]. However, several studies have found differences in broccoli cultivation depending on the season, the micronutrient plants tested, and the fertilizer used, making it difficult to make conclusions about the effects of the cultivation system [23]. Climate change is also hampering agricultural growth [24].

3. Methodology

Data collection was carried out for six months (March-August 2015) in Kutabawa Village, KarangrejaSubdistrict, Purbalingga Regency, with the consideration that many farmers switched to planting broccoli in that location. The type of data in this research is primary data and secondary data. Data collection was carried out using interview techniques, which were conducted on 52 farmers who planted broccoli for two consecutive growing seasons.

3.1. Broccoli Farm Risk Analysis

Broccoli farming risk analysis includes production risk, and income risk analyzed using the coefficient of variation (θ) and (φ). The coefficient of variation is a measure of the relative risk obtained by dividing the standard deviation by the expected average value. This method is using production data, costs, product prices, and income obtained from broccoli farming. Measurement of production and income risk [7] is:

$$\theta \text{or } V(Y) = \delta_Y / \mu_Y \quad (1)$$

where θ or V (Y) is a variance coefficient of production, δY is a standard deviation, and μY is average production (kg).The value of income risk determined by

$$\varphi \text{ or } V(I) = \delta I / \mu I \quad (2)$$

where φ or V(I) is income variance coefficient, δI is standard deviation, and μI is average income (Rp).

3.2. Farmer's Behavior Towards Broccoli Farm Risk Analysis

In factor analysis that influences broccoli production, regression coefficients will be obtained, which is also the production elasticity of the most significant inputs (unstandardized coefficients) and the most substantial input contribution (standardized coefficients). By entering input prices, input quantities, product prices, average products, and coefficient values of variation from production risk into parameter K(S).

$$K(S) = \frac{1}{\theta}\left(1 - \frac{PxiXi}{Pyfi\mu y}\right) \quad (3)$$

Note: $K(S)$ is the risk rejection parameter. $\theta$is the production variance coefficient.Px_i is i-th input price; X_i is i-th input. Py is product price; f_i is production elasticity from i-th input. $\mu_Y$is the mean of production. The farmers were classified into three groups based on the value of risk parameter K(S). A farmer is a risk-lover if $0<K(S)<0.4$, risk-neutral if $0.4 \le K(S) \le 1.2$, and risk-averter if $1.2 < K(S) < 2.0$.

3.3. Factors Affecting Farmer's Behavior Towards Broccoli Farm Risk Analysis

To find out the factors that influence the farmer's behaviour on the risk of broccoli farming, the estimation model [25], [26] is:

$$K(S) = \alpha_0 + \sum_{i=1}^{11} \alpha_i X_i + diDi + \mu \quad (4)$$

$$K(S) = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8 + \alpha_9 X_9 + \alpha_{10} X_{10} + \alpha_{11} X_{11} + d_1 D_1 + \varepsilon \quad (5)$$

Analysis model tested using Ordinary Least Square (OLS) through two stages: (1) testing of classical assumptions, and (2) testing of the suitability of the model [27].

4. Results and Discussion

4.1. The Value of the Production Risk and Broccoli Farming Income Risk

From the data obtained and the calculation of variance, it is shown that the risk of broccoli production in the rainy season (0.170 or 17.0%) and the dry season (0.168 or 16.8%). Meanwhile, the risk of broccoli income in the rainy season is 0.877 or 87.7%, and the dry season is 0.808 or 80.8%.

4.2. Farmer's Behavior Towards Broccoli Farm Risk

Farmer's behaviour towards broccoli farm risk was confirmed by K(S) parameter. In Table 1, we can see there is six value of factors that used to determine parameter K(S) on the rainy and dry season.

Table 1. Factors Value of Parameter K(S)

Description	θ	Px_i	X_i	Py	f_i	μ_y
Rainy Season	0.170	Labor's wage each respondent	Labor's wage each respondent	Broccoli price mean	0.223	14,401.63
Dry Season	0.168	Labor's wage each respondent	Labor's wage each respondent	Broccoli price mean	0.220	15,494.63

Table 2 shows that in the rainy season, there is 1 risk-lover farmer (1.92%), 8 risk-neutral farmers (15.38%), and 43 risk-averter farmers (82.69%). In the dry season, there are 3 risk-lover farmers (5.77%), 9 risk-neutral farmers (17.31%), and 40 risk-averter farmers (76.92%).

