

**PENGARUH DURASI SOLARISASI TERHADAP KELIMPAHAN NEMATODA  
PADA LAHAN TUMPANGSARI BAWANG MERAH DAN CABAI**

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**Intisari**

Solarisasi merupakan salah satu teknik olah tanah yang dapat meningkatkan suhu tanah dan mempengaruhi keberadaan nematoda dilahan pertanian. Penelitian ini bertujuan untuk mengetahui pengaruh durasi solarisasi terhadap, kelimpahan dan keanekaragaman nematoda, serta pengaruhnya terhadap produktivitas bawang merah. Penelitian menggunakan Rancangan Acak Kelompok Lengkap dengan tiga perlakuan solarisasi dan lima ulangan. Perlakuan terdiri dari durasi solarisasi (hari) meliputi A (14), B (30), dan C (kontrol, tanpa solarisasi). Analisis jenis, keragaman dan kelimpahan nematoda dilakukan di Laboratorium Nematologi, Departemen Hama dan Penyakit Tumbuhan, Fakultas Pertanian, Universitas Gadjah Mada. Sampel tanah diambil sebelum perlakuan solarisasi, setelah perlakuan solarisasi dan ketika panen dengan metode sampling acak. Ekstraksi-isolasi nematoda dengan metode whitehead tray. Hasil yang menunjukkan perbedaan signifikan diuji menggunakan uji Duncan (DMRT) dengan  $\alpha = 5\%$ . Hasil penelitian menunjukkan perbedaan durasi solarisasi mempengaruhi suhu tanah, keanekaragaman dan kelimpahan nematoda. Suhu tanah tertinggi terdapat pada durasi solarisasi 14 hari (42,72 °C). Secara keseluruhan ditemukan 22 genera nematoda pada tiga durasi solarisasi. Kelimpahan seluruh genera nematoda menurun secara signifikan pada durasi solarisasi 14 hari. Bakterivora merupakan kelompok trofik dominan pada seluruh perlakuan solarisasi. Solarisasi tanah hanya berdampak kecil terhadap kelimpahan kelompok trofik predator dan omnivor. Kelimpahan nematoda tanah dan keanekaragaman komunitas meningkat secara signifikan ketika panen. Nilai index keragaman paling rendah pada perlakuan solarisasi 14 hari dengan nilai 1,70. Hasil produktivitas bawang merah pada durasi solarisasi 14 hari dan 30 hari, menghasilkan rata-rata tinggi tanaman, berat akar, panjang akar, berat basah umbi bawang merah dan berat kering umbi bawang merah yang lebih tinggi dibandingkan dengan kontrol (tanpa solarisasi).

**Kata Kunci :** solarisasi tanah, suhu, kelimpahan nematoda, bawang merah.

## THE EFFECT OF SOLARIZATION DURATION ON NEMATODE ABUNDANCE IN SHALLOT AND CHILI INTERCROPPING FIELDS

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### Abstract

Solarization is one of the tillage cultivation techniques that can increase soil temperature and affect the presence of nematodes on agricultural land. This study aims to determine the effect of solarization duration on soil temperature, nematode abundance and diversity, and its effect on shallot production. The research was conducted in an intercropping system of shallot and chili in Gotakan Village, Panjatan Subdistrict, Kulonprogo Regency, Yogyakarta using a Complete Randomized Block Design with three solarization treatments and five replications. Treatments consisted of solarization duration (days) including A (14), B (30), and C (control, no solarization). Analysis of nematode species, diversity and abundance was conducted at the Nematology Laboratory, Department of Plant Pests and Diseases, Faculty of Agriculture, Gadjah Mada University. Soil samples were taken before solarization treatment, after solarization treatment and during harvest using random sampling method. Extraction-isolation of nematodes with whitehead tray method. Results that showed significant differences were tested using Duncan's test (DMRT) with  $\alpha = 5\%$ . The results showed that differences in solarization duration affected soil temperature, diversity and abundance of nematodes. The highest soil temperature was found in the solarization duration of 14 days (42.72 °C), which had the lowest diversity index of 1.7. Temperature was negatively correlated with all soil nematode abundances. The results of shallot growth at solarization durations of 14 days and 30 days produced higher average plant height, root weight, root length, wet weight of shallot bulbs and dry weight of shallot bulbs compared to the control (without solarization). Solarization treatment is best applied in the field for 14 days.

**Keywords:** Shallot, soil solarization, temperature, abundance and diversity of nematode, growth yield