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Pertumbuhan Populasi Kutu Daun *Aphis gossypii* Glover (Hemiptera:Aphididae) pada Tanaman Cabai Rawit (*Capsicum frutescens* L.) dengan Pemberian Bakteri *Lysinibacillus sphaericus*  
FEBRIANA SARASWATI, Drs. Hari Purwanto, M.P., Ph.D.  
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## DAFTAR PUSTAKA

- Agustiansyah, Ilyas, S., Sudarsono, & Machmud, M. (2013). Karakterisasi Rizobakteri yang Berpotensi dan Meningkatkan Pertumbuhan Tanaman Padi. *J. HPT Tropika*, 13(1), 42–51.
- Agustina, S., Widodo, P., & Hidayah, H. A. (2014). Analisis Fenetik Kultivar Cabai Besar *Capsicum annuum* L. dan Cabai Kecil *Capsicum frutescens* L. *Scripta Biologica*, 1(1), 113. <https://doi.org/10.20884/1.sb.2014.1.1.36>
- Ahmed, I., Yokota, A., Yamazoe, A., & Fujiwara, T. (2007). Proposal of *Lysinibacillus boronitolerans* gen. nov. sp. nov., and transfer of *Bacillus fusiformis* to *Lysinibacillus fusiformis* comb. nov. and *Bacillus sphaericus* to *Lysinibacillus sphaericus* comb. nov. *International Journal of Systematic and Evolutionary Microbiology*, 57(5), 1117–1125. <https://doi.org/10.1099/ijts.0.63867-0>
- Anggraini, K., Yuliadhi, K. A., & Widaningsih, D. (2018). Pengaruh Populasi Kutu Daun Pada Tanaman Cabai Besar (*Capsicum Annum L.*) Terhadap Hasil Panen. *E-Jurnal Agroekoteknologi Tropika*, 7(1), 113–121.
- Balfas, R. (2005). Serangga Penular (Vektor) Penyakit Kerdil pada Tanaman Lada dan Strategi Penanggulangannya. *Balai Penelitian Tanaman Rempah Dan Obat*, 71–76.
- Berry, C. (2012). The bacterium , *Lysinibacillus sphaericus* , as an insect pathogen. *Journal of Invertebrate Pathology*, 109(1), 1–10. <https://doi.org/10.1016/j.jip.2011.11.008>
- Blubaugh, C. K., Carpenter-Boggs, L., Reganold, J. P., Schaeffer, R. N., & Snyder, W. E. (2018). Bacteria and competing herbivores weaken top-down and bottom-up aphid suppression. *Frontiers in Plant Science*, 9, 1–10. <https://doi.org/10.3389/fpls.2018.01239>
- CABI. (n.d.). *Aphis gossypii* (cotton aphid). Retrieved July 7, 2020, from <https://www.cabi.org/isc/datasheet/6204>
- Capinera, J. (2007a). *Green Peach Aphid , Myzus persicae ( Sulzer ) ( Insecta:Hemiptera Aphididae)*. <https://www.semanticscholar.org>
- Capinera, J. (2007b). *Melon Aphid or Cotton Aphid, Aphis gossypii Glover (Insecta:Hemiptera: Aphididae)*. <http://creatures.ifas.ufl.edu>
- Charaabi, K., Carletto, J., Chavigny, P., Marrakchi, M., Makni, M., & Antipolis, S. (2008). Genotypic diversity of the cotton-melon aphid *Aphis gossypii* ( Glover ) in Tunisia is structured by host plants. *Bulletin of Entomological Research*, 98, 333–341. <https://doi.org/10.1017/S0007485307005585>
- Claus, D., & Berkeley, R. (1986). *Bergey's Manual of Bacteriology*. Williams and Wilkins Co.
- Comptant, S., Clément, C., & Sessitsch, A. (2010). Soil Biology & Biochemistry Plant growth-promoting bacteria in the rhizo- and endosphere of plants : Their role , colonization , mechanisms involved and prospects for utilization. *Elsevier*, 42, 669–678. <https://doi.org/10.1016/j.soilbio.2009.11.024>



- Correa, M., & Yousten, A. (1995). BS recycling and spore germination in cadavers.pdf. *Journal of Invertebrate Pathology*, 66, 76–81.
- Davidson, E. (1985). *Bacillus sphaericus as a microbial control agent for mosquito larvae*. In: Laird M, ,iles J (eds) *Integrated mosquito control methodologi* (2th Ed). Academia Press.
