RINGKASAN

Jagung manis (*Zea mays* L. Saccharata Sturt) merupakan salah satu komoditas yang memiliki nilai ekonomi tinggi dibanding komoditas jagung lainnya. Petani di Indonesia banyak yang membudidayakan jagung manis karena jagung manis digemari masyarakat dan peminatnya dari berbagai kalangan. Banyaknya peminat membuat produksi jagung manis harus selalu stabil untuk memenuhi tingginya permintaan pasar. Akan tetapi, kondisi sebagian besar lahan pertanian di Indonesia kurang mendukung. Rendahnya kesuburan dan bahan organik pada lahan pertanian menyebabkan petani terkendala dalam peningkatan produksi tanaman jagung manis. Pupuk kasgot merupakan hasil fermentasi dari limbah budidaya maggot yang digunakan sebagai alternatif media tanam serta pupuk organik sebagai upaya peningkatan hasil jagung manis. Selain dengan penggunaan pupuk berimbang, penggunaan varietas unggul juga perlu dilakukan petani agar tanaman mampu beradaptasi baik dengan lingkungan, sehingga meningkatkan hasil produksi jagung manis. Penelitian ini bertujuan untuk (1) mengetahui pengaruh dosis pupuk organik kasgot terhadap respon fisiologis beberapa varietas tanaman jagung manis. (2) mengetahui dosis pupuk kasgot yang efektif terhadap pertumbuhan dan respon fisiologis beberapa varietas tanaman jagung manis. (3) mengetahui interaksi antara penggunaan pupuk kasgot dan varietas terhadap respon fisiologis tanaman jagung manis.

Penelitian ini dilaksanakan di Lahan *Experimental* yang terletak di Fakultas Pertanian, Universitas Jenderal Soedirman. Analisis fisiologi pada tanaman dilakukan di Laboratorium Agronomi dan Hortikultura serta Laboratorium Tanah dan Sumberdaya Lahan, Fakultas Pertanian Universitas Jenderal Soedirman. Penelitian dilakukan pada bulan November 2022-Maret 2023. Penelitian ini menggunakan Rancangan Acak Kelompok Lengkap (RAKL) dengan 2 faktor dan 3 ulangan. Faktor pertama Varietas V1: Talenta; V2: Secada; V3: Exsotic. Faktor kedua dosis pupuk kasgot K0: 0 ton/ha; K1: 15 ton/ha; K2: 30 ton/ha. Data hasil penelitian dianalisis menggunakan uji ANOVA pada taraf kesalahan 5%, jika menunjukkan pengaruh nyata, maka dilanjutkan uji *Duncan's Multiple Range Test* (DMRT) pada taraf kesalahan 5%. Variabel yang diamati meliputi: luas daun (cm^2), Indeks Luas Daun, kehijauan daun, bobot kering tanaman (g), Laju Asimilasi Bersih (g/dm^2/minggu), Laju Pertumbuhan Tanaman (g/m^2/minggu), kadar kemanisan (˚brix), lebar bukaan stomata (µm), kerapatan stomata (buah/mm^2), Aktivitas Nitrat Reduktase (µmolx10^3/mg/jam), kadar klorofil a, klorofil b, dan klorofil total (mg/g).

Hasil penelitian menunjukkan bahwa dosis kasgot berpengaruh terhadap luas daun, indeks luas daun, kehijauan daun, bobot kering tanaman, kadar kemanisan, laju pertumbuhan tanaman, dan laju asimilasi bersih. Varietas jagung manis menunjukkan adanya perbedaan pada luas daun, indeks luas daun, kadar kemanisan. Interaksi antara dosis pupuk kasgot dan varietas jagung manis berpengaruh terhadap luas daun dan indeks luas daun. Dosis kasgot 15 ton/ha menghasilkan pertumbuhan dan hasil jagung manis terbaik.

SUMMARY

Sweet corn (Zea mays L. Saccharata Sturt) is a commodity that has a higher economic value than other corn commodities. Many farmers in Indonesia cultivate sweet corn because sweet corn is popular with the community and its fans from all walks of life. A large number of fans make the production of sweet corn always have to be stable to meet the high demand of the market. However, the conditions of most agricultural land in Indonesia are not favourable. The low fertility and organic material on the farmland has caused farmers to be controlled in increased production of sweet corn crops. Maggot frass fertilizer is the result of fermentation from maggot cultivation waste used as an alternative medium for cultivation as well as organic fertilizers as an attempt to enhance sweet corn yields. In addition to using balanced fertilizer, the use of superior varieties also needs to be done by farmers so that plants can adapt well to the environment, thereby increasing the yield of sweet corn. This study aims to (1) determine the influence of the dosage of organic maggot frass fertilizer on the physiological response of some varieties of sweet corn crops. (2) determine the effective dose of maggot frass fertilizers on the growth and physiological responses of several varieties. (3) determine the interaction between the use of maggot frass fertilizers and varieties to the physiologic response of sweet maize plants.

The research was conducted at the Experimental Land located at the Faculty of Agriculture, University of Jenderal Soedirman. Physiological analysis of plants was carried out at the Laboratory of Agronomy and Horticulture as well as the Laboratorium of Soil and Land Resources, the Faculties of Agriculture of Jenderal Soedirman University. The research was conducted between November 2022 and March 2023. This study uses the Complete Group Random Planning (RAKL) with 2 factors and 3 repetitions. Variety first factor V1: Talenta; V2: Secada; V3: Exsotic. The results of the study were analyzed using the ANOVA test at the error level of 5%, if it showed a real impact, then the Duncan's Multiple Range Test (DMRT) test was resumed at the level of error of 5%. The observed variables included: leaf area (cm2), Leaf width index, leaf greenery, plant dry weight (g), Pure assimilation rate (g/dm2/week), Plant growth rate (g/m2/ week), humility rate (ᵒbrix), stomata opening width (µm), stoma density (fruit/mm2), Nitrate reduction activity (µmolx103/mg/hour), chlorophyll a, chlorofyll b, and total chlorphyll (mg/g).

The results of the research showed that the dosage of maggot frass influenced the leaf width index, leaf greenery, dry weight of plants, humidity rate, plant growth rate, and net assimilation rate. Sweet corn varieties indicate a difference in leaf size, leaf width index, humidity rate. The interaction between the dosage of maggot frass fertilizer and the variety of sweet corn affects the leaf size and leaf width index. A dose of 15 tons/ha of maggot frass produces the best sugar corn growth and yield.