UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

A., V., & Costa, D. M. De. (2014). Molecular and Pathogenic Diversity of the Causal Agents of Onion Leaf Twister Disease in Batticaloa District of Sri Lanka. *Universal Journal of Plant Science*, *2*(7), 121–127. https://doi.org/10.13189/ujps.2014.020702

Ahmad, I., Ahmad, M., Hussain, A., & Jamil, M. (2021). Integrated use of phosphate-solubilizing Bacillus subtilis strain IA6 and zinc-solubilizing Bacillus sp. strain IA16: a promising approach for improving cotton growth. *Folia Microbiologica*, *66*(1), 115–125. https://doi.org/10.1007/s12223-020-00831-3

Aisyah, S.N., Khoiruddin, M., Hidayat, M., Astuti, A. 2021. Comparison on Fusarium Basal Rot Occurrence among shallot cultivation in Bantul Regency. *International Conference on Suistanable Agricultural* : Earth and Environment Science 985 (2022).

Akhter, A., Hage-Ahmed, K., Soja, G., & Steinkellner, S. (2016). Potential of Fusarium wilt-inducing chlamydospores, in vitro behaviour in root exudates and physiology of tomato in biochar and compost amended soil. *Plant and Soil*, *406*(1–2), 425–440. https://doi.org/10.1007/s11104-016-2948-4

Alves, K.S., and E.M.D. Ponte. 2021. Analysis and simulation of plant disease progress curves in R: introducing the epifitter package. *Phytopathology Research* 3 (22) https://doi.org/10.1186/s42483-021-00098-7

Al-Sa'di, A. M., Drenth, A., Deadman, M. L., De Cock, A. W. A. M., & Aitken, E. A. B. (2007). Molecular characterization and pathogenicity of Pythium species associated with damping-off in greenhouse cucumber (*Cucumis sativus*) in Oman. *Plant Pathology*, *56*(1), 140–149. https://doi.org/10.1111/j.1365-3059.2006.01501.x

Andrabi, S. B. A., Tahara, M., Matsubara, R., Toyama, T., Aonuma, H., Sakakibara, H., Suematsu, M., Tanabe, K., Nozaki, T., & Nagamune, K. (2018). Plant hormone cytokinins control cell cycle progression and plastid replication in apicomplexan parasites. *Parasitology International*, *67*(1), 47–58. https://doi.org/https://doi.org/10.1016/j.parint.2017.03.003

Anonim. 2021. Curah Hujan dan Hari Hujan di Kabupaten Bantul. diakses online 22 Juli 2022. https://data.bantulkab.go.id/

Aprilia, I., Maharijaya, A., & Wiyono, S. (2020). Keragaman Genetik dan Ketahanan terhadap Penyakit Layu Fusarium (Fusarium oxysporum f.sp cepae) Bawang Merah (Allium cepa L. var. aggregatum) Indonesia. *Jurnal Hortikultura Indonesia*, *11*(1), 32–40. https://doi.org/10.29244/jhi.11.1.32-40

Arisuryanti, T., Daryono, B. S., Hartono, S., Agung, A., & Raka, G. (2008). Observasi dan Identifikasi Virus yang Menginfeksi Bawang Merah di Jawa. *Jurnal Perlindungan Tanaman Indonesia*, *14*(2), 55–62.

Arkhipova, T. N., Veselov, S. U., Melentiev, A. I., Martynenko, E. V., & Kudoyarova, G. R. (2005). Ability of bacterium Bacillus subtilis to produce cytokinins and to influence the growth and endogenous hormone content of lettuce plants. *Plant and Soil*, *272*(1–2), 201–209. https://doi.org/10.1007/s11104-004-5047-x

Artanti, H. 2022. Induksi Ketahanan terhadap Penyakit Moler dan Struktur Komunitas

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Bakteri Rhizosfer pada Bawang Merah yang diperlakukan dengan Rhizophagus Intraradices dan Trichoderma asperellum. *Thesis.* Universitas Gadjah Mada

Bais, H. P., Fall, R., & Vivanco, J. M. (2004). Biocontrol of Bacillus subtilis against infection of Arabidopsis roots by Pseudomonas syringae is facilitated by biofilm formation and surfactin production. *Plant Physiology*, *134*(1), 307–319. https://doi.org/10.1104/pp.103.028712

Banerjee, G., Gorthi, S., & Chattopadhyay, P. (2018). Beneficial effects of bio-controlling agent Bacillus cereus IB311 on the agricultural crop production and its biomass optimization through response surface methodology. *Anais Da Academia Brasileira de Ciencias*, *90*(2), 2149–2159. https://doi.org/10.1590/0001-3765201720170362

Barrios, F.R., Granillo, A.R., Canales, M.G.M., Lim, M.G., Loske, A.M., Tovar, A.V., Perez, N.O. 2022. *Fusarium tempertaum* shows a hemibiotrophic infection process and differential pathogenecity over different maize breeds from Mexico. *Journal of Phytopathology* 170: 21 - 23. https://doi.org/10.1111/jph.13052

Bélanger, J. M. R., Jocelyn Paré, J. R., & Sigouin, M. (1997). Chapter 2 High performance liquid chromatography (HPLC): Principles and applications. *Techniques and Instrumentation in Analytical Chemistry*, *18*(C), 37–59. https://doi.org/10.1016/S0167-9244(97)80011-X

Benbow, J. M., & Sugar, D. (1999). Fruit surface colonization and biological control of postharvest diseases of pear by preharvest yeast applications. *Plant Disease*, *83*(9), 839–844. https://doi.org/10.1094/PDIS.1999.83.9.839

Benizri, E., Piutti, S., Verger, S., Pagès, L., Vercambre, G., Poessel, J. L., & Michelot, P. (2005). Replant diseases: Bacterial community structure and diversity in peach rhizosphere as determined by metabolic and genetic fingerprinting. *Soil Biology and Biochemistry*, *37*(9), 1738–1746. https://doi.org/10.1016/j.soilbio.2005.02.009

Bhaliya, C.M., Jadeja, K.B. 2014. Efficacy of different fungicides against *Fusarium solani* causing coriander root rot. *The Bioscan* 9 (3): 1225 - 1227.

