Selection of effective *Azotobacter* sp. for increasing crop yield

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ABSTRACT

Ten isolates of effective Azotobacter selected with the nitrogenase activity of 322-1,334 nmole C_2H_4/pt/hr were selected. Then, pot experiment in order to evaluate the nitrogen fixation efficiency of these microbes were carried out with sweet corn. CRD comprising 11 treatments with 3 replications was used. The results showed that average value of sweet corn weight, height and leaf area including nitrogenase activity did not differ significantly. However, KJB 29 and KJB 31 isolate showed a trend of the highest N_2-fixation at 126.4 nmole C_2H_4/pt/hr. Randomized Completely Block Design was planned in field experiment, totally 5 treatments and 4 replications, T1: control, T2: N-P-K, T3: KJB29+P-K, T4: KJB31+P-K and T5: MIXED(KJB29+KJB31)+P-K. Results found that height and leaf area of sweet corn, sweetness, width and length of ear corn showed no statistical difference. But the highest of stem dry weight (510.33 kg/rai) was observed in T2, mean while, corn yield between T2 and microbial inoculation treatment (T3-T5) was not different by a mean range of 994.67-1,229.67 kg/rai. Analysis of microbial population and nitrogenase activity in inoculated KJB 31 treatment showed the highest value at 5.89 log no./g cell and 59.4 nmole C_2H_4/pt/hr, respectively.

Key words ; *Azotobacter* .sp, Nitrogen, Non-symbiotic nitrogen fixation bacteria

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