Table 2. Farmer's Behavior Towards Risk

Description	Farmer's Behavior Towards Broccoli Farm Risk					
	Risk-lover		Risk-neutral		Risk-averter	
	People	Percent (%)	People	Percent (%)	People	Percent (%)
Rainy Season Samples = 52	1	1.92	8	15.38	43	82.69
Dry Season Samples = 52	3	5.77	9	17.31	40	76.92

Mostly farmers on every plant season have a risk-averter behaviour. Problems such as production risk due to weather variability, climate change, and limited natural resources are often faced by farmers [28]. Rejection behaviour on risk-averter farmers is generally done with using certified seed so that the production level will increase, the use of organic fertilizer in massive amounts, and phosphorus fertilizer in order to complete the NPK needs. Certified seeds are seeds that are produced from known genetic origin seeds and genetic purity. These seeds are controlled and tested for production, processed and declared to follow the Law on Seeds. The use of high-quality seeds is a prerequisite for farmers to get higher yields. Thus, farmers will get higher profits [29]. Seed selection is made to reducing the risk that caused by soil fertility decreasing due to soil surface erosion and land slope, watering plants during the dry season, and do integrated pest control to reduce the risk of pest attack. The characteristics of conventional agriculture to increase crop yields are the use of superior varieties, irrigation water, chemical fertilizers, and synthetic pesticides [30].

4.3. Factors Affecting Farmer's Behavior Towards Broccoli Farm Risk Analysis

The analysis results of factors that affect a farmer's behaviour towards broccoli farming risk are shown in Table 3.

Table 3. Farmer's Reluctance Increasing Factors

Variables	Sign	Coefficient	Std. Error	t-Statistic	Probability
Rainy Season					
C	+/-	-1.462598*	0.834939	-1.751742	0.0821
Planting Area	-	-0.156407**	0.053742	-2.910309	0.0042
Farmer's Age	-	0.004163^{ns}	0.016175	0.257385	0.7973
Education	-	-0.058001**	0.027428	-2.114697	0.0363
Farming Experience	-	0.004645^{ns}	0.017376	0.267355	0.7896
Number of Family Dependents	-	0.039404^{ns}	0.060371	0.652702	0.5150
Farm Income	-	-5.86E-07^{ns}	4.78E-07	-1.224961	0.2227
Non-Farm Income	-	-1.39E-08**	5.21E-09	-2.661559	0.0087
Pest and Plant Disease	+	0.134949***	0.030247	4.461643	0.0000
Land Slope	+	0.001176^{ns}	0.007042	0.166996	0.8676
Production Risk	+	9.914503***	2.271468	4.364800	0.0000
Income Risk	+	9.00E-31^{ns}	5.67E-30	0.158896	0.8740
Dummy Growing Season	-	0.370278***	0.108360	-3.417110	0.0008
Farming Experience	-	0.004645^{ns}	0.017376	0.267355	0.7896
R2		0.640420			
F-statistic		17.083479***			0.00000
Dry Season					
C	+/-	-0.171426^{ns}	0.469654	-0.365004	0.7153
Planting Area	-	-0.068955*	0.050847	-1.356128	0.0758
Farmer's Age	-	0.000104^{ns}	0.010201	0.010169	0.9919
Education	-	-0.042193**	0.020999	-2.009231	0.0451
Farming Experience	-	0.007618^{ns}	0.011164	0.682412	0.4953
Number of Family Dependents	-	-0.030072^{ns}	0.046276	-0.649843	0.5161
Farm Income	-	-3.90E-07^{ns}	2.61E-07	-1.491516	0.1366
Non-Farm Income	-	-8.07E-09***	2.00E-09	-4.029788	0.0001
Pest and Plant Disease	+	0.059575***	0.014765	4.034859	0.0001
Land Slope	+	-0.005594^{ns}	0.005870	-0.952959	0.3411
Production Risk	+	5.848906***	1.514870	3.860996	0.0001
Income Risk	+	6.59E-30^{ns}	4.90E-30	1.344121	0.1796
Dummy Growing Season	-	-0.250395*	0.115629	-2.165504	0.0309
Farming Experience	+/-	-0.171426^{ns}	0.469654	-0.365004	0.7153
R2		0.644231			
F-statistic		16.984299***			0.00000

