



## DAFTAR PUSTAKA

- Afieyah, C. N., Suryanti, Joko, T., & Somowiyarjo, S. 2020. Benefical Effect of Arbuscular Mychorrizal Fungi and Trichoderma on Diseased Shallot. JPTI 24 (1): 105-114.
- Agrios, G.N. 2005. Plant Pathology 5<sup>th</sup> ed. Elsevier Academic Press. New York. 947 p.
- Akyol, T.Y., Niwa, R., Hirakawa, H., Maruyama, H., Sato, T., Suzuki, T. Fukunaga, A., Sato, T., Yoshida, S., Tawaraya, K., Saito, M., Ezawa, T. & Sato, S. 2019. Impact of Introduction of Arbuscular Mycorrhizal Fungi on the Root Microbial Community in Agricultural Fields. *Microbes Environment* 34 (1): 23-32.
- Andrade, G., Linderman, R.G., & Bethlenfalvay, G.J. 1998. Bacterial associations with the mycorrhizosphere and hyposphere of the arbuscular mycorrhizal fungus *Glomus mosseae*. *Plant and Soil* 202: 79-87.
- Anonim. 2020. Deskripsi Bawang Merah Varietas Crok Kuning. <<http://varitas.net/dbvarietas/varimage/Bawang%20merah%20Crok%20Kuning.pdf>>. Diakses pada tanggal 29 Juni 2020.
- Apriliani, S. M. P. 2019. Pelapisan Benih Bawang Merah Menggunakan Kaolin untuk Mengurangi Kerusakan Akibat Hama dan Penyakit Selama Masa Penyimpanan. Skripsi. Universitas Gadjah Mada. Yogyakarta.
- Arisuryanti, T., Daryono, B. S., Hartono, S., & Swastika, A. A. G. R. 2008. Observasi dan Identifikasi Virus yang Menginfeksi Bawang Merah di Jawa. JPTI 14 (2): 55-62.
- Artanti, H. 2012. Pengaruh Inokulasi Pupuk Hayati Mikoriza pada Berbagai Lama Penyimpanan terhadap Pertumbuhan Bibit Kakao. Skripsi. Universitas Gadjah Mada. Yogyakarta.
- Azmi, C., Hidayat, I.M., & Wiguna, G. 2011. Pengaruh Varietas dan ukuran Umbi terhadap Produktivitas Bawang Merah. J. Hort 21 (3): 206-213.
- Berlian, I., Setyawan, B. & Hadi, H. 2013. Mekanisme Antagonisme *Trichoderma* spp. terhadap Beberapa Patogen Tular Tanah. Warta Perkaretan 32 (2): 74-82.
- Brundrett, M., Bougner, N., Dell, B., Grove, T., & Malajczuk, N. 1996. Working with Mychorrizas in Forestry and Agriculture. ACIAR Monograph 32. 374 p.
- Caballero, G.R., Caravaca, F., Gonzalez, A.J.F., Alguacil, M.M., Lopez, M.F., & Roldan, A. 2017. Arbuscular mycorrhizal fungi inoculation mediated changes in rhizosphere bacterial community structure while promoting revegetation in a semiarid ecosystem. *Science of the Total Environment* 584-585: 838-848.
- Coelho, C., Mesquita, N., Costa, I., Soares, F., Trovao, J., Freitas, H., Portugal, A., & Tiago, I. 2021. *Bacterial and Archaeal* Structural Diversity in Several Biodegradation Patterns on the Limestone Walls of the Old Cathedral of Coimbra. *Microorganisms* 9 (709): 1-16.



