



Farmers' Interest in Land Utilization for the Development of Melon Farming with the Drip System: Case Study in Gunung Kidul Regency, Indonesia

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Abstract. The younger generation's disinterest in working in the agricultural sector has developed into an obstacle in the process of cross-generational agricultural succession. It is essential to ensure the regeneration of the agricultural sector. This study aims: (1) to determine the interest of young farmers in land use for the development of melon farming and (2) to determine the effect of income, employment, education, and the community environment on youth interest. Farming in land use for the development of melon farming. This research is a descriptive study involving all members of farmer groups in Gunung Kidul Regency who develop melon cultivation by applying drip irrigation systems as respondents. The number of respondents was 40 farmers. Gunungkidul Regency has a soil texture of rock and clay, which is prone to drought, but this has yet to dampen the interest of young farmers in Wonosari District in developing melon farming by implementing a drip system. To determine the relationship between farmers' interest in cultivating melons using the drip irrigation system and income, employment, and the community's. The results showed that the interest of young farmers in developing melon farming was in the very high category. Most of the melon farmers are young. They feel happy running a melon farming with a drip system as a form of technological innovation. They have the awareness and willingness to make melon farming a prospective job. Factors of income, employment, education, and community environment show a significant positive relationship to farmers' interest in developing melon farming with a drip system. Efforts are needed to foster farmer interest through the application of appropriate technology that is in demand by young farmers. Apart from helping regenerate the agricultural sector, this activity can also improve farmers' welfare.

Keywords: Farmers' Interest · Melon Farming · Drip System

1 Introduction

The agricultural sector has a strategic role in increasing food availability and security. Increasing investment in agricultural infrastructure and extension services, as well as

increasing the purchasing power of households, especially in rural areas, are very important for realizing increased food security [1]. However, the agricultural sector faces several problems. Climate change has impacted the emergence of extreme weather, which has caused crop failures in several areas, so agricultural productivity has decreased. Changing agricultural land's function [2] and human resource issues are essential issues in modern agricultural production [3].

Urbanization becomes an agent of change quickly and changes many aspects, including the agricultural sector. The migration of rural youth is a phenomenon that can change the agricultural landscape of farming communities [4]. Young people have high intentions to migrate but also strongly desire to remain connected to their family farms. Migrants can often increase the resources needed to finance intensive farming operations [4]. Urbanization and the aging of the population in rural areas have consequences for the reduction of skilled workers in the agricultural sector, which is happening worldwide. Individual attitudes related to migration intentions, values, and social ties influence the intention to migrate. Young and skilled workers who do not want to work in the agricultural sector and do not like the rural lifestyle tend to have the motivation to migrate [5]. Some of the essential concerns of the agricultural sector include the limited ability of farmers to utilize advanced technology, limited agricultural personnel, and increasing urbanization and migration [3].

The disinterest of the young generation in Indonesia in working in the agricultural sector has developed into an obstacle in the cross-generational agricultural succession process [6]. The number of young farmers in some parts of the world, such as in industrialized Asian countries and many countries [7][8], has decreased. Society's mistakes in assessing the farming profession have impacted the low interest of young people in becoming farmers. The definition of a farmer is limited to someone who cultivates the land [9]. This negative perception of youth in agriculture is why youth are not participating in this sector [10]. Perceptions of the agricultural sector negatively impact youth participation in agribusiness in Vietnam but not in Zambia. In addition, there are obstacles to the effective involvement of youth in the agricultural sector, including a lack of start-up capital, personal aspirations [11], low profitability, lack of role models in agriculture, difficulties in purchasing agricultural land, and administrative burdens. The primary motivation for young farmers to pursue agriculture is to continue their parent's business, the desire to work in nature, and to do with animals [12].