Borriss, R., Chen, X.-H., Rueckert, C., Blom, J., Becker, A., Baumgarth, B., Fan, B., Pukall, R., Schumann, P., Spröer, C., Junge, H., Vater, J., Pühler, A., & Klenk, H.-P. (2011). Relationship of Bacillus amyloliquefaciens clades associated with strains DSM 7T and FZB42. *International Journal of Systematic and Evolutionary Microbiology*, *61*(Pt 8), 1786–1801. https://doi.org/10.1099/ijs.0.023267-0

BPS. (2019). *Produksi Tanaman Sayuran Indonesia*. https://www.bps.go.id/indicator/55/61/1/produksi-tanaman-sayuran.html

Calvo, P., Zebelo, S., McNear, D., Kloepper, J., & Fadamiro, H. (2019). Plant growth-promoting rhizobacteria induce changes in Arabidopsis thaliana gene expression of nitrate and ammonium uptake genes. *Journal of Plant Interactions*, *14*(1), 224–231. https://doi.org/10.1080/17429145.2019.1602887

Cao, Y., Pi, H., Chandrangsu, P., Li, Y., Wang, Y., Zhou, H., Xiong, H., Helmann, J. D., & Cai, Y. (2018). Antagonism of Two Plant-Growth Promoting Bacillus velezensis Isolates Against Ralstonia solanacearum and Fusarium oxysporum. *Scientific Reports*, *8*(1), 1–14. https://doi.org/10.1038/s41598-018-22782-z

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Chavera, G.F.S., Macuer, M.A., Torres, P.M. 2020. Endospore-forming bacteria present in commercial stabilized poultry manure determines the *Fusarium* Biocontrol and the Tomato Growth Promotion. *Agronomy* (10).

Chen, C., Bélanger, R. R., Benhamou, N., & Paulitz, T. C. (2000). Defense enzymes induced in cucumber roots by treatment with plant growth-promoting rhizobacteria (PGPR) and Pythium aphanidermatum. *Physiological and Molecular Plant Pathology*, *56*(1), 13–23. https://doi.org/10.1006/pmpp.1999.0243

Chen, La, Hao, Z., Li, K., Sha, Y., Wang, E., Sui, X., Mi, G., Tian, C., & Chen, W. (2021). Effectsof growth-promoting rhizobacteria on maize growth and rhizosphere microbial community under conservation tillage in Northeast China. *Microbial Biotechnology*, *14*(2), 535–550. https://doi.org/10.1111/1751-7915.13693

Chen, Liang, Heng, J., Qin, S., & Bian, K. (2018). A comprehensive understanding of the biocontrol potential of Bacillus velezensis LM2303 against Fusarium head blight. *PLoS ONE*, *13*(6), 1–22. https://doi.org/10.1371/journal.pone.0198560

Chen, Lin, Wang, X., Ma, Q., Bian, L., Liu, X., Xu, Y., Zhang, H., Shao, J., & Liu, Y. (2020). Bacillus velezensis CLA178-Induced Systemic Resistance of Rosa multiflora Against Crown Gall Disease. *Frontiers in Microbiology*, 1–12. https://doi.org/10.3389/fmicb.2020.587667

Chen, Z., Zhao, L., Dong, Y., Chen, W., Li, C., Gao, X., Chen, R., Li, L., & Xu, Z. (2021). The antagonistic mechanism of Bacillus velezensis ZW10 against rice blast disease: Evaluation of ZW10 as a potential biopesticide. *PLOS ONE*, *16*(8), e0256807. https://doi.org/10.1371/journal.pone.0256807

Ciesielski, S., Bułkowska, K., Dabrowska, D., Kaczmarczyk, D., Kowal, P., & Mozejko, J. (2013). Ribosomal intergenic spacer analysis as a tool for monitoring methanogenic archaea changes in an anaerobic digester. *Current Microbiology*, *67*(2), 240–248. https://doi.org/10.1007/s00284-013-0353-2

Darsan, S., Sulistyaningsih, E., & Wibowo, A. (2017). Various Shallot Seed Treatments with Trichoderma to Increase Growth and Yield on Sandy Coastal. *Ilmu Pertanian (Agricultural Science)*, *1*(3), 094. https://doi.org/10.22146/ipas.12564

Devy, N., Setiyani, R., Hardiyanto, H., & Puspitasari. (2020). Performance of shallot (Allium cepa var. ascalonicum) derived from true seed under a dry condition area. *IOP Conference Series: Earth and Environmental Science*, *458*, 12008. https://doi.org/10.1088/1755-1315/458/1/012008

Ding, Z., Yang, L., Wang, G., Guo, L., Liu, L., Wang, J., & Huang, J. (2018). Fusaric acid is a virulence factor of Fusarium oxysporum f. sp. cubense on banana plantlets. *Tropical Plant Pathology*, *43*(4), 297–305. https://doi.org/10.1007/s40858-018-0230-4

Diyansah, B., Aini, L. Q., & Hadiastono, T. (2012). The Effect of PGPR (Plant Growth Promoting Rhizobacteria) Pseudomonas Fluorescens and Bacillus Subtilis on Leaf Mustard Plant (Brassica Juncea L.) Infected by TuMV (Turnip Mosaic Virus). *Journal of Tropical Plant Protection*, *1*(1), 30–38.

Dunlap, C. A., Kim, S. J., Kwon, S. W., & Rooney, A. P. (2016). Bacillus velezensis is not a later heterotypic synonym of Bacillus amyloliquefaciens; Bacillus

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

methylotrophicus, Bacillus amyloliquefaciens subsp. Plantarum and 'Bacillus oryzicola' are later heterotypic synonyms of Bacillus velezensis based on phylogenom. *International Journal of Systematic and Evolutionary Microbiology*, *66*(3), 1212–1217. https://doi.org/10.1099/ijsem.0.000858

Dwimartina, F., Arwiyanto, T., & Joko, T. (2017). Potential of Endophytic and Rhizobacteria as an Effective Biocontrol for Ralstonia syzygii subsp. syzygii. *Asian Journal of Plant Pathology*, *11*(4), 191–198. https://doi.org/10.3923/ajppaj.2017.191.198

Elshyana, I. S. (2019). Respon pertumbuhan *true shallot seed* beberapa varietas bawang merah *(Allium cepa l .) terhadap aplikasi giberelin*. *3*(October), 114–123.