- Dabire, T.G., Bonzi, S., Somda, I., & Legreve, A. 2016. Evaluation of the Potential of *Trichoderma harzianum* as a Plant Growth Promoter and Biocontrol Agent Against *Fusarium* Damping-off in Onion in Burkina Faso. Asian journal of Plant Pathology 10 (4): 49-60.
- Dharmaputra, O. S., Listiyorati, S., & Nurwulansari, I. Z. 2018. Keragaman Cendawan Pascapanen pada Umbi Bawang Merah Varietas Bima Brebes. J. Fitopatologi Indonesia 14 (5): 175-182.
- Diagne, N., Ngom, M., Djighaly, P.I., Fall, D., Hocher, V., & Svistoonoff, S. 2020. Roles of Arbuscular Mychorrizal Fungi on Plant Growth and Performance: Importance in Biotic and Abiotic Stressed Regulation. Diversity 12 (370): 1-25.
- Faizah, R., Sujiprihati, S., Syukur, M., & Hidayat, S.H. 2012. Ketahanan Biokimia Tanaman Cabai terhadap *Begomovirus* Penyebab Penyakit Daun Keriting Kuning. Jurnal Fitopatologi Indonesia 8 (5): 138-144.
- Fitriani, M.L., Wiyono, S., & Sinaga, M.S. 2019. Potensi Kolonisasi Mikoriza Arbuskular dan Cendawan Endofit untuk Pengendalian Layu Fusarium pada Bawang Merah. Jurnal Fitopatologi Indonesia 15 (6): 228-238.
- Fujitani, H., Momichi, K., Ishii, K., Nomachi, M., Kikuchi, S., Ushiki, N., Sekiguchi, Y., & Tsuneda, S. 2020. Genomic and Physiological Characteristics of a Novel Nitrite-Oxidizing *Nitrospira* Strain Isolated from a Drinking Water Treatment Plant. Frontiers in Microbiology 11: 1-13.
- Garcia, J.G.O., Belmont, R.M., Monroy, M.R., Trujillo, J.A.R., Rodriguez, R.S., & Jimenez, G.S. 2015. Effect of *Trichoderma asperellum* application and mineral fertilization on growth promotion and the content of phenolic compounds and flavonoids in onions. Scientia Horticulturae 195: 8-16.
- Gautam, A.K. 2014. *Colletotrichum gloeosporioides*: Biology, Pathogenicity and Management in India. J. Plant of Physiology & Pathology 2 (2): 1-11.
- Gomez, A.J., Santamaria, Z.S., Igual, J.M., Rivas, R., Mateos, P.F., & Fraile, P.G. 2019. Genome Insights into the Novel Species *Microvirga brassicacearum*, a Rapeseed Endophyte with Biotechnological Potential. Microorganisms 7 (354): 1-19.
- Gonzalez, A.J.F., Hidalgo, P.M., Diaz, J.F.C., Villadas, P.J., Molina, E.M., Toro, N., Tringe, S.G., & Lopez, M.F. 2017. The rhizosphere microbiome of burned holm-oak: potential role of the genus *Arthrobacter* in the recovery of burned soils. Scientific Report 7: 1-12.
- Gunaeni, N., Wulandari, A. W., Duriat, A. S., & Muharam, A. 2011. Insidensi Penyakit Virus Tular Umbi pada Tigabelas Varietas Bawang Merah Asal Jawa Barat dan Jawa Tengah. J. Hort 21 (2): 164-172.
- Gusnawaty, H.S., Taufik, M., Triana, L. & Asniah. 2014. Karakterisasi Morfologi *Trichoderma* spp. Indigenus Sulawesi Tenggara. Jurnal Agroteknos 4 (2): 88-94.



