

Farmers Adoption on Watermelon Cultivation in Coastal Areas Purworejo District, Central Java

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Abstract.

This research was conducted in Purworejo Regency. Total respondents are 60 people in the Grabag Subdistrict, Ngombol Subdistrict, and Purwodadi Subdistrict. The technique sampling used purposive sampling. The purposes of this research were 1. To determine the characteristics of farmers on watermelon cultivation in coastal areas, Purworejo Regency. 2. To determine the farmer adoption on watermelon cultivation in coastal areas, Purworejo Regency. The results of the research show that the farmer characteristics on watermelon cultivation in the coastal areas, Purworejo Regency that are the age of a farmer was a productive age, farmer education was a junior high school, farmer experience level about 3-16 years, the land cultivation of watermelon farmer about 5000 m², the status of the ownership of the land was rented, the technique cultivation of watermelon was easy, and the infrastructure facilities for watermelon cultivation was easy. 2. The farmers adoption on watermelon cultivation is low.

Keywords: adoption, watermelon, sandy areas, purworejo, jawa tengah

1. Introduction

The availability of agricultural land decreasing by land function from agricultural sector to non-agricultural sector. One of the efforts to overcome the limitations of agricultural land use an alternative land of coastal sandy Land (Rajiman, 2014). Sandy land is one of the assets that is expected to be developed into a productive agricultural land. Coastal sandy land has advantages, namely: a) expand, B) flat, C) free of flood, d) abundant sunlight, e) shallow ground water, f) soil pH and neutral water and g) easy land processing (Rajiman, 2014).

As well as in the region of Purworejo Regency that the mapping of plant commodities increasingly visible. Paddy fields located in lowland are used to commodity crops such as rice, corn, and soy bean. Then the plateau is used for the types of crops such as teak trees, albasia, mahogany, coconut, clove, chocolate, durian, and some kind of *empon-empon* plants. Then for land in the coastal areas need to be consistently developed vegetable and fruit crops to meet the needs of the regional and outside the area as well as support the mapping of commodities in Purworejo District.

Coastal sandy land that has low productivity due to several limiting factors in the form of supporting and storing low water, high infiltration and evaporation, fertility and very low organic matter and efficiency Low water use (Kertonegoro, 2001; Al-Omran, et al., 2004 in Barus, DKK., 2013).

But the obstacles in the utilization of coastal sand land is the coastal sand land dominated by the sand fraction (> 95%) While the dust fraction and the throw is very low causing coastal sand land has high water power (Istiyanti, et al., 2015).

Watermelon is a type of horticultural crop that is suitable for planting on sandy land in coastal areas. To cultivate watermelon crops also not too difficult. In addition, watermelon plants are a type of fruit that is attracted by consumers both from within and outside Purworejo Regency. These watermelon plants are found in many markets, supermarkets can even be processed products such as syrup, fruit chips, juice packaging, ice cream and food taste. The focus of this research is how farmers adopt the watermelon in the coastal sand of Purworejo Regency. The adoption of innovation is a process by farmers to understand an innovation that will eventually be rejected or applied to such innovations (Mosher, 1978 in Valera, et al., 1987).

According to Leeuwis and Van den Ban (1988), the stage of decision making of the adoption process are:

1. Awareness: knowing/Realizing the existence of an innovation.
2. Interest: Collecting as much information about the innovation as possible.
3. Evaluation: Assessing benefits and Unfortune.
4. Trial/Try: Try the innovation.
5. Adoption/Acceptance: Implementing Innovations.

For the adoption of adopters, it classified into 5 categories namely innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%), and laggards (16%).

The purposes of this research are:

1. To determine of the farmers characteristics on the cultivation of watermelon crops in coastal areas, Purworejo Regency, Central Java.
2. To determine of farmers adoption on watermelon cultivation in coastal areas, Purworejo Regency, Central Java.

