

Pest Control of Caisim (*Brassica chinensis*) and Pakcoy (*Brassica rapa*) at Balai Penyuluh Pertanian Tana Tidung

Nurjannah^{1*}, and Chandra Feriansyah¹

¹Departement of Agrotechnology, Borneo Tarakan University, Indonesia

*email : nurjannah905@borneo.ac.id

ABSTRACT

Caisim (*Brassica chinensis*) and pakcoy (*Brassica rapa*) belong to the type of mustard vegetable that is easily obtained and has an economical price. However, the cultivation of caisim and pakcoy has various obstacles that cause production fluctuations. One of them is the attack of pests, severe pest infestation is capable of causing losses of up to 100% due to crop failure. Pest control on caisim and pakcoy crops carried out at various phases of cultivation depending on the type of pest and the planting conditions. This research was carried out at Balai Penyuluhan Pertanian Kabupaten Tana Tidung. Caisim and pakcoy are one of the most widely cultivated in the Balai Penyuluhan Pertanian Kabupaten Tana Tidung. This research is an observational and experimental research with the data from the research results analysed descriptively. The stages of prevention include the regulation of seeding seeds, the installation of traps and the application of vegetable pesticides on agricultural land. For attacked caisim and pakcoy crops, pest control carried out by mechanical control, and a plant rotation system. The application of the rotation system is carried out at the next stage of planting on the same cultivated land. Pest countermeasures should be carried out consistently and completely in order to obtain satisfactory results. Based on the results of observations and analysis, it is known that pest control methods carried out at the Agricultural Extension Center of Tana Tidung Regency are able to reduce the pest attack rate by up to 80%.

Keywords:

Caisim, Pakcoy,
Control, Pests

INTRODUCTION

Mustard is a plant of the Brassica genus which has several species including chicory (maize mustard), green mustard (caisim) and mustard huma (pakcoy). Caisim and pakcoy leaves are used as food, both fresh and processed. Currently, pakcoy is widely used by the community in various cuisines, especially Asian dishes. This

causes the demand for caisim and pakcoy to continue to increase [1]

The conditions for growing mustard greens are that they require adequate water and sunlight [2]. This is in accordance with the geographical conditions in North Kalimantan, which has quite high rainfall and sufficient sunlight. In the Agricultural Extension Center of Tana Tidung Regency, there are various types of horticultural

commodities that are cultivated. Some of the commodities that are cultivated include mustard caisim, pakcoy, watermelon and eggplant. Caisim mustard and pakcoy are one of the leading and most widely cultivated commodities in the Balai Penyuluhan Pertanian Kabupaten Tana Tidung, North Kalimantan. However, the cultivation of caisim and pakcoy has various obstacles that cause production fluctuations to still occur frequently. One of them is pest attack, especially in the rainy season.

Severe pest attacks can cause losses of up to 100% due to crop failure. Pests on acaisim and pakcoy plants include the Cabbage Crop caterpillar (*Crocidolomia binotalis*), the Tritip caterpillar/diamondback moth (*Plutella xylostella* L.) and the leaf beetle or dog beetle (*Phyllotreta* sp.) [3]. In addition to these pests, there are also secondary pests on caisim and pakcoy namely, hemiptera (ladybugs) Lepidoptera (leaf miners), Nematodes, and Orthoptera (grasshoppers) [4].

Pest control on caisim and pakcoy mustard plants can be carried out at various stages of cultivation depending on the type of pest and ongoing planting conditions. Pest control techniques can be carried out in two main stages, namely the prevention stage and the control stage. Prevention stages include setting up seedling, setting traps and applying botanical pesticides to agricultural land. For mustard and pakcoy plants that have been attacked by pests, control measures are carried out in the form of mechanical control, intercropping, and the application of a crop rotation system. The application of the rotation

system is carried out at the next planting stage on the same cultivation area. Pest management must be carried out consistently and completely in order to obtain satisfactory results.

METHOD

Research on the control of caisim and pakcoy mustard pests was carried out at the Balai Penyuluhan Pertanian Kabupaten Tana Tidung, North Kalimantan. This research is an observational and experimental research and the research data were analysed descriptively. Pest control is carried out in two main stages, namely the prevention stage and the control stage. Prevention treatment including seeding regulation, Trap installation (yellow paint trap) and application of organic pesticide. Control treatment including mechanical control, polyculture and plant rotation system.

RESULT AND DISCUSSION

Table 1 shows that each pest prevention and control treatment was able to reduce the number of pests in caisim and pakcoy plants. Pest control that produces the least number of pests is mechanical control of casim plants. In Pakcoy, this method is not very effective due to the denser arrangement of Pakcoy leaves, which makes mechanical pest control more difficult to do. The proper seeding regulation method was able to reduce the number of pests on caisim and pakcoy seedlings, reducing the number of pests on caisim plants by more than 50%.

