INTISARI

Pengelolaan tanah yang kurang tepatkhususnya vertisol dapat berdampak negatif terhadap kualitas suatu lahan sehingga berpotensi menurunkan hasil pertanian.Penelitian ini bertujuan untuk memperoleh pola pengairan dan pengolahan tanah yang tepat untuk sifat fisik dan kimia tanah yang optimal, serta pertumbuhan dan hasil padi yang maksimal di lahan sawah vertisol Kabupaten Lombok Tengah Provinsi Nusa Tenggara Barat.Penelitian dilaksanakan di Desa Batu Bolong Kecamatan Praya Barat Daya Provinsi NTB dengan posisi geografis -$8^0$42'32" LS dan $116^0$12'39" BT dan elevasi 127,5 mdpl dari bulan Maret hingga Oktober 2021.Rancangan percobaan menggunakan*Nested Experiment* dengan faktor pengolahan yang tersarang pada faktor pemberian air.Faktor pengolahan tanah terdiri dari tiga taraf yaitu tanpa olah tanah (T1), olah tanah minimum (T2), dan olah tanah maksimum (T3).Faktor pengairan juga terdiri dari tiga taraf yaitu macak-macak (P1), pengairan basah kering/PBK (P2), dan tergenang terus-menerus (P3).Pengamatan dilakukan secara kontinyu setiap hari untuk tinggi muka air tanah, pengamatan tiga tahap untuk masing-masing sifat fisik dan kimia tanah aktual di lapangan, pengamatan pada fase vegetatif untuk parameter pertumbuhan tanaman padi.Setelah panen dilanjutkan dengan pengambilan ubinan dan pengamatan fase generatif, kemudian dilanjutkan analisis di laboratorium untuk sifat fisik tanah, kimia tanah, dan jaringan tanaman.Data hasil penelitian selanjutnya dianalisis keragaman (ANOVA) pada selang kepercayaan 95%, jika ditemukan nilai berbeda nyata maka dilakukan uji lanjut dengan menggunakan nilai *Least Significant Different* pada taraf 5%. Analisis statistik mengugnakan *software GenStat Discovery edition* 4.Hasil penelitian menunjukkanperlakuan pengairan dan olah tanah mempengaruhi secara signifikan pada beberapa sifat fisik dan kimia tanah serta pertumbuhan dan hasil tanaman padi baik secara mandiri maupun interkasi antar perlakuan.Pada sifat fisika tanah diperoleh nilai tertinggi pada perlakuan pengairan macak-macak namun tidak berbeda nyata dengan perlakuan lainnya.Sedangkan untuk perlakuan olah tanah diperoleh nilai sifat fisika tanah paling optimal pada perlakuan olah tanah minimum.Perlakuan macak-macak dan basah kering juga memberikan nilai tertinggi pada parameter sifat kimia yaitu N total, N ammonia, N nitrat, K dd, Ca dd, Mg dd, KPK dan pH mendekati netral. Secara fisiologis baik pada parameter pertumbuhan, kadar asam amino prolin hingga parameter hasil rata-rata diperoleh hasil optimum pada perlakuan pengairan macak-macak dan PBK namun tidak berbeda nyata secara statistik. Hasil padi (GKP)sebesar 6,13 th^{-1} pada tanpa olah tanah;5,95th^{-1}pada olah tanah minimum dan 6,02th^{-1}pada olah tanah maksimum. Meskipun nilai GKP yang diperoleh pada olah tanah minimum lebih rendah dibandingkan dengan olah tanah maksimum namun secara statistik tidak berbeda nyata. Secara keseluruhan maka dapat dikatakan bahwa perlakuan terbaik untuk memperoleh sifat fisika tanah, kimia tanah, pertumbuhan dan hasil tanaman padi terbaik adalah pada perlakuan pengairan macak-macak dengan olah tanah minimum.

Kata kunci: olah tanah, vertisol, pengairan, padi, sifat fisik tanah, sifat kimia tanah

ABSTRACT

Improrer soil management especially invertisols soils may have negative impacts on the quality of a land wich canpotentially reduce agricultural yields.This study aims to obtain the suitable irrigation and tillage patterns for optimal physical and chemical properties, and also maximum rice growth and yield in vertisol paddy fields in the southern Central Lombok Regency of West Nusa Tenggara Province. The research was conducted in BatuBolong Village, Ungga District, Praya Southwest Regency, NTB, with a geographical position of -8^{0}42'32" LS and 116^{0}12'39" BT and an elevation of 127.5 meters above sea level. The implementation is in the field from March to October 2021. The treatment design was Nested Experiment with a treatment factor interspersed water supply factor. The land processing factor consists of three levels, namely, no-tillage (T1), minimum tillage (T2), and maximum tillage (T3). The irrigation factor also consists of three levels, namely macak-macak (P1), dry wet irrigation/PBK (P2), and continuous flooding (P3). Observations are carried out continuously every day for groundwater level height, three-stage observations for each of the actual physical and chemical properties of the soil, and also observations in the vegetative phase for rice plant growth parameters. The data from the study were analyzed (ANOVA) at an interval of 95% confidence. A further test was carried out using the Least Significant Different value at 5% if a significantly different value was found. The Statistical analysis using GenStat Discovery Edition 4 software.The results showed that the irrigation and tillage treatments significantly affected several physical and chemical properties of the soil as well as the growth and yield of rice plants both independently and in interactions between treatments. On the physical properties of the soil obtained the highest value in the macak-macak irrigation treatment but it was not significantly different from the other treatments. As for tillage treatment, the most optimal value of soil physical properties was obtained at minimum tillage treatment. The macak-macak and PBK also gave the highest values for the chemical properties parameters, namely N total, N ammonia, N nitrate, K dd, Ca dd, Mg dd, KPK and near neutral pH. Physiologically, both in growth parameters, amino acid levels of proline to the average yield parameters, optimum results were obtained in macak-macak and PBK irrigation treatment ieven tough non significant. Rice yield (GKP) of 6.13 th^{-1}*on no tillage; 5.95* th^{-1}*on minimum tillage and 6.02* th^{-1}*on maximum tillage. Although the GKP value obtained in the minimum tillage is lower than the maximum tillage, it is not statistically significantly different. Overall, it can be said that the best treatment to obtain soil physical properties, soil chemistry, growth and yield of the best rice plant is the macak-macak irrigation treatment with minimum tillage.*

***Keywords**: tillage, vertisol, watering, rice, soil physical properties, soil chemical properties*