Analysis results in Table 3 show that on rainy season the value of determination coefficient (R2) is 0.640420 or 64.04%and the dry season is 0.644231 or 64.42%. $F_{calculated}$ in the rainy season is 17.083479, and in the dry season 16.984299, both of them are bigger than the value of F_{stat} (α = 1%). So, the independent variable together affects the dependent variable or K(S) parameter. One of the factors that can affect farmers' behaviour towards the risk of broccoli farming is the specific plant area of sample farmers is 0.88 hectares with a minimum area of 0.25 hectares. Plant area has a negative effect on

K(S) parameter at all plant season, so with the increase of plant area will make the farmer's reluctance decreasing or the farmer's courage increasing to face the risk.

Another factor that can affect the farmer's behaviour is the formal education of farmers. The average formal education of sample farmers is 10.65 years, the lowest education level is six years, and the highest is 12 years. So, the average sample had completed their study in Junior High School. The formal education variable has a negative effect on K(S) parameter, so the higher education level of the farmer, the reluctance behaviour towards the risk will decreasing, or the farmer's courage increasing. The next factor is the non-farm incomes of farmers, which has a negative effect on K(S) parameter. So, the increase of farmer's non-farm incomes will make the farmer's reluctance decreasing or the farmer's courage increasing to face the risk.

Pest attack factorhas a positive effect on K(S) parameter. It is due to on rainy season the heavy rainfall with high intensity will increase humidity and low temperature. This condition makes pathogens very easy to evolve, especially from the fungus froup. Thus, in the rainy season, the level of disease attacks is high, and it will increase farmer's reluctance to the risk. Meanwhile, in the dry season, the level of pest attack is high caused by approaching the transition of season. This condition very suitable for pest to evolving, primarily pest that eats leaf and crop of broccoli. The higher pest attack will make the farmer's reluctance increase. However, the farmer can avoid this risk with pesticide spraying frequently.The production risk factor has a positive effect on K(S) parameter. The higher production risk will increasing farmer's reluctance to the risk. Moreover, plant season also affected farmer's behaviour, so the percentage of farmers that have a reluctant behaviour is more significant on rainy than the dry season.

5. Conclusion

Broccoli production risk on rainy season is 0.170 or 17.0% and on the dry season is 0.168 or 16.8%. Meanwhile, broccoli income risk on rainy season is 0.877 or 87.7% and on dry season 0.808 or 80.8%. So, the income risk is more significant than the production risk at all plant season. Furthermore, the broccoli farmers in the research area mostly have risk-averter behaviour. Furthermore, factors that affect farmers' reluctance increasing are the level of pest attack and production risk. Meanwhile, plant area, farmers' education level, and non-farm income affect decreasing of farmers' reluctance behaviour to face the broccoli farming risk.

Acknowledgements

The authors thank UniversitasMuhammadiyahPurwokerto for supporting this research.

References

[1] Sumadi, Jumintono, and F. Ardiani, "Supply Chain Brown Sugar Agroindustry in Banyuwangi District: Analysis Study with a Dynamic System Approach," Int. J. Supply Chain Manag., vol. 9, no. 1, pp. 626–632, 2020.
[2] R. Dominguez-Perles, M. C. Martinez-Ballesta, M. Carvajal, C. Garcia-Viguera, and D. A. Moreno, "Broccoli-Derived By-Products — A Promising Source of Bioactive Ingredients," Food Chem., vol. 75, 4, pp. 383–392, 2010.
[3] J. C. J. M. van den Bergh, "Externality or Sustainability Economics?," Ecol. Econ., vol. 69, no. 11, pp. 2047–2052, 10.
[4] Y. Wang, "Income Uncertainty, Risk Coping Mechanism and Farmer Production & Management Decision: An Empirical Study from Sichuan Province," Agric. Agric. Sci. Procedia, vol. 1, pp. 230–240, 2010.
[5] F. Kuang, J. Jin, R. He, J. Ning, and X. Wan, "Farmers' livelihood risks, livelihood assets and adaptation strategies in Rugao Ci hina," J. Environ. Manage., vol. 264, p. 110463, 2020.
[6] I. Santosa and A. Suyanto, "The Benefits of Mix Farming Agribusiness to Strengthen Food Sustainability of The Farmer Households at Agrotourism Areas," J. Arts Humanit., vol. 6, no. 10, pp. 24–31, 2017.

