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Cultural Practices on Integrated Control of *Soybean mosaic virus*

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INTRODUCTION

Soybean [*Glycine max* (L.) *Merr.*] is one of the most important crops in the world. In Indonesia, it is an important source of protein and oil for human consumption. However, soybean mosaic disease, caused by soybean mosaic virus (SMV), is one of the most destructive viral diseases in soybean (*Glycine max* (L.) Merr.), it can cause drastic yield losses and reduce seed quality throughout the world [1]. In Indonesia, this disease has been consistently associated with a 10 – 30% yield reduction. Various strains and isolates of SMV that cause different symptoms on soybean have been identified worldwide. Symptoms of infection by SMV on soybean include mosaic and necrosis. SMV is transmitted efficiently through seed and by aphids of at least 32 species in a non-persistent manner. Two primary determinants of aphid transmission of potyviruses, the helper component protease (HC/Pro) and CP, have been identified and their interactions with aphid stylets and each other has been studied extensively [2]. HC/Pro functions as a bridge between aphid stylets and virus particles. Integrated pest management of virus disease has been promoted as mean to improve the integrated control of the disease. The application of resistant cultivars is the most effective, economical, and environment friendly approach to control SMV. Here, we examined a major element in integrated control of SMV is host plant resistance, crop sanitation, cultural measure adapted to ecozone e.g. planting system as well as soil amendment with mulch.

MATERIAL AND METHODS

This experiment was conducted in a soybean field area at Bontorannu, Gowa regency, South Sulawesi with natural inoculum sources of SMV and natural population of *Aphis glycines*.. The field experiment used a block randomized design arranged in a factorial design with two factors, namely variety and planting system. The variety consisted of Tampomas and Orba, while the planting system consisted of (1) soybean without mulching nd weeds (sanitation), (2) soybean with mulching, and (3) soybean with weeds. The Observation was conducted in one time with an interval of seven days. The observed parameter was a symptom expression of the SMV, population density of their vector, *Aphis glycine* and its predator were observed.

RESULT AND DISCUSSION

Two soybean variety (Orba and Tampomas) were used to test the affect of planting infectivity of SMV and the density population of *A. glycines* and its predator, *Coccinella* sp. The observation showed that both of soybean variety assayed became infected with SMV in the field at 21 days after planting. The symptoms were detected by phenotype of soybean mosaic diseases. The result of the research revealed that the variety of Orba showed a lower response to SMV and *Aphis glycines* had a slower response than that of Tampomas. The research also showed that sanitation treatment to SMV and *A. glycines* had a slower response thatn that of other treatments. The interactions between Orba variety and Tampomas variety in different planting system indicated significant effects.

Table 1. The average of the intensity of SMV, population of *Aphis glycines* and *Coccinella* sp. in the field.

Treatment	Intensity of SMV Disease (%)	Population of *Aphis glycines*	Population of *Coccinella* sp. Predator
V1S1	13.52	4.52	0.19
V2S1	11.83	12.50	0.16
V1S2	25.96	107.36	0.09
V2S2	27.90	56.79	0.07
V1S3	24.05	12.94	0.34
V2S3	20.11	140.26	0.23

V1S1 : Tampomas variety with sanitation
V2S1 : Orba variety with sanitation
V1S2 : Tampomas variety with mulching
V2S2 : Orba variety with mulching
V1S3 : Tampomas variety with weeds (without sanitation)
V2S3 : Orba variety with weeds (without sanitation)

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