

RINGKASAN

Penelitian ini bertujuan mendapatkan kombinasi perlakuan MVA dan pupuk organik untuk sorgum varietas Mandau yang paling sesuai di lahan merjinal perkebunan kelapa sebagai bahan pangan dan pakan bernutrisi serta produksi tinggi, dengan menggunakan teknik budidaya Sorgum yang efektif. Penelitian dilaksanakan dalam dua tahap.

Pada penelitian tahap I, menggunakan rancangan acak lengkap dengan empat perlakuan (Sorgum varietas Mandau diberi inokulan MVA jenis *Glomus*, *Acaulospora* dan *Gigaspora* dan campuran ketiga jenis tersebut). Diperoleh hasil bahwa bahwa MVA campuran (*Glomus*, *Acaulospora* dan *Gigaspora*) memiliki daya infeksi yang lebih tinggi dibandingkan MVA dari jenis tunggal.

Penelitian tahap II, dilaksanakan secara faktorial dengan menggunakan rancangan acak kelompok. Penelitian terdiri dari dua faktor yaitu faktor dosis inokulan MVA dengan level 0, 5, 10 dan 20 gr/lubang tanaman dan faktor dosis pupuk organik dengan level 0, 200, 400 dan 600 kg/ha. Penelitian tahap ini mengamati apakah terdapat interaksi antara inokulan MVA dan pupuk organik terhadap pertumbuhan vegetatif (25 HST dan 50 HST), fase generatif, kadar hara tanah, daya infeksi infeksi dan jumlah populasi MVA.

Hasil penelitian tahap II menunjukkan bahwa pada pengamatan fase vegetatif (25 HST) interaksi inokulan MVA dan pupuk organik tidak memberikan pengaruh yang nyata pada tinggi tanaman, diameter batang jumlah daun dan luas daun.

Pada fase vegetatif (50 HST) Interaksi antara dosis inokulan MVA dan dosis pupuk organik berpengaruh nyata ($p < 0.05$) pada berat kering, protein kasar dan kadar fosfor tanaman

Pada fase generatif pengaruh interaksi nyata pada umur berbunga 50 % dan berat biji per tanaman.

Perlakuan pemberian inokulan MVA berpengaruh nyata ($p < 0.05$) terhadap tinggi tanaman, jumlah daun, luas daun, berat segar tanaman, kandungan HCN tanaman, umur panen, berat segar tanaman (umur 50 HST), umur panen, berat kering tanaman (fase generatif), berat 1000 biji per tanaman, kadar P tanah, Ca tanah, pH tanah, C/N rasio, KTK tanah dan populasi MVA dalam tanah.

Perlakuan dosis pupuk organik berpengaruh nyata ($p < 0.05$) terhadap jumlah daun, luas daun, serat kasar, HCN tanaman, (fase vegetatif 50 HST), berat 1000 biji per tanaman (fase generatif) dan infeksi MVA pada akar sorgum.

Dari hasil penelitian dari tahap I, II didapatkan hasil sebagai berikut:

1. Inokulan MVA memberikan tingkat infektivitas berbeda-beda pada akar tanaman sorgum. Inokulan yang paling responsif untuk diaplikasikan pada tanaman sorgum varietas Mandau adalah MVA campuran dari *Glomus*, *Acaulospora* dan *Gigaspora*

2. Interaksi inokulan MVA dan pupuk organik tidak berpengaruh nyata pada fase vegetatif 25 HST, sedangkan pada fase 50 HST interaksi berpengaruh nyata pada berat kering, protein kasar dan kadar fosfor tanaman dilahan marjinal perkebunan kelapa. Perlakuan inokulan MVA berpengaruh nyata pada tinggi tanaman, jumlah daun, luas daun, berat segar dan kadar HCN tanaman. Perlakuan pupuk organik berpengaruh nyata pada jumlah daun, luas daun, berat segar, serat kasar dan kadar HCN tanaman.
3. Interaksi inokulan MVA dan pupuk organik memberikan pengaruh yang nyata pada fase generatif yakni umur berbunga 50 % dan berat biji. Perlakuan inokulan MVA berpengaruh nyata pada umur panen, berat kering dan berat 1000 biji. Untuk perlakuan pupuk organik berpengaruh nyata pada berat 1000 biji.
4. Interaksi inokulan MVA dan pupuk organik tidak memberikan pengaruh yang nyata pada kadar hara tanah, demikian pula untuk perlakuan pupuk organik. Sedangkan perlakuan inokulan MVA memberikan pengaruh yang nyata.
5. Interaksi inokulan MVA dan pupuk organik tidak memberikan pengaruh yang nyata pada daya infeksi akar sorgum. Daya infeksi MVA pada akar Sorgum hanya dipengaruhi oleh dosis pupuk organik.
6. Perlakuan inokulan MVA dan pupuk organik tidak memberikan interaksi yang nyata terhadap populasi mikoriza, begitu juga pada perlakuan pupuk organik. Sedangkan perlakuan inokulan MVA memberikan pengaruh yang nyata pada populasi MVA.