Feduraev, P. et al. (2020). Diseases of Wheat - Triticum aestivum L. *Diseases Of Field Crops And Their Management*, 39–64. https://doi.org/10.1201/9781003084198-2

Fitriana, N., & Susandarini, R. (2019). Morphology and taxonomic relationships of shallot (Allium cepa L. group aggregatum) cultivars from Indonesia. *Biodiversitas*, *20*(10), 2809–2814. https://doi.org/10.13057/biodiv/d201005

Fravel, D.R., Deahl, K.L., Stommel, J.R. 2005. Compatibilty of the biocontrol fungus *Fusarium oxysporum* strain CS-20 with selected fungicides. *Biological Control* 34: 165 - 169.

Fu, H. Z., Marian, M., Enomoto, T., Hieno, A., Ina, H., Suga, H., & Shimizu, M. (2020). Biocontrol of tomato bacterial wilt by foliar spray application of a novel strain of endophytic bacillus sp. *Microbes and Environments*, *35*(4), 1–11. https://doi.org/10.1264/jsme2.ME20078

Fu, L., Penton, C. R., Ruan, Y., Shen, Z., Xue, C., Li, R., & Shen, Q. (2017). Inducing the rhizosphere microbiome by biofertilizer application to suppress banana Fusarium wilt disease. *Soil Biology and Biochemistry*, *104*, 39–48. https://doi.org/10.1016/j.soilbio.2016.10.008

Gao, Q. M., Zhu, S., Kachroo, P., & Kachroo, A. (2015). Signal regulators of systemic acquired resistance. *Frontiers in Plant Science*, *6*(APR), 1–12. https://doi.org/10.3389/fpls.2015.00228

Gong, A. D., Li, H. P., Yuan, Q. S., Song, X. S., Yao, W., He, W. J., Zhang, J. B., & Liao, Y. C. (2015). Antagonistic mechanism of iturin a and plipastatin a from Bacillus amyloliquefaciens S76-3 from wheat spikes against Fusarium graminearum. *PLoS ONE*, *10*(2), 1–18. https://doi.org/10.1371/journal.pone.0116871

Hadi, A. E., Khalisha, A., Pambudi, A., & Effendi, Y. (2021). Potential of bacteria consortium as growth controller of pathogenic fungi Fusarium oxysporum F. sp. cubense (Foc). *IOP Conference Series: Earth and Environmental Science*, *637*(1). https://doi.org/10.1088/1755-1315/637/1/012029

Hadiwiyono, H., Sari, K., & Poromarto, S. H. (2020). Yields Losses Caused by Basal Plate Rot (Fusarium oxysporum f.sp. cepae) in Some Shallot Varieties. *Caraka Tani: Journal of Sustainable Agriculture*, *35*(2), 250. https://doi.org/10.20961/carakatani.v35i2.26916

Hafri, N. D., Sulistyaningsih, E., & Wibowo, A. (2020). Pengaruh Aplikasi *Plant Growth*

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Promoting Rhizobacteria terhadap Pertumbuhan dan Hasil Tanaman Bawang Merah (*Allium cepa* L. Aggregatum group). *Vegetalika*, *9*(4), 512. https://doi.org/10.22146/veg.47812

Hahuly, M. V., Sumardiyono, C., Wibowo, A., Subandiyah, S., & Harper, S. (2018). Identification of purple blotch pathogen of shallot by PCR using specific primer for Alternaria genus. *Archives of Phytopathology and Plant Protection*, *51*(3–4), 103–121. https://doi.org/10.1080/03235408.2017.1384196

Hassan, T. (2018). Bacillus cereus: a competent plant growth promoting bacterium of saline sodic field. *Pakistan Journal of Botany*, *50*.

Herlina, L., Istiaji, B., & Wiyono, S. (2021). The Causal Agent of Fusarium Disease Infested Shallots in Java Islands of Indonesia. *E3S Web of Conferences*, *232*(March). https://doi.org/10.1051/e3sconf/202123203003

Hong, S., Kim, T. Y., Won, S. J., Moon, J. H., Ajuna, H. B., Kim, K. Y., & Ahn, Y. S. (2022). Control of Fungal Diseases and Fruit Yield Improvement of Strawberry Using Bacillus velezensis CE 100. *Microorganisms*, *10*(2). https://doi.org/10.3390/microorganisms10020365

Hu, D., Li, S., Li, Y., Peng, J., Wei, X., Ma, J., Zhang, C., Jia, N., Wang, E., & Wang, Z. (2020). Streptomyces sp. strain TOR3209: a rhizosphere bacterium promoting growth of tomato by affecting the rhizosphere microbial community. *Scientific Reports*, *10*(1), 1–15. https://doi.org/10.1038/s41598-020-76887-5

Idris, E. S. E., Iglesias, D. J., Talon, M., & Borriss, R. (2007). Tryptophan-dependent production of Indole-3-Acetic Acid (IAA) affects level of plant growth promotion by Bacillus amyloliquefaciens FZB42. *Molecular Plant-Microbe Interactions*, *20*(6), 619–626. https://doi.org/10.1094/MPMI-20-6-0619

Iriani, E. (2013). Prospek Pengembangan Inovasi Teknologi Bawang Merah di Lahan Sub Optimal (Lahan Pasir) dalam Upaya Peningkatan Pendapatan Petani. *Jurnal Litbang Provinsi Jawa Tengah*, *11*(2), 231–243. https://doi.org/10.1190/segam2013-0137.1

Islam, J., Phukan, S., & Chattopadhyay, P. (2019). Development of a validated RP-HPLC/DAD method for the quantitative determination of methyl jasmonate in an insect repellent semi-solid formulation. *Heliyon*, *5*(5), e01775–e01775. https://doi.org/10.1016/j.heliyon.2019.e01775

Iwai, T., Seo, S., Mitsuhara, I., & Ohashi, Y. (2007). Probenazole-induced accumulation of salicylic acid confers resistance to Magnaporthe grisea in adult rice plants. *Plant and Cell Physiology*, *48*(7), 915–924. https://doi.org/10.1093/pcp/pcm062

Jayanti, R.M. 2022. Penapisan gen gen penyandi plant growth promoting bacteria untuk pengendalian penyakit moler pada budidaya bawang merah. *Thesis.* Universitas Gadjah Mada, Yogyakarta.

