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DAFTAR PUSTAKA

Adisarwanto, T. 2007. Budidaya Kedelai dengan Pemupukan yang Efektif dan Pengoptimalan Peran Bintil Akar. Swadaya, Jakarta.

Aguilar, A., H. Peralta., Y. Mora., R. Díaz., C.Vargas-Lagunas., L. Girard, and Jaime Mora. 2016. Genomic comparison of *Agrobacterium pusense* strains isolated from bean nodules. Frontiers in Microbiology 7:1-5.

Allito, B. B. 2015. Soil population and phenotypic characterization of soybean (*Glycin max*) and haricot bean (*Phaseolus vulgaris*) nodulating rhizobia at Hawassa and Ziway. Scholarly Journal of Agricultural Science 5: 30-38.

Arimurti. 2009. Karakterisasi rhizobia *indigenous* edamame sebagai kandidat pupuk hayati. Jurnal Ilmu Dasar 10: 30-37.

Aserse, A. A., L. A. Ranen, F. Assefa, Hailemariam, and M. K Lindstro. (2012). Phylogeny and genetic diversity of native rhizobia nodulating common bean (*Phaseolus vulgaris L*.) in Ethiopia. Systematic and Applied Microbiology 35: 120-131.

Atlas, R. M. 2010. Handbook of Microbiological Media, Fourth Edition. CRC Press, Florida.

Berrada, H. and F. Benbrahim. 2014. Taxonomy of the rhizobia : current perspectives. British Microbiology Research Journal 4 (6) : 616-639.

Bochner, B. R. 2009. Global phenotypic characterization of bacteria. Federation of European Microbiological Societies Review 33: 191-205.

Brencic, A. and S. C. Winans. 2005. Detection of and response to signals involved in host microbe interactions by plant-associated bacteria. Microbial Molecular Review 69: 155-194.

Bruning, B. and J. Rozema. 2013. Symbiotic nitrogen fixation in legums : Perspective for saline agriculture. Environmental and Experimental Botany 92 : 134-143.

Catoira, R., Gelera., D. Billy., Penmetsa., Etienne., F. Maillet., C. Rosenberg., D. Cook., Gougha., and Denarie. 2000. Four Gens of *Medicago truncatula* controlling components of a Nod Factor transduction pathway. American Society of Plant Physiologists 12: 1647-1665.

De Bruijn. 1992. Use of repetitive (repetitive rxtragenic palindromic and enterobacterial repetitive intergeneric consensus) sequences and the polymerase chain reaction to fingerprint the genomes of *Rhizobium meliloti* isolates and other soil bacteria. Applied and Environmental Microbiology 58 : 2180-2187.

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Fatima, Z., M. Zia and M. C. Haudhary. 2006. Effect of *Rhizobium* strain and phosphorus on growth of soybean (*Glycine max*) and survival of Rhizobium and P-solubizing bacteria. Pakistan Journal of Botany 2 : 459-464.

Gage, D.J. 2004. Infection and invasion of roots by symbiotic, nitrogen fixing rhizobia during nodulation of temperate legumes. Microbiology Molecular Biology Rivew 68: 280–300.

Gauri, A.K.S., R.P. Bhatt., S. Pan.t, M.K. Bedi and A. Naglot. 2011. Characterization of *Rhizobium* isolated from root nodules of *Trifolium alexandrinum*. Journal of Agricultural Technology 7: 1705-1723.

Guimaraes, A. s., P. M. D. Jaramillo., R. S. A. Nobrega., L. A. Florentino., K. B. Silva, and F. M. S. Moreira. 2012. Genetic and symbiotic diversity of nitrogen-fixing bacteria isolated from agricultural soils in the western amazon by using cowpea as the trap plant. Applied and Environmental Microbiology 18: 6726-6733.

Hadioetomo, R. S. 1993. Mikrobiologi Dasar Dalam Praktek: Teknik dan Prosedur Laboratorium. PT. Gramedia Pustaka Utama, Jakarta.

Hahn, N. J. 1966 . The congo red in bacteria and its usefulness in the identification of *Rhizobia*. Canadian Journal of Microbiology 12: 725-733.

Hamid, S., S. Muzaffar, I. A. Wani, F. A. Masoodi dan M. M Bhat. 2014. Physical and cooking characteristics of two cowpea cultivars grown in temperate Indian climate. Journal of the Saudi Society of Agricultural Sciences (http://dx.doi.org/10.1016/j.jssas.2014.08.002). Diakses 20 Januari 2017.

Hindersah, R, and T. Simarmata . 2004. Potensi *Rizobakteri Azotobacter* dalam meningkatkan kesehatan tanah. Jurnal Natur Indonesia 5: 127-133.

Holt, G. H., N. R. krieg., P. H. A. Sneath, J. T. Staley and S.T. Williams. 1994. Bergey's Manual of Determinative Bacteriology 9th editon. The Williams and Wilkins, Baltimore.

Jaramillo, P. M. D., A. A. Guimares., L. A. Florentino., K. B. Silva., R. S. A. Nobrega and F. M. S. Moreira. 2013. Symbiotic nitrogen-fixing bacterial populations trapped from soils under agroforestry systems in the western Amazon. Scientia Agricola 70: 397- 404.

Jutono, J. Soedarsono, S. Hartadi., S. Kabirun., Suhadi., and Soesanto. 1973. Pedoman Praktikum Mikrobiologi Umum untuk Perguruan Tinggi. Departemen Mikrobiologi, Fakultas Pertanian, Universitas Gadjah Mada Yogyakarta.

Kamboj, D., R. Kumar., A. Kumari., B. S. Kundu., D. Pathak and K. S. Parveen. 2008. Rhizobia, nod factors and nodulation. Journal of Agricultural 29: 200-206.

Kessel, C. V ., dan C. Hartley. 2000. Agricultural management of grain legumes: has it led to an increase in nitrogen fixation. Field Crops Research 65: 165-181.

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Kishinevsky, B. D., D. Sen and G. Yang. 1996. Diversity of rhizobia isolated from various hedysarum species. Journal of Plant Soil 186: 21-28.

Kuykendall, L. D., J. M. Young, E. Martinez-Romero, A. Kerr, and H. Sawada. 2005. *Rhizobium. In*: Don J. Brenner, Noel R. Krieg, and James T. Staley (Eds.). Bergey's Manual of Systematic Bacteriology 2nd ed. Vol. 2. Springer, New York.

Kumar, P., R. C. Dubey., D. K. Maheshwari, and V. K. Bapjai. 2016. acc deaminase producing *rhizobium leguminosarum* rpn5 isolated from root nodules of *Phaseolus vulgaris* L. Bangladesh Journal of Botany. 3: 477-484.

Laurette, N. N., N. B. Maxemilienne., F. Henri., A. Souleymanou., K. Kamdem., N. Albert., N. Dieudonne and E. F. Xavier. 2015. Isolation and screening of indigenous bambara groundnut (*Vigna Subterranea*) nodulating bacteria for their tolerance to some environmental stresses. American Journal of Microbiological Research 3: 65-75.

Lima, A.S., R. S. A. Nobrega., A. Barberi., K. D. Silva., D. F. Ferreira and F. M. S. Moreira. 2009. Nitrogen-fixing bacteria communities occurring in soils under different uses in the Western Amazon Region as indicated by nodulation of siratro (*Macroptilium atropurpureum*). Journal of Plant Soil 319: 127- 145.

Liu X. Y., S. Wei., F. Wang., E. K. James., X. Y. Guo., C. Zagar., L. G. Xia., X. Dong and Y. P. Wang. 2012. *Burkholderia* and *Cupriavidus* spp. Are the preferred symbionts of *Mimosa* spp. in Southern China. FEMS Microbiology Ecology 80: 417426.

Lopez-lopez, A., A. Marco, Rogel-Hernandez, I. Barois, A.I.O. Ceballos, J. Martinez, E. Ormeno-Orrillo, and E. Martinez-Romero. 2012. *Rhizobium grahamamii* sp. nov., from nodules of *Dalea leporina*, *Leucaena leucocephala* and *Clitroria ternatea*, and *Rhizobium mesoamericanum* sp. nov., from nodules of *Phaseolus vulgaris*, siratro, cowpea and *Mimosa pudica*. International Journal of Systematic and Evolutionary Microbiology 62 : 2264-2271.

Madigan, M. Tj., J. M. Martinko, and J. Parker. 2009. Brock: Biology of Microorganism. 12th Edition Pretince Hall, USA.

Marsoem, S. R. 2013. Studi mutu kayu jati di hutan rakyat gunungkidul. Jurnal Ilmu Kehutanan 2: 108-122.

Massawel, P. I., K. M. Mtei., L. K. Munishi, and P. A. Ndakidemi. 2016. effect of rhizobium and intercropping systems on soil nutrients and biological nitrogen fixation as influenced by legumes (*Phaseolus vulgaris and Dolichos lablab*). International Journal of Current Microbiology and Applied Sciences 10: 135-149.

Mnasri, B., S Saidi., S. Chihaoui, and R Mohamadi. (2012). Sinorhizobium americanum symbiovarmediterranense is a predominant symbiont that nodulates and fixes

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nitrogen with common bean (*Phaseolus vulgaris L*.) in a Northern Tunisian field. Systematic and Evolutionary Microbiology 35:263-269.

Nadeem,S.M., M. Naveed, M. Ahmad, and Z.A.Zahir. 2015. Rhizosphere bacteria for crop production and inprovement of stress tolerance : mechanisms of action, application, and future prospects. Plant Microbes Symbiosis : Applied Facts Springer : 1-36.

Namkeleja, Y. , K. Mtei., and P. A. Ndakidemi.. 2016. Isolation and molecular characterization of elite indigenous *Rhizobia* nodulating *Phaseolus* bean (*Phaseolus vulgaris* L.). American Journal of Plant Sciences 7: 1905-1920.

Norris, J.R., and Douglas W.R. 2002. 1:Routine Biochemical Test. Methods in Microbiology : 10-14.

Peoples, M.B., A.W. Faizah, B. Rerkasem, and D.F. Herridge. 1989. Method for Evaluating Nitrogen Fixation by Nodulating Legumes in the Field. Australian Academyof Science.Canberra.

Purwaningsih, S. 2008. Populasi bakteri *Rhizobium* di tanah pada beberapa tanaman dari Pulau Buton, Kabupaten Muna, Propinsi Sulawesi Tenggara. Journal of Tropical Soils 14: 65-70.

Rasolomampianina, R., X. Bailly, R. Fetiarison, R. Rabevohitra, G. Bena, L. Ramaroson, M. Raherimandimby, L. Moulin, P. De lajudie, B. Dreyfus, and J.C. Avarre. 2005. Nitrogen-fixing nodules from rose wood legum trees (*Dalbergia spp*.) Endemic to madagascar host seven different genera belonging to α- and β-*proteobacteria*. Molecular Ecology 14: 4135-4146.

Rao, N. S. S. 1982. Biofertilizers inAgriculture. Oxford& IBH Publishing Company. New Delhi.

Rao, N. S. 1994. Mikrobiologi Tanah dan Pertumbuhan Tanaman Edisi Kedua. UI Press, Jakarta.

Sadowsky, M. J., H. H. Keyser, and B. B. Bohlool. 1983. Biochemical characterization of fast and slow growing rhizobia that nodulated soybeans. International Journal of Systematic Bacteriology 33 : 716-722.

Sessitsch, A., G. Hardarson., A.D.L. Akkermans and W.M. de Vos. 1997. Characterization of *Rhizobium etli* and other *Rhizobium* sp. that nodulate *Phaseolus vulgaris* L. in an Austrian soil. Molecular Ecology 6: 601-608.

Seymour, M., J. A. Kirkegaard, M. B. Peoples, P. F. White, R. J. French, R.J.,and A van Burgel. 2012. Break-crop benefits to wheat in Western Australia—insights from overthree decades of research. *Crop* and *Pasture Science* 63: 1–16.

Somasegaran, P. and H.J. Hoben. 1985. Methods in Legume : *Rhizobium* Technology. Department of Agronomy and Soil Science, University of Hawaii.

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Spaepen, S., J. Vanderleyden, and R. Remans. 2007. Indole-3-acetic acid in microbial and microorganism plant and signaling. Federation of European Microbiological Societies Review : 1-24.

Tariq, S. Hameed., T. Yasmeen and A. Ali. 2012. Non-rhizobial bacteris for improved nodulation and grain yield of mung bean (*Vigna radiate (L.)* Wilczek). African Journal of Biotechnology 11: 15012-15019.

Thomas, B., D. J. Murphy., B. G. Murray. 2016. Encyclopedia of Applied Plant Sciences. Academic Press, Netherlands.

Varshney, R.K., S.M. Mohan, P.M. Gaur, N.V.P.R. Gangarao, M.K. Pandey, A. Bohra, S.K. Sawargaonkar, A. Chitikineni, P.K. Kimurto, P. Janila, K.B. Saxena, S.K. Chaturvedi, N. Mallikarjuna, G. Anuradha, A. Babbar, A. K. Choudhary, M.B. Mhase, Ch. Bharadwaj, D.M. Mannur, P.N. Harer, B. Guo, X. Liang, N. Nadarajan, and C.L.L. Gowda. 2013. Achievements and prospects of genomics-assisted breeding in three legum crops of the semi-arid tropics. Biotechnology Advances 31 : 1120-1134.

Vincent, J. M. 1970. A Manual for the Practical Study of the Root Nodule Bacteria. Blackwell Scientfic Publications, Oxford.

Young, J. M., L. D. Kuykendall., E. Martinez Romero., A. Kerr and H. Sawada. 2003. Classification and nomenclature of *Agrobacterium* and *Rhizobium*. International Journal of Systematic and Evolutionary Microbiology 53:1689-95.