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DAFTAR PUSTAKA

Abo-elyousr, K.A.M., & M.R. Asran. 2009. Antibacterial activity of certain plant extracts against bacterial wilt of tomato. Archives of Phytopathology and Plant Protection, 42(6):573-578.

Agrios, G.N. 2005. Plant Pathology 5th Edition. Elsevier Academic Press, United States of America.

Aji, O.R. 2020. Analisis resistensi antibiotic pada bakteri yang berasosisasi dengan lalat (*Musca domestica*). Quagga Jurnal Pendidikan dan Biologi, 12(1):11-16.

Alvarez, B., E.G. Biosca, & M.M. Lopez. 2010. On the life of *Ralstonia solanacearum*, a destructive bacterial plant pathogen. Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology: 267-279.

Antoniou, A., M.D. Tsolakidou, I.A. Stringlis, & I.S. Pantelides. 2017. Rhizosphere microbiome recruited from a suppressive compost improves plant fitness and increases protection against vascular wilt pathogens of tomato. Frontiers in Plant Sciences, 8: 1-16.

Apriyadi, Z., E. Liestiany, & Rodinah. 2019. Pengendalian biologi penyakit layu bakteri (*Ralstonia solanacearum*) pada tanaman tomat (*Lycopersicum esculentum*). Proteksi Tanaman Tropika, 2(02): 1-7.

Arwiyanto, T. 2014. Biological control of plant diseases caused by bacteria. Jurnal Perlindungan Tanaman Indonesia, 18(1):1-12.

Babalola, O.A. 2019. Assesment of the contribution of microbial activities to tomato growth and yield under an organic production system. Open Agriculture, 4:661-675.

Badan Pusat Statistik Nasional. 2014. Produksi Sayuran Nasional. Jakarta.

Badan Standarisasi Nasional. 1998. SNI-19-428-1998 Petunjuk Pengambilan Contoh Padatan. Badan Standarisasi Nasional, Jakarta.

Bishop, E.L., J.A. Pecchia, V. Wilkinson, I. Albert, & D.J. Royse. 2016. Effects of spent mushroom compost as an ingredient in phase I compost on production of *Agaricus bisporus*. Compost Science and Utilization, 24(4):246-258.

Blok, W.J., J.G. Lamers, A.J. Termoshuizen, & A.J. Bollen. 2000. Control of soilborne plant pathogens by incorporating fresh organic amendments followed by tarping. Phytopathology, 30: 253-259.

Boulter, J.I., J.T. Trevors, & G.J. Boland. 2002. Microbial studies of compost: bacterial identification, and their potential for turfgrass pathogen suppression. World Journal of Microbiology and Biotechnology, 18:661-671.

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Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Cahyani, H.N., & Ngadiman. 2022. Isolasi dan identifikasi jamur dari kompos dan berdaya antagonistic terhadap patogen tular tanah *Fusarium oxysporum* dan *Rhizoctania solani*. Skripsi, Universitas Gadjah Mada.

Cahyono, B. 2005. Tomat (Budidaya dan Analisis Usaha Tani). Penerbit Kanisius, Yogyakarta.

Cappucino, J.G., & N. Sherman. 2014. Microbiology: a laboratory manual 10th edition. Pearson, United States of America.

Chang, S.T., & P.G. Miles. 2004. Mushrooms: cultivation, nutritional value, medicinal effect and environmental impact 2nd Ed. CRC Press, USA.

Chen, Y., D. Zhou, D. Qi, Z. Geo, J. Xie, & Y. Luo. 2018. Growth promotion and disease suppression ability of a *Streptomyces* sp. CB-75 from banana rhizosphere soil. Frontiers in Microbiology, 8:2704.

Chinakwe, E.C., V.I. Ibekwe, U.N. Nwogwugwu, N.N. Oneymakara, J. Ofoegbu, E. Mike-Anosike, M. Emeakaraoha, S. Adeleye, & P.O. Chinakwe. 2019. Microbial population changes in the rhizosphere of tomato *Solanum lycopersicum* varieties during early growth in greenhouse. Malaysian Journal of Sustainable Agriculture, 3(1):23-27.

Choiriyah, A. & S.D. Nurcahyanti. 2019. Pengendalian penyakit layu bakteri (*Ralstonia solanacearum*) pada tanaman tomat dengan penyambungan batang bawah tahan. Jurnal Bioindustri, 2(1):295-306.

Denny, T.P. 2006. Plant pathogenic *Ralstonia* species. Springer, Netherlands.