- Hadiwiyono, Sari, K., & Poromarto, S.H. 2020. Yields Losses Caused by Basal Plate Rot (*Fusarium oxysporum* f.sp. *cepae*) in Some Shallot Varieties. Journal of Sustainable Agriculture 35 (2): 250-257.
- Handelsman, J., & Stabb, E. V. 1996. Biocontrol of Soilborne Plant Pathogens. The Plant Cell 8: 1855-1869.
- Hardiatmi, J.M.S. 2008. Pemanfaatan Jasad Renik Mikoriza untuk Memacu Pertumbuhan Tanaman Hutan. Jurnal Inovasi Pertanian 7 (1): 1-10.
- Hasanah, U., Purnomowati & Dwiputrantri, U. 2017. Pengaruh Inokulasi Mikoriza Vesikula Arbuskula (MVA) Campuran terhadap Kemunculan Penyakit Layu Fusarium pada Tanaman Tomat. Scripta Biologica 4 (1): 31-35.
- Hermosa, R., Viterbo, A., Chet, I., & Monte, E. 2012. Plant-beneficial effects of *Trichoderma* and of its genes. Microbiology 158: 17-25.
- Hidayat, T., Yudono, P., Sulistyaningsih, E., & Wibowo, A. 2018. The Growth and Yield of Shallot (*Allium cepa* L. Aggregatum group) in Application of Beneficial Microorganisms. Jurnal Ilmu Pertanian 3 (2): 66-71.
- Huang, X.F., Chaparro, J.M., Reardon, K.F., Zhang, R., Shen, Q. & Vivanco, J.M. 2014. Rhizosphere interactions: root exudates, microbe, and microbial communities. Botany 91: 267-275.
- Jamiolkowska, A., Bednarz, B.S., Patkowska, E., Buczkowska, H., Galazka, A., Grzadziel, J., & Kopacki, M. 2020. Effect of Mycorrhizal Inoculation and Irrigation on Biological Properties of Sweet Pepper Rhizosphere in Organic Field Cultivation. Agronomy 10: 1-18.
- Jie, W.G., Yao, Y.X., Guo, N., Zhang, Y.Z., & Qiao, W. 2021. Effect of *Rhizophagus intraradices* on Plant Growth and the Composition of Microbial Communities in the Roots of Continuous Cropping Soybean at Maturity. Sustainability 13: 1-12.
- Kaur, S., & Suseela, V. 2020. Unraveling Arbuscular Mychorrhizal-Induced Changes in Plant Primary and Secondary Metabolome. Metabolites 10 (335): 1-30.
- Kementan. 2020. Data Lima Tahun Terakhir Subsektor Hortikultura <<https://www.pertanian.go.id/home/?show=page&act=view&id=61>>. Diakses pada tanggal 2 Juni 2020.
- Kormanik. P.P., & A.C. Mc Graw. 1982. Quantification of vesicular-arbuscular mycorrhizae in plant root. In: N.C. Schenk (Ed.). Methods and Principles of Mycorrhizae Research. The American Phytopathological Society 46: 37-45.
- Kumar, S., Abedin, M.M., Singh, A.K., & Das, S. 2020. Role of Phenolic Compounds in Plant-Defensive Mechanisms on Plant Phenolics in Sustainable Agriculture Volume 1. Springer: Singapore p 517-532.
- Kumar, V., Verma, D.K., Pandey, A.K., & Srivastava, S. 2019. *Trichoderma* spp.: Identification and Characterization for Pathogenic Control and Its Potential



Application. Microbiology for Sustainable Agriculture, Soil Health and Environmental Protection 1<sup>st</sup> Edition. Apple Academic Press. New York 428p.

Kumar, A. R., Kumar, N., Poornima, K., & Soorianathasundaram, K. 2012. Screening of in vitro derived mutants of banana against nematodes. African Journal of Biotechnology 11 (88): 15451-15456.

Kwak, M.J., Kwon, S.K., & Kim, J.F. 2017. Complete genome sequence of the sand-sediment actinobacterium *Nocardioides dokdonensis* FR1436<sup>T</sup>. Standards in Genomic Sciences 12: 1-7.

Lee, J., Lee, S., & Young, J.P.W. 2008. Improved PCR primers for the detection and identification of arbuscular mycorrhizal fungi. FEMS Microbiology Ecology 65: 339-349.

Lestiyani, A., Wibowo, A., Subandiyah, S., Gambley, C., Ito, S., & Harper, S. 2016. Identification of *Fusarium* spp., the causal agent of twisted disease of shallot. Proc. Int. Symp. On Horticulture in Developing Countries and World Food Production.