It is crucial to ensure the regeneration of agriculture. An ambitious program is needed that can help young farmers while at the same time attracting a broader community to be more interested in agriculture [13]. Policymakers need to help those who leave rural areas to return after some time and pay the same attention to those who may not return to rural areas but are willing to invest in agriculture to employ their poor relatives [4]. To attract young people, policy incentives, investment subsidies to facilitate start-ups [12], agricultural promotion, increased outreach, recognition of young farmers as innovators, educational opportunities, and strengthening of incentives [6]. The design of policy tools to support this includes support for access to land, capital, market access, capacity building, and making agriculture a more attractive profession [7]. It is also essential to redefine farmers to get a better perspective from the community and motivate young people to get involved in agriculture [9]. Solving this problem also includes social change,

increasing motivational attributes, policies in the agricultural sector, and developing methods and mechanisms for managing labor resources. To make adjustments in creating modern agricultural production is necessary to provide infrastructure, update educational content, train, retrain, and professional development programs, and improve industrial management mechanisms [3]. Governments can ensure that agricultural education and training reflect the needs of the agricultural labor market and increases young people's familiarity with the world of work, including its practices, challenges, and rewards. Youth must have direct relationships with business partners, and they must have direct experience [10]. Running innovative financing value chains and market networks can increase company profitability and youth participation in agribusiness [11].

Many young farmers are still interested in farming [14]. Most youths are involved in agricultural production and the provision of inputs, transportation, and advisory services [11]. Young farmers are showing interest in on-farm innovations related to farm management (efficiency, breeding, information technology, and performance monitoring). Research organizations and extension/education providers can develop discussion and learning programs that suit the characteristics of young farmers (not a generalization approach), and they need to ensure comprehensive and focused course programming on stimulating innovation [7]. Farming businesses run by young farmers are far more profitable than those run by older farmers. The factors that encourage young farmers to remain in the agricultural sector as agricultural leaders are insufficient to sustain them to participate in this sector [8].

In Gunungkidul Regency, some young farmers apply agricultural innovations by utilizing appropriate technology in cultivating melon commodities that have high economic value. As additional information, Gunungkidul Regency has the characteristics of an area that is in a karst area which makes the local community very dependent on karst groundwater sources, especially during the dry season. Water that is abundantly available in the underground flow system is still difficult for local people to access. This area regularly experiences drought, especially in karst areas [15]. Most of the agricultural land in Gunungkidul Regency is dry land. Most commodities cultivated are field rice and secondary crops, and only a few cultivate horticultural crops. The natural condition in Gunungkidul is that there is not enough water for melon cultivation as a commodity that has a future selling value. Based on this background, this study aims: (1) to determine the interest of young farmers in land use for the development of melon farming and (2) to determine the effect of socioeconomic factors (income, employment, education, community environment) on the interest of young farmers in land use for the development of melon farming.

2 Introduction

This research is a descriptive study involving all members of farmer groups in Gunung Kidul Regency who develop melon cultivation by applying drip irrigation systems as respondents. The number of respondents was 40 farmers. The sampling method uses the census method. This research uses primary data, including the respondent's identity, farmer's interest, income, occupation, and community environment, while secondary data is research-supporting. Data collection techniques include observation, interviews,

and questionnaires. This research is a case study based on the uniqueness of Gunungkidul Regency, which has a rock and clay soil texture prone to drought. Still, implementing a drip system encourages young farmers in Kapanewon Wonosari to develop melon farming.

2.1 Variable Definition

Interest is a feeling/feeling of pleasure and concern that arises consciously within the respondent so that the willingness and aspiration to make melon farming a prospective job field arises.

Income is income from melon farming which provides benefits to meet the needs of the respondents, the compensation is according to responsibility, and the value is higher than income from other farming businesses.

Occupation is a condition of work that can provide satisfaction to respondents for the results obtained, provide comfort and good communication with fellow members of farmer groups, and enable respondents to gain new friends and experiences so that respondents commit to trying melon farming.

The community environment includes neighbors and friends who work as farmers who encourage and support respondents to try farming.

Variable measurement in this study uses a Likert scale. All have fulfilled the validity and reliability tests (Table 1). The validity test results showed that each variable's r count is greater than the r table (n is 40, and α is 5%). Based on the reliability test shows that the value of Cronbach's Alpha is > 0.6 , which means the questionnaire used is reliable.

Table 1. Output Validity and Reliability

Variable	Items	Correlation	Decision	Cronbach's Alpha	Decision
Income	X _{1_1}	.757**	Valid	0,678	Reliable
	X _{1_2}	.783**	Valid		
	X _{1_3}	.800**	Valid		
Occupation	X _{2_1}	.701**	Valid	.670	Reliable
	X _{2_2}	.528**	Valid		
	X _{2_3}	.841**	Valid		
	X _{2_4}	.790**	Valid		
Community Environment	X _{3_1}	.820**	Valid	.781	Reliable
	X _{3_2}	.754**	Valid		
	X _{3_3}	.698**	Valid		
	X _{3_4}	.836**	Valid		

** . Correlation is significant at the 0.01 level (2-tailed)

2.2 Analysis Method

Interest in this research includes three categories, namely low, medium, and high categories, using the following formula.

$$MC = ((X_n - X_i))/k \quad (1)$$

MC is the category interval for interest, X_n is the highest interest value, X_i is the lowest value for interest, and k is the number of categories.