- Depatemen Pertanian, A. (2013). *Kutu Daun*. Dinas Perlindungan Hortikultura. <http://ditlin.hortikultura.pertanian.go.id>
- Esitken, A., Yildiz, H. E., Ercisli, S., Figen Donmez, M., Turan, M., & Gunes, A. (2010). Effects of plant growth promoting bacteria (PGPB) on yield, growth and nutrient contents of organically grown strawberry. *Scientia Horticulturae*, 124(1), 62–66. <https://doi.org/10.1016/j.scienta.2009.12.012>
- Glick, B. R. (2012). Plant Growth-Promoting Bacteria: Mechanisms and Applications. *Scientifica*, 2012, 1–15.
- Gomez-Garzon, C., Hernandez-Santana, A., & Dussan, J. (2017). A genome-scale metabolic reconstruction of *Lysinibacillus sphaericus* unveils unexploited biotechnological potentials. *PLoS ONE*, 12(6), 1–21. <https://doi.org/10.1371/journal.pone.0179666>
- Gusmaini, Aziz, S. A., Munif, A., Sopandie, D., & Bermawie, N. (2013). Potensi Bakteri Endofit dalam Upaya Meningkatkan Pertumbuhan, Produksi, dan Kandungan Andrografolid pada Tanaman Sambiloto. *Jurnal Littri*, 19(4), 167–177.
- Herlinda, S., Mayasari, R., Adam, T., & Pujiastuti, Y. (2007). Populasi dan Serangan Lalat Buah Bactrocera dorsalis (Hendel) (Diptera: Tephritidae) serta Potensi Parasitoidnya pada Pertanaman Cabai (*Capsicum annuum* L.). *Seminar Nasional Dan Kongres Ilmu Pengetahuan Wilayah Barat*, 1–13.
- Hidayat, S. H., & Hidayat, P. (2014). *Dasar-dasar Perlindungan Tanaman*. Universitas Terbuka.
- Hindersah, R., & Matheus, J. (2015). Respons Pertumbuhan Vegetatif Jagung Di Tailing Tambang Timah Terkontaminasi Kadmium Setelah Inokulasi Bakteri Indogenus. *Agrologia*, 4(1), 8–14. <https://doi.org/10.30598/a.v4i1.211>
- Hu, X., Fan, W., Han, B., Liu, H., Li, Q., Dong, W., Yan, J., Gao, M., Berry, C., Yuan, Z., Hu, X., Fan, W., Han, B., Liu, H., Zheng, D., Li, Q., Dong, W., Yan, J., Gao, M., Yuan, Z. (2008). Complete Genome Sequence of the Mosquitocidal Bacterium *Bacillus sphaericus* C3-41 and Comparison with Those of Closely Related *Bacillus* Species. *Journal of Bacteriology*, 190(8), 2892–2902. <https://doi.org/10.1128/JB.01652-07>
- Irsan, C., Sosromarsono, S., Buchori, B., & Triwidodo, H. (1998). Kutudaun (Homoptera: Aphidoidea) yang ditemukan hidup pada Solanaceae di Jawa Barat. *Hama Dan Penyakit Tumbuhan*, 10, 81–84.
- Jakobs, R., Schweiger, R., & Müller, C. (2019). Aphid infestation leads to plant part-specific changes in phloem sap chemistry, which may indicate niche construction. *New Phytologist*, 221(1), 503–514. <https://doi.org/10.1111/nph.15335>



- Jones, G. W., Nielsen-Leroux, C., Yang, Y., Yuan, Z., Fiúza Dumas, V., Monnerat, R. G., & Berry, C. (2007). A new Cry toxin with a unique two-component dependency from *Bacillus sphaericus*. *The FASEB Journal*, 21(14), 4112–4120. <https://doi.org/10.1096/fj.07-8913com>
- Jumar. (2000). *Entomologi Pertanian*. PT Rineka Cipta.
- Kafrawi, Kumalawati, Z., & Muliani, S. (2015). Skrining Isolat Plant Growth Promoting Rhizobacteri (PGPR) dari Pertanaman Bawang Merah (*Allium ascalonicum*) di Gorontalo. *Prosiding Seminar Nasional Mikrobiologi Kesehatan Dan Lingkungan*, 132–139.
- Khalimi, K., & Wirya, G. (2009). Pemanfaatan Plant Growth Promoting Rhizobacteria. *Ecothropic*, 4(2), 131–135.
- Kloepper, J., & Schroth, M. (1980). Plant Growth-Promoting Rhizobacteria and Plant Growth Under Gnotobiotic Conditions. *Phytopathology*, 71, 642–644.