Lestiyani, A. 2015. Identifikasi, Patogenisitas dan Variabilitas Penyebab Penyakit Moler pada Bawang Merah. Tesis. Universitas Gadjah Mada. Yogyakarta.

Luo, D., Meng, X., Zheng, N., Li, Y., Yao, H., & Chapman, S.J. 2021. The anaerobic oxidation of methane in paddy soil by ferric iron and nitrate, and the microbial communities involved. Science of the Total Environment 788: 1-10.

Lv, J., Liu, F., Han, W., Wang, Y., Zhu, Q., Zang, J., Wang, S., Zhang, B., & Wang, N. 2019. The Effect of Nitrogen Content on Archaeal Diversity in an Arctic Lake Region. Microorganisms 7 (534): 1-15.

Maharani, Puti. 2020. Peran *Trichoderma* sp. dan Jamur Mikoriza Arbuskular terhadap Kesehatan Bawang Merah Asal Biji. Skripsi. Universitas Gadjah Mada. Yogyakarta.

Marschner, P., Crowley, D. & Yang, C.H. 2004. Development of specific rhizosphere bacterial communities in relation to plant species, nutrition and soil type. Plant and Soil 261: 199-208.

Medina, A.M., Pascual, J.A., Alfocea, F.P., Albacete, A., & Roldan, A. 2010. *Trichoderma harzianum* and *Glomus intraradices* Modify the Hormone Disruption Induced by *Fusarium oxysporum* Infection in Melon Plants. The American Phytopathological Society 100 (7): 682-688.

Moekasan, T.K., Prabaningrum, L., Setiawati, W., Prathama, M. & Rahayu, A. 2016. Pengelolaan Tanaman Terpadu Bawang Merah Modul Pendampingan Pengembangan Kawasan. Puslitbang Hortikultura Badan Litbang Pertanian. 211p.

Moekasan, T.K., Prabaningrum, L., Gunadi, N., & Adiyoga, W. 2010. Rakitan Komponen Teknologi PTT Cabai Merah-Bawang Merah Pengelolaan Tanaman Terpadu Cabai Merah Tumpanggilir dengan Bawang Merah. Puslitbang Hortikultura bekerjasama dengan Wageningen University. 80p.



- Musfal. 2010. Potensi Cendawan Mikoriza Arbuskula untuk Meningkatkan Hasil Tanaman Jagung. *Jurnal Litbang Pertanian* 29 (4): 154-158.
- Mutia, A.K., Purwanto, Y.A., & Pujantoro, L. 2014. Perubahan Kualitas Bawang Merah (*Allium Ascalonicum* L.) Selama Penyimpanan pada Tingkat Kadar Air dan Suhu yang Berbeda. *J. Pascapanen* 11 (2): 108-115.
- Nugroho, A. W., Hadiwiyono & Sudadi. 2015. Potensi Jamur Perakaran sebagai Agens Pengendalian Hayati Penyakit Moler (*Fusarium oxysporum* f.sp. *Cepae*) pada Bawang Merah. *Agrosains* 17 (1): 4-8.
- Nurkomar, Rakhmadion, S., & Kurnia, L. 2001. Teknik Penyimpanan Bawang Merah Pasca panen di Jawa Timur. *Jurnal Teknologi Pertanian* 2 (2): 27-34.
- Nurviani, Sulandari, S., Somowiyarjo, S., & Subandiyah, S. 2016. Deteksi Virus Terbawa Umbi Benih pada Bawang Merah Kultivar Biru Bantul. *J. Fitopatologi Indonesia* 12 (5): 185-190.
- Oehl, F., Sieverding, E., Palenzuela, J., Ineichen, K., & Silva, G.A.D. 2011. Advance in *Glomeromycota* taxonomy and classification. *IMA Fungus* 2 (2): 191-199.
- Pangestuti, R., & Sulistyaningsih, E. 2011. Potensi Penggunaan *True Seed Shallot* (TSS) sebagai Sumber Benih Bawang Merah di Indonesia. Prosiding Semiloka Nasional "Dukungan Agro-Inovasi untuk Pemberdayaan Petani". Semarang.
- Panpatte, D.G., Jhala, Y.K., & Vyas, R.V. 2020. Signaling pathway of induced systemic resistance. *Molecular Aspects of Plant Beneficial Microbes in Agriculture*. Elsevier.
- Plummer, D.T. 1971. An introduction of Practical Biochemistry. McGraw Hill Book Co. Ltd. Maidenhead Berkshire, UK.
- Prashar, P., Kapoor, N., & Sachdeva, S. 2013. Rhizosphere: its structure, bacterial diversity and significance. *Reviews in Environmental Science and Bio/Technology* 12 (2): 1-14.
- Qiu, Z., Li, M., Song, L., Wang, C., Yang, S., Yan, Z., & Wang, Y. 2021. Study on nitrogen-retaining microbial agent to reduce nitrogen loss during chicken manure composting and nitrogen transformation mechanism. *Journal of Cleaner Production* 285: 1-9.
- Radhakrishnan, R., Hashem, A., & Abd, E.F. 2017. *Bacillus*: A Biological Tool for crop Improvement through Bio-Molecular Changes in Adverse Environtment. *Frontiers in Physiology* 8 (667): 1-14.
- 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.
- Ratnawati, Sjam, S., Rosmana, A., & Tresnapura, U.S. 2020. Endophytic *Trichoderma* Species of Palu Valley Shallot Origin with Potential for



