RINGKASAN

Bawang merah (*Allium ascalonicum* L.) merupakan tanaman semusim yang membentuk rumpun dan tumbuh tegak dengan tinggi mencapai 15-40 cm. Intensifikasi budidaya bawang merah dilakukan dengan untuk meningkatkan pertumbuhan dan hasil. Salah satu upaya yang dapat dilakukan yaitu dengan penggunaan pupuk hayati dan sintetik. Penelitian bertujuan untuk, 1) mengetahui pengaruh dosis pupuk hayati mikoriza *Trichoderma* terhadap fisiologi tanaman bawang merah, 2) mengetahui pengurangan dosis pupuk sintetik N,P,K yang masih memberikan respon optimal terhadap fisiologi tanaman bawang merah, 3) mengetahui bagaimana interaksi antara pupuk hayati mikoriza-*Trichoderma* sp. dan pengurangan dosis pupuk sintetik N,P,K terhadap fisiologi tanaman bawang merah.

Penelitian ini dilaksanakan dari bulan Mei 2019 sampai bulan Juli 2019 di Desa Patikraja, Kecamatan Patikraja, Kabupaten Banyumas dan Laboratorium Agronomi dan Hortikultura Fakultas Pertanian UNSOED, Purwokerto. Rancangan percobaan yang digunakan yaitu Rancangan Acak Kelompok Lengkap dengan dua faktor. Faktor pertama adalah dosis pupuk hayati mikoriza-*Trichoderma* yang terdiri dari dosis, 10 g, 30 g, dan 50 g tanaman^{-1}. Faktor kedua yaitu pengurangan dosis pupuk sintetik N,P,K 0%, 25% dan 50%. Variabel yang diamati tinggi tanaman, jumlah daun, luas daun, kehijauan daun, bobot tanaman segar, bobot tanaman kering, laju pertumbuhan, kerapatan stomata, bobot akar segar dan bobot akar kering. Variabel pendukung yang diamati yaitu suhu dan kelembaban udara.

Pemberian perlakuan mikoriza-*Trichoderma* sp dengan dosis 50 g per tanaman dapat meningkatkan 33% bobot tanaman segar dibandingkan dosis 30 g per tanaman. Pengurangan dosis pupuk sintetik N,P,K 50% dapat meningkatkan bobot tanaman segar sebesar 30% dibandingkan pengurangan dosis sintetik N,P,K 0%, luas daun sebesar 63% dibandingkan pengurangan dosis sintetik N,P,K 0%, kehijauan daun sebesar 20% dibandingkan pengurangan dosis sintetik N,P,K 25% dan jumlah daun 17% dibandingkan pengurangan dosis sintetik N,P,K 25%. Tanpa pengurangan dosis pupuk sintetik N,P,K hanya dapat meningkatkan tinggi tanaman sebesar 5% dibandingkan pengurangan dosis sintetik N,P,K 50%.

Tidak terdapat interaksi antara perlakuan mikoriza-*Trichoderma* sp dengan pengurangan dosis pupuk sintetik N,P,K terhadap seluruh variabel fisiologi tanaman bawang merah: luas daun, bobot tanaman kering, laju pertumbuhan tanaman, kerapatan stomata, kehijauan daun, tinggi tanaman, bobot akar, bobot tanaman segar, jumlah daun, dan bobot akar kering.

Kata kunci: bawang merah, fisiologi, mikoriza, *Trichoderma* sp., pupuk sintetik

SUMMARY

Shallot (Allium ascalonicum L.) is an annual plant that forms clumps and grows upright with a height reaching 15-40 cm. Intensification of onion cultivation is done to increase growth and yield. One effort that can be done is the use of biological and synthetic fertilizers. The research aims to, 1) determine the effect of Trichoderma mycorrhizal dose of biological fertilizer on the physiology of shallot plants, 2) find out the reduction in the dose of synthetic fertilizers N,P,K that still provide an optimal response to the physiology of shallot plants, 3) find out how the interaction between mycorrhizal-Trichoderma sp. and reducing the dose of synthetic fertilizers N,P,K to the physiology of shallot plants.

This research conducted from May 2019 until July 2019 in Patikraja Village, Patikraja District, Banyumas Regency and the Agronomy and Horticulture Laboratory of the Faculty of Agriculture, UNSOED, Purwokerto. The experimental design used was a Complete Randomized Block Design with two factors. The first factor was the dose of mycorrhizal Trichoderma (M) biological fertilizer 10 g, 30 g, and 50 g. The second factor was the reduction in the dose of synthetic fertilizer N,P,K 0%, 25% and 50%. The variables observed in this study include plant height, number of leaves, leaf area, greenish leaves, fresh plant weight, dry plant weight, growth rate, stomata density, fresh root weight, and dry root weight. Supporting variables observed were temperature and air humidity.

Mycorrhizal-Trichoderma sp treatment at a dose of 50 g per plant Trichoderma sp. could increase 33% of fresh plant weight compared to dose of 30 g per plant. The reduction of 50% synthetic fertilizer N,P,K dosage could increase fresh plant weights by 30% compared to reduction of 0%, leaf area by 63% compared to reduction of 0%, leaf greenness by 20% compared to reduction of 25%, and number of leaves by 17% compared to reduction of 25%. Without reduction the dose of synthetic fertilizer N,P,K only increased the plant height variable by 33% compared to reduction of 50%. There was no interaction between mycorrhizal-Trichoderma sp treatment with reduction of synthetic fertilizer N,P,K dosage on all physiological variables of shallot plants: leaf area, dry plant weight, plant growth rate, stomata density, leaf greenness, plant height, root weight, fresh plant weight , number of leaves, and dry root weight.

Keywords: shallot, physiology, mycorrhizae, Trichoderma sp., Synthetic fertilizer