[7] L. Olarinde, V. Manyong, and J. Akintola, "Attitudes Towards Risk Among Maize Farmers in the Dry Savanna Zone of Nigeria: Some Prospective Policies for Improving Food Production," African J. Agric., vol. 2, no. 8, pp. 399–408, 2007.
[8] J. Denrell, "Adaptive Learning and Risk Taking," Psychol. Rev., vol. 114, no. 1, pp. 177–187, 2007.
[9] R. Hoyt, "American Risk and Insurance Association (ARIA)," J. Risk Insur., vol. 54, no. 2, pp. 391–, 2014.
[10] E. U. Weber, A.-R. Blais, and N. E. Betz, "A Domain-Specific Risk-Attitude Scale: Measuring Risk ceptions and Risk Behaviors," J. Behav. Decis. Mak., vol. 15, pp. 263–290, 2002.
[11] M. Cucculelli and B. Ermini, "Risk Attitude, Product Innovation, and Firm Growth. Evidence from an Manufacturing Firms," Econ. Lett., vol. 118, no. 2, pp. 275–279, 2013.
[12] A. Madadi, M. E. Kurz, K. M. Taaffe, J. L. Sharp, and S. J. Mason, "Supply Network Design: Risk-Averse or Neutral?," Comput. Ind. Eng., vol. 78, pp. 55–65, 2014.
[13] J. Willock et al., "Farmers' Attitudes, Objectives, Behaviors, and Personality Traits: The Edinburgh Study of De on Making on Farms," J. Vocat. Behav., vol. 54, no. 1, pp. 5–36, 1999.
[14] A. Tymula et al., "Adolescents' Risk-Taking Behavior Is Driven by Tolerance to Ambiguity," Proc. l. Acad. Sci. U. S. A., vol. 109, no. 42, pp. 17135–17140, 2012.
[15] B. Figner and E. U. Weber, "Who Takes Risks When and Why? Determinants of Risk Taking," Curr. r. Psychol. Sci., vol. 20, no. 4, pp. 211–216, 2011.
[16] A. Verschoor, B. D'Exelle, and B. Perez-Viana, "Lab and Life: Does Risky Choice Behaviour Observed in Experiments eflect That in the Real World?," J. Econ. Behav. Organ., vol. 128, pp. 134–148, 2016.
[17] S. L. P. Cogo et al., "Low Soil Water Content During Growth Contributes to Preservation of Green Colour and Bioactive Compounds of Cold-Stored Broccoli (Brassica Oleraceae L.) Florets," Postharvest Biol. Technol., vol. 60, no. 2, pp. 158–163, 2011.
[18] G. B. de Freitas, M. S. Rocha, R. H. S. Santos, L. M. da S. Freitas, and L. de A. Resende, "Broccoli Yield in Response to Top-Dressing Fertilization with Green Manure and Biofertilizer," Rev. Ceres, vol. 58, no. 5, p. . 645–650, 2011.
[19] L. Milà, A. Chapagain, S. Orr, J. Chenoweth, A. Anton, and R. Clift, "Assessing Freshwater Use Impacts in Lca, Part 2: Case Study of Broccoli Production in the UK and Spain," Life Cycle Assess, vol. 15, pp. 598–607, 201
[20] G. P. P. Lima et al., "Ozonated Water and Chlorine Effects on the Antioxidant Properties of Organic and Conv onal Broccoli During Postharvest," Sci. Agric., vol. 71, no. 2, pp. 151–156, 2014.
[21] Z. Li et al., "The Evolution of Genetic Diversity of Broccoli Cultivars in China Since 1980," Sci. Hortic. nsterdam)., vol. 250, no. 12, pp. 69–80, 2019.
[22] P. Kumar and D. K. Srivastava, "Biotechnological Advancement in Genetic Improvement of Broccoli (Brassica oleracea L. var. italica), an Important Vegetable Crop Pankaj," Biotechnol. Lett., vol. 38, no. 7, p 1049–1063, 2016.
[23] M. Martínez-Tomé, M. Mariscal, J. Martínez-Tomé, and M. J. Martínez-Tomé, "Proximate composition and anti-oxidant activities of organically-and conventionally-grown broccoli (Brassica oleracea L. var. ca)," J. Hortic. Sci. Biotechnol., vol. 86, no. 5, pp. 511–516, 2011.
[24] L. Lipper et al., "Climate-Smart Agriculture for Food Security," Nat. Clim. Chang., vol. 4, no. 12, pp. 8–1072, 2014.
[25] I. Ozturk and U. Al-Mulali, "Natural Gas Consumption and Economic Growth Nexus: Panel Data nalysis for GCC Countries," Renew. Sustain. Energy Rev., vol. 51, pp. 998–1003, 2015.
[26] T. H. Ng, L. L. Chong, and H. Ismail, "Is the Risk Management Committee Only a Procedural Compliance?: An Insight into Managing Risk Taking Among Insurance Companies in Malaysia," J. k Financ., vol. 14, no. 1, pp. 71–86, 2012.
[27] Y. De Mey, E. Wauters, D. Schmid, M. Lips, M. Vancauteren, and S. Van Passel, "Farm Household Risk Balancing: Empirical Evidence from Switzerland," Eur. Rev. Agric. Econ., vol. 43, no. 4, pp. 637–662, 2016.
[28] R. P. Wibowo, Sumono, and T. Rizaldi, "Deficit Irrigation for Rice Farming with Production Risk Due to Weather Variability," IOP Conf. Ser. Earth Environ. Sci., vol. 260, no. 1, pp. 1–7, 2019.
[29] S. Bogdanović, V. Mladenov, and S. Balešević-Tubić, "The Importance of Using Certified Seed," Sel. i Semen., vol. 2 o. 2, pp. 63–67, 2016.
[30] J. Timsina, "Can organic sources of nutrients increase crop yields to meet global food demand?," Agronomy, vol. 8, no. 10, pp. 1–20, 2018.