Table 1. Pest decrease after preventive and control treatment

Pest Control Method	Pest Decrease	
	Caisim	Pakcoy
Seeding Regulation	52%	40%
Trap Installation (<i>Yellow paint trap</i>)	28%	32%
Organic pesticide	20%	20%
Mechanical control	68%	40%
Polyculture	32%	32%
Plant rotation system	40%	40%

Table 1 shows that the best pest preventive and control techniques are seeding regulation and mechanical control, both of which were able to reduce the number of pests by more than 50% on caisim plants and 40% on pakcoy plants. While the pest preventive and control technique that produces the lowest value is the yellow trap installation and organic pesticide application, which is only able to reduce the number of pests by 20-32%.

Pest preventive and control treatment of caisim and pakcoy was able to reduce pest attack activity on agricultural land at the Balai Penyuluhan Pertanian Kabupaten Tana Tidung. Seeding regulation is carried out with the aim of separating seedlings from cultivated plants, so that the seeds are protected from pests found on cultivated land. This treatment was proven to reduce the percentage of pest attacks with a significant value.

The use of organic pesticides has not given good results, this is because the use of organic pesticides has only been seen in a long period of application. However, if it is continuously used, its effectiveness can increase [5]. In addition to the slow reaction, the use of organic pesticides is also constrained by rain. If it rains after the

application of organic pesticides, the organic pesticides will be carried away by rainwater so that their effectiveness is much reduced.

Yellow trap installation did not produce a significant value, this was because not all types of pests were attracted to yellow, while insects that were attracted to yellow were not all pests of caisim and pakcoy. Therefore, the number of insects caught is not always in line with the decrease in pest attacks.

Trap installation (Yellow paint trap) is carried out to attract insects that are attracted to the yellow colour. From the installation of these traps, several types of insect pests were caught so that they did not damage the caisim and pakcoy plants. Application of Organic pesticide is able to reduce the number of pest attacks, but not so high. This can be caused by the mechanism of action of organic pesticides which is quite slow, but the use of organic pesticides is proven to be healthier and safer for consumers and the environment as well as sustainable agriculture.

Control treatment of caisim and pakcoy including mechanical control, polyculture and plant rotation culture. Mechanical control is able to reduce the highest pest attack rate. Polyculture and rotation culture mechanism yet decrease pest attack on caisim and pakcoy. However, the Polyculture and plant rotation system is a method that is safe, easy and quite effective if applied for a long period of time [5].



Figure 1. Figure pakcoy before (left) and after (right) pest control application

CONCLUSION

The best pest prevention and control methods are those that are carried out on an ongoing basis. The use of more than one method is also highly recommended, especially for long-term prevention. For short-term control, the mechanical control method is the best, because it can reduce the number of pests by more than 50%.

ACKNOWLEDGMENTS

Authors wishing to acknowledge Balai Penyuluhan Pertanian Kabupaten Tana Tidung, North Kalimantan. for the research permit that has been granted. Also to the Fakultas Pertanian Universitas Borneo Tarakan for providing the opportunity to publish the results of this research.

REFERENCES

- [1] Fuad, A. (2010). *Budidaya Tanaman Sawi (Brassica Juncea L.)*. Surakarta: Perpustakaan.uns.ac.id.
- [2] Drost, D., & Johnson, M. (2010). *Mustard In The Garden*. Utah State University Cooperative Extension Work: HG/Garden/2005-07pr.
- [3] Paling, S., Inri, & Polona, L. (2019). *Identifikasi Jenis-jenis Hama yang*

Menginvasi Tanaman Sawi Hijau (*Brassica rapa* var. parachinensis) di Lahan Pertanian Stkip Kristen Wamena. *Stigma*, 12(1), 34-40.

- [4] Wahyudi, T. (2004). *Pengaruh Aplikasi Insektisida Piretroid Terhadap Tingkat Kerusakan Tanaman Populasi dan Keragaman Arthropoda Target dan Non Target Pada Tanaman Sawi*. [Skripsi]. Universitas Lampung, Bandar Lampung. [Indonesia]
- [5] Fajri, L., Heiriyani, T., & Susanti, H. (2017). *Pengendalian Hama Ulat Menggunakan Larutan Daun Pepaya Dalam Peningkatan Produksi Sawi (Brassica juncea L.)*. *Ziraa'ah*, 42(1), 69-76.
- [6] Ndalewoa, L. B. (2012). *Identifikasi Klorpirifos Dalam Sawi Hijau Di Pasar Terong Dan Swalayan Mtos Makassar*. [Skripsi]. Universitas Hasanuddin. Makassar. [Indonesia]
- [7] Mardiyah, S., Sulistiyo, L., Puspitawati, I., R., & Nurwantara, M. P. (2016). *Pengaruh Pupuk Organik Cair dan Media Tanam terhadap Pertumbuhan dan Hasil Tanaman Sawi (Brassica juncea L.)*.