Denny, T.P., & A.C. Hayward. 2001. Gram-negative bacteria: *Ralstonia*. Laboratory Guide for Identification of Plant Pathogenic Bacteria. 3rd Edition. APS Press, St. Paul.

Faatih, M., J. Widada, & Ngadiman. 2008. Succession of actinomycetes during composting proccess of dairy-farm waste investigated by culture-dependent and independent approaches. Indonesian Journal of Biotechnology, 13: 1085 – 1091.

Faraji, R., A. Parsa, B. Torabi, & T. Withrow. 2006. Effects of kanamycin on the macromolecular composition of kanamycin sensitive *Escherichia coli* DH5α strain. Journal of Experimental Microbiology and Immunology, 9:31-38.

Fatichah, N.L., Ngadiman, & D. Widianto. 2022. Isolasi dan identifikasi aktniomisetes kompos yang berkemampuan antagonis terhadap *Rhodococcus fascians* dan *Streptomyces puniciscabiei*. Skripsi, Universitas Gadjah Mada.

Fluit, A.C., J.R. Bayjanov, M.D. Aguilar, R. Canton, M.M. Tunney, J.S. Elborn, M. van Westreenen, & M.B. Ekkelenkamp. 2021. Characterization of clinical *Ralstonia* strains and their taxonomic position. Antonie van Leeuwenhoek:1-13.

Garcia, R.O., J.P. Kerns, & L. Thiessen. 2019. *Ralstonia solanacearum* species complex: a quick diagnostic guide. Plant Health Progress 2(1):7-13.

UNIVERSITAS GADJAH MADA
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Golzaran, M.R., R.A. Frick, K. Rajendran, B. Berger, S. Boy, M. Tester, & D.S. Lun. 2011. Accurate inference of shoot biomass from high-throughtput image of cereal plants. Plant Methods, 7:1-11.

Gumawan, O.S. 2006. Virulensi dan ras *Ralstonia solanacearum* pada pertanaman kentang di kecamatan Pangalengan, kabupaten Bandung, Jawa Barat. Jurnal Hortikultura, 16(3):211-218.

Hadiwiyono. 2008. Tanah supresif: Terminologi, sejarah, karakteristik, dan mekanisme. Jurmal Perlindungan Tanaman Indonesia, 14 (2): 47-54.

Haridjaja, O., D.P.T. Baskoro, & M. Setianingsih. 2013. Perbedaan nilai kadar air kapasitas lapang berdasarkan metode Alhricks, drainase bebas, dan *pressure plate* pada berbagai tekstur tanah dan hubungannya dengan pertumbuhan bunga matahari (*Helianthus annuus* L.). Jurnal Ilmu Tanah dan Lingkungan, 15:52-59.

Heuvelink, E. 1996. Tomato growth and yield: quantitative analysis and synthesis. Dissertation, Wageningen Agricultural University, Wageningen, The Netherlands.

Huang, Q., & C. Allen. 2000. Polygalacturonaces are required for rapid colonization and full virulence of *Ralstonia solanacearum* on tomato plants. Physiology and Molecular Plant Pathology, 57:77–83.

Huang, J.L., J.Y. Liu, J.C. Chen, W.M. Xie, J.H. Kuo, X.W. Lu, K.L. Chang, S.T. Wen, G. Sun, H.M. Cai, M. Buyukada, & F. Evrendilek. 2018. Combustion behaviors of spent mushroom substrate using TG-MS and TG-FTIR: Thermal conversion, kinetic, thermodynamic and emission analyses. Bioresource Technology, 266:389-397.

Huang, W., D.A. Ratkowsky, C. Hui, P. Wang, J. Su, & P. Shi. 2019. Leaf fresh weight versus dry weight: which is better for describing the scaling relationship between leaf biomass and leaf area for broad-leaved plants?. Forests, 10:1-19.

Isah, A.S., E.B. Amans, E.C. Odion, & A.A. Yusuf. 2014. Growth rate and yield of two tomato varieties (*Lycopersicon esculentum* Mill) under green manure and NPK fertilizer rate Samaru northern guinea savanna. International Journal of Agronomy:1-8.

Islam, T.M., & K. Toyota. 2004. Suppression of bacterial wilt of tomato by *Ralstonia solanacearum* by incorporation of compost in soil and possible mechanisms. Microbes Environmental, 19:53-60.

Juhnke, M. E., & E. des Jardin. 1989. Selective medium for isolation of *Xanthomonas maltophilia* from soil and rhizosphere environemnets. Applied and Environmental Microbiology, 55(3): 747-750.

