Studi asosiasi strain Nostoc CPG8, CPG24 dan GIA 13a dengan akar padi (Oryza sativa L.) varietas Ciherang secara in vitro = Association study of Nostoc CPG8, CPG24 dan GIA 13a with roots of paddy ((Oryza sativa L.) under in vitro conditions

Aprilia Nur Fitrianti, author

Abstrak

Strain Nostoc (CPG8, CPG24 dan GIA13a) yang diambil dari persawahan di Ciptagelar, Jawa Barat dan Gianyar, Bali digunakan untuk mengetahui asosiasi yang terjadi dengan akar tanaman padi. Kultivasi tanaman padi dilakukan dalam kondisi aseptik (in vitro) pada suhu 250C dengan 12 jam siklus terang-gelap hingga tanaman padi berusia 14 hari. Strain Nostoc diinokulasikan ke dalam tanaman padi yang telah di ko-kultivasi dalam medium cair BG11 N-free sebanyak 0,4 gram berat basah untuk setiap perlakuan. Pengamatan asosiasi yang terjadi antara Nostoc dengan akar tanaman padi dilakukan dengan menggunakan Scanning Electron Microscope (SEM) dan mikroskop cahaya.
Hasil analisis SEM dan mikroskop cahaya menunjukkan ketiga strain Nostoc terlihat di bagian permukaan akar dan mendominasi permukaan bagian tengah akar tanaman padi. Ketiga strain Nostoc juga menunjukkan peningkatan kadar klorofil dan strain Nostoc CPG24 memiliki peningkatan kadar klorofil a yang paling signifikan sebesar 2,108 mg/L. Tanaman padi menunjukkan gejala defisiensi Nitrogen, Phospor dan Kalium sedangkan ketiga strain Nostoc menunjukkan peningkatan kadar klorofil yang sebanding dengan peningkatan biomassa. Bentuk asosiasi diantara tiga strain Nostoc dengan akar tanaman padi secara in vitro adalah kompetisi dalam memperoleh nutrisi dari media ko-kultivasi.
.....Nostoc strains (CPG8, CPG24 and GIA13a) were taken from rice fields in Ciptagelar, West Java and Gianyar, Bali used to determine the association is going on with the roots of rice plants. Paddy cultivation is done under aseptic conditions (in vitro) at a temperature of 250C with a 12 hour light-dark cycle of up to 14 days old rice plants. Nostoc strain was inoculated into rice plants that have been in co- cultivation in liquid medium BG11 N-free as much as 0,4 gram wet weight for each treatment. Observations occurred between Nostoc association with the roots of rice plants is done by using a Scanning Electron Microscope (SEM) and light microscopy.
The results of SEM and light microscopy analysis showed the three strains of Nostoc visible on the surface of the root surface and dominates the central part of the roots of the rice plant. All of Nostoc strains also showed increased levels of chlorophyll and Nostoc strains CPG24 have elevated levels of chlorophyll a most significant of 2.108 mg/L. Rice plants showing symptoms of deficiency of nitrogen, phosphorus and potassium, while all three strains Nostoc showed elevated levels of chlorophyll which is corelated to the increase in biomass. The association of the three strains of Nostoc with the roots of rice plants in vitro is competition in obtaining nutrients from the co-cultivation medium.