Jiang, J., Gao, L., Bie, X., Lu, Z., Liu, H., Zhang, C., Lu, F., & Zhao, H. (2016). Identification of novel surfactin derivatives from NRPS modification of Bacillus subtilis and its antifungal activity against Fusarium moniliforme. *BMC Microbiology*, *16*(1), 31. https://doi.org/10.1186/s12866-016-0645-3

Joko, T., Koentjoro, M. P., Somowiyarjo, S., Rohman, M. S., Liana, A., & Ogawa, N. (2012). Response of rhizobacterial communities in watermelon to infection with

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

cucumber green mottle mosaic virus as revealed by cultivation-dependent RISA. *Archives of Phytopathology and Plant Protection*, *45*(15), 1810–1818. https://doi.org/10.1080/03235408.2012.707526

Kalman, B., Abraham, D., Graph, S., Perl-Treves, R., Harel, Y. M., & Degani, O. (2020). Isolation and identification of fusarium spp., the causal agents of onion (allium cepa) basal rot in northeastern israel. *Biology*, *9*(4). https://doi.org/10.3390/biology9040069

kementerian Pertanian Republik Indonesia. (2021). *Statistik Konsumsi Pangan Tahun 2020*. http://epublikasi.setjen.pertanian.go.id/arsip-perstatistikan/163-statistik/statistik-konsumsi/751-statistik-konsumsi-pangan-tahun-2020

Khan, M. S., Gao, J., Chen, X., Zhang, M., Yang, F., Du, Y., Moe, T. S., Munir, I., Xue, J., & Zhang, X. (2020). The Endophytic Bacteria Bacillus velezensis Lle-9, Isolated from Lilium leucanthum, Harbors Antifungal Activity and Plant Growth-Promoting Effects. *Journal of Microbiology and Biotechnology*, *30*(5), 668–680. https://doi.org/10.4014/jmb.1910.10021

Khotimah, K., Sulistyaningsih, E., & Wibowo, A. (2017). In Vitro Induced Resistance of Fusarium Wilt Disease (Fusarium oxysporum f.sp. cepae) by Salicylic Acid in Shallot CV 'Bima Brebes.' *Ilmu Pertanian (Agricultural Science)*, *2*(1), 001. https://doi.org/10.22146/ipas.12840

Koeck, M., Hardham, A. R., & Dodds, P. N. (2011). The role of effectors of biotrophic and hemibiotrophic fungi in infection. *Cellular Microbiology*, *13*(12), 1849–1857. https://doi.org/10.1111/j.1462-5822.2011.01665.x

Kowalska, M., Woźniak, M., Kijek, M., Mitrosz, P., Szakiel, J., & Turek, P. (2022). Management of validation of HPLC method for determination of acetylsalicylic acid impurities in a new pharmaceutical product. *Scientific Reports*, *12*(1), 1. https://doi.org/10.1038/s41598-021-99269-x

Kuan, K. B., Othman, R., Rahim, K. A., & Shamsuddin, Z. H. (2016). Plant growth-promoting rhizobacteria inoculation to enhance vegetative growth, nitrogen fixation and nitrogen remobilisation of maize under greenhouse conditions. *PLoS ONE*, *11*(3), 1–19. https://doi.org/10.1371/journal.pone.0152478

Kumar, M., Mishra, S., Dixit, V., Kumar, M., Agarwal, L., Chauhan, P. S., & Nautiyal, C. S. (2016). Synergistic effect of Pseudomonas putida and Bacillus amyloliquefaciens ameliorates drought stress in chickpea (Cicer arietinum L.). *Plant Signaling and Behavior*, *11*(1), 1–9. https://doi.org/10.1080/15592324.2015.1071004

Kuvalekar, A., Redkar, A., Gandhe, K., & Harsulkar, A. (2011). Peroxidase and polyphenol oxidase activities in compatible host-pathogen interaction in Jasminum officinale and Uromyces hobsoni: Insights into susceptibility of host. *New Zealand Journal of Botany*, *49*(3), 351–359. https://doi.org/10.1080/0028825X.2011.569727

Leon-Reyes, A., Van der Does, D., De Lange, E. S., Delker, C., Wasternack, C., Van Wees, S. C. M., Ritsema, T., & Pieterse, C. M. J. (2010). Salicylate-mediated suppression of jasmonate-responsive gene expression in arabidopsis is targeted downstream of the jasmonate biosynthesis pathway. *Planta*, *232*(6), 1423–1432. https://doi.org/10.1007/s00425-010-1265-z

Leslie, J. F., & Summerell, B. A. (2006). *The Fusarium Laboratory Manual.* In

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Blackwell Publishing, Oxford, UK,

Lestiyani, A., Wibowo, A., & Subandiyah, S. (2021). Pathogenicity and Detection of Phytohormon (Gibberellic Acid and Indole Acetic Acid) Produced by Fusarium spp. that Causes Twisted Disease in Shallot. *Jpt : Jurnal Proteksi Tanaman (Journal of Plant Protection)*, *5*(1), 24. https://doi.org/10.25077/jpt.5.1.24-33.2021

Liu, Y., Chen, L., Wu, G., Feng, H., Zhang, G., Shen, Q., & Zhang, R. (2017). Identification of root-secreted compounds involved in the communication between cucumber, the beneficial bacillus amyloliquefaciens, and the soil-borne pathogen fusarium oxysporum. *Molecular Plant-Microbe Interactions*, *30*(1), 53–62. https://doi.org/10.1094/MPMI-07-16-0131-R

Lozano, G. L., Holt, J., Ravel, J., Rasko, D. A., Thomas, M. G., & Handelsman, J. (2016). Draft Genome Sequence of Biocontrol Agent Bacillus cereus UW85. *Genome Announcements*, *4*(5), e00910-16. https://doi.org/10.1128/genomeA.00910-16

Lyons, R., Stiller, J., Powell, J., Rusu, A., Manners, J. M., & Kazan, K. (2015). Fusarium oxysporum triggers tissue-specific transcriptional reprogramming in Arabidopsis thaliana. *PLoS ONE*, *10*(4), 1–23. https://doi.org/10.1371/journal.pone.0121902

Madriz-ordeñana, K., Pazarlar, S., Jørgen, H., Jørgensen, L., Nielsen, T. K., Zhang, Y., Nielsen, K. L., Hansen, L. H., & Thordal-christensen, H. (2022). *The Bacillus cereus Strain EC9 Primes the Plant Immune System for Superior Biocontrol of Fusarium oxysporum*. 1–19.