ABSTRACT

The aim of this research is to find out a mixed treatment of MVA and organic fertilizer for sorghum of Mandau variety being most adaptable to marginal farms of coconut plantation as highly nutritious food and feed materials, as well as greatly productive plant, by using effective cultivation technique.

The research was undertaken in two phases making the use of complete random design with four treatments in which the sorghum was treated with MVA inoculum of *Glomus*, *Acaulospora* and *Gigaspora* types and mixture of these three types. It obviously appeared that mixed MVA (*Glomus*, *Acaulospora* and *Gigaspora*) possessed a higher infectivity compared with single-type MVA.

In phase II, the research was conducted in factorial manner by using the randomized group design. It consisted of two factors namely dosage of MVA inoculum with 0, 5, 10 and 20 g/plant and dosage of organic fertilizer with 0, 200, 400 and 600 kg/ha. In this phase, it observed whether there was an interaction between MVA inoculum and organic fertilizer and had an effect on the vegetative growth (25 HST and 50 HST), generative phase, nutrient level, infectivity and number of MVA population.

Results of the phase II showed that in the vegetative phase (25 HST), interaction of MVA inoculum and organic fertilizer did not significantly influence the plant height, stalk diameter, number of foliages and foliages width.

In the vegetative phase (50 HST), the interaction of MVA inoculum and organic fertilizer generated highly significant effect ($p < 0.05$) on dry weight, crude protein and phosphor levels of the plants.

In the generative phase, such an interaction had significant influence on the age of blossoming 50% and seed weight per plant.

The MVA inoculum treatment produced the significant impact ($p < 0.05$) on the plant height, number of foliages, foliage width, plant fresh weight (50 HST), plant HCN levels, harvesting age, plant dry weight (generative phase), weight of 1000 seeds per plant, soil P levels, Ca, pH, C/N ratio, KTK and MVA population within the soil.

Similarly, the treatment of organic fertilizer generated the significant effect ($p < 0.05$) on the number of foliages, foliage width, crude

fiber, soil HCN (vegetative phase of 50 HST), weight of 1000 seeds per plant (generative phase) and MVA infection in sorghum roots.

Results of the phase I and II indicated that (1) MVA inoculum brought about different infectivities in sorghum roots. The most responsive inoculum applied to the sorghum of Mandau variety was the mixed MVA of *Glomus*, *Acaulospora* and *Gigaspora* types); (2) interaction of MVA inoculum and organic fertilizer did not exert significant effect on the vegetative phase of 25 HST, while in the vegetative phase of 50 HST, the interaction had significant influences on dry weight, crude protein and phosphor levels in the marginal farms of coconut plantation. The MVA inoculum treatment had significant effect on the plant height, number of foliages, foliage width, fresh weight, and HCN levels. The organic fertilizer treatment also possessed significant effect on the number of foliages, foliage width, fresh weight, crude fiber and HCN levels; (3) the interaction of MVA inoculum and organic fertilizer produced significant effect on the generative phase namely age of blossoming 50% and seed weight. The inoculum treatment had significant effect on the harvesting age, dry weight and weight of 1000 seeds, while the organic fertilizer treatment caused significant effect on the weight of 1000 seeds; (4) the interaction had no significant effect on the nutrient levels, and the same condition occurred to the organic fertilizer treatment. In contrast, the inoculum treatment produced significant effect; (5) the interaction did not generated significant effect on the root infectivity. MVA infectivity in the roots was merely influenced by the organic fertilizer; and (6) the inoculum and organic fertilizer treatments did not induce significant effect on the michorizal population, and this also occurred to the fertilizer treatment. However, inoculum treatment gave significant effect on the MVA population.

Key Words: MVA, organic fertilizer, sorghum, marginal farm.