To determine the relationship between farmers' interest in cultivating melons using a drip irrigation system with income, employment, and the community environment using the Spearman Rank Correlation.

$$r_s = 1 - \frac{6 \sum b_i^2}{n(n^2 - 1)} \quad (2)$$

where is the Spearman rank correlation coefficient, b is the difference between each rank pair, and n is the number of rank pairs.

To test the significance of the relationship between motivation-forming factors and the level of motivation using the t-test.

$$t_{stat} = r_s \sqrt{\frac{n-2}{1-r_s^2}} \quad (3)$$

Equal of significant = 0.05 at the 95% sureness level. The test principles are as follows. If $t_{stat} > table$, H_0 is disallowed and H_a is recognized, which means there is a significant correlation between farmers' interest in cultivating melons that apply drip irrigation with income, employment, and the community's environment. If that $< table$, then H_0 is received, and H_a is refused, which means there is no connection between farmers' interest in cultivating melons that apply drip irrigation with income, employment, and the community's environment. Furthermore, the association n value (r_s) appraises the power of the relationship between the two variables. The correlation coefficient can be positive or negative, with the correlation coefficient varying from -1 to $+1$. Explanation of correlation coefficient values can provide usage guidelines: if r is worth: (1) 0.00 means no relationship, (2) 0.01 – 0.20 means fragile relationship, (2) 0.21 – 0.40 means weak relationship n , (3) 0.41 – 0.70 means moderate relationship, (4) 0.71 – 0.99 means high relationship, (5) 1.00 means perfect relationship [16].

3 Results and Discussion

Forty respondents in this study were farmers who applied drip irrigation systems to melon farming in Gunungkidul Regency. The age of the respondents ranged from 21 to 45 years. Figure 1 shows the distribution of respondents by age. Most (85%) of the respondents were young farmers aged 21 to 30, while only 15% were more than 30 years old.

Meanwhile, Fig. 2 shows the distribution of farmers according to education. Most respondent farmers have a high school education, namely 85%.

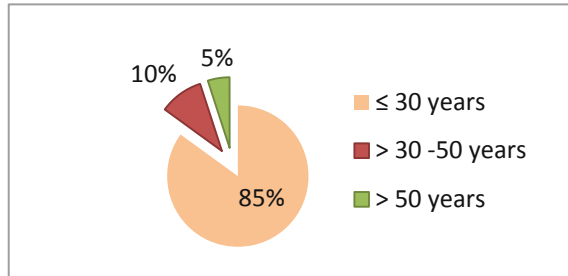


Fig. 1. Distribution of Respondents by Age.

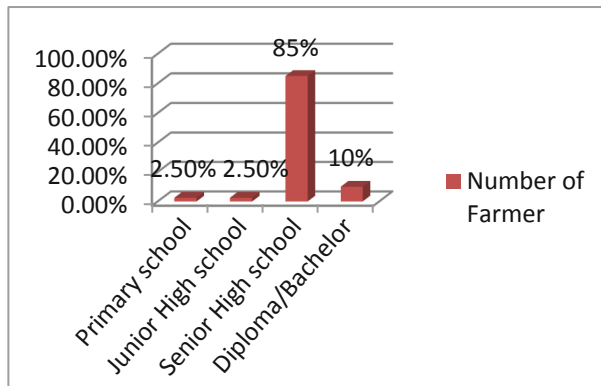


Fig. 2. Distribution of Farmers by Education

3.1 Farmers' Interest in Cultivating Melon with Drip Irrigation System

Distribution of Interest of Melon Cultivating Farmers with Drip Irrigation Systems (Table 2) shows that most farmers (62.5%) are highly interested .

