

RINGKASAN

Pestisida merupakan bahan kimia pertanian yang digunakan untuk membasmi organisme pengganggu tanaman. Setelah aplikasi, residu pestisida akan terdapat pada tanaman, tanah, dan organisme tanah. Klorpirifos adalah salah satu insektisida yang paling banyak digunakan. Insektisida ini efektif dalam mengendalikan hama dari tanaman ekonomis penting karena insektisida ini mempunyai spektrum yang luas. Bioremediasi cemaran di lingkungan melibatkan jamur beserta mekanisme reduksinya, baik di dalam sel maupun di luar sel. Beberapa jenis jamur yang sering dijadikan agensia remediator, antara lain *Aspergillus* sp., *Fusarium* sp., *Penicillium* sp., *Hanerochaete* sp., *Saccharomyces cerevisiae*, dan *Trichoderma* sp. Metabolit sekunder *T. harzianum* T213 berpotensi sebagai remediator pada tanah tercemar insektisida dan mampu meningkatkan pertumbuhan tanaman jagung. Penelitian bertujuan untuk mengetahui (1) peran metabolit sekunder *T. harzianum* T213 terhadap penyerapan residu insektisida; (2) adanya pengaruh perlakuan metabolit sekunder *T. harzianum* T213 terhadap pertumbuhan tanaman jagung pada tanah tercemar residu insektisida.

Penelitian ini dilaksanakan pada bulan Oktober 2018 sampai dengan Januari 2019 di Laboratorium Perlindungan Tanaman dan *Green House* Fakultas Pertanian Universitas Jenderal Soedirman, Purwokerto. Rancangan percobaan yang digunakan adalah Rancangan Acak Kelompok (RAK) dengan 4 perlakuan yaitu tanah tercemar insektisida tanpa aplikasi metabolit sekunder *T. harzianum* T213, tanah tercemar insektisida dengan aplikasi metabolit sekunder *T. harzianum* T213 50, 100, 150%, dengan 6 ulangan. Variabel yang diamati antara lain tinggi tanaman, jumlah daun, bobot segar tanaman, panjang akar, dan kadar residu insektisida pada tanaman jagung yang dianalisis di Balai Besar Perbenihan dan Proteksi Tanaman Perkebunan Surabaya.

Hasil penelitian menunjukkan bahwa (1) Metabolit sekunder *T. harzianum* T213 100% tertinggi dalam menurunkan residu insektisida klorpirifos sebesar 95% diikuti aplikasi metabolit sekunder *T. harzianum* T213 50% dan 150% yaitu sebesar 94% dan 91% (2) Perlakuan metabolit sekunder *T. harzianum* T213 efektif meningkatkan pertumbuhan tanaman meliputi tinggi tanaman, jumlah daun, bobot segar tanaman dan panjang akar masing-masing sebesar 22-27%, 23-26%, 37-45%, dan 28-45%, dibanding dengan kontrol.

SUMMARY

*Pesticides are agricultural chemicals used to eradicate crop pest organisms. After application, pesticide residues will be found in plants, soil, and soil organisms. Chlorpyrifos is one of the most widely used insecticides. This insecticide is effective in controlling pests from economically important plants because these insecticides have a broad spectrum. Bioremediation of environmental contamination involves fungi and their reduction mechanisms, both inside in outside the cell. Some fungi commonly used are remediation agents, are *Aspergillus* sp., *Fusarium* sp., *Penicillium* sp., *Hanerochaete* sp., *Saccharomyces cerevisiae*, and *Trichoderma* sp. Secondary metabolite *T. harzianum* T213 has potential as remediation in insecticide-contaminated soils and is able to increase the growth of corn. The result aimed to determine (1) the role of *T. harzianum* T213 secondary in absorption residual insecticide; (2) the effect of the secondary metabolites on corn growth at the insecticide contaminated soils.*

*The result was conducted on October 2018 up to January 2019 at the Laboratory of Plant Protection and Green House of Faculty of Agriculture, Jenderal Sudirman University, Purwokerto. Randomized Block Design (RBD) was used with six replicated and four treatments of chlorpyrifos contaminated soils without application secondary metabolites, chlorpyrifos contaminated with the secondary metabolites *T. harzianum* T213 50, 100, and 150%. Variables observed were crop height, number of leaf, crop fresh weight, root length, and insecticide residual contain in corn by Surabaya Estate Crops Regional Center of Seed and Plant Protection.*

*Results of the research indicated that (1) the secondary metabolites *T. harzianum* T213 100% gave the highest chlorpyrifos residual reduction as 95% followed by the treatment of 50 and 150% as 94% and 91%, respectively (2) the secondary metabolites of *T. harzianum* T213 effectively increased corn growth indicated by crop height, number of leaves, crop fresh weight and root length, as 22-27, 23-26, 37-45 and 28-45%, respectively.*