

RINGKASAN

Jagung manis (*Zea mays saccharata*) memiliki rasa yang lebih manis dibandingkan jagung biasa dan umur produksinya lebih singkat (genjah). Produksi jagung manis di Indonesia masih terbilang rendah, petani masih menggunakan budidaya secara konvensional. Salah satu pendekatan yang dilakukan yaitu dengan pemberian bahan organik seperti Azolla, Azolla mampu menambat N₂ dari udara. Alternatif lain dalam peningkatan produksi jagung manis yaitu dengan biopestisida. Salah satunya *Bacillus* sp. selain sebagai agens pengendali hayati, bakteri ini juga dapat digunakan sebagai PGPR. Tujuan dari penelitian ini untuk (1) mengetahui pengaruh pemberian pupuk organik cair Azolla terhadap pertumbuhan dan hasil jagung manis, (2) mengetahui pengaruh pemberian biopestisida berbasis *B. subtilis* B1 terhadap pertumbuhan dan hasil jagung manis, dan (3) mengetahui pengaruh pemberian pupuk organik cair Azolla yang ditambahkan dengan biopestisida berbasis *B. subtilis* B1 terhadap pertumbuhan dan hasil jagung manis.

Penelitian dilaksanakan di lahan *exfarm* Fakultas Pertanian Universitas Jenderal Soedirman dari bulan Desember 2018 sampai bulan Maret 2019. Penelitian menggunakan Rancangan Acak Kelompok Lengkap (RAKL) yang terdiri dari 4 perlakuan yaitu N,P,K (P0), N,P,K+POC Azolla (P1), N,P,K+*B. subtilis* B1 (P2), N,P,K+POC Azolla+*B. subtilis* B1 (P3) dengan 6 ulangan. Variabel pengamatan meliputi: tinggi tanaman, jumlah daun, luas daun, laju pertumbuhan tanaman, kandungan klorofil, saat keluar bunga/pembungaan, bobot segar tanaman, bobot kering tanaman, bobot kering akar, panjang tongkol, diameter tongkol, bobot tongkol berkelobot, bobot tongkol tanpa kelobot, jumlah baris per tongkol, dan bobot biji per tongkol. Data yang diperoleh dianalisis dengan menggunakan uji F, apabila terdapat pengaruh nyata maka diuji lanjut dengan BNT 5%.

Hasil penelitian menunjukkan bahwa pemberian POC Azolla menghasilkan kandungan klorofil dan luas daun lebih tinggi masing-masing sebesar 21% dan 32%, serta bobot tongkol tanpa kelobot dan bobot biji per tongkol lebih rendah masing-masing sebesar 14% dan 11% dibanding pemberian N,P,K saja. Pemberian *B. subtilis* B1 menghasilkan kandungan klorofil lebih tinggi sebesar 17%, serta laju pertumbuhan tanaman, bobot kering tanaman, bobot tongkol berkelobot, bobot tongkol tanpa kelobot dan bobot biji per tongkol lebih rendah masing-masing sebesar 45%, 20%, 11%, 13%, dan 13% dibanding pemberian N,P,K saja. Pemberian POC Azolla+*B. subtilis* B1 menghasilkan luas daun, tinggi tanaman, bobot segar tanaman dan bobot kering akar lebih tinggi masing-masing sebesar 54%, 22%, 13%, dan 24% serta tidak berpengaruh pada hasil jagung manis dibanding pemberian N,P,K saja.

SUMMARY

Sweet corn (*Zea mays saccharata*) has a taste sweeter than ordinary corn and its production age is shorter (early). Sweet corn production in Indonesia is still relatively low, farmers still use conventional cultivation. One approach is done by providing organic materials such as Azolla, Azolla capable of tethering N₂ from the air. Another alternative in increasing the production of sweet corn is biopesticides. One of them is *Bacillus* sp. aside from being a biological control agent, these bacteria can also be used as PGPR. The purpose of this study was to (1) determine the effect of Azolla liquid organic fertilizer on the growth and yield of sweet corn, (2) determine the effect of *B. subtilis* B1 based biopesticide on sweet corn growth and yield, and (3) determine the effect of organic fertilizer liquid Azolla added with *B. subtilis* B1 based biopesticide on growth and yield of sweet corn.

The research was conducted out on the exfarm of the Jenderal Soedirman University Faculty of Agriculture from December 2018 to March 2019. The experimental design used a Randomized Complete Block Design (RAKL) consisting of 4 treatments namely N,P,K (P0), N,P,K + POC Azolla (P1), N,P,K + *B. subtilis* B1 (P2), N,P,K + POC Azolla + *B. subtilis* B1 (P3) with 6 replications. Variables observed include: plant height, number of leaves, leaf area, plant growth rate, chlorophyll content, flowering, fresh weight plants, plant dry weight, root dry weight, cob length, cob diameter, weighted cob with corn husk, cob weight without corn husk, number of rows per cob, and seed weight per cob. Data obtained were analyzed using the F test, if there was a significant effect, then it would be tested with LSD 5%.

Result of the research showed that application of liquid organic fertilizer of Azolla yield of chlorophyll and leaf area higher respectively of 21% and 32%, and weight of cob without weight and seed weight per cob lower respectively of 14% and 11% compared to application N, P, K only. Application of *B. subtilis* B1 yield chlorophyll content higher of 17%, and plant growth rates, plant dry weight, weighted cob with corn husk, cob weight without corn husk and seed weight per cob lower respectively of 45%, 20%, 11% respectively 13%, and 13% compared to application N, P, K only. Application of liquid organic fertilizer of Azolla + *B. subtilis* B1 yield leaf area, plant height, plant fresh weight and root dry weight higher respectively of 54%, 22%, 13%, and 24% and did not affect sweet corn yield compared to application N, P, K only.