3.2 Interest and Income Relationship

The results of the correlation analysis in Table 3 show a positive correlation. And significant for three variables (income, employment, and community environment). The increase in income is in line with the increasing interest of farmers in cultivating melons using drip irrigation. This result means that melon farming can provide a higher income than other commodities. This significant difference in net income is one of the attractions of the shift from rice farming to horticulture farming. Horticulture commodities culture requires less water than rice plants. And there is a high demand for horticulture ([18]. Horticultural farming can provide higher income to farmers to support local economic growth. However, land use for horticultural commodities in a large area, and the long term, is not in line with achieving food security at the local and national levels [19]. The income received by farmers is compensation from melon farming activities, including land management and plant maintenance (pest control, irrigation, and fertilization) up to

Table 2. Distribution of Farmers' Interest in Cultivating Melon with Drip Irrigation Systems

Farmer's interest		Number of Farmer (%)
Score	Category	
14–17	low	5.0
18–21	middle	32.5
22–25	high	62.5

Source: primary data

Table 3. The Relationship Between Income, Profession, Community Environment

Variable	Motivation	
	Spearman Correlation	Sig.
Income	0.382	0.015
Profession	0.772	0.000
Community Environment	0.491	0.001

* Correlation is significant at the 0.05 level (2-tailed).

Source: Primary Data 2021.

the harvest period. The compensation value of this melon farming follows the responsibilities of farmers in managing their farming. From this income, farmers can meet their needs.

3.3 Interest and Occupation Relationship

The Spearman Correlation value for the employment variable is 0.772. It is significant at $\alpha = 1\%$, which means a positive relationship exists between work and farmers' interest in cultivating melons using drip irrigation. Occupation shows a condition of work that can give satisfaction to farmers for the results obtained, provides comfort and good communication and allows for new friends and experiences so that farmers commit to trying melon farming. The involvement of human resources in the work environment generally indicates a positive, satisfying condition and a motivational attitude related to well-being [20]. Job satisfaction is the primary driver of work involvement [21]. Melon farming with a drip irrigation system is a new experience for most farmers in dividing tasks while participating in farming activities such as land preparation, seeding, transplanting, and maintenance. And fertilization, as well as harvesting. Thus all members have different roles and responsibilities according to their work duties. Farmers are committed to continuing to develop melon farming by adopting drip system mitigation technology. Farmers feel satisfied and happy with the yields obtained in the development of melon farming.

3.4 Interest and Community Environment Relationship

The Spearman Correlation value for the community environment variable is 0.491. It is significant at $\alpha = 1\%$, which means a moderate and positive relationship exists between the community environment and farmers' interest in cultivating melons with drip irrigation systems. The community environment includes neighbors and friends who work as farmers who encourage and support farming. The support from fellow farmers gives encouragement and enthusiasm to farmers. *Melon farming* is a future opportunity that contributes to employment in agriculture, with the sense that the community environment is very influential in the development of melon farming. The community's support, especially those involved in agriculture and working as farmers, will spur the enthusiasm and interest of young farmers to participate in developing farming, especially melon commodities. In this way, the participation of the surrounding community positively impacts the sustainability of melon farming. So it is expected to be able to become future jobs that can absorb many young workers in the agricultural sector. However, this is contradicted by [22] which showed that the social environment has no significant relationship with the youth's interest in farming work. With the support of the social environment, all activities in the agricultural sector can be a unique attraction for people who want to get involved in agriculture.

4 Conclusion and Suggestion

4.1 Conclusion

Based on the results of research that has been done regarding the interest of young farmers in the development of melon farming in Kapanewon Wonosari, Gunungkidul Regency, it can be concluded as follows:

1. The interest of young farmers in developing melon farming is included in having a score of $\geq 86.4\%$ (very high category). Most young melon farmers are happily running melon farming with a drip system. They have the awareness and willingness to make melon farming a prospective job.
2. Socio-economic factors, which include; income, employment, education, and community environment, show a significant positive relationship to farmers' interest in developing melon farming with a drip system

4.2 Suggestion

Researchers put forward several suggestions related to socio-economic factors that have a significant relationship with the interest of young farmers in developing melon farming in Kapanewon Wonosari, Gunungkidul Regency. Income positively correlates with farmers' interest in running a melon farming business with a drip system. Therefore efforts are needed to grow farmers' interest by applying appropriate technology that is of interest to young farmers. Apart from helping regenerate the agricultural sector, this activity can also improve farmers' welfare. Actual activities can be in the form of training and assistance from related agencies or other institutions concerned with agricultural sustainability.

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