2. Research Method

The method of research is descriptive analysis by survey. It can be said that survey research that take samples from one population and use questionnaires as a fundamental data collection. Survey research can be used for the purpose of (1) exploratory research, (2) descriptive, (3) explanatory or confirmatory, namely to explain causal relationship and hypothesis testing, (4) evaluation, (5) predictions or predicting certain events in the future, (6) Operational research, and (7) the development of social indicators (Singarimbun and Effendi, 1989). In this research that used as a staple research is descriptive analysis.

This research is done in the coastal areas, Purworejo Regency, Central Java with the focus on watermelon commodities. Sampling is conducted in three sub-districts in Purworejo District that are Purwodadi Sub-Districts, Ngombol Sub-Districts, and Grabag Sub-Districts.

Total respondents were taken in this study are 60 farmers. Farmers who are taken are farmers who cultivate watermelon commodities in the coastal areas in Purworejo Regency.

The supporting data used is secondary and primary Data. Secondary data in the form of supporting data from libraries, *Badan Pusat Statistik* (BPS), literatures, etc. While, primary data is taken using questionnaires with direct indepth interview with sample.

3. Results And Discussion

3.1. Respondent characteristics

3.1.1. Age

Age is a number of years used to calculate the length of a person's life calculated from birth to now in the unit of years. Age is divided into 3 namely unproductive age, productive age, and non productive age. The unproductive age ranges from 0-14 years old, where the age is age when a person is active in a compulsory period of study. For a productive age ranging from 15-64 years, where the age is a person's productive age. As for age ranged > 64 year is an non productive age.

Table 1. Age Level of Farmer Watermelon Comodities in Coastal Areas, Purworejo Regency

| Level of age | Total (population) | Percentage (%) |
|-----------------------|--------------------|----------------|
| Non productive (0-14) | 0 | 0 |
| Productive (15-64) | 60 | 100 |
| Unproductive (> 64) | 0 | 0 |
| Total | 60 | 100 |

Source: Primary Data (2019)

In table 1. shows that the age of farmer was classified as a productive age of 100%. It means that the age of farmers' watermelon in coastal areas, Purworejo Regency, Central Java was productive age.

3.1.2. Education level

The level of education is the length of formal education pursued by farmers' watermelon in the coastal areas of Purworejo Regency, Central Java. The level of education is Elementary School, Secondary School, High School, Diploma, and Graduate.

Table 2. The Education Level of Farmers' Watermelon in Coastal Areas, Purworejo Regency

| Education level | Total (population) | Persentase (%) |
|-------------------|--------------------|----------------|
| Elementary School | 13 | 13 |
| Secondary School | 34 | 56,67 |
| High School | 13 | 13 |
| Diploma | 0 | 0 |
| Graduate | 0 | 0 |
| Total | 60 | 100 |

Source: Primary Data (2019)

Based on the table 2. can be known that the majority of the level of Farmers education watermelon in Purworejo Regency, Central Java coastal areas was 56.67% Secondary School, then for the education level of Elementary School and High School were 13% respectively. This shows that the watermelon farmer in the coastal areas of Purworejo Regency, Central Java has been implementing compulsory study for 9 years.

3.1.3. Experience Level

The level of experience shows the skills owned by the watermelon farmer in the coastal areas of Purworejo Regency, Central Java. The longer farmers do their farming in watermelon cultivation in the coastal areas of Purworejo Regency, Central Java there will be more experienced farmers in cultivating crops in the coastal areas of Purworejo Regency, Central java.

Table 3. The Experience Level of Farmer Watermelon Comodities in Coastal Areas, Purworejo Regency

| Experience level | Total (Population) | Persentase (%) |
|------------------|--------------------|----------------|
| 3-16 | 49 | 81,67 |
| 17-30 | 10 | 16,67 |
| 31-44 | 1 | 1,67 |
| Total | 60 | 100,00 |

Source: Primary Data (2019)

Table 3. Shows that the experience of watermelon farming in the coastal areas of Purworejo Regency ranges from 3-16 years was 81.67%. Then there are also farmers in the coastal areas that has been cultivating a range of 17-30 years, which was 16.67%, the remain was 1.67% with the number of farmers experience very long. This shows that the farmers' watermelon has had sufficient experience in cultivating watermelon crops in the coastal areas of Purworejo Regency, Central Java.