Controlling Purple Blotch Pathogen *Alternaria porii*. International Journal of Agriculture & Biology 22: 977-982.

Redecker, D., Schubler, A., Stockinger, H., Sturmer, S.L., Morton, J.B., & Walker, C. 2013. An evidence-based consensus for the classification of arbuscular mychorrhizal fungi (*Glomeromycota*). Mychorriza 23: 515-531.

Resti, Z., Habazar, T., Putra, D. P. & Nasrun. 2016. Aktivitas Enzim Peroksidase Bawang Merah yang Diintroduksi dengan Bakteri Endofit dan Tahan terhadap Penyakit Hawar Daun Bakteri (*Xanthomonas axonopodis* pv. *allii*). J. HPT Tropika 16 (2): 131-137.

Rubatzky, V.E. & M. Yamaguci. 1997. World Vegetables: Principles, Production, and Nutritive Values. 2<sup>nd</sup> Ed. Aspen Publication, Inc. Maryland USA.

Sabbagh, S.K., Roudini, M., & Panjehkeh, N. 2017. Systemic resistance induced by *Trichoderma harzianum* and *Glomus mossea* on cucumber damping-off disease caysed by *Phytophthora melonis*. Archives of Phytopathology and Plant Protection 50: 375-388.

Sandy, Y. A., Djauhari, S., & Sektiono, A. W. 2015. Identifikasi Molekuler Jamur Antagonis *Trichoderma harzianum* Diisolasi dari Tanah Pertanian di Malang, Jawa Timur. J. HPT 3 (3): 1-8.

Santoso, S.E., Soesanto, L., & Haryanto, T.A.D. 2007. Penekanan Hayati Penyakit Moler pada Bawang Merah dengan *Trichoderma harzianum*, *Trichoderma koningii*, dan *Pseudomonas fluorescens* P60. J. HPT Tropika 7 (1): 53-61.

Saputri, A.S., Tondok, E.T., & Hidayat, S.H. 2018. Insidensi Virus dan Cendawan pada Biji dan Umbi Bawang Merah. Jurnal Fitopatologi Indonesia 14 (6): 222-228.

Sari, M. P., Hadisutrisno, B, & Suryanti. 2016. Penekanan Perkembangan Penyakit Bercak Ungu pada Bawang Merah oleh Cendawan Mikoriza Arbuskula. J. Fitopatologi Indonesia 12 (5): 159-167.

