

RINGKASAN

Caisim (*Brassica juncea* L.) merupakan komoditas hortikultura yang memiliki nilai ekonomi tinggi dan prospek pengembangan yang baik di Indonesia, karena dapat tumbuh di dataran tinggi maupun rendah. Budidaya caisim di Indonesia memiliki potensi hasil mencapai 20-30 ton/ha, namun, pada tahun 2022 produktivitas caisim nasional hanya mencapai 10,6 ton/ha. Salah satu solusi untuk meningkatkan hasil tanaman caisim yaitu dengan menerapkan teknologi budidaya secara hidroponik, dengan pemberian bakteri penghasil IAA. Hormon IAA merupakan salah satu jenis auksin yang umum terdapat di alam. Bakteri penghasil IAA mampu berinteraksi secara fisiologis dengan tanaman melalui transfer IAA yang dihasilkannya ke dalam tanaman, sehingga dapat meningkatkan sensitivitas tanaman terhadap perubahan kadar hormon tersebut.

Penelitian ini dilaksanakan di Laboratorium Agronomi dan Hortikultura dan Kebun Percobaan Fakultas Pertanian Universitas Jenderal Soedirman pada bulan Oktober 2024 hingga April 2025. Rancangan yang digunakan Adalah Rancangan Acak Kelompok (RAK) non faktorial, yang terdiri dari 8 perlakuan dan masing-masing perlakuan diulang sebanyak 4 kali. Perlakuan yang diberikan yaitu Kontrol (P0), Isolat S3 (P1), Isolat N15 (P2), Isolat N19 (P3), Konsorsium isolat S3 + isolat N15 (P4), Konsorsium isolat S3 + isolat N19 (P5), Konsorsium isolat N15 + isolat N19 (P6), dan Konsorsium isolat S3 + isolat N15 + isolat N19 (P7). Variabel yang diamati adalah tinggi tanaman, jumlah daun, luas daun, kehijauan daun, volume akar, bobot akar segar, bobot akar kering, bobot tajuk segar, bobot tajuk kering, bobot tanaman segar, bobot tanaman kering, kandungan klorofil, dan kerapatan stomata. Data dianalisis menggunakan uji ANOVA dengan taraf kepercayaan 95%, apabila signifikan dilanjutkan uji DMRT dengan taraf kepercayaan 95%.

Hasil penelitian menunjukkan bahwa pemberian bakteri penghasil IAA isolat tunggal S3, N15, dan N19 tidak memberikan pengaruh terhadap pertumbuhan tanaman caisim secara hidroponik *wick system*. Perlakuan konsorsium tiga isolat bakteri S3 + N15 + N19 memberikan hasil terbaik terhadap pertumbuhan dan hasil tanaman caisim. Perlakuan konsorsium isolat S3 + N15 + N19 (P7) dapat menjadi alternatif perlakuan terbaik.

SUMMARY

Caisim (Brassica juncea L.) is a horticultural commodity that has high economic value and good prospects in Indonesia, because it can grow in both highlands and lowlands. Caisim cultivation in Indonesia has the potential to produce 20-30 tons/ha, but in 2022 the caisim productivity will only reach 10.6 tons/ha. One solution to increase Chinese cabbage yields is to implement hydroponic cultivation technology, incorporating IAA-producing bacteria. IAA is a type of auxin commonly found in nature. IAA-producing bacteria can interact physiologically with plants by transferring the IAA they produce into the plant, thereby increasing the plant's sensitivity to changes in hormone levels.

This research was conducted at the Agronomy and Horticulture Laboratory and Experimental Farm of the Faculty of Agriculture, Jenderal Soedirman University from October 2024 to April 2025. The design used was a non-factorial Randomized Block Design (RAK) consisting of 8 treatments and each treatment was repeated 4 times. The treatments given were Control (P0), Isolate S3 (P1), Isolate N15 (P2), Isolate N19 (P3), Consortium of isolate S3 + isolate N15 (P4), Consortium of isolate S3 + isolate N19 (P5), Consortium of isolate N15 + isolate N19 (P6), and Consortium of isolate S3 + isolate N15 + isolate N19 (P7). The variables observed were plant height, number of leaves, leaf area, leaf greenness, root volume, fresh root weight, dry root weight, fresh crown weight, dry crown weight, fresh plant weight, dry plant weight, chlorophyll content, and stomatal density. Data were analyzed using the ANOVA test with a confidence level of 95%. If significant, continue green DMRT with a confidence level of 95%.

The results of the research showed that the application of single isolates of IAA-producing bacteria i.e. S3, N15, and N19 did not affect the growth of Chinese cabbage plants using a hydroponic wick system. The consortium treatment of three bacterial isolates S3 + N15 + N19 provided the best results for the growth and yield of Chinese cabbage plants. The consortium treatment of isolates S3 + N15 + N19 (P7) can be the best alternative treatment.