THE EFFECT OF COMMERCIAL BIOCONTROL AGENT ON THE INCIDENCE OF SHALLOT VIRUSES AND PLANT GROWTH

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ABSTRAK

MOH. MUMTAZUL HAQ ASB. Pengaruh Agens Biokontrol Komersial terhadap Insidensi Virus Bawang Merah dan Pertumbuhan Tanaman. Dibimbing oleh SRI HENDRASTUTI HIDAYAT dan SARI NURULITA.

Infeksi virus pada tanaman bawang merah bersifat tular umbi dan berpotensi menurunkan produktivitas tanaman. Penelitian dilakukan untuk mengevaluasi potensi aplikasi agens biokontrol komersial terhadap penekanan infeksi virus serta pengaruhnya terhadap pertumbuhan dan produktivitas tanaman bawang merah. Bahan tanam yang digunakan berupa benih umbi (var. Bima Brebes dan var. Tajuk) dan *true shallot seed* (TSS) (var. Sanren F1 dan var. Lokananta). Aplikasi agens biokontrol dilakukan melalui perendaman benih dan kombinasi perendaman benih dengan penyemprotan daun di lapangan. Rancangan acak kelompok faktorial digunakan dengan dua taraf perlakuan yaitu, varietas bahan tanam dan metode aplikasi agens biokontrol. Pengamatan dilakukan pada insidensi penyakit, karakter pertumbuhan dan produktivitas tanaman. Deteksi virus dilakukan menggunakan metode RT-PCR dengan target *Onion yellow dwarf virus* (OYDV), *Leek yellow stripe virus* (LYSV), *Shallot latent virus* (SLV), dan *Garlic common latent virus* (GCLV). Gejala infeksi virus pada tanaman asal benih umbi sudah terlihat sejak minggu pertama, sedangkan pada tanaman asal benih TSS baru mulai terlihat pada minggu keempat setelah tanam. Deteksi virus dari sampel lapangan mengonfirmasi infeksi OYDV dan SLV pada sampel tanaman asal benih umbi. Namun, hanya beberapa sampel dari tanaman asal TSS yang positif OYDV dan SLV. Perlakuan agens biokontrol tidak berpengaruh terhadap insidensi penyakit, karakter pertumbuhan, dan produktivitas tanaman bawang merah. Perlu dilakukan optimasi aplikasi agens biokontrol untuk meningkatkan efisiensinya dalam menekan infeksi virus.

Kata kunci: infeksi virus, insidensi penyakit, RT-PCR, *true shallot seed*, tular umbi

ABSTRACT

MOH. MUMTAZUL HAQ ASB. The Effect of Commercial Biocontrol Agent on the Incidence of Shallot Viruses and Plant Growth. Supervised by SRI HENDRASTUTI HIDAYAT and SARI NURULITA

Viral infections in shallots are bulb-borne and have the potential to reduce plant productivity. This study was conducted to evaluate the potential application of commercial biocontrol agent in suppressing viral infections and improving shallot growth and productivity. The planting materials used consisted of seed bulbs (var. Bima Brebes and var. Tajuk), and true shallot seed (TSS) (var. Sanren F1 and var. Lokananta). Commercial biocontrol agent was applied by seed soaking and by a combination of seed soaking and foliar spraying in the field. A randomized factorial design was used with two treatment factors, i.e., shallot variety and the biocontrol agent application method. Observations were conducted on disease incidence, growth characteristics, and plant productivity. Virus detection was performed using the RT-PCR method targeting *Onion yellow dwarf virus* (OYDV), *Leek yellow stripe virus* (LYSV), *Shallot latent virus* (SLV), and *Garlic common latent virus* (GCLV). Symptoms of viral infection in plants originating from seed bulbs were visible as early as the first week, whereas symptoms in plants from TSS appeared in the fourth week after planting. Virus detection from field samples confirmed OYDV and SLV infections in all samples from bulb-derived plants. However, only a few samples from TSS plants tested positive for OYDV and SLV. Biocontrol agent treatments did not affect disease incidence, growth characteristics, and productivity of shallot plants. Optimization of biocontrol agent application is needed to improve its effectiveness in suppressing viral infections.

Keywords: bulb-borne, disease incidence, RT-PCR, true shallot seed, viral infection

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PREFACE

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The author hopes that this scientific work may be beneficial to those in need and contribute to the advancement of knowledge.

Bogor, January 2026

Moh. Mumtazul Haq Asb

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES