

## ABSTRAK

**Dewi Sukma Yanti Gulo, NIM 4163220009 (2016). Isolasi Bakteri Filosfer Penambat Nitrogen Pada Padi (*Oryza sativa*) yang Ditanam Secara Organik dan Anorganik Di Desa Lubuk Bayas Kabupaten Serdang Bedagai.**

Bakteri filofosfer merupakan salah satu bakteri yang berperan dalam pertumbuhan tanaman. Bakteri filofosfer memiliki banyak manfaat, salah satunya bermanfaat sebagai penambat nitrogen. Ketersediaan unsur N dalam tanaman merupakan salah satu faktor penting untuk menunjang pertumbuhan dan perkembangan padi. Tetapi, informasi mengenai bakteri filofosfer yang berpotensi sebagai penambat nitrogen masih terbatas, termasuk pada padi yang ditanam secara organik maupun anorganik. Penelitian ini bertujuan untuk mengetahui keberadaan bakteri filofosfer yang berpotensi menambat nitrogen pada padi yang ditanam secara organik maupun anorganik. Metode yang digunakan dalam menyeleksi bakteri penambat nitrogen adalah menggunakan media *James Nitrogen free bromthymol* (JNFb) semipadat. Pengamatan makroskopis dilakukan dengan mengamati morfologi bakteri filofosfer. Pengamatan mikroskopis dilakukan dengan pewarnaan gram dan uji biokimia pada bakteri filofosfer. Identifikasi sampai tingkat genus mengacu pada buku *Bergeys's Manual Of Determinative Bacteriology*. Didapat 47 isolat bakteri filofosfer yang telah diisolasi, pada sistem pertanian organik terdapat 29 isolat bakteri dengan kepadatan populasi bakteri yaitu  $14,91 \times 10^6$  CFU/g dan pada sistem anorganik terdapat 18 isolat dengan kepadatan populasi bakteri yaitu  $10,36 \times 10^6$  CFU/g. Pada sistem pertanian organik bakteri yang berpotensi menambat nitrogen yaitu 14 isolat dan pada sistem pertanian anorganik bakteri yang berpotensi menambat nitrogen yaitu 8 isolat. Berdasarkan hasil karakterisasi dan uji biokimia, dari 22 isolat yang berpotensi menambat nitrogen, tigabelas isolat masuk ke dalam genus *Azotobacter* sp. dan sembilan isolat genus *Azosprillum* sp.

Kata Kunci : Bakteri, Filofosfer, Nitrogen, Organik, Anorganik.



## ABSTRACT

**Dewi Sukma Yanti Gulo, NIM 4163220009 (2016). Isolation of Nitrogen Fixing Phyllosphere Bacteria in Rice (*Oryza sativa*) which Was Grown Organically and Inorganically in Lubuk Bayas Village, Serdang Bedagai Regency.**

Phyllosphere bacteria is one of the bacteria that plays a role in plant growth. Phyllosphere bacteria have many benefits, one of which is useful as a nitrogen fixer. The availability of N in plants is one of the important factors to support the growth and development of rice. However, information on phyllospheric bacteria that have the potential as nitrogen fixers is still limited, including in rice grown both organically and inorganically. This study aims to determine the presence of phyllosphere bacteria that have the potential to fix nitrogen in rice grown organically and inorganically. The method used in selecting nitrogen-fixing bacteria was using semisolid James Nitrogen free bromthymol (JNFb) media. Macroscopic observations were made by observing the morphology of the phyllosphere bacteria. Microscopic observations were carried out by gram staining and biochemical tests on phyllosphere bacteria. Identification to the genus level refers to the book Bergeys's Manual Of Determinative Bacteriology. There are 47 isolates of phyllosphere bacteria that have been isolated, in the organic farming system there were 29 isolates of bacteria with a bacterial population density of  $14.91 \times 10^6$  CFU/g and in the inorganic system there were 18 isolates with a bacterial population density of  $10.36 \times 10^6$  CFU/g . In organic farming systems, bacteria that have the potential to fix nitrogen are 14 isolates and in inorganic farming systems, bacteria that have the potential to fix nitrogen are 8 isolates. Based on the results of characterization and biochemical tests, of the 22 isolates that had the potential to fix nitrogen, thirteen isolates belonged to the genus *Azotobacter* sp. and nine isolates of the genus *Azospirillum* sp.

Keywords: Bacteria, phyllosphere, nitrogen, organically, conventionally