

RINGKASAN

Penelitian ini bertujuan untuk memetakan distribusi dan insidensi virus kuning cabai (Pepper yellow leaf curl virus) di Kabupaten Banyumas serta menganalisis kandungan hara tanah (N, P, K) dan klorofil tanaman cabai terinfeksi. Penelitian dilakukan di 30 desa pada 9 kecamatan sentra produksi cabai di Banyumas pada Desember 2023–Juli 2025. Metode yang digunakan adalah survei lapangan, pemetaan berbasis *Unmanned Aerial Vehicle* (UAV) untuk analisis spektral, analisis laboratorium tanah untuk N, P, dan K total, serta analisis jaringan tanaman untuk klorofil dan irisan jaringan.

Kadar klorofil total daun sehat mencapai 2,75 mg/L (klorofil a: 1,42 mg/L; klorofil b: 1,33 mg/L), sedangkan pada daun terinfeksi >75% menurun menjadi 0,94 mg/L (klorofil a: 0,52 mg/L; klorofil b: 0,42 mg/L). ANOVA dan DMRT menunjukkan penurunan klorofil signifikan ($p < 0,05$) seiring peningkatan tingkat infeksi. Analisis irisan jaringan menunjukkan kerusakan floem, penebalan dinding sel, dan berkurangnya jaringan fotosintetik pada tanaman terinfeksi.

Hasil penelitian menunjukkan insidensi penyakit berkisar 1,35%–49,84%. Analisis ANOVA menunjukkan perbedaan nyata ($p < 0,05$) kandungan hara tanah antara tanaman sehat dan terinfeksi. Rata-rata N-total tanah berkisar 0,14%–0,38%, P-total 8,25–17,43 ppm, dan K-total 0,21–0,39 me/100 g. Hasil DMRT menunjukkan desa dengan insidensi tinggi cenderung memiliki N, P, dan K yang lebih rendah secara signifikan dibandingkan desa dengan insidensi rendah.

Kesimpulan penelitian ini adalah distribusi penyakit virus kuning cabai di Banyumas bervariasi antar desa dengan insidensi tertinggi di Kemutug Kidul dan insidensi tertinggi di wilayah dengan populasi vektor dan kondisi lingkungan yang mendukung. Penurunan kandungan hara dan klorofil berpengaruh terhadap produktivitas tanaman. Hasil penelitian ini dapat menjadi acuan pengendalian penyakit berbasis zonasi wilayah dan manajemen kesuburan lahan.

SUMMARY

This research aimed to map the distribution and disease incidence of Pepper yellow leaf curl virus (PepYLCV) infection in chili plants in Banyumas Regency, as well as to analyze soil nutrient contents (N, P, K) and chlorophyll levels in infected plants. The study was conducted in 30 villages across 9 main chili-producing sub-districts in Banyumas from December 2023 to July 2025. The methods used included field surveys, spectral analysis using Unmanned Aerial Vehicle (UAV) mapping, laboratory soil analysis for total N, P, and K, and plant tissue analysis for chlorophyll content and tissue structure observation.

Total chlorophyll content in healthy chili leaves was 2.75 mg/L (chlorophyll a: 1.42 mg/L; chlorophyll b: 1.33 mg/L), while in leaves with >75% infection it decreased to 0.94 mg/L (chlorophyll a: 0.52 mg/L; chlorophyll b: 0.42 mg/L). ANOVA and DMRT confirmed a significant ($p < 0.05$) decline in chlorophyll levels with increasing infection severity. Tissue section analysis revealed phloem damage, cell wall thickening, and reduced photosynthetic tissues in infected plants.

The results showed that disease incidence ranged from 1.35% to 49.84%. ANOVA revealed significant differences ($p < 0.05$) in soil nutrient contents between healthy and infected plants. Total nitrogen ranged from 0.14% to 0.38%, total phosphorus from 8.25 to 17.43 ppm, and total potassium from 0.21 to 0.39 me/100 g. DMRT results indicated that high-incidence areas had significantly lower N, P, and K values than low-incidence areas.

In conclusion, the distribution of PepYLCV in Banyumas Regency varied among villages, with the highest incidence in KemutugKidul and highest disease incidence in areas with high vector populations and favorable environmental conditions. The reduction in nutrient content and chlorophyll significantly affected chili plant productivity. This study is expected to serve as a reference for zone-based disease control and land fertility management.