- Lee, B., Lee, S., & Ryu, C. M. (2012). Foliar aphid feeding recruits rhizosphere bacteria and primes plant immunity against pathogenic and non-pathogenic bacteria in pepper. *Annals of Botany*, 110(2), 281–290. <https://doi.org/10.1093/aob/mcs055>
- Lozano, L., & Dussán, J. (2013). Metal tolerance and larvicidal activity of *Lysinibacillus sphaericus*. *World J Microbiol Biotechnol*, 1–7. <https://doi.org/10.1007/s11274-013-1301-9>
- Martinez, S., & Dussan, J. (2017). *Lysinibacillus sphaericus* Plant Growth Promoter Bacteria and Lead Phytoremediation Enhancer with *Canavalia ensiformis*. *Environmental Progress & Sustainable Energy*, 00(00), 1–7. <https://doi.org/10.1002/ep>
- Massie, J., Roberts, G., & White, P. J. (1985). Selective isolation of *Bacillus sphaericus* from soil by use of acetate as the only major source of carbon. *Applied and Environmental Microbiology*, 49(6), 1478–1481. <https://doi.org/10.1128/aem.49.6.1478-1481.1985>
- Meyer, G. A. (1993). A comparison of the impacts of leaf- and sap-feeding insects on growth and allocation of goldenrod. *Ecology*, 74(4), 1101–1116. <https://doi.org/10.2307/1940480>
- Monroy, A., Martinez, J., & Dussan, J. (2019). *Lysinibacillus sphaericus* as a Nutrient Enhancer during Fire-Impacted Soil Replantation. *Applied and Environmental Soil Science*, 1–8.
- Naeem, M., Aslam, Z., Khaliq, A., Ahmed, J., Nawaz, A., & Hussain, M. (2018). Plant growth promoting rhizobacteria reduce aphid population and enhance the productivity of bread wheat. *Brazilian Journal of Microbiology*, 6–11. <https://doi.org/10.1016/j.bjm.2017.10.005>
- Nakbanpote, W., Panitlurtumpai, N., & Sangdee, A. (2014). Salt-tolerant and plant growth-promoting bacteria isolated from Zn / Cd contaminated soil : identification and effect on rice under saline conditions. *Journal of Plant Interactions*, 9(1), 37–41. <https://doi.org/10.1080/17429145.2013.842000>
- Naureen, Z., Rehman, N., Hussain, H., Hussain, J., Gilani, S., Al Housni, S.,



- Mabood, F., Khan, A., Farooq, S., Abbas, G., & Harrasi, A. (2017). Exploring the Potentials of *Lysinibacillus sphaericus* ZA9 for Plant Growth Promotion and Biocontrol Activities against Phytopathogenic Fungi. *Frontiers in Microbiology*, 8, 1–11. <https://doi.org/10.3389/fmicb.2017.01477>
- Noordam, D. (2004). *Aphids of Java . Part V: Aphidini (Homoptera : Aphididae)*.
- Orhan, E., Esitken, A., Ercisli, S., Turan, M., & Sahin, F. (2006). Effects of plant growth promoting rhizobacteria (PGPR) on yield , growth and nutrient contents in organically growing raspberry. *Scientia Horticulturae*, 111, 38–43. <https://doi.org/10.1016/j.scienta.2006.09.002>
- Peña-montenegro, T. D., & Dussán, J. (2013). Genome sequence and description of the heavy metal tolerant bacterium *Lysinibacillus sphaericus* strain. *Standarts in Genomic Sciences*, 9, 42–56. <https://doi.org/10.4056/sigs.4227894>
- Pineda, A., Zheng, S. J., van Loon, J. J. A., Pieterse, C. M. J., & Dicke, M. (2010). Helping plants to deal with insects: The role of beneficial soil-borne microbes. *Trends in Plant Science*, 15(9), 507–514. <https://doi.org/10.1016/j.tplants.2010.05.007>
- Pracaya. (2008). *Hama dan Penyakit Tanaman*. Penebar Swadaya.
- Price, P. W., Denno, R. F., Elubank, M. D., Finke, D. L., & Kaplan, I. (2011). Insect Ecology: Behavior, Populations and Communities. In *Ecology*. Cambridge University Press. <https://doi.org/10.2307/1941338>
- Putri, L. (2019). *Isolasi dan Uji Patogenisitas Bakteri Lysinibacillus sphaericus Neide dari Tanah Sekitar Perakaran Terhadap Larva Culex quinquefasciatus Say*. Gadjah Mada University.
- Rai, M. (2005). *Handbook of Microbial Biofertilizers*. Food Products Press.
- Ramadhona, R., Djamilah, & Mukhtasar. (2018). Efektivitas ekstrak daun pepaya dalam pengendalian kutu daun pada fase vegetatif tanaman terung. *Jurnal Ilmu-Ilmu Pertanian Indonesia*, 20(1), 1–7.
