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Management Of Pest And Disease Control In Sallots (Allium Ascalonicum L) Farm Activities Sub-District Sungai Ulin Banjarbaru City

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Abstract. This research aims to identify management pest and disease control and cost incurred of shallot (Allium ascalonicum L) farmer in Banjarbaru City, This research activity was carried out began on December-January 2024 with research sampling method is case study, data analysis with management implementation and financial analysis. Result of this research Pest control is very important for farmers to reduce the risk of crop failure due to pests, the purpose of pest and disease control management is not to eliminate pests altogether but to reduce the risk of attacks due to pests and diseases in shallot plants. Farmers need to apply management functions in controlling pests and diseases, namely the functions of planning, organizing, implementing and supervising. The application of management function in Bawang Mas Horti Langgeng Farmer Group has not been fully carried out properly and Average total cost incurred by each farmer is Rp.640,720. The average cost of medicines per one harvest period is 4 months amounting to Rp.277,800. The average depreciation cost of tools amounted to Rp.41,670.

Keywords: Shallot Farmer; Horticulture; Pest dan Disease Control; Management

1. Introduction

Shallots (Allium ascalonicum L) is one of the horticultural crop commodities that are widely consumed by humans as a mixture of cooking spices after chili. Onion plants are plants that support implantation in Indonesia.

Shallots are a superior vegetable commodity that has long been cultivated by farmers intensively and Indonesia is the largest center of shallots in Central Java, East Java, West Sumatra, and NTB. Unlike South Kalimantan, shallots are not the main commodity that is cultivated, especially in Banjarbaru, however, shallot cultivation can still be done. Shallot cultivation is a challenge in itself because Banjarbaru has natural conditions, physical properties of the soil that are different from the shallot producing centers.

One of the constraints in shallot production is the presence of pest attacks (plant disrupting organisms). Potential yield loss by pests in old and young plant stadia can reach 20-100% depending on the management of shallot cultivation.

Pests that can attack shallot plants include orong-orong Gryllotalpa spp. (Orthoptera: Gryllotalpidae), onion caterpillar Spodoptera exigua (Lepidopera: Noctuidae), armyworm Spodoptera litura (Lepidoptera: Noctuidae), leaf-boring fly Liriomyza chinensis (Diptera: Agromyzidae) and thrips Thrips tabaci (Thysanoptera: Thripidae). While diseases that can infect shallot plants include purple spot (Alternaria porri), downy mildew (Peronospora destructor), Cercospora leaf spot (Cercospora duddiae), anthracnose (Colletotrichum gloeosporiodes), Fusarium wilt (Fusarium oxysporum) and nematodes (Dytylenchus dissaci). As much as 80% of shallot production in Indonesia comes from Java Island and almost 50% is concentrated in Central Java. Brebes district is the center of shallot production in Central Java.

The average pest that is often found in shallot plants is the leaf caterpillar pest which has the Latin name Spodopetra exigua. This pest is found in almost all shallot production centers. The damage caused varies from 3.80% to 100.00% depending on the management of shallot cultivation. Onions attacked by armyworms result in transparent leaves because the mesophyll of the leaves is scraped from the inside, then the leaves dry and die.

Production of shallots in Banjarbaru City in 2022 according to the Agriculture Office quoted from BPS (2022) The income of shallots in Banjarbaru City in 2022 amounted to 127 tons. From 2019 to 2022 the income of shallots in Banjarbaru City only experienced a slight increase due to these factors.

The Onion Mas Horti Langgeng Farmer Group Banjarbaru South Kalimantan has been cultivating shallots since 2021 producing well and shallots have good performance to be cultivated, from the results of the research, I see that the Onion Mas Horti Langgeng Farmer Group has not carried out management functions such as not having planning (planning) both short term, medium term, and long term and on the organizing system (organizing) which is still not duplicate positions. This is the background of the author choosing a research location in the Horti Langgeng Onion Mas Farmer Group, because this location makes shallots as a superior commodity for cultivation of the farmer group, shallots in this place are able to compete with other superior varieties, this place also uses the latest alternative technology system, namely planting shallots using seeds or True Shallot Seed seeing the great opportunities from this place makes its own desire to be able to learn to cultivate shallots in Banjarbaru.

1.1. Research Purposes

The objectives of this research are:

1. Knowing the Management of Pest and Disease Control in Shallot Farming (Allium ascalonicum L) in Sungai Ulin District, Banjarbaru City (Case Study of Horti Langgeng Onion Farmer Group)?
2. Knowing the control costs incurred by Shallot Farmers in the Onion Farmers Group Horti Langgeng Sungai Ulin District, Banjarbaru City?
3. Knowing what problems are faced by Shallot Farmers in the Horti Langgeng Onion Farmer Group in Sungai Ulin District, Banjarbaru City?

2. Research Methods

2.1. Place and Time of Research

This research activity was carried out in Sungai Ulin Sub-district, Banjarbaru City. The implementation time began in December-January 2024.

2.2. Types and Sources of Data

The types of data used in this study are in twofolds. Fist, we apply the qualitative followed by quantitative data. The qualitative data, namely data that can describe and explain the research variables which include Pest and Disease Control Management in Onion Farming Business (Allium ascalonicum L) Sungai Ulin District, Banjarbaru City (Case Study of Onion Farmer Group Mas Horti Langgeng).

Quantitative data is a type of data that can be measured or calculated directly, in the form of information or explanations expressed in numbers or in the form of numbers. In this case the quantitative data required is the number of chairmen, secretaries, and members, the number of facilities and infrastructure.

