Optimum Fertilizer Rate for Kangkong (Ipomoea reptans L.) Production in Ultisol Jasinga

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Proper fertilization of a crop is knowing the crop nutrient requirement for production of maximum yield and the potential level of nutrient availability from the soil. In addition to yield obtained, quality of the commodity is an important factor of profit and shelf-life for high-value crops (Hochmuth et al., 1993). Nitrogen, phosphor, and potassium availability is the most limiting factors for maximim growth and yield (Tisdale, Nelson dan Beaton, 1990). Kangkong (Ipomoea reptans L.) were grown to evaluate optimum rate of N, P, and K fertilizer in Ultisol Jasinga soil with low pH (5.5), low C-Organic (1.54%), very low N-total (0.12 %), low K content (0.29 me/100 g), but very high soil P2O5 concentration (19.2 ppm) to evaluate the best crop management practices with saline solution.

MATERIALS AND METHODS

The experiment was conducted at farmer site in Hambaro village-Nanggung, Bogor, Indonesia from January to April 2008. Treatments: N, P, K fertilizer rate of 0%, 50%, 100%, 150%, and 200% from fertilizer recommendation rate (100 kg/ha N, 135 kg/ha P2O5, and 150 kg/ha K2O). This experiment using Completely Randomized Block Design with four replications (each farmer field as one replication). Total plot = 15 x 4 = 60 plot. Plot size = 1.5 x 5 m. Kangkong local variety planted in four rows per plot, 25 cm between rows and 15 cm within rows, 10 seed per planting

RESULT AND DISCUSSION

Application of N to 200 kg/ha, P2O5 to 270 kg/ha, and K2O to 270 kg/ha quadratically increased total and relative yield of kangkong. Base on Y = - 0.0021x2 + 0.572x + 56.857 for N, Y = - 0.0013x2 + 0.3673x + 72.102 for P2O5, and Y = - 0.0001x2 + 0.0959x + 84.102 for K2O the optimum rate for each nutrients were 136-141-674 kg N- P2O5- K2O /ha.

Fertilizer recommendation base on K threshold (no K) was 41-40-0 and P threshold was 24-0-0 kg N-P2O5- K2O/ha. However, there were no fertilizer needed on N threshold. In recommendation base on optimum yield (136-141-674), percentage increase in cost (134,0) was higher than the expected increase in yield (19.28). According to the yield vs. cost rule therefore, the most economical recommendation would be 41-40-0 kg N-P2O5- K2O/ha (K threshold).

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