Kelmann, A. 1954. The relationship of pathogenicity of *Pseudomonas solanacearum* to colony appearance in a tetrazholium medium. Phytopathology,44:693-695.

Khokhani, D., T.M. Tran, T.M. Lowe-Power, & C. Allen. 2018. Plant assays for quantifying *Ralstonia solanacearum* virulence. Bio Protocol, 8(18):1-19.

UNIVERSITAS GADJAH MADA
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Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Kim, S.G., O.S. Hur, N.Y. Ro, H.C. Ko, J.H. Rhee, J.S. Sung, K.Y. Ryu, S.Y. Lee, & H.J. Baek. 2016. Evaluation of resistence to *Ralstonia solanacearum* in tomato genetic resources at seedling stage. The Plant Pathology Journal 32(1):58-64.

Kumar, S., Kedarnath, N. Hamsaveni, P.H.R. Howda, I.B. Rohini, K.T. Rangaswarny, & R. Achari. 2017. Isolation and characterization of *Ralstonia solanacearum* causing bacterial wilt of solanaceae crops. International Journal Current Microbiology Applied Science, 6(5):1173-1190.

Ling, L., X. Han, X. Li, X. Zhang, H. Wang, L. Zhang, P. Cao, Y. Wu, X. Wang, J. Zhao, & W. Xiang. 2020. A *Streptomyces* sp. NEAU-HV9: isolation, identification, and potential as a biocontrol agent against *Ralstonia solanacearum* of tomato plants. Microorganisms, 8(351):1-15.

Lisnawati. 1998. Analisis potensi sinergisme *Rodopholus similis* Cobb dan *Fusarium oxysporum* Schlecht f. sp. cubense (E.F. Smith) Synd dan Hands dalam perkembangan layu *Fusarium* pada pisang. Program Pasca Sarjana Institute Pertanian Bogor, Bogor.

Liu, L., C. Sun, X. He, X. Liu, H. Wu, M. Liu, C. Tang, & Y. Zhang. 2016. The secondary compost products enhances soil suppressive capacity against bacterial wilt of tomato caused by *Ralstonia solancaearum*. European Journal of Soil Biology, 75:70-78.

Lutz, S., B. Thuerig, T. Oberhaensli, J. Mayerhofer, J.G. Fuchs, F.M. Freimoser, & C.H. Ahrens. 2020. Harnessing the microbiomes of suppressive composts for plant protection: from metagenomes to beneficial microorganisms and reliable diagnostics. Frontiers in Microbiology, 11:1810.

Madigan, M.T., K.S. Bender, D.H. Buckley, W.M. Sattley, & D.A. Stahl. 2019. Brock Biology of Microorganisms 15th Edition. Pearson, New York.

Mariani, S.D., Koesriharti, & N. Barunawati. 2017. Respon pertumbuhan dan hasil tanaman tomat (*Lycopersicum esculentum* Mill.) varietas permata terhadap dosis pupkkotoran ayam dan KCl. Jurnal Produksi Tanaman, 5(9):1505-1511.

Maulida, I., R.H. Murti, & T. Arwiyanto. 2019. Selection and inheritance of toato resistance against *Ralstonia solanacearum*. Jurnal Perlindungan Tanaman Indonesia, 23(1):61-67.

Mehta, C.M., U. Palni, I.H. Franke-Whittle, & A.K. Sharma. 2014. Compost: its role, mechanism and impact on reducing soil-borne plant diseases. Waste Management, 34:607-622.

Mikhail, M.S., A.I. Abdel-Alim, N.M. Balabel, & A.M. Abbas. 2017. Virulence of *Ralstonia solanacearum* phylotype II sequevar I, the casual pathogen of potato brown rot. Journal Biological Chemistry and Environmental Sciences, 12(3):219-235.

Muimba, A., & Kankolongo. 2018. Food Crop Production by Smallholder Farmers in Sourthern Africa. Academic Press, London.

UNIVERSITAS GADJAH MADA
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MoARD (Ministry of Agriculture and Rural Development). 2009. Variety Register. Addis Ababa, Ethiopia.

Nasrulloh, A., T. Mutiarawati, & W. Sutari. 2016. Pengaruh penambahanarang sekam dan jumlah cabang produksi terhadap pertumbuhan tanaman, hasil dan kualitas buah tomat kultivar doufu hasil sambung batang pada Inceptisol Jatinangor. Jurnal Kultivasi, 15(1):26-36.

Oberhaensli, T., V. Hofer, L. Tamm, J.G. Fuchus, M. Koller, J. Herforth-Rahme, M. Maurhofer, & B. Thuerig. 2017. *Aeromonas* media in compost amendments contributes to suppression of *Pythium ultimum* in cress. Acta Hortic: Proceeding III International Symposium on Organic Greenhouse Horticulture: 353-360.

