



HUBUNGAN INSIDENSI PENYAKIT KERDIL DENGAN FAKTOR BIOLOGI DAN FISIK PADA LAHAN PERTANAMAN PADI

INTISARI

Penyakit kerdil ditemukan pada pertanian padi di Klaten, Kulon Progo, dan Purworejo. Berdasarkan gejala yang ditemukan di lahan, penyakit kerdil diduga disebabkan oleh *Rice Grassy Stunt Virus* (RGSV) dan *Rice Ragged Stunt Virus* (RRSV) yang menginfeksi secara tunggal atau bersamaan dan ditularkan oleh wereng batang coklat (WBC). Insidensi dan intensitas penyakit kerdil dapat dipengaruhi oleh faktor biologi seperti keberadaan WBC, musuh alami, dan gulma. Faktor fisik seperti suhu, curah hujan, dan kelembaban dapat mempengaruhi keberadaan WBC. Penelitian ini bertujuan untuk mengetahui hubungan antara keberadaan penyakit kerdil dengan WBC, musuh alami, gulma, dan lingkungan fisiknya. Penelitian dilakukan pada bulan Desember 2022-Maret 2023 di Desa Tlingsing, Kecamatan Cawas, Kabupaten Klaten; Desa Kebonrejo, Kecamatan Temon, Kabupaten Kulon Progo; dan Desa Jatikontal, Kecamatan Purwodadi, Kabupaten Purworejo. Insidensi dan intensitas penyakit diamati dengan metode *random sampling*. Pengamatan tinggi tanaman dan jumlah anakan dilakukan sejak umur 5 MST hingga 8 MST sebanyak 40 sampel. Pengamatan jumlah anakan produktif dilakukan saat fase generatif sebanyak 40 sampel. Pengamatan gulma dominan dan gulma bergejala dilakukan dengan metode eksplorasi. Pengamatan populasi WBC dan musuh alami menggunakan *sweep net* sebanyak 10 kali ayunan tunggal. Data keragaman musuh alami dianalisis dengan menggunakan indeks keragaman menurut Shannon Wiener. Hubungan antara suhu, kelembaban, dan curah hujan terhadap populasi WBC dianalisis dengan model regresi linier. Berdasarkan hasil penelitian, diketahui bahwa lahan dengan kondisi paling parah terdapat di Purworejo dengan insidensi penyakit tertinggi (75,1%), intensitas penyakit tertinggi (61,33%) tinggi tanaman terendah (62,4cm), jumlah anakan paling sedikit (16,7), dan anakan produktif paling sedikit (8,95). Populasi WBC berpengaruh signifikan terhadap insidensi penyakit kerdil. Gulma yang ditemukan bergejala dan diduga berperan sebagai inang alternatif virus kerdil yaitu *E. indica* dan *F. miliacea*. Hubungan antara suhu, kelembaban, dan curah hujan terhadap wereng batang coklat adalah sedang ($r = 0,38$). Suhu, kelembaban, dan curah hujan mempengaruhi populasi wereng batang coklat sebesar 14,6 %.

Kata kunci: kerdil padi, WBC, musuh alami, gulma, lingkungan

RELATIONSHIP BETWEEN INCIDENCE OF DWARF DISEASE WITH BIOLOGICAL AND PHYSICAL FACTORS IN RICE FIELDS

ABSTRACT

Dwarf disease was found in rice plantations in Klaten, Kulon Progo, and Purworejo. Based on rice symptoms found in the fields, dwarf disease is thought to be caused by Rice Grassy Stunt Virus (RGSV) and Rice Ragged Stunt Virus (RRSV) which infect singly or together and are transmitted by the brown planthopper (BPH). The incidence and intensity of dwarf disease can be influenced by biological factors such as the presence of BPH, natural enemies and weeds. Physical factors such as temperature, rainfall, and humidity can affect the presence of BPH. This study aims to determine the relationship between the presence of dwarf disease and BPH, natural enemies, weeds, and the physical environment. The research was conducted in December 2022-March 2023 in Tlingsing Village, Cawas District, Klaten Regency; Kebonrejo Village, Temon District, Kulon Progo Regency; and Jatikontal Village, Purwodadi District, Purworejo Regency. Disease incidence and intensity were observed by random sampling method. Observation of plant height and number of tillers was carried out from 5-8 Week After Planting for 40 samples. Observation of productive tillers number was carried out during the generative phase of 40 samples. Observation of dominant weeds and symptomatic weeds was carried out using the exploratory method. Observation of BPH populations and natural enemies using a sweep net of 10 single swings. Natural enemy diversity data were analyzed using the diversity index according to Shannon Wiener. The relationship between temperature, humidity, and rainfall on the WBC population was analyzed using a linear regression model. Based on the research results, it is known that land with the most severe conditions is in Purworejo with the highest incidence of disease (75.1%), the highest disease intensity (61.33%), the lowest plant height (62.4cm), the least number of tillers (16, 7), and the fewest productive tillers (8.95). The WBC population has a significant effect on the incidence of dwarf disease. Weeds that were found symptomatic and were suspected of acting as alternative hosts for the dwarf virus, namely *E. indica* and *F. miliacea*. The relationship between temperature, humidity, and rainfall on the brown planthopper was moderate ($r = 0.38$). Temperature, humidity, and rainfall affect the brown planthopper population by 14.6%.

Key words: rice dwarf, BPH, natural enemies, weeds, environment