- Ramjegathesh, R., Samiyappan, R., Prabakar, K., & Saravanakumar, D. (2013). *Bacteria in agrobiology: Disease management*. Springer. <https://doi.org/10.1007/978-3-642-33639-3>
- Rismayani, R., Rubiyo, R., & Dewi Ibrahim, M. S. (2020). Dinamika Populasi Kutu Tempurung (*Coccus viridis*) dan Kutudaun (*Aphis gossypii*) pada Tiga Varietas Kopi Arabika (*Coffea arabica*). *Jurnal Penelitian Tanaman Industri*, 19(4), 159. <https://doi.org/10.21082/jlitri.v19n4.2013.159-166>
- Riyanto, Zen, D., & Arifin, Z. (2016). Studi Biologi Kutu Daun (*Aphis gossypii* Glover) (Hemiptera: Aphididae). *Jurnal Pembelajaran Biologi*, 3(2), 146–152.
- Rocki, P. (2014). *Botani, Klasifikasi, dan Syarat Tumbuh Tanaman Cabai*. <http://digilib.unila.ac.id/790/9/BAB II.pdf>
- S, S., Varghese, E. M., Thampi, M., S, K., J, S., & M S, J. (2020). Enhancement



- of Growth and Yield of Rice (*Oryza Sativa*) by Plant Probiotic Endophyte, *Lysinibacillus sphaericus* under Greenhouse Conditions. *Communications in Soil Science and Plant Analysis*, 51(9), 1268–1282. <https://doi.org/10.1080/00103624.2020.1751190>
- Schoonhoven, L. M., Jermy, T., & van Loon, J. J. A. (1998). Insect-Plant Biology. In *Insect-Plant Biology* (Second Edi). Oxford University Press. <https://doi.org/10.1007/978-1-4899-3200-6>
- Semangun, H. (2007). *Penyakit-penyakit tanaman, hortikultura di Indonesia*. Gadjah Mada University Press.
- Shavit, R., Ofek-lalzar, M., Burdman, S., & Morin, S. (2013). Inoculation of tomato plants with rhizobacteria enhances the performance of the phloem-feeding insect *Bemisia tabaci*. *Frontiers in Plant Science*, 4, 1–13. <https://doi.org/10.3389/fpls.2013.00306>
- Silva Filha, M. H. N. L., Berry, C., & Regis, L. (2014). *Lysinibacillus sphaericus: Toxins and Mode of Action, Applications for Mosquito Control and Resistance Management*. In *Advances in Insect Physiology* (Vol. 47). <https://doi.org/10.1016/B978-0-12-800197-4.00003-8>
- Slonczewski, J., & John, W. (2009). *An Evolving Science Microbiology*. W. W. Norton & Company.
- Sutariati, G. A. K., & Ilyas, S. (2006). *Pengaruh Perlakuan Rizo-bakteri Pemacu Pertumbuhan Tanaman terhadap Viabilitas Benih serta Pertumbuhan Bibit Tanaman Cabai*. Bul. Agron.
- Syamsiah, M., & Royani. (2014). Respon Pertumbuhan dan Produksi Tanaman Cabai Merah (*Capsicum annum* L.) terhadap Pemberian PGPR ( Plant Growth Promoting Rhizobakteri ) dari Akar Bambu dan Urine Kelinci. *Agroscience*, 4(2), 109–114.
- Taufik, M. (2010). Pertumbuhan dan produksi tanaman cabai yang diaplikasi plant growth promoting rhizobakteria. *J. Agrivigor*, 10(1), 99–107.
- Tjahjadi, N. (1991). *Bertanam Cabai*. Kanisius.
- Tjandra, E. (2011). *Panen Cabai Rawit Di Polybag*. Cahaya Atma Pustaka.
- Trizelia, Reflinaldon, & Martinus. (2017). *Induksi Ketahanan Tanaman Cabai terhadap Kutu Daun (Aphididae) Menggunakan Cendawan Endofit Beauveria bassiana*.
- USDA. (2020). *Classification for Kingdom Plantae Down to Genus Capsicum L.* <https://plants.usda.gov/java/ClassificationServlet?source=display&classid=CAPSI>
- Vacheron, J., Desbrosses, G., Bouffaous, M., Touraine, B., Moënne-Loccoz, Y., Muller, D., Legendre, L., Wisniewski-Dyé, F., & Prigent-Combaret, C. (2013). Plant growth-promoting rhizobacteria and root system functioning. *Frontiers in Plant Science*, 4, 1–19. <https://doi.org/10.3389/fpls.2013.00356>
- Varela, A. . (2020). *Aphids*. <https://www.infonet-biovision.org/PlantHealth/Pests/Aphids>