3.1.4. Land Size

The level of experience shows the skills owned by the farmers' watermelon in the coastal areas of Purworejo Regency, Central Java. The longer farmers their farming the longer experienced farmers in cultivating watermelon crops in the coastal areas of Purworejo Regency, Central Java.

Table 4. Land Level of Farmer Watermelon in Coastal Areas, Purworejo Regency

| Level of land (ha) | Total (Population) | percentage (%) |
|--------------------|--------------------|----------------|
| 0,5 | 25 | 41,67 |
| 1 | 23 | 38,33 |
| 1,5 | 6 | 10 |
| 2 | 6 | 10 |
| Total | 60 | 100 |

Source: Primary Data (2019)

Based on the table 4. Shows that the area of the watermelon farmer in Purworejo Regency was 0.5 ha with the percentage 41.67%. Then followed by 1 Ha land area with the percentage 38.33%, and land area of 1.5 ha with the percentage 10%, and 2 ha of land areas with the percentage 10%.

3.1.5. Land Tenure Status

Table 5. The Land Status of Farmer Watermelon Comodities in Coastal Areas, Purworejo Regency

| Land Tenure Status | Total (Population) | percentage (%) |
|-----------------------------|--------------------|----------------|
| Own Land | 19 | 31,67 |
| Profit Sharing <i>sakap</i> | 6 | 10 |
| Rented | 35 | 58,33 |
| Total | 60 | 100 |

Source: Primary Data (2019)

Based on the table 5. Shows that the status of the ownership of the farmer's land on coastal areas were the status of rented land with the percentage 58.33%, then the status of own land about 31.67%, and the profit sharing or *sakap* was 10%. This

shows many farmers who rented sand land and cultivate in coastal for watermelon production are dominant.

3.1.6. Facilities

Table 6. Level of Facilities for Watermelon Farmers in Coastal Areas, Purworejo District

| Facilities | Total (Population) | percentage (%) |
|------------|--------------------|----------------|
| Easy | 59 | 98,33 |
| Difficult | 1 | 1,67 |
| Total | 60 | 100 |

Source: Primary Data (2019)

Based on the table 6. The level of infrastructure facilities of watermelon farmers in Purworejo Regency is easy with a percentage of 98.33% and difficult categories with the percentage are 1.67%. This shows that watermelon cultivation used to easy facilities to imcreasing watermelon product and the facilities can be used daily and the other crops.

3.1.7. Cultivation Facilities

Table 7. The Cultivation Level of Watermelon Farmers in Coastal Areas, Purworejo Regency

| Cultivation | Total (Population) | percentage (%) |
|-------------|--------------------|----------------|
| Easy | 37 | 61,67 |
| Difficult | 23 | 38,33 |
| Total | 60 | 100 |

Source: Primary Data (2019)

Based on the table 7. Show that the ease of cultivation of watermelon plants in the coastal sand of Purworejo Regency is easy with the percentage 61.67%. And difficult cultivation are 38.33%. Difficult cultivation are irrigation that not support for watermelon cultivation.

3.2. Farmers Adoption on Watermelon Cultivation in Coastal Areas, Purworejo District

From the results of the research the adoption of watermelon cultivation in coastal areas, Purworejo Regency as follows.

Table 8. Farmers Adoption on Watermelon Cultivation in Coastal Areas, Purworejo Regency

| Statement | Score average | percentage (%) |
|--|---------------|----------------|
| 1. Farmers perform the selection of Superior seeds watermelon (certified). | 4,68 | 9,61 |
| 2. Farmers do land processing. | 4,38 | 8,99 |
| 3. Farmers do watermelon planting based on field extension instructions. | 4,48 | 9,19 |
| 4. Farmers do cultivation of NPK. | 4,37 | 8,97 |
| 5. Farmers use compost fertilizer. | 4,43 | 9,09 |
| 6. Farmers do eradication of pests according to guidance of field extension. | 4,4 | 9,03 |
| 7. Farmers do watermelon crop weeding. | 4,3 | 8,83 |
| 8. Farmers conduct disease prevention in the watermelon crop. | 4,47 | 9,18 |
| 9. Farmers do irrigation. | 4,54 | 9,32 |
| 10. Farmers harvest watermelon crops according to crop age. | 4,52 | 9,28 |
| 11. Farmer performs sorting and grading | 4,1 | 8,42 |
| Total | 48,71 | 100,00 |