The data sources used in this study are: Primary data obtained through direct observation and through interviews with shallot farmers using questionnaires that have been prepared. Second, the secondary data obtained from journals, books, and other scientific works related to this study.

2.3. Sampling Method

The research method used in this research is a case study of the Horti Langgeng Onion Farmer Group on farmers related to the management and implementation of pest and disease control in shallots in the Horti Langgeng Onion Farmer Group.

2.4. Variables Observed

The variables observed in this study are:

1. Management implementation includes planning, organizing, implementing, and supervising.
2. Type, amount and price of inputs used in controlling pests and diseases of shallots.
3. Problems faced by the Horti Langgeng Onion Farmer Group.

2.5. Data Analysis

The data obtained from the research were collected, processed, tabulated, and then analyzed. The first and third objectives use descriptive analysis, namely by describing and telling the conditions regarding business management and the problems faced by the Horti Langgeng Onion Farmer Group through interviews with respondents. To answer the second research, namely:

Calculating the costs incurred for controlling pests and diseases of shallots such as explicit and implicit costs into total costs and calculating total costs using the following formula:

$$TC = TC_E + TC_I$$

TC = Total cost of pest and disease management
TEC = Total explicit costs
TIC = Total implicit costs

Depreciation costs with the formula:
Description:

$$P = \frac{Nb - Ns}{Ne}$$

P = Depreciation Cost
Nb = New Value
Ns = Residual Value
Ne = Economic Value

3. RESULT AND CONCLUSION

3.1. Pests and Diseases affecting Shallots

3.1.1. Pests

There are several pests that attack shallot plants in the horti langgeng onion farmer group, among others:

1. Armyworm



Picture 1. Armyworm Pests

Caterpillars are the main pest that damages shallot plants. Caterpillar attacks on shallots can cause a decrease in shallot production if no treatment/control of the pest is carried out. Armyworms are pests that are active at night and hide during the day. The symptoms caused by the armyworm attack are white spots that make the leaves droop. As for how to control armyworm pests on shallots, namely by applying insecticides branded Vayego with a dose of 10 / ml with 15 liters of water sprayed 1 week 2 times to see the caterpillar attack that is not severe, severe caterpillar attacks can be sprayed every 2 days with the same dose of 10 / ml with 15 liters of water during the dry season because to kill armyworm pests.

3.2. Diseases in Shallots

Diseases in shallot plants experienced by the horti langgeng shallot farmer group include:

1. Anthracnose



Picture 2. Anthracnose Disease

Anthracnose comes from the fungus Colletotrichum gloeosporoides usually this disease is characterized by drying of young tips, yellowing of young leaves, elongated and twisted stem necks, oval spots appear on leaves / bulbs in the form of concentric circles, orange or black spots, usually spread through the air or in the soil. Efforts to control Anthracnose disease is by spraying fungicides branded Antracol or Oktav with a dose of 1 tablespoon and dissolved in 15 liters of water done every 3 days.

3.3. Management of Pest and Disease Control

Pest and disease control management is very necessary to be carried out by farmers, with the existence of good management activities made can run effectively and efficiently. Pest control is very important for farmers to reduce the risk of crop failure due to pests, the purpose of pest and disease control management is not to eliminate pests altogether but to reduce the risk of attacks due to pests and diseases in shallot plants. Farmers need to apply management functions in controlling pests and diseases, namely the functions of planning, organizing, implementing and supervising.

3.4. Economic Analysis

3.4.1. Total Cost

Handling carried out by farmers in controlling pests and diseases for costs incurred is divided into two, namely explicit costs and implicit costs, while the average total cost incurred by farmers in controlling pests and diseases in shallots is Rp.640,720. The average explicit costs in controlling pests and diseases incurred by the horti langgeng onion farmer group amounted to Rp.319,470 which includes tools, namely handsprayers, hoses, hoes and the cost of drugs used, namely fungicides (Antracol and Octav), and Insecticides (Vayego).

Table 1. Explicit average cost of pest and disease control (Primary Data, 2024)

No	Component	Average cost (Rp)
1	Tool Depreciation	Rp. 41.670
2	Medicines	Rp. 277.800

Implicit costs are costs that are not incurred but must still be taken into account. The average implicit costs in controlling pests and diseases is Rp.321,250 in the form of labor costs in the family (TKDK) with an average of Rp.90,000/HOK. The list of implicit costs incurred by farmers in controlling pests and diseases can be seen in table 10.

Table 2. List of Implicit Average Costs of pest and disease control

No	Component	Average cost (Rp)
1	TKDK	Rp.50.000
2	Land Rent	Rp. 205.000

Based on the table above, the average value of the cost of labor in the family (TKDK) is Rp. 270,000 and the average cost of land rent is Rp. 205,000 / harvest period.

4. Conclusion

The results of this study can be concluded, namely:

1. The application of the management function in the Horti Langgeng Mas Onion Farmer Group has not been fully carried out properly by the chairman to the members of the farmer group.
2. The average total cost incurred by each farmer is Rp.640,720. The average cost of medicines per one harvest period is 4 months amounting to Rp.277,800. The average depreciation cost of tools amounted to Rp.41,670 which includes electric hand sprayers, hoses, and hoes.
3. The problem experienced by the Horti Langgeng Onion Farmer Group is the lack of understanding of farmer group management so that the application of management is not going well.

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