

Effect of using agro-fertilizers and N-fixing Azotobacter enhanced biofertilizers on the growth and yield of corn

ABSTRACT

Corn is an important crop and is grown widely around the world. Corn is a food source for human as well as animal and processed into industrial product such as ethanol. Corn is one of the important productions of Malaysia as the climate is suitable for corn growth. In this study, organic fertilizers such as biofertilizer, N-fixing Azotobacter enhanced biofertilizers and compost were added to the soil to determine best practice in using organic fertilizers for higher corn yield and growth. The study was conducted in plot experiment with five replications based on randomized block design in the summer of 2012. All plots were manually harvested and yield was adjusted to 15% moisture. Grain yield (total corn harvested) at maturity was determined by harvesting the two central rows of each plot. Statistical analysis was performed on the effect of fertilizer treatments on plant growth, corn yield and nitrogen, phosphorous and potassium contents of plant materials. The means were compared according to Duncan multiple range test. The results showed that organic fertilizers in the form of N-fixing Azotobacter enhanced biofertilizer increased yield with positive effects on measured plant height, weight and leaf index. Given the significant enhancement in growth and yield of corn taking place mainly with N-fixing Azotobacter fertilizers under organic condition, the mechanism for this beneficial effect could be due to the more balanced nutrition and improved absorption of nitrogen and other mineral nutrients by the corn.

Keyword: Biofertilizer; Corn yield; Compost; Fertilizer treatments; N-fixing Azotobacter