

RINGKASAN

Jagung (*Zea mays*) merupakan tanaman pangan strategis bernilai ekonomi tinggi di Indonesia, namun budidaya jagung terkendala serangan hama invasif *Spodoptera frugiperda* JE Smith. Hama ini bersifat agresif dengan daya rusak tinggi, terutama pada fase vegetatif hingga generatif tanaman, sehingga menjadi ancaman serius bagi produktivitas jagung di berbagai wilayah. Penelitian ini bertujuan untuk: (1) menganalisis populasi *S. frugiperda*, (2) menganalisis intensitas serangan *S. frugiperda*, (3) mengidentifikasi keanekaragaman serangga hama dan musuh alami, serta (4) mengkaji hubungan populasi hama dan kerusakan tanaman dengan kondisi agroklimatik di Kabupaten Purbalingga, Banyumas, dan Cilacap.

Penelitian dilaksanakan di enam titik lokasi pengamatan pada tiga kabupaten dengan variasi ketinggian, antara lain: (1) dua lokasi di Desa Serang (Karangreja, Purbalingga), (2) dua lokasi di Desa Ciberem (Sumbang, Banyumas), dan (3) dua lokasi di Desa Karanganyar (Adipala, Cilacap). Metode survei menggunakan *random sampling* dengan pola "Scouting W" untuk pengambilan sampel. Data dianalisis secara deskriptif, dilanjutkan dengan uji regresi linier, korelasi, dan *Principal Components Analysis* (PCA) Biplot untuk mengidentifikasi hubungan antar variabel.

Populasi tertinggi *S. frugiperda* (249 individu) dan kerusakan tanaman terparah (54%) ditemukan di Desa Karanganyar (Cilacap) dengan kondisi agroklimatik suhu tinggi (rata-rata 29.5°C), kelembapan 81%, dan kecepatan angin 11.9 m/s. Populasi dan intensitas serangan meningkat seiring penurunan elevasi lahan, kenaikan suhu, dan peningkatan kecepatan angin. Tingkat kerusakan bervariasi: kategori ringan di Serang dan Ciberem (0–27%/minggu) serta berat di Karanganyar (2–54%/minggu). Keanekaragaman hama (4–5 spesies) bervariasi antar lokasi, sementara musuh alami stabil (8 spesies) dan menunjukkan asosiasi negatif dengan *S. frugiperda*. Analisis statistik menunjukkan bahwa peningkatan suhu dan kecepatan angin menyebabkan peningkatan populasi hama dan kerusakan tanaman (korelasi positif), sedangkan peningkatan kelembapan menyebabkan penurunan populasi hama dan kerusakan tanaman (korelasi negatif).

SUMMARY

Corn (*Zea mays*) is a strategic food crop with high economic value in Indonesia, but its cultivation is hampered by attacks from the invasive *Spodoptera frugiperda* JE Smith. This pest is aggressive and highly destructive, especially during the vegetative to generative phases of the plant, posing a serious threat to corn productivity in various regions. This study aims to: (1) analyze the level of *S. frugiperda* infestation, (2) calculate the percentage of plant damage, (3) identify the diversity of pest insects and natural enemies, and (4) examine the relationship between pest populations and plant damage with agroclimatic conditions in the former Banyumas Residency (covering Banyumas, Purbalingga, and Cilacap districts).

The research was conducted at six observation sites across three districts with varying altitudes, including: (1) two sites in Serang Village (Karangreja, Purbalingga), (2) two sites in Ciberem Village (Sumbang, Banyumas), and (3) two sites in Karanganyar Village (Adipala, Cilacap). The survey method employed random sampling using a “W-scouting” pattern for sample collection. Data were analyzed descriptively, followed by linear regression, correlation tests, and Principal Components Analysis (PCA) Biplot to identify relationships among variables.

The results of this study show that the highest population of *S. frugiperda* (249 individuals) and the most severe crop damage (54%) were found in Karanganyar Village (Cilacap) with high agroclimatic conditions (average temperature of 29.5°C, humidity of 81%, and wind speed of 11.9 m/s). Population and attack intensity increased significantly with decreasing land elevation, increasing temperature, and increasing wind speed. Damage levels varied: mild in Serang and Ciberem (0–27%/week) and severe in Karanganyar (2–54%/week). Pest diversity ranged from 4 to 5 species across locations, while natural enemies remained stable (8 species) and showed a negative association with *S. frugiperda*. Statistical analysis revealed that increases in temperature and wind speed led to higher pest populations and crop damage (positive correlation), whereas increased humidity resulted in reduced pest populations and crop damage (negative correlation).