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Studi Serapan Hara N, P, K dan Potensi Hasil Lima Varietas Padi Sawah (Oryza sativa L.) pada Pemupukan Anorganik dan Organik

Absorption of N, P and K, and Yield of Five Lowland Rice Cultivars (Oryza sativa L.) under Inorganic and Organic Fertilization

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ABSTRACT

The objective of the research was to study the nutrition uptake (nitrogen, phosphorus, and potassium,) and the grain production of five rice varieties representing modern, new plant type and local varieties under application of inorganic, organic and combined inorganic-organic fertilization. Five rice varieties were Way Apoburu and IR-64 (modern varieties), Midun and Sarinah (local varieties from Sukabumi and Garut, respectively), and Fatmawati (new plant type variety). Five fertilizer treatments were (1) full recommendation dosage of inorganic fertilizer (250 kg urea/ha, 100 kg SP-36/ha, and 100 kg KCl/ha), (2) ¼ recommendation dose of inorganic fertilizer + rice straw, (3) ½ recommended dose of inorganic fertilizer + rice straw, (4) rice straw, and (5) green manure from Crotalaria juncea biomass. The results showed that there was no specific response of rice varieties to the fertilization treatments, even though there was specific nutrient uptake pattern and yield of each variety, and there was significant effect of fertilizer treatment to nutrient uptake and rice yield. Nutrient uptake and grain yield indicated that nutrient imobilisation occurred at 1st season, however the availability of N, P, K nutrients increased at 2nd and 3rd season on rice straw and green manure treatments. Rice straw application caused lower nutrient uptake and grain yield than full dosage inorganic fertilizer at 1st season but both were not significantly different at 2nd and 3rd season. Application of rice straw with ½ dosage of inorganic fertilizers was not significantly different from full dosage of inorganic fertilizers in nutrient uptake and grain yield. Modern varieties showed higher level of N absorption than that of new type variety although it was not significantly different with that of local varieties, whereas the P and K uptake of modern varieties was lower than that of local and new plant type varieties. The modern varieties also showed higher level of dry grain per hill than that of local and new plant type varieties. However yield per ha of all varieties tended to be similar.

Key words: uptake, efficiency, mineral nutrition, variety, lowland rice

PENDAHULUAN

Hingga saat ini varietas unggul baru terus dikembangkan untuk mempertahankan dan meningkatkan daya hasil. Akhir-akhir ini pemulia tanaman juga telah menghasilkan varietas padi tipe baru untuk meningkatkan hasil padi varietas moderen yang dianggap tidak dapat lagi ditingkatkan. Varietas padi tipe baru merupakan persilangan padi indica dan japonica yang diseleksi berdasarkan ideotipe. Disamping itu, dalam kurun waktu 40 tahun dari berbagai varietas moderen yang dihasilkan telah terjadi adaptasi terhadap kondisi suatu lokasi (off type) di beberapa daerah. Dengan demikian di setiap daerah terdapat varietas lokal yang merupakan varietas modern adaptasi ataupun varietas unggul lama adaptasi. Ketiga tipe varietas tersebut memiliki karakter fisiologis maupun agronomis yang berbeda-beda (Peng et al., 1994). Tanggap suatu varietas terhadap kesuburan tanah berbeda. Seperti dinyatakan oleh Rajaram et al. (1996) galur berdaya hasil tinggi yang diseleksi pada lingkungan optimum hasilnya akan lebih rendah dibandingkan galur berdaya hasil rendah hasil seleksi pada lingkungan sub optimum.

Penggunaan varietas moderen telah mendorong petani untuk mengaplikasikan pupuk anorganik berdosis tinggi dan tidak mengaplikasikan bahan organik. Hal ini menyebabkan kadar bahan organik tanah menjadi sangat rendah dan menjadi pembatas untuk mencapai hasil yang tinggi. Fungsi bahan organik tanah sangat penting karena sebagai kunci mekanistik untuk suplai unsur hara. Dengan biomas mikrobial yang segmen siklusnya sangat cepat, fase organik bertindak sebagai biokatalis untuk suplai unsur hara dan pool hara.

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