Behaviour's Farmer to the Risk of Broccoli Farming in Kutabawa Village, Sub-District Karangreja, Purbalingga District

ORIGINALITY REPORT

19%	14%	16%	8%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Muhammad Farhan Malik, Mahbub Zaman, Sherrena Buckby. "Enterprise risk management and firm performance: Role of the risk committee", Journal of Contemporary Accounting & Economics, 2020 Publication	1%
2	Donna Jefferies, Ivan Muñoz, Juliet Hodges, Vanessa J. King et al. "Water Footprint and Life Cycle Assessment as approaches to assess potential impacts of products on water consumption. Key learning points from pilot studies on tea and margarine", Journal of Cleaner Production, 2012 Publication	1%
3	Shahab E. Saqib, Mokbul Morshed Ahmad, Sanaullah Panezai, Irfan Ahmad Rana. "An empirical assessment of farmers' risk attitudes in flood-prone areas of Pakistan", International Journal of Disaster Risk Reduction, 2016 Publication	1%

4	rd.springer.com Internet Source	1%
5	Lionel Page, Dipanwita Sarkar, Juliana Silva-Goncalves. "Long-lasting effects of relative age at school", Journal of Economic Behavior & Organization, 2019 Publication	1%
6	Spinelli, Sara, Amalia Conte, Lucia Lecce, Lucia Padalino, and Matteo Alessandro Del Nobile. "Supercritical carbon dioxide extraction of brewer's spent grain", The Journal of Supercritical Fluids, 2016. Publication	1%
7	orbi.uliege.be Internet Source	1%
8	Foyuan Kuang, Jianjun Jin, Rui He, Jing Ning, Xinyu Wan. "Farmers' livelihood risks, livelihood assets and adaptation strategies in Rugao City, China", Journal of Environmental Management, 2020 Publication	1%
9	www.matmerk.no Internet Source	1%
10	zakird.com Internet Source	1%

