

Different Organic Sources as Germination Enhancers of Selected Seeds and as Components of Fertilizer Formulation for a Test Crop

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Farmers tend to use inorganic fertilizers in excess amount for getting high yield. Excess application of inorganic fertilizer is detrimental. In this background a study was undertaken to formulate a low-cost organic fertilizer and examine the effectiveness of Spirulina, Azolla and formulated organic fertilizer (FOF) on germination and seedling vigor of Curry Chilli, Green Chilli, Water spinach and Sugar graze and to evaluate the effect of FOF on growth and yield of Sugar graze. The organic fertilizer was formulated based on nutrient analysis, using dry powders of Spirulina, Azolla, and three underutilized resources, namely Palmyrah leaf, Coconut leaf and Banana pseudostem. The germination experiment was carried out with three replicates in Complete randomized design (CRD) with five treatments namely T1 - FOF, T2 - dry Azolla powder, T3 - dry Spirulina powder, T4 - live Spirulina culture and T5 - Control (Distilled water). A pot experiment was conducted in net house to find the response of Sugar graze for different fertilizer combinations. Treatments were T1 - control (no fertilizer), T2- 100% inorganic (NPK-2.7, 1.8, 0.9 g/pot), T3 - 50% inorganic (NPK-1.35, 0.9, 0.45 g/pot), T4 - 100% organic (cattle manure - 540 g/pot), T5 - 50% organic (cattle manure - 270 g/pot), T6 - 50% inorganic (NPK-1.35, 0.9, 0.45 g/pot) + 270 g FOF and T7 - 50% organic (cattle manure - 270 g/pot) + 270 g FOF. Design was CRD with two replicates. Nutrient uptake of the plants, plant height and yield were measured. The recorded data were statistically analysed using Analysis of Variance and treatment means were compared using Duncan's multiple range test. Result showed that soaking with Spirulina, Azolla and FOF improves the germination (5 -15%) and seedling vigour (12-53%) compared to control in all selected seeds. T6 (50% inorganic + FOF) and T2 (100% inorganic) recorded the same average value in height (210 cm), which was the highest among treatments. T4 (100% organic) recorded the highest value in potassium (34.34 g/plant) uptake. T7 (50% organic + FOF) recorded the highest values in nitrogen (0.82 g/plant) and phosphorous (2.18 g/plant) uptake and fresh biomass yield (158 g/plant) and dry biomass yield (41 g/plant). This finding indicates that by substituting 50% of organic or inorganic fertilizer with FOF, either similar or higher performance of sugar graze compared to 100% organic or inorganic treatments can be obtained.

Keywords: Azolla; Formulated organic fertilizer; Seed vigour; Spirulina; Sugar graze

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