Masood, S., Zhao, X. Q., & Shen, R. F. (2020). Bacillus pumilus promotes the growth and nitrogen uptake of tomato plants under nitrogen fertilization. *Scientia Horticulturae*, *272*(March), 109581. https://doi.org/10.1016/j.scienta.2020.109581

Mehta, P., Walia, A., Kulshrestha, S., Chauhan, A., & Shirkot, C. K. (2015). Efficiency of plant growth-promoting P-solubilizing Bacillus circulans CB7 for enhancement of tomato growth under net house conditions. *Journal of Basic Microbiology*, *55*(1), 33–44. https://doi.org/10.1002/jobm.201300562

Miljaković, D., Marinković, J., & Balešević-Tubić, S. (2020). The significance of bacillus spp. In disease suppression and growth promotion of field and vegetable crops. *Microorganisms*, *8*(7), 1–19. https://doi.org/10.3390/microorganisms8071037

Murningsih, T., & Chairul. (2000). Mengenal HPLC: peranannya dalam analisa dan proses isolasi bahan kimia alam. *Berita Biologi*, *5*(2), 261–272.

Nasser, E., & Qaddoumi, S. Q. (2016). Antimicrobial activity of Bacillus cereus: Isolation, identification and the effect of carbon and nitrogen source on its antagonistic activity. *Journal of Microbiology and Antimicrobials*, *8*, 7–13. https://doi.org/10.5897/JMA2015.0340

Nie, P., Li, X., Wang, S., Guo, J., Zhao, H., & Niu, D. (2017). Induced systemic resistance against botrytis cinerea by Bacillus cereus AR156 through a JA/ET- and NPR1-dependent signaling pathway and activates PAMP-triggered immunity in arabidopsis. *Frontiers in Plant Science*, *8*(February), 1–12. https://doi.org/10.3389/fpls.2017.00238

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Nifakos, K., Tsalgatidou, P. C., Thomloudi, E. E., Skagia, A., Kotopoulis, D., Baira, E., Delis, C., Papadimitriou, K., Markellou, E., Venieraki, A., & Katinakis, P. (2021). Genomic analysis and secondary metabolites production of the endophytic bacillus velezensis bvel1: A biocontrol agent against botrytis cinerea causing bunch rot in post-harvest table grapes. *Plants*, *10*(8), 1–18. https://doi.org/10.3390/plants10081716

Nisrina, L., Effendi, Y., Pancoro, A., 2021. Revealing the role of plant growth promoting rhizobacteria in suppressive soils against *Fusarium oxysporum* f.s. *cubense* based on metagenomic analysis. *Heliyon* 7 (8) doi.org/10.1016/j.heliyon.2021.e07636

Niu, D. D., Liu, H. X., Jiang, C. H., Wang, Y. P., Wang, Q. Y., Jin, H. L., & Guo, J. H. (2011). The plant growth-promoting rhizobacterium Bacillus cereus AR156 induces systemic resistance in Arabidopsis thaliana by simultaneously activating salicylate- and jasmonate/ethylene-dependent signaling pathways. *Molecular Plant-Microbe Interactions*, *24*(5), 533–542. https://doi.org/10.1094/MPMI-09-10-0213

Nugroho, A. W. (2015). Potensi Jamur Perakaran sebagai Agens Pengendalian Hayati Penyakit Moler (Fusarium oxysporum f . sp . Cepae) pada Bawang Merah Potential of Root-Colonizing Fungi as Biocontrol Agent of Moler Desease (Fusarium oxysporum f . sp . Cepae) on Shallot. *Agrosains*, *17*(1), 4–8.

Nurhayati, Y., Suryanti, S., & Wibowo, A. (2021). In Vitro Evaluation of Trichoderma asperellum Isolate UGM-LHAF against Rhizoctonia solani Causing Sheath Blight Disease of Rice. *Jurnal Perlindungan Tanaman Indonesia*, *25*(1), 64. https://doi.org/10.22146/jpti.65290

Palazzini, J. M., Dunlap, C. A., Bowman, M. J., & Chulze, S. N. (2016). Bacillus velezensis RC 218 as a biocontrol agent to reduce Fusarium head blight and deoxynivalenol accumulation: Genome sequencing and secondary metabolite cluster profiles. *Microbiological Research*, *192*, 30–36. https://doi.org/https://doi.org/10.1016/j.micres.2016.06.002

Pande, A., Pandey, P., Mehra, S., Singh, M., & Kaushik, S. (2017). Phenotypic and genotypic characterization of phosphate solubilizing bacteria and their efficiency on the growth of maize. *Journal of Genetic Engineering and Biotechnology*, *15*(2), 379–391. https://doi.org/https://doi.org/10.1016/j.jgeb.2017.06.005

Pandya, N., & Desai, P. (2013). Gibberellic Acid Production by Bacillus cereus Isolated from the Rhizosphere of Sugarcane. *Journal of Pure and Applied Microbiology*, *7*, 3239–3242.

Paraschivu, M., Cotuna, Otilia dan Paraschivu, M. 2013. The use of the area under disease progress curve (AUDPC) to assess the epidemics of septoria tritici in winter wheat. *Research Journal of Agriculturan Sciece* 45(1)

Perez, PM., dan Alberto, RT. 2020. Chemical management of anthracnose-twister (*Colletotrichum gloeosporoides* and *Fusarium fujikuroi)* Disease of Onion (*Allium cepa)*. *Plant Pathology & Quarantine* 10 (1): 198 - 216.

