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One field experiment has been conducted at Karangrejo, East Lampung to study the effect of inoculation of some selected *Azospirillum* isolates at two sub-optimal N doses on growth and yield in maize cv Bisma. Long drought occurred after the 2nd N fertilizer application affected further plant growth obviously due to water stress. Observation at flowering stage shown that *Azospirillum* inoculation improved drought tolerance as shown in higher plant population, increasing plant dry matter and plant N yield in inoculated plots. At grain maturity, grain yield response to inoculation and N rates were different emphasized further selection of *Azospirillum* isolates.

Key words : N fertilizer rates, *Azospirillum* inoculation, drought tolerance, maize.

Introduction

Among the free living rhizospheric bacteria, *Azospirillum* is getting more attention due to their beneficial effect on plant growth and crop yield of agronomic importance. Various reports indicated that inoculation of *Azospirillum* in forage grass may increased dry matter of *Pennisetum* and *Panicum* (1) as well as grain yield in cereals, such as wheat (2) and maize (3). In Indonesia, Government self sufficiently program in maize resulted the increase of production, from 6,869,000 ton in 1994 to 9,345,000 ton in 2000 (4). To obtain optimum growth and production of maize, considerable amount of N fertilizer is needed with N rates around 120-135 kg N ha⁻¹. Some reports mentioned that *Azospirillum* inoculation could reduce the use of N fertilizer with the increase of grain yield in cereals (5). Furthermore, more success on *Azospirillum* inoculation on grain yield achieved at intermediate rate of fertilizer (6,7). The objective of this experiment was to study the effect