Semangun, H. 2004. Penyakit-Penyakit Tanaman Hortikultura di Indonesia. Gadjah Mada University Press. Yogyakarta. 849p.

Senter, S.D., Robertson, J.A., & Meredith, F.I. 1989. Phenolic compound of the mesocarp of cresthaven peaches during storage and ripening. J. Food Science 54: 1259-1260.

Sharma, K., Lee, Y.R., Park, S.W., & Nile, S.H. 2016. Importance of growth hormones and temperature for physiological regulation of dormancy and sprouting in onions. Food Reviews International 32 (3): 233-255.

Shentu, X., Zhan, X., Ma, Z., Yu, X., & Zhang, C. 2014. Antifungal activity of metabolites of the endophytic fungus *Trichoderma brevicompactum* from garlic. Brazilian Journal of Microbiology 45 (1): 248-254.

Siddiquee, S. 2017. Practical Handbook of the Biology and Molecular Diversity of *Trichoderma* Species from Tropical Regions. Springer. Switzerland 102p.



**INDUKSI KETAHANAN TERHADAP PENYAKIT MOLER DAN STRUKTUR KOMUNITAS BAKTERI RIZOSFER PADA BAWANG MERAH YANG DIPERLAKUKAN DENGAN RHIZOPHAGUS INTRARADICES DAN TRICHODERMA ASPERELLUM**

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Singh, H.B., Keswani, C, Reddy, M.S., Sansinenea, E., & Estrada, C.G. 2019. Secondary Metabolite of Plant Growth Promoting Rhizomicroorganisms. Singapore: Springer Nature. 410p.

Sintayehu, A., Sakhija, 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.

Sieverding, E., Silva, G.A.D., Berndt. R., & Oehl, F. 2014. *Rhizoglomus*, a new genus of the *Glomeraceae*. Mycotaxon 129 (2): 373-386.

Solekha, R., Susanto, F.A., Joko, T., Nuringtyas, T.R., & Purwestri, Y.A. 2019. Phenylalanine ammonia lyase (PAL) contributes to the resistance of black rice against *Xanthomonas oryzae* pv. *oryzae*. Journal of Plant Pathology: 1-7.

Soni, R., Kumar, V., Suyal, D.C., Jain, L., & Goel, R. 2017. Understanding Host-Microbiome Interactions-An Omics Approach: Metagenomics of Plant Rhizosphere Microbiome. Singapore: Springer Nature 193-205p.

Southwood, M.J., Viljoen, A., & McLeod, A. 2015. Inoculum sources of *Fusarium oxysporum* f.sp. *cepae* on onion in the Western Cape Province of South Africa. Crop Protection 75: 88-95.

Sumarni, N. & Hidayat, A. 2005. Budidaya Bawang Merah. Panduan Teknis PTT Bawang Merah No. 3. Balitsa. 22 p.

Sutejo, A.M., Priyatmojo, A. & Wibowo, A. 2008. Identifikasi Morfologi Beberapa Spesies Jamur Fusarium. JPTI 14 (1): 7-13.

Taribuka, J., Sumardiyono, C., Widystuti, S.M., & Wibowo, A. 2016. Eksplorasi dan Identifikasi *Trichoderma* endofitik pada Pisang. J. HPT Tropika 16 (2): 115-123.

Tenhaken, R. & Rubel, C. 1997. Salicylic Acid is Needed in Hypersensitive Cell Death in Soybean but Does Not Act as a Catalase Inhibitor. Plant Physiology 115: 291-298.

Udiarto, B. K., Setiawati, W., & Suryaningsih, E. 2005. Pengenalan Hama dan Penyakit pada Tanaman Bawang Merah dan Pengendaliannya. Balai Penelitian Tanaman Sayuran. Badan Penelitian dan Pengembangan Pertanian. Kementerian Pertanian. 48 p.