11	Niklas Möhring, Tobias Dalhaus, Geoffroy Enjolras, Robert Finger. "Crop insurance and pesticide use in European agriculture", Agricultural Systems, 2020 Publication	1%
12	journal.ugm.ac.id Internet Source	1%
13	Reza Alikhani, S. Ali Torabi, Nezih Altay. "Strategic supplier selection under sustainability and risk criteria", International Journal of Production Economics, 2019 Publication	1%
14	Rulianda P Wibowo, Taufik Rizaldi, Sumono, Ikhsan Siregar. "The impact of risk and uncertainty on irrigation decision for paddy production in North Sumatera Indonesia", IOP Conference Series: Materials Science and Engineering, 2019 Publication	1%
15	Geetika Gambhir, Pankaj Kumar, D.K. Srivastava. "High frequency regeneration of plants from cotyledon and hypocotyl cultures in Brassica oleracea cv. Pride of India", Biotechnology Reports, 2017 Publication	1%
16	disser.spbu.ru Internet Source	1%

17	Biresselioglu, Mehmet Efe, and Tezer Yelkenci. "Scrutinizing the causality relationships between prices, production and consumption of fossil fuels: A panel data approach", Energy, 2016. Publication	1%
18	Joaquín H. Hasperué, Alicia R. Chaves, Gustavo A. Martínez. "End of day harvest delays postharvest senescence of broccoli florets", Postharvest Biology and Technology, 2011 Publication	1%
19	Nain Peralta-Antonio, Maristela Watthier, Ricardo Henrique Silva Santos, Herminia Emilia Prieto Martinez, Leonardus Vergütz. "Broccoli Nutrition and Changes of Soil Solution with Green Manure and Mineral Fertilization", Journal of Soil Science and Plant Nutrition, 2019 Publication	1%
20	Submitted to Deakin University Student Paper	1%
21	Jerker Denrell. "Adaptive learning and risk taking.", Psychological Review, 2007 Publication	1%
22	Submitted to Brigham Young University Student Paper	<1%

23	www.orgprints.org Internet Source	<1%
24	Submitted to Universitas Jenderal Soedirman Student Paper	<1%
25	Rui Pei, Nina Lauharatanahirun, Christopher N. Cascio, Matthew B. O'Donnell et al. "Neural processes during adolescent risky decision making are associated with conformity to peer influence", Developmental Cognitive Neuroscience, 2020 Publication	<1%
26	jamanetwork.com Internet Source	<1%
27	Submitted to AUT University Student Paper	<1%
28	d-nb.info Internet Source	<1%
29	hal-univ-tln.archives-ouvertes.fr Internet Source	<1%
30	Zachary Stansell, Thomas Björkman. "From landrace to modern hybrid broccoli: the genomic and morphological domestication syndrome within a diverse B. oleracea collection", Horticulture Research, 2020 Publication	<1%

31	eprints.umm.ac.id Internet Source	<1%
32	Submitted to Udayana University Student Paper	<1%
33	jurnal.ugm.ac.id Internet Source	<1%
34	Laurenti, Rafael, Rajib Sinha, Jagdeep Singh, and Björn Frostell. "Some pervasive challenges to sustainability by design of electronic products – a conceptual discussion", Journal of Cleaner Production, 2015. Publication	<1%
35	www.locus.ufv.br Internet Source	<1%
36	Marco Cucculelli, Barbara Ermini. "Risk attitude, product innovation, and firm growth. Evidence from Italian manufacturing firms", Economics Letters, 2013 Publication	<1%
37	D. D. Aisyah, Mr Sugiyarto, Mr Irham. "Risk of production and income of rice farming based on landscape integrated pest management in Pliken village Kembaran district Banyumas regency", International Journal of Business Management and Social Research, 2018 Publication	<1%

38	Jagadish Timsina. "Can Organic Sources of Nutrients Increase Crop Yields to Meet Global Food Demand?", Agronomy, 2018 Publication	<1%
39	download.atlantis-press.com Internet Source	<1%

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		