Source: Primary Data (2019)

In table 8 above the farmer is known to do a certified seed selection are 9.61%, farmers do a land processing with the percentage 8.99%, farmers do planting

according to the counseling that are 9.19%, farmers do the fertilization are 8.97 %, farmers are doing compost with the percentage 9.09%, farmers do the eradication of pests with the percentage 9.03%, farmers do weeding in the plant with the percentage 8.83%, farmers conduct disease prevention in the plant watermelon of 9.18%, farmers do the irrigation of 9.32%, farmers harvest watermelon crops in accordance with the harvest age of 9.28%, and farmers do the sorting and grading of 8.42%. It shown that farmer doing cultivation by habits and need to accompaniment from extension agent.

Table 9. The Farmers Adoption Level in Watermelon Cultivation in Coastal Areas, Purworejo Regency

| Categories | Class Interval | Total | Percentage (%) |
|--------------|----------------|-------|----------------|
| Low | 40-45 | 23 | 38,33 |
| Middle | 46-51 | 15 | 25,00 |
| High | 52-57 | 22 | 36,67 |
| Total | | 60 | 100,00 |

Source: Primary Data (2019)

Based on the table 9 of farmers adoption level in watermelon cultivation in coastal areas, Purworejo Regency dominant with low category that was 38.33%. This indicated that the farmers' watermelon in the sandy land still used the cultivation habits done by their ancestors.

4. Conclusions

4.1. Farmers characteristic watermelon comodities in coastal areas of Purworejo Regency, Central Java were the age of a farmers was productive age, the average level of education of the farmers was junior high, the average level of experience of farmers ranged from 3-16 years, the area of land in average about 5000 m², status the ownership of the land is rented, the technique of watermelon cultivation was easy, and the facility of infrastructure for watermelon cultivation was easy.

4.2. The farmers adoption on the watermelon comodities in the coastal areas of Purworejo Regency was relatively low.

References

- Rajiman. 2014. Pengaruh Bahan Pembenh Tanah Di Lahan Pasir Pantai Terhadap Kualitas Tanah (*Effect of Soil Conditioner Matter at Coastal Sand Land to Soil Quality*). Prosiding Seminar Nasional Lahan Suboptimal 2014, Palembang 26-27 September 2014 ISBN : 979-587-529-9.
- Barus, Marwansyah, Rohlan Rogomulyo, dan Sri Trisnowati. 2013. Pengaruh Takaran Pupuk Kandang Terhadap Pertumbuhan dan Hasil Wijen (*Sesamum indicum L.*) Di Lahan Pasir Pantai. *Vegetalika* Vol.2 No.4, 2013 : 45-54.
- Istiyanti, Ani, Uswatun Hasanah, dan Arifah Anjarwati. 2015. Pengembangan Usahatani Cabai Merah di Lahan Pasir Pantai Kecamatan Temon Kabupaten Kulonprogo. *Jurnal Agribisnis*. Vol.I No.1 Januari 2015 Hal 6- 11.
- Valera, Jaime B, Vicente A Martinez, dan Ramiro F. Plopino. 1987. *An Introduction to Extension Delivery Systems*. Island Publishing House, Inc: Manila.

Leeuwis, Cees and Anne van den Ban. 1988. *Communication for Rural Innovation: Rethinking Agricultural Extension Third Edition*. By Blackwell science: UK.

Singarimbun, Masri dan Sofian Effendi. 1989. *Metode Penelitian Survei*. LP3ES Lembaga Penelitian, Pendidikan, dan Penerangan Ekonomi dan Sosial: Jakarta.