

Biofertilizer as a supplement of chemical fertilizer for yield maximization of rice

ABSTRACT

Biofertilizer performs major role in crop production. A study was conducted to determine the effect of bio-organic fertilizer with reduced chemical fertilizer for rice yield maximization. The treatments were (i) control (without fertilizer), (ii) N, P, K at recommended rate i.e. 100% (120, 30, 60 kg ha⁻¹), (iii) N and P (75%), and K (recommended rate) with biofertilizer (5 t ha⁻¹) and (iv) N and P (50%), and K (recommended rate) with biofertilizer (10 t ha⁻¹). Results showed that N and P (50%) with biofertilizer (10 t ha⁻¹) increased the number of tillers (29), panicle length (28 cm), weight of 1000 grain (21.31 g), and produced the highest grain yield (7.26 t ha⁻¹). There was no significant difference found among the N, P (75%) with biofertilizer (5 t ha⁻¹) and N, P (50%) with biofertilizer (10 t ha⁻¹) treatments for plant height, number of panicle plant⁻¹ and harvest index (%). The application of biofertilizer with beneficial microbes improved the leaf chlorophyll, plant nutrient uptake and grain protein content in rice. Hence, the use of chemical N and P fertilizer can be minimized by 50 percent and improve rice yield with the supplement of 5 ton ha⁻¹ of bio-organic fertilizer.

Keyword: Beneficial microbes; Nutrient uptake; Grain protein; Harvest index