Pracaya. 2011. Hama dan Penyakit Tanaman. Penerbit Penebar Swadaya, Depok.

Prior, P., & M. Fegan. 2005. Diversity and moleculer detection of *Ralstonia solanacearum* race 2 strains by multiplex PCR. American Phytopathological Society, Saint Paul, Minnesota.

Pugazhendhi, A., G. M. Boovaragamoorthy, K. Ranganathan, M. Naushad, & T. Kaliannan. 2018. New insight into effective biosorption of lead from aqueous solution using *Ralstonia solanacearum*: characterization and mechanism studies. Jorunal of Cleaner Production, 174:1234-1239.

Rahayu, M. 2012. Penyakit layu *Ralstonia solanacearum* pada kacang tanah dan strategi pengendalian ramah lingkungan. Buletin Palawa, 24:69-81.

Sabahannur, St., & L. Herawati. 2017. Pertumbuhan dan produksi tanaman tomat (*Licoprison esculentum* Mill) pada berbagai jarak tanam dan pemangkasan. Jurnal Agrotek 1(2):32-42.

Semangun, H. 2000. Penyakit-penyakit Tanaman Hortikultura di Indonesia. Universitas Gadjah Mada Press, Yogyakarta.

Setiawan, A.W. 2019. Epidemiologi penyakit layu bakteri dan perkembangan kompleks spesies *Ralstonia solanacearum*. Jurnal Galung Tropika, 8(3):243-270.

Shapiro-Ilan, D., J.R. Fuxa, L.A. Lacey, D.W. Onstad, and H.K. Kaya. 2005. Definition of pathogenicity and virulence in invertebrate pathology. Journal of Invertebrate Pathology, 88(1):1-7.

Soleha, T.U. 2015. Uji kepekaan terhadap antibitoik. Jurnal Kesehatan Universitas Lampung, 5(9):119-123.

Stella, M., & M. Sashikala. 2016. Beneficial microorganisms isolated from vegetable compost. Journal of Tropical Agriculture and Food Science, 44: 277 – 293.

Sumartini. 2012. Penyakit tular tanah (*Sclerotium roflsii* dan *Rhizoctonia solani*) pada tanaman kacang-kacangan dan umbi-umbian serta cara pengendaliannya. Jurnal Litbang Pertanian, 31(1):27-34.

Suprapto, H. 1998. Bertanam Kedelai. Penebar Swadaya, Jakarta.

UNIVERSITAS
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Thomas, P., & R. Upeti. 2014. Significant effects due to peptone in Kelman medium on colony characteristics and virulence of *Ralstonia solanacearum* in tomato. The Open Microbiology Journal, 8:95-113.

Vallad, G.E., & R.M. Goodman, 2004. Systemic acquired resistance and induced systemic resistance in conventional agriculture, review and interpretation. Crop Science, 44:1920-1934.

Vos, A.M., A. Heijboer, H.T.S. Boschker, B. Bonnet, L.G. Lugones, & H.A.B. Wosten. 2017. Microbial biomass in compost during colonization of *Agaricus bisporus*. AMB Express, 7: 7.

Waithaka, P. N., E. M. Gathuru, B. M. Githaiga, & C. O. Ouma. 2018. Microbial degradation of maize waste materials using actinomycetes isolated from Egerton University Soils, Njoro in Kenya. International Reasearch Journal of Biological Science, 1: 31-36.

Weller, D.M., J.M. Raajimakers, B.B.McS. Garderner, & L.S. Tornshow. 2002. Microbial populations responsible for specific soil suppressiveness to plant pathogen. Annual Review of Phytophatology, 40:309-348.

Wolfgang, A., J. Taffner, R. A. Guimarães, D. Coyne & G. Berg. 2019. Novel strategies for soil-borne diseases: exploiting the microbiome and volatile-based mechanisms towards controlling Meloidogyne-based disease complexes. Frontiers in Microbiology, 10: 1 – 15.

Yao, J., & C. Allen. 2006. Chemotaxis is required for virulence and competitive fitness of the bacterial wilt pathogen *Ralstonia solanacearum*. Journal of Bacteriology, 188:2697-3708.

Zheng, X., Y. Zhu, J. Wang, Z. Wang, & B. Liu. 2019. Combined use of microbial restoration substrate and avirulent *Ralstonia solanacearum* for the control of tomato bacterial wilt. Scientific Reports, 9: 1-10.