Perković, J., Major, N., Ban, D., Cvitan, D., & Ban, S. G. (2021). Shallot species and subtypes discrimination based on morphology descriptors. *Plants*, *10*(1), 1–18. https://doi.org/10.3390/plants10010060

Pieterse, C. M. J., Van Wees, S. C. M., Van Pelt, J. A., Knoester, M., Laan, R., Gerrits,

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

H., Weisbeek, P. J., & Van Loon, L. C. (1998). A novel signaling pathway controlling induced systemic resistance in arabidopsis. *Plant Cell*, *10*(9), 1571–1580. https://doi.org/10.1105/tpc.10.9.1571

Prakash, J., & Arora, N. K. (2019). Phosphate-solubilizing Bacillus sp. enhances growth, phosphorus uptake and oil yield of Mentha arvensis L. *3 Biotech*, *9*(4), 126. https://doi.org/10.1007/s13205-019-1660-5

Purba, S. N., Ansoruddin, & Batubara, L. R. (2018). PERTUMBUHAN DAN PRODUKSI TANAMAN BAWANG MERAH (Allium ascalonicum L .). *BERNAS Agricultural Research Journal*, *14*(2), 77–88.

Putri, R. E., Mubarik, N. R., Ambarsari, L., & Wahyudi, A. T. (2021). Antagonistic activity of glucanolytic bacteria Bacillus subtilis W3.15 against fusarium oxysporum and its enzyme characterization. *Biodiversitas*, *22*(9), 4067–4077. https://doi.org/10.13057/biodiv/d220956

Rahayu, Mujiyo, Arini, R. U. (2018). JOURNAL OF DEGRADED AND MINING LANDS MANAGEMENT Azotobacter population, soil nitrogen and groundnut growth in mercury-contaminated tailing inoculated with Azotobacter. *J. Degrade. Min. Land Manage*, *5*(53), 2502–2458. https://doi.org/10.15243/jdmlm

Rahma, A. A., Suryanti, Somowiyarjo, S., & Joko, T. (2020). Induced disease resistance and promotion of shallot growth by bacillus velezensis B-27. *Pakistan Journal of Biological Sciences*, *23*(9), 1113–1121. https://doi.org/10.3923/pjbs.2020.1113.1121

Ramírez, V., Martínez, J., Bustillos-Cristales, M. D. R., Catañeda-Antonio, D., Munive, J.-A., & Baez, A. (2022). Bacillus cereus MH778713 elicits tomato plant protection against Fusarium oxysporum. *Journal of Applied Microbiology*, *132*(1), 470–482. https://doi.org/10.1111/jam.15179

Ran, L. X., Liu, C. Y., Wu, G. J., Van Loon, L. C., & Bakker, P. A. H. M. (2005). Suppression of bacterial wilt in Eucalyptus urophylla by fluorescent Pseudomonas spp. in China. *Biological Control*, *32*(1), 111–120. https://doi.org/10.1016/j.biocontrol.2004.08.007

Ranjard, L., Brothier, E., & Nazaret, S. (2000). Sequencing bands of ribosomal intergenic spacer analysis fingerprints for characterization and microscale distribution of soil bacterium populations responding to mercury spiking. *Applied and Environmental Microbiology*, *66*(12), 5334–5339. https://doi.org/10.1128/AEM.66.12.5334-5339.2000

Ranjard, L., Poly, F., Lata, J. C., Mougel, C., Thioulouse, J., & Nazaret, S. (2001). Characterization of bacterial and fungal soil communities by automated ribosomal intergenic spacer analysis fingerprints: biological and methodological variability. *Applied and Environmental Microbiology*, *67*(10), 4479–4487. https://doi.org/10.1128/AEM.67.10.4479-4487.2001

Ratchhaseema, M.T.N., *et al.* 2021. The role of salicylic acid and benzothiadiazole in decreasing phytoplasma titer if sugarcane white leaf disease. *Scientific Reports* 11: 15211. https://doi.org/10.1038/s41598-021-94746-9

Ravikumar, M., & Perinbam, K. (2016). Production , Optimization and Characterization of Chitin Deacetylase from Marine bacteria Bacillus cereus TK19. *Journal of Academia and Industrial Research*, *5*(5), 72–76.

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Resti, Z., Habazar, T., Putra, D. P., & . N. (2018). Characterization of Endophytic Bacillus Isolated From Shallot Root As Biocontrol of Bacterial Leaf Blight Disease. *Jurnal Hama Dan Penyakit Tumbuhan Tropika*, *18*(1), 31. https://doi.org/10.23960/j.hptt.11831-38

Ruiz-García, C., Béjar, V., Martínez-Checa, F., Llamas, I., & Quesada, E. (2005). Bacillus velezensis sp. nov., a surfactant-producing bacterium isolated from the river Vélez in Málaga, southern Spain. *International Journal of Systematic and Evolutionary Microbiology*, *55*(1), 191–195. https://doi.org/10.1099/ijs.0.63310-0

Ryu, C.-M., Farag, M. A., Hu, C.-H., Reddy, M. S., Kloepper, J. W., & Paré, P. W. (2004). Bacterial Volatiles Induce Systemic Resistance in Arabidopsis. *Plant Physiology*, *134*(3), 1017–1026. https://doi.org/10.1104/pp.103.026583

Ryu, C. M., Hu, C. H., Reddy, M. S., & Kloepper, J. W. (2003). Different signaling pathways of induced resistance by rhizobacteria in Arabidopsis thaliana against two pathovars of Pseudomonas syringae. *New Phytologist*, *160*(2), 413–420. https://doi.org/10.1046/j.1469-8137.2003.00883.x

Saeid, A., Prochownik, E., & Dobrowolska-Iwanek, J. (2018). Phosphorus Solubilization by Bacillus Species. *Molecules (Basel, Switzerland)*, *23*(11), 2897. https://doi.org/10.3390/molecules23112897

Saputra, R., Arwiyanto, T., & Wibowo, A. (2019). Streptomyces sp.: Characterization, Identification and Its Potential as a Ralstonia solanacearum Biological Control Agent in vitro. *Indonesian Journal of Agricultural Research*, *2*(3), 89–96. https://doi.org/10.32734/injar.v2i3.1389

Satyanarayana, T., Deshmukh, S. K., & Johri, B. N. (2017). Developments in fungal biology and applied mycology. In *Developments in Fungal Biology and Applied Mycology* (Issue February 2020). https://doi.org/10.1007/978-981-10-4768-8

