RINGKASAN

Pakcoy (*Brassica rapa* L.) merupakan salah satu sayuran daun yang banyak diminati oleh masyarakat, baik dikonsumsi dalam bentuk segar maupun diolah menjadi masakan. Permintaan kebutuhan konsumsi pakcoy yang terus meningkat tiap tahunnya belum didukung oleh meningkatnya produktivitas pakcoy. Salah satu usaha untuk peningkatan produksi tanaman pakcoy adalah melalui perluasan lahan dengan memanfaatkan lahan marginal seperti ultisol. Pengembangan tanaman pakcoy di lahan marginal seperti ultisol dapat dibantu dengan penambahan bakteri pelarut fosfat dalam upaya meningkatkan produktivitas tanah. Bakteri pelarut fosfat mampu meningkatkan ketersediaan unsur fosfat di dalam tanah guna mencukupi kebutuhan nutrisi dan menjaga keseimbangan hara yang tersedia selama siklus pertumbuhan tanaman. Penelitian ini bertujuan untuk 1) mengetahui jenis isolat bakteri pelarut fosfat yang memberikan pengaruh terbaik terhadap pertumbuhan dan hasil pakcoy di tanah Ultisol, 2) mengetahui waktu aplikasi bakteri pelarut fosfat yang memberikan pengaruh terbaik terhadap hasil dan pertumbuhan pakcoy di tanah Ultisol, 3) mengetahui pengaruh interaksi bakteri pelarut fosfat dan waktu aplikasi terbaik terhadap pertumbuhan dan hasil tanaman pakcoy di tanah Ultisol.

Penelitian ini dilaksanakan pada bulan januari sampai Mei 2024 di *Screen House* Fakultas Pertanian, Universitas Jenderal Soedirman. Variabel yang diamati yaitu panjang akar terpanjang, volume akar, tinggi tanaman, jumlah daun, luas daun, klorofil daun, kerapatan stomata, bobot akar segar, bobot tajuk segar, bobot tanaman segar, bobot akar kering, bobot tajuk kering, bobot tanaman kering, dan indeks panen. Data dianalisis menggunakan sidik ragam (ANOVA) pada taraf kesalahan 5% dan apabila signifikan dilakukan uji lanjut DMRT (*Duncan's Multiple Range Test*) pada taraf kesalahan 5%. Penelitian yang menggunakan Rancangan Acak Kelompok (RAK) ini terdiri dari 2 faktor perlakuan. Faktor pertama yaitu jenis isolat bakteri yang terdiri atas tanpa isolat bakteri pelarut fosfat, isolat S3, isolat N15, isolat N19, dan konsorsium atau gabungan isolat S3, N15, dan N19. Faktor kedua waktu aplikasi bakteri yaitu 1 minggu sekali dan 2 minggu sekali. Kombinasi antar faktor tersebut diperoleh 10 perlakuan dan setiap perlakuan dilakukan 3 kali pengulangan, sehingga terdapat 30 unit percobaan.

Hasil penelitian menunjukkan bakteri pelarut fosfat isolat N15 berpengaruh meningkatkan dan memberikan hasil tertinggi pada variabel jumlah daun, kandungan klorofil daun, bobot tajuk segar, bobot tanaman segar bobot akar kering, bobot tajuk kering, bobot tanaman kering, dan indeks panen. Waktu aplikasi bakteri 1 minggu sekali memberikan hasil tertinggi pada variabel panjang akar terpanjang, bobot akar segar, bobot tajuk segar, dan bobot tanaman segar. Kombinasi pemberian bakteri pelarut fosfat dan waktu aplikasi bakteri menunjukkan adanya interaksi pada variabel bobot akar segar dengan hasil terbaik pada perlakuan isolat N15 dengan waktu aplikasi 1 minggu sekali

SUMMARY

Pakcoy (Brassica rapa L.) is one of the leaf vegetables that are in great demand by the public, both consumed in fresh form and processed into dishes. The demand for pakcoy consumption needs that continues to increase every year has not been supported by increased pakcoy productivity. One of the efforts to increase pakcoy production is through land expansion by utilizing marginal land such as ultisol. The development of pakcoy plants on marginal land such as ultisol can be assisted by the addition of phosphate solubilizing bacteria in an effort to increase soil productivity. Phosphate solubilizing bacteria can increase the availability of phosphate elements in the soil to meet nutritional needs and maintain the balance of available nutrients during the plant growth cycle. This study aims to 1) determine the type of phosphate solubilizing bacteria isolate that gives the best effect on the growth and yield of pakcoy in Ultisol soil, 2) determine the application time of phosphate solubilizing bacteria that gives the best effect on the yield and growth of pakcoy in Ultisol soil, 3) determine the interaction effect of phosphate solubilizing bacteria and the best application time on the growth and yield of pakcoy plants in Ultisol soil.

This research was conducted from January to May 2024 at the Screen House, Faculty of Agriculture, Universitas Jenderal Soedirman. The variables observed were longest root length, root volume, plant height, number of leaves, leaf area, leaf chlorophyll, stomatal density, fresh root weight, fresh crown weight, fresh plant weight, dry root weight, dry crown weight, dry plant weight, and harvest index. Data were analyzed using variance analysis (ANOVA) at the 5% error level and if significant, DMRT (Duncan's Multiple Range Test) was conducted at the 5% error level. The research that used Randomized Group Design consisted of 2 treatment factors. The first factor is the type of bacterial isolate consisting of no phosphate solubilizing bacterial isolate, isolate S3, isolate N15, isolate N19, and consortium or combination of isolates S3, N15, and N19. The second factor of bacterial application time is once a week and once every two weeks. The combination of these factors obtained 10 treatments and each treatment was repeated 3 times, so there were 30 experimental units.

The results showed that phosphate solubilizing bacteria isolate N15 had an increasing effect and gave the highest results on the variable number of leaves, leaf chlorophyll content, fresh crown weight, fresh plant weight dry root weight, dry crown weight, dry plant weight, and harvest index. The application time of bacteria once a week gave the highest results in the longest root length variable, fresh root weight, fresh crown weight, and fresh plant weight. The combination of giving phosphate solubilizing bacteria and the time of application of the bacteria showed that there was an interaction on the fresh root weight variable with the best results in the N15 isolate treatment with an application time of once a week.