

RINGKASAN

Penggunaan pestisida golongan Organofosfat (Klorpirifos) pada budidaya bawang merah dilakukan intensif dan cenderung berlebihan sehingga menimbulkan efek negatif berupa residu di dalam tanah. Bioremediasi merupakan alternatif untuk mengurangi residu pestisida dengan menggunakan mikroorganisme. Bio P60 dan Bio T10 adalah biopestisida yang mengandung agensia hayati dan memiliki berbagai manfaat untuk tanaman serta berpotensi sebagai agen bioremediator. Penelitian ini bertujuan untuk mengetahui peran Bio P60, Bio T10 dan kombinasi Bio P60 dan Bio T10 sebagai bioremediator tanah tercemar pestisida golongan organofosfat, mengetahui pengaruh Bio P60 dan Bio T10 terhadap pertumbuhan dan hasil tanaman bawang merah pada tanah tercemar pestisida organofosfat.

Penelitian ini dilaksanakan di *Screen House* Fakultas Pertanian, Universitas Jenderal Soedirman pada bulan Mei sampai September 2019. Penelitian ini menggunakan Rancangan Acak Kelompok Lengkap (RAKL), dengan 4 perlakuan berupa aplikasi bioremediator (tanpa Bio P60 & Bio T10, Bio P60 50% v/v, Bio T10 50% v/v, dan Bio P60 25% v/v + Bio T10 25% v/v). Perlakuan tersebut diulang 6 kali. Variabel yang diamati yaitu residu pestisida, tinggi tanaman, jumlah daun, bobot daun, bobot tanaman segar, panjang akar, bobot umbi segar, dan jumlah umbi.

Hasil penelitian menunjukkan bahwa aplikasi Bio P60, Bio T10, dan kombinasinya mampu menurunkan residu pestisida klorpirifos berturut-turut 99,4%, 93,7%, dan 84,1%. Aplikasi kombinasi Bio P60 & Bio T10 pada tanah tercemar pestisida menunjukkan hasil terbaik terhadap pertumbuhan dan hasil tanaman bawang merah meliputi variabel jumlah daun, panjang akar, bobot tanaman segar, bobot daun segar, bobot umbi segar, dan jumlah umbi.

SUMMARY

The use of Organophosphate (Chlorpyrifos) pesticides in onion cultivation is very intensive and tends to be excessive resulting in negative effects on the soil productivity. Bioremediation is a one of the methods to reduce pesticide residues using microorganisms. Bio P60 and Bio T10 are biological agents that have a variety of benefits for plants and are potential as bioremediation agents. This study aimed to examine the role of Bio P60, Bio T10 and the combination of Bio P60 and Bio T10 as bioremediators of organophosphate-contaminated soils, to asses the effects of Bio P60 and Bio T10 on the growth and result of food plants in organophosphate pesticide-contaminated soil.

This research was conducted at the Screen House by the Faculty of Agriculture, Jenderal Soedirman University in May to September 2019. This experiment was laid out based on a Complete Randomized Block Design (RCBD), with 4 treatments in the form of bioremediator applications (without Bio P60 & Bio T10, Bio P60 50% v/v, Bio T10 50% v/v, and Bio P60 25% v/v + Bio T10 25% v/v). The treatments were replicated 6 times. The variables observed were pesticide residues, plant height, number of leaves, leaf weight, fresh plant weight, root length, fresh tuber weight, and number of tubers.

The results showed that the application of Bio P60, Bio T10, and their combination was able to reduce chlorpyrifos pesticide residues, by 99.4%, 93.7%, and 84.1% respectively. The combined application of Bio P60 & Bio T10 of pesticide-contaminated soils showed the best results on the growth and yield of shallots include the number of leaves, root length, weight of fresh plants, weight of fresh leaves, weight of fresh tubers, and number of tubers.