ABSTRAK

Nematoda puru akar (*Meloidogyne* spp.) merupakan salah satu hama penting pada tanaman tomat. Upaya mengendalikan hama ini ini lebih menekankan kepada penggunaan nematisida kimia sintetik yang terbukti berdampak negatif terhadap lingkungan. Salah satu alternatif pengendalian yang potensial dan ramah lingkungan adalah penggunaan asap cair. Penelitian ini dilakukan dengan tujuan untuk mengetahui konsentrasi asap cair yang efektif terhadap mortalitas nematoda puru akar di laboratorium, dan mengetahui pengaruh frekuensi aplikasi asap cair dalam mengendalikan nematoda puru akar tanaman tomat serta pengaruhnya terhadap pertumbuhan tanaman tomat.

Penelitian ini dilaksanakan di Laboratorium Perlindungan Tanaman dan *Screen House* Fakultas Pertanian, Universitas Jenderal Soedirman dari bulan November 2019 hingga Maret 2020. Penelitian terdiri dari 2 tahap, yaitu uji konsentrasi Asap cair terhadap mortalitas nematoda puru akar di Laboratorium dan uji frekuensi perlakuan Asap cair untuk mengendalikan nematoda puru akar pada tanaman tomat. Uji konsentrasi Asap cair dilakukan menggunakan Rancangan Acak Kelompok (RAK) dengan 5 taraf konsentrasi yaitu 0%, 1%, 2%, 3%, dan 4%. Setiap perlakuan diulang sebanyak 5 kali. Variabel yang diamati yaitu mortalitas nematoda yang diamati selama 2 hari. Selanjutnya, pada uji frekuensi perlakuan asap cair dilakukan menggunakan Rancangan Acak Kelompok (RAK) dengan 5 perlakuan yaitu 0 kali (kontrol), 2 kali, 3 kali, 4 kali, dan nematisida kimia sintetik (furadan). Masing-masing perlakuan diulang sebanyak 5 kali. Variabel yang diamati adalah tingkat kerusakan akar, populasi nematoda dalam tanah, tinggi tanaman, bobot basah tajuk, dan jumlah daun.

Hasil penelitian menunjukkan bahwa, asap cair bersifat toksik terhadap nematoda puru akar. konsentrasi 4% mampu menimbulkan mortalitas 98,2 %., asap cair mempunyai nilai LC_{95} 47,94 ml/l terhadap *Meloidogyne* spp., frekuensi aplikasi asap cair 3 sampai 4 kali mampu menurunkan populasi *Meloidogyne* spp. dan tingkat kerusakan akar, namun tidak mampu meningkatkan pertumbuhan tanaman tomat.

ABSTRAK

Root knot nematode (Meloidogyne spp.) is one of the important pests in tomato plants. The effort to control these pests is more emphasis on the use of synthetic chemical nematicides which have been shown to have a negative impact on the environment. One of the potential and environmental friendly alternative controls is the use of liquid smoke. This research was conducted with the aim to determine the effective concentration of liquid smoke on the mortality of root knot nematodes in the laboratory, and to determine the effect of the frequency of application of liquid smoke in controlling the root knot nematodes of tomato plants and also their effect to the growth of tomato plants.

This research was conducted at the Plant Protection Laboratory and Screen House of the Faculty of Agriculture, Jenderal Soedirman University from November 2019 to March 2020. The study consisted of 2 stages, namely the concentration of liquid smoke test on mortality of root knot nematodes in the laboratory and the frequency test on liquid smoke application to control root knot nematodes in tomato plants. The liquid smoke concentration test was carried out using a randomized block design (RBD) with 5 levels of concentration, namely 0%, 1%, 2%, 3%, and 4%. Each treatment was repeated 5 times. The observed variable was the nematode mortality which observed for 2 days. Furthermore, the frequency test on liquid smoke application was carried out using a randomized block design (RBD) with 5 treatments, namely 0 times (control), 2 times, 3 times, 4 times, and synthetic chemical nematicide (furadan). Each treatment was repeated 5 times. The variables observed were the level of root damage, nematodes population in the soil, plant height, shoot wet weight, and number of leaves.

The research results showed that liquid smoke was toxic to the root knot nematodes. The liquid smoke with concentration 4% can cause 98.2% mortality., liquid smoke has an LC_{95} value as amount as 47.94 ml/l against Meloidogyne spp., The frequency application of liquid smoke 3 to 4 times can reduce the population of Meloidogyne spp. and the level of root damage, but not able to increase the growth of tomato plants.