

RINGKASAN

Jagung manis (*Zea mays saccharata* L.) merupakan tanaman yang cukup populer di masyarakat Indonesia. Saat ini permintaan terhadap jagung manis semakin meningkat, sehingga mendorong para petani untuk melakukan perbaikan terhadap sistem budidaya untuk meningkatkan produksi. Jagung manis memiliki karakteristik unggul yaitu produktivitas tinggi, rasa manis, umur panen genjah, dan daya simpan lebih lama. Penggunaan pupuk sintetis untuk meningkatkan produksi jagung manis harus dikurangi, karena penggunaan pupuk sintetis secara terus-menerus akan berdampak terhadap kesuburan tanah yang dapat menurunkan pertumbuhan dan hasil tanaman jagung manis. Tujuan penelitian ini adalah untuk mengetahui respon pertumbuhan dan hasil tanaman jagung manis terhadap biopestisida berbasis *B. subtilis* B1 di lapangan serta membandingkannya dengan bakterisida.

Penelitian dilaksanakan di lahan pekarangan petani Desa Kebanggan, Kecamatan Sumbang Kabupaten Banyumas. Penelitian dilaksanakan selama 4 bulan, mulai bulan Maret sampai Juni 2018. Rancangan percobaan yang digunakan adalah rancangan acak kelompok (RAK) yang terdiri atas 3 perlakuan (*B. subtilis* 50 ml/tanaman, bakterisida 50 ml/tanaman dan kontrol). Masing-masing perlakuan diulang 9 kali. Data hasil pengamatan dianalisis dengan analisis sidik ragam. Apabila hasil pengujian berbeda nyata, maka dilanjutkan dengan uji Beda Nyata Terkecil (BNT) pada taraf kesalahan 5%. Variabel pengamatan meliputi tinggi tanaman (cm), jumlah daun (helai), diameter batang (g), bobot akar segar (g), bobot akar kering (g), bobot tanaman segar (g), bobot tanaman kering (g), luas daun (cm²), bobot tongkol (g), panjang tongkol (cm), dan diameter tongkol (cm).

Hasil penelitian menunjukkan bahwa pemberian agen hayati (Biopestisida berbasis *Bacillus subtilis* B1 dan bakterisida) mampu meningkatkan pertumbuhan jagung manis (diameter batang dan bobot tajuk kering), tetapi belum mampu meningkatkan hasil jagung manis. Diameter batang dan bobot tajuk kering tanaman yang diberi perlakuan *B. Subtilis* lebih tinggi dibandingkan kontrol, namun masih lebih rendah jika dibandingkan dengan bakterisida. Bobot tongkol berkelebot tanaman jagung manis yang diberi perlakuan *Bacillus subtilis* dan bakterisida masing-masing adalah 300,5 g dan 297,4 g.

SUMMARY

Sweet corn (Zea mays sacaratha L.) is a quite pupolar plant in Indonesian. Its demand is increasing presently. This encourages farmers to improve their cultivation system in order to increase the production. Sweet corn has superior characteristics, namely high productivity, sweety taste, early harvest date, and longer storability. The use of synthetic fertilizers should be reduced, because the use of synthetic fertilizers continuous will have an impact on soil fertility which can reduce the growth and yield of sweet corn plants. The purpose of this study was to determine the growth response and yield of sweet corn on B. subtilis B1 based biopesticides in the field and compare them with bactericides applications.

The research was carried out in the farmer's dry land area of the Kebanggan Village, Sumbang District, Banyumas Regency. The study was conducted for 4 months, from March to June 2018. The environment site was arranged in a Randomized Complete Block Design (RCBD) consisting of 3 treatments (B. subtilis 50 ml / plant, bactericidal 50 ml / plant and control). The treatments were replicated 9 times. Observed data was analyzed by analysis of variance. If the test results are significant, then the analysis continues with the Lower Significant Difference (LSD) at the 5% error level. Observation variables included plant height (cm), number of leaves (strands), stem diameter (g), fresh root weight (g), dry root weight (g), fresh plant weight (g), dry plant weight (g), area leaf (cm²), ear weight (g), ear length (cm), and ear diameter (cm).

The results showed that administration of biological agents (Biopesticides based on Bacillus subtilis B1 and bactericidal) were able to increase the growth of sweet corn (stem diameter and dry canopy weight), but had not been able to increase the yield of sweet corn. Stem diameter and dry canopy weight of plants treated with B. subtilis were higher than controls, but still lower when compared to bactericide. The weight of the sweet corn cob treated with Bacillus subtilis and bactericide was 300.5 g and 297.4 g, respectively.