Serteyn, L., Quaghebeur, C., Ongena, M., Cabrera, N., Barrera, A., Molina-Montenegro, M. A., Francis, F., & Ramírez, C. C. (2020). Induced systemic resistance by a plant growth-promoting rhizobacterium impacts development and feeding behavior of aphids. *Insects*, *11*(4). https://doi.org/10.3390/insects11040234

Shafi, J., Tian, H., & Ji, M. (2017). *Bacillus species as versatile weapons for plant pathogens : a review*. *February*. https://doi.org/10.1080/13102818.2017.1286950

Silo-Suh, L. A., Lethbridge, B. J., Raffel, S. J., He, H., Clardy, J., & Handelsman, J. (1994). Biological activities of two fungistatic antibiotics produced by Bacillus cereus UW85. *Applied and Environmental Microbiology*, *60*(6), 2023–2030. https://doi.org/10.1128/aem.60.6.2023-2030.1994

Singh, H.B., Keswani, C., Reddym M.S., Sansinenea, E., & Estrada, C.G. 2019. Secondary metabolite of Plant Growth Promoting Rhizomicroorganisms. Singapore: Spinger Nature.

Sintayehu, A., Sakhuja, P. K., Fininsa, C., & Ahmed, S. (2011). Management of fusarium basal rot (Fusarium oxysporum f. sp. cepae) on shallot through fungicidal bulb treatment. *Crop Protection*, *30*(5), 560–565. https://doi.org/10.1016/j.cropro.2010.12.027

Sopha, G. A., Widodo, W., Poerwanto, R., & Palupi, E. (2014). *Photoperiod and*

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

gibberellins effect on True shallot seed formation. *6*, 70–76.

Sudarma, I. M., Suprapta, D. N., Sudana, I. M., & Temaja, I. G. R. M. (2012). Aplikasi Polymerase Chain Reaction-Ribosomal Intergenic Mikroba Tanah Pada Habitat Tanaman Pisang Dengan Dan Tanpa Gejala Layu Fusarium. *Jurnal Bumi Lestari*, *12*(2), 313–320.

Sumarni, N., & Hidayat, A. (2005). Budidaya Bawang Merah. In *Balitsa*. http://balitsa.litbang.pertanian.go.id

Sumarni, N., Sopha, G. A., & Gaswanto, R. (2012). Respons Tanaman Bawang Merah Asal Biji True Shallot Seeds terhadap Kerapatan Tanaman pada Musim Hujan. *Jurnal Hortikultura*, *22*(1), 23. https://doi.org/10.21082/jhort.v22n1.2012.p23-28

Sumudumali, I., Jayawardana, J.M.C.K., Gunatilake, S.K., Udayakumara, E.P.N. 2022. The effects of fungicide chlorothalonil on leaf litter breakdown rate in tropical streams: a microcosm study. *Aquatic Sciences* 84(1).

Sun, E. J. (1978). Identification of Fusarium oxysporum f. sp. cubense Race 4 from Soil or Host Tissue by Cultural Characters. In *Phytopathology* (Vol. 68, Issue 11, p. 1672). https://doi.org/10.1094/phyto-68-1672

Sunardi, Y. S. (2007). *Penentuan kandungan unsur makro pada lahan pasir pantai samas bantul dengan metode analisis aktivasi neutron (aan)*. 123–129.

Suryadi, Y., Samudra, I. M., Priyatno, T., Susilowati, D., & Sutoro, S. (2015). Antifungal Activity of Bacillus cereus 11UJ against Rhizoctonia solani and Pyricularia oryzae. *Jurnal Fitopatologi Indonesia*, *11*, 35–42. https://doi.org/10.14692/jfi.11.2.35

Susilowati, D., Fauziah, F., Setiawati, M. R., Pranoto, E., Hidayati, E., Setyowati, M., & Rachmiati, Y. (2016). Analysis of tea rhizosphere bacterial community at the seedling stage using terminal restriction fragment length . *Jurnal Penelitian Teh Dan Kina (Indonesian Journal of Tea and Cinchona Research)*, *19*, 147–156.

Suswati, Indrawaty, A., & . F. (2016). Aktivitas Enzim Peroksidase Pisang Kepok Dengan Aplikasi Glomus Tipe 1. *Jurnal Hama Dan Penyakit Tumbuhan Tropika*, *15*(2), 141. https://doi.org/10.23960/j.hptt.215141-151

Taufik, M., Rahman, A., Wahab, A., Hidayat, S.H. 2010. Mekanisme ketahanan terinfeksi oleh Plant Growth Promoting Rhizobacteria (PGPR) pada tanaman cabai terinfeksi Cucumber Mosaic Virus . *Jurnal Hortikultura* 20(3): 274 - 283

Toral, L., Rodríguez, M., Béjar, V., & Sampedro, I. (2020). Crop protection against botrytis cinerea by rhizhosphere biological control agent bacillus velezensis XT1. *Microorganisms*, *8*(7), 1–17. https://doi.org/10.3390/microorganisms8070992

Tuhuteru, S., Sulistyaningsih, E., & Wibowo, D. A. (2019). Aplikasi Plant Growth Promoting Rhizobacteria dalam Meningkatkan Produktivitas Bawang Merah di Lahan Pasir Pantai. *Jurnal Agronomi Indonesia (Indonesian Journal of Agronomy)*, *47*(1), 53–60. https://doi.org/10.24831/jai.v47i1.22271

Vanitha, S. C., Niranjana, S. R., & Umesha, S. (2009). Role of phenylalanine ammonia lyase and polyphenol oxidase in host resistance to bacterial wilt of Tomato. *Journal of Phytopathology*, *157*(9), 552–557. https://doi.org/10.1111/j.1439-0434.2008.01526.x

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

Wagi, S., & Ahmed, A. (2019). Bacillus spp.: potent microfactories of bacterial IAA. *PeerJ*, *7*, e7258–e7258. https://doi.org/10.7717/peerj.7258

Walters, D. R., Ratsep, J., & Havis, N. D. (2013). Controlling crop diseases using induced resistance: Challenges for the future. *Journal of Experimental Botany*, *64*(5), 1263–1280. https://doi.org/10.1093/jxb/ert026

Wang, L. T., Lee, F. L., Tai, C. J., & Kuo, H. P. (2008). Bacillus velezensis is a later heterotypic synonym of Bacillus amyloliquefaciens. *International Journal of Systematic and Evolutionary Microbiology*, *58*(3), 671–675. https://doi.org/10.1099/ijs.0.65191-0

