RINGKASAN

Pupuk merupakan salah satu komponen penting dalam peningkatan produksi pangan, berperan krusial dalam mendukung ketahanan pangan di Indonesia. Penggunaan pupuk sintetis yang diterapkan di Indonesia terbukti mampu meningkatkan hasil pertanian. Namun tanpa disadari pemakaian pupuk sintetis dalam jangka panjang dapat merusak sifat fisik, kimia, dan biologi tanah. Oleh karena itu, penting beralih ke praktik pertanian yang lebih keberlanjutan, seperti penggunaan pupuk hayati mikoriza. Penelitian ini bertujuan mengetahui pengaruh jenis media tanam terhadap perbanyakan Mikoriza Arbuskular dan pertumbuhan tanaman inang sorgum, respon pertumbuhan tanaman sorgum terhadap Mikoriza Arbuskular, dan membandingkan respon mikoriza arbukular dari sumber inokulum yang berbeda dalam perbanyakan dalam media tanam inang yang berbeda.

Penelitian ini dilakukan di *Screenhouse* Fakultas Pertanian, Universitas Jenderal Soedirman, Grendeng, Purwokerto Utara, Kabupaten Banyumas. Kegiatan penelitian dilaksanakan pada April 2025-September 2025. Penelitian dilakukan dengan Rancangan Acak Kelompok Lengkap (RAKL) yang terdiri atas 2 faktor. Faktor yang pertama adalah perlakuan sumber inokulum (N) yang terdiri atas 3 jenis yaitu tanpa mikoriza, inokulum kapulaga ternaungi, inokulum kapulaga tanpa naungan. Faktor kedua yaitu perlakuan media tanam (P), yang terdiri atas 3 jenis media tanam, yaitu media sekam 20% + *inceptisol* 80%, *biochar* arang sekam 20% + *inceptisol* 80%, kompos 20% + *inceptisol* 80%. Penelitian dengan faktor tersebut dikombinasikan dan diperoleh 9 kombinasi perlakuan yang diulang 3x, sehingga terdapat 27 unit percobaan. Setiap unit terdiri dari 3 *polybag*, sehingga diperoleh 81 *polybag*.

Hasil penelitian menunjukkan bahwa pemberian inokulum mikoriza berpengaruh nyata dapat meningkatkan jumlah spora, infeksi akar. Aplikasi media tanam yang berbeda dapat meningkatkan karakter pertumbuhan tanaman sorgum, terutama pada variabel tinggi tanaman, jumlah daun, luas daun, bobot basah, bobot kering, volume akar, dan serapan P tanaman. Penggunaan media tanam *inceptisol* 80% + kompos 20% memberikan hasil terbaik dalam meningkatkan tinggi tanaman 132,61 cm, 7,51 helai daun sorgum, 457,59 cm^2 luas daun, bobot basah 158,19 g, bobot kering 22,39 g, volume akar 38,11 cm^3 dan serapan P 6,47 (mg P/tanaman). Kombinasi sumber inokulum dan media tanam memberikan hasil yang setara terhadap karakter mikoriza dan hasil tanaman sorgum.

Kata kunci : media tanam, mikoriza, pertumbuhan dan hasil, sorgum.

SUMMARY

Fertilizer is a crucial component in increasing food production and plays a crucial role in supporting food security in Indonesia. The use of synthetic fertilizers in Indonesia has been proven to increase agricultural yields. However, long-term use of synthetic fertilizers can unwittingly damage the physical, chemical, and biological properties of the soil. Therefore, it is important to shift to more sustainable agricultural practices, such as the use of mycorrhizal biofertilizers. This study aimed to determine the effect of planting medium types on arbuscular mycorrhizal propagation and growth of sorghum host plants, the growth response of sorghum plants to arbuscular mycorrhizal inoculum, and to compare the responses of arbuscular mycorrhizal inoculum sources during the propagation process in different host growing media.

This research was conducted at the Screenhouse of the Faculty of Agriculture, Jenderal Soedirman University, Grendeng, North Purwokerto, Banyumas Regency. The research activities were carried out from April to September 2025. The study was conducted using a Completely Randomized Block Design (CRBD) consisting of 2 factors. The first factor was the inoculum source treatment (N) consisting of 3 types, namely without mycorrhiza, shaded cardamom inoculum, and unshaded cardamom inoculum. The second factor was the planting media treatment (P), consisting of 3 types of planting media, namely 20% rice husk media + 80% inceptisol, 20% rice husk biochar + 80% inceptisol, and 20% compost + 80% inceptisol The research combined these factors to yield nine treatment combinations, each repeated three times, resulting in 27 experimental units. Each unit consisted of three polybags, resulting in a total of 81 polybags.

The results showed that the provision of mycorrhizal inoculum significantly increased the number of spores and root infection. The application of different planting media can improve the growth characteristics of sorghum plants, especially in the variables of plant height, number of leaves, leaf area, fresh weight, dry weight, root volume, and plant P uptake. The use of 80% inceptisol planting media + 20% compost gave the best results in increasing plant height of 132.61 cm, 7.51 sorghum leaves, 457.59 cm2 leaf area, fresh weight of 158.19 g, dry weight of 22.39 g, root volume of 38.11 cm3 and P uptake of 6.47 (mg P/plant). The combination of inoculum sources and planting media gave equivalent results on mycorrhizal characters and sorghum plant yields.

Keywords: growth and yield, mycorrhiza, planting media, sorghum