

## Penggunaan isolat azotobacter pada tanaman sorgum sorghum bicolor l sebagai alternatif sumber nitrogen = The use of azotobacter isolate on sorghum sorghum bicolor l as source of nitrogen

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### Abstrak

Telah dilakukan penelitian mengenai potensi koleksi tiga isolat Azotobacter milik BPPT terhadap ketersediaan nitrogen untuk pertumbuhan tanaman sorgum (*Sorghum bicolor* L.). Percobaan dilakukan pada lima perlakuan dan empat ulangan. Perlakuan terdiri dari kontrol negatif tanpa perlakuan (TP) dan perlakuan isolat tunggal Azotobacter (Az1, Az2, Az3), serta kontrol positif Urea (U) yang diberikan satu kali, yaitu setelah tanaman berumur 7 hari setelah tanam. Volume yang diberikan pada setiap isolat adalah 10 ml, dimana setiap 1 ml isolat mengandung 10<sup>9</sup> sel Azotobacter. Kontrol positif berupa pemberian urea diberikan sebanyak 1 g. Tanaman dipelihara di rumah kaca hingga fase vegetatif maksimum (40 hari). Parameter pertumbuhan yang diukur adalah tinggi, kadar klorofil, jumlah daun, panjang helaian daun, diameter batang, dan berat kering. Data dianalisis menggunakan uji lanjut jarak berganda LSD ( $\alpha = 0,05$ ). Uji LSD menunjukkan kadar klorofil, jumlah daun, diameter batang dan berat kering isolat Az2 sama dengan perlakuan kontrol positif Urea. Hasil penelitian memperlihatkan bahwa isolat Az2 memiliki potensi sebagai biofertilizer sumber nitrogen pengganti urea.

*The research on use of three isolates Azotobacter of BPPT collections on the growth of sorghum (*Sorghum bicolor* L.) as an alternative source of nitrogen has been done. The aim of this study is to determine the potency of Azotobacter as a nitrogen biofertilizer. Experiments were conducted in five treatment and four replications. The treatment consist of a negative control without treatment (TP) and the treatment of three single isolates of Azotobacter (Az1, Az2, Az3), a s well as the positive control urea (U) were applied once at the 7th days after planting. Volume given to each isolate containing 10<sup>9</sup> Azotobacter cells was 10 ml while urea as positive control was applied as 1 g. Sorghum grown in a greenhouse until vegetative maximum phase. Chlorophyll content, number of leaves, length of leaves, diameter of stem, and dry weight are measured as parameter growth of sorgum. Data were analyzed using LSD multiple range test further ( $\alpha = 0,05$ ). LSD test showed that Az2 isolate and positive control (Urea) gave same results on chlorophyll content, number of leaves, diameter of stem, and dry weight parameters. These beneficial effects of Az2 isolate can potentially be used as nitrogen biofertilizer to substitute urea.*