Wang, Nan, Li, P., Pan, J., Wang, M., Long, M., Zang, J., & Yang, S. (2018). Bacillus velezensis A2 fermentation exerts a protective effect on renal injury induced by Zearalenone in mice. *Scientific Reports*, *8*(1), 1–14. https://doi.org/10.1038/s41598-018-32006-z

Wang, Ning, Wang, L., Zhu, K., Hou, S., Chen, L., Mi, D., Gui, Y., Qi, Y., Jiang, C., & Guo, J. H. (2019). Plant root exudates are involved in Bacillus cereusAR156 mediated biocontrol against Ralstonia solanacearum. *Frontiers in Microbiology*, *10*(JAN), 1–14. https://doi.org/10.3389/fmicb.2019.00098

Wang, X., Wang, L., Wang, J., Jin, P., Liu, H., & Zheng, Y. (2014). Bacillus cereus AR156-Induced Resistance to Colletotrichum acutatum Is Associated with Priming of Defense Responses in Loquat Fruit. *PLOS ONE*, *9*(11), e112494. https://doi.org/10.1371/journal.pone.0112494

Wei, F., Hu, X., & Xu, X. (2016). Dispersal of Bacillus subtilis and its effect on strawberry phyllosphere microbiota under open field and protection conditions. *Scientific Reports*, *6*(March), 1–9. https://doi.org/10.1038/srep22611

Wiyatiningsih, S., Wibowo, A., & Triwahyu, E. P. (2009). Tanggapan tujuh kultivar bawang merah terhadap infeksi Fusarium oxysporum f. sp. cepae penyebab penyakit moler. *Jurnal Pertanian Mapeta, 12*(1), 1–12.

Yánez-Mendizábal, V., Usall, J., Viñas, I., Casals, C., Marín, S., Solsona, C., & Teixidó, N. (2011). Potential of a new strain of Bacillus subtilis CPA-8 to control the major postharvest diseases of fruit. *Biocontrol Science and Technology*, *21*(4), 409–426. https://doi.org/10.1080/09583157.2010.541554

Yang, L., Xi, Y., Luo, X. Y., Ni, H., & Li, H. H. (2019). Preparation of peroxidase and phenolics using discarded sweet potato old stems. *Scientific Reports*, *9*(1), 1–10. https://doi.org/10.1038/s41598-019-40568-9

Yanti, Y. (2015). Peroxidase Enzyme Activity of Rhizobacteria-introduced Shallots Bulbs to Induce Resistance of Shallot towards Bacterial Leaf Blight (Xanthomonas Axonopodis pv Allii). *Procedia Chemistry*, *14*, 501–507. https://doi.org/10.1016/j.proche.2015.03.067

Yuan, M., Huang, Y., Huang, Y., Ge, W., Jia, Z., Song, S., & Zhang, L. (2019). Involvement of jasmonic acid, ethylene and salicylic acid signaling pathways behind the systemic resistance induced by Trichoderma longibrachiatum H9 in cucumber. *BMC Genomics*, *20*(1), 1–13. https://doi.org/10.1186/s12864-019-5513-8

Zegeye, E. D., Santhanam, A., Gorfu, D., & Kassa, B. (2011). Biocontrol activity of *Trichoderma viride* and *Pseudomonas fluorescens* against *Phytophthora*

UNIVERSITAS
GADJAH MADA
Efektivitas Penyemprotan Bawang Merah dengan Bacillus spp. dalam Pengelolaan Penyakit Moler (Fusarium spp.)
DINI SUNDARI, Dr. Ir. Arif Wibowo, M.Agr.Sc; Dr. Tri Joko, S.P., M.Sc.
Universitas Gadjah Mada, 2022 | Diunduh dari http://etd.repository.ugm.ac.id/

infestans under greenhouse conditions. *Journal of Agricultural Technology*, *7*(6), 1589–1602.

Zeriouh, H., de Vicente, A., Pérez-García, A., & Romero, D. (2014). Surfactin triggers biofilm formation of Bacillus subtilis in melon phylloplane and contributes to the biocontrol activity. *Environmental Microbiology*, *16*(7), 2196–2211. https://doi.org/10.1111/1462-2920.12271

Zhang, C., Wang, W., Xue, M., Liu, Z., Zhang, Q., Hou, J., Xing, M., Wang, R., & Liu, T. (2021). The Combination of a Biocontrol Agent Trichoderma asperellum SC012 and Hymexazol Reduces the Effective Fungicide Dose to Control Fusarium Wilt in Cowpea. In *Journal of Fungi* (Vol. 7, Issue 9). https://doi.org/10.3390/jof7090685

Zhang, L.-N., Wang, D.-C., Hu, Q., Dai, X.-Q., Xie, Y.-S., Li, Q., Liu, H.-M., & Guo, J.-H. (2019). Consortium of Plant Growth-Promoting Rhizobacteria Strains Suppresses Sweet Pepper Disease by Altering the Rhizosphere Microbiota. *Frontiers in Microbiology*, *10*(July), 1–10. https://doi.org/10.3389/fmicb.2019.01668

Zhang, X., Xue, C., Fang, D., He, X., Wei, M., Zhuo, C., Jin, J., Shen, B., Li, R., Ling, N., & Shen, Q. (2021). Manipulating the soil microbiomes during a community recovery process with plant beneficial species for the suppression of Fusarium wilt of watermelon. *AMB Express*, *11*(1), 87. https://doi.org/10.1186/s13568-021-01225-5

Zhang, Y., Gao, X., Shen, Z., Zhu, C., Jiao, Z., Li, R., & Shen, Q. (2019). Pre-colonization of PGPR triggers rhizosphere microbiota succession associated with crop yield enhancement. *Plant and Soil*, *439*(1–2), 553–567. https://doi.org/10.1007/s11104-019-04055-4

Zhu, M. L., Wu, X. Q., Wang, Y. H., & Dai, Y. (2020). Role of biofilm formation by Bacillus pumilus HR10 in biocontrol against pine seedling damping-offdisease caused by Rhizoctonia solani. *Forests*, *11*(6), 1–17.