Umadevi, P., Anandaraj, M., Srivastav, V., & Benjamin, S. 2018. *Trichoderma harzianum* MTCG 5179 impacts the population and functional dynamics of microbial community in the rhizosphere of black pepper (*Piper nigrum* L.). Brazilian Journal of Microbiology 49: 463-470.

Vergara, C., Araujo, K.E.C., Souza, S.R., Schultz, N., Junior, O.J.S., Sperandio, M.V.L., & Zilli, J.E. 2018. Plant-mycorrhizal fungi interaction and response to inoculation with different growth-promoting fungi. Pesquisa Agropecuaria Brasileira 1-24.



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- Walker, C., Schubler, A., Vincent, B., Cranenbrouck, S., & Declerck, S. 2021. Anchoring the species *Rhizophagus intraradices* (formerly *Glomus intraradices*). *Fungal Systematics and Evolution* 8 : 179-201.
- Wang, F. & Feng, G. 2021. Arbuscular Mycorrhizal Fungi Interactions in the Rhizosphere on Rhizosphere Biology: Interactions Between Microbes and Plant, *Rhizosphere Biology*. Singapore: Springer Nature. 217-235 p.
- Wibowo, S. 2005. Budidaya Bawang Putih, Bawang Merah dan Bawang Bombay. Penebar Swadaya. Jakarta. 201 p.
- Widajati, E., Murniati, E., Palupi, E.R., Kartika, T., Suhartanto, M.R., & Qodir, A. 2013. Dasar Ilmu dan Teknologi Benih. Bogor (ID): IPB Press.
- Wijoyo, R.B., Sulistyaningsih, E., & Wibowo, A. 2020. Growth, Yield and Resistance Responses of Three Cultivars on True Seed Shallots to Twisted Disease with Salicylic Acid Application. *Journal of Sustainable Agriculture* 35 (1): 1-11.
- Xu, J., Liu, S., Song, S., Guo, H., Tang, J., Yong, J.W.H., Ma, Y., & Chen, X. 2018. Arbuscular mychorrhizal fungi influence decomposition and the associated soil microbial community under different soil phosphorus availability. *Soil Biology and Biochemistry* 120: 181-190.
- Yang, S., Zhang, X., Cao, Z., Zhao, K., Wang, S., Chen, M., & Hu, X. 2014. Growth-promoting *Sphingomonas paucimobilis* ZJSH1 associated with *Dendrobium officinale* through phytohormone production and nitrogen fixation. *Microbial Biotechnology* 7 (6): 611-620.
- 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.
- Yao, Q., Zhu, H.H., & Zeng, R.S. 2007. Role of phenolic compounds in plant defence: Induced by arbuscular mychorrizal fungi. *Allelopathy Journal* 20 (1): 1-14.
- Yu, C. & Luo, X. 2020. *Trichoderma koningiopsis* controls *Fusarium oxysporum* causing damping-off in *Pinus massoniana* seedlings by regulating active oxygen metabolism, osmotic potential, and the rhizosphere microbiome. *Biological Control* 150: 1-12.
- Yudha, M.K., Soesanto, L., & Mugiaستuti, E. 2016. Pemanfaatan empat isolate *Trichoderma* sp. untuk mengendalikan penyakit akar gada pada tanaman caisin. *Jurnal Kultivasi* 15 (3): 143-149.
- Zehra, A., Meena, M., Dubey, M.K., Aamir, M., & Upadhyay, R.S. 2017. Activation of defense response in tomato against Fusarium wilt disease triggered by *Trichoderma harzianum* supplemented with exogenous chemical inducers (SA and MeJA). *J. Botani Brazil* 40 (3): 651-664.
- Zhang, Y., Tian, C., Xiao, J., Wei, L., Tian, Y., & Liang, Z. 2020. Soil inoculation of *Trichoderma asperellum* M45a regulates rhizosphere microbes and triggers watermelon resistance to Fusarium wilt. *AMB Express* 10 (189): 1-13.