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DAFTAR PUSTAKA

Abobaker, A, M., S. Bound, N. D. Swarts, and K. M. Barry. 2018. Effect of fertilizser type and mycorrhizal inoculation on growth and development of sunflower (*Helianthus annuus* L.). Rhizosphere, 6: 11-19.

Akiyama, K., K. Matsuzaki, and H. Hayashi. 2005. Plant sesquiterpenes induce hyphal branching in arbuscular mycorrhizal fungi. Nature, 435(7043): 824-827.

Ali, A. I., M. Yakup, dan Sabaruddin. 2012. Kepadatan spora dan tingkat kolonisasi *Pueraria phaseoloides* (Roxb.) Benth pada beberapa tingkat naungan dan inokulasi fungi mikoriza arbuskular. Jurnal Peternakan Sriwijaya, 1(1).

Andrino A., G. Guggenberger, S. Kernchen, R. R. Mikutta, L. Sauheitl, and J. Boy. 2021. Production of organic acids by arbuscular mycorrhizal fungi and their contribution in the mobilization of phosphorus bound to iron oxides. Front in Plant Science, 12: 1-13.

Ashofie, I., dan B. Prasetya. 2019. Pengaruh Aplikasi Kompos dan Mikoriza Arbuskula pada Tailing Tambang Emas terhadap Pertumbuhan dan Serapan Fosfor Tanaman Bunga Matahari. Jurnal Tanah dan Sumberdaya Lahan, 6(1):1133-1144.

Azcon, R., and J. M. Barea. 1997. Mycorrhizal dependency of a representative plant species in Mediterranean shrublands (*Lavandula spica* L.) as a key factor to its use for revegetation strategies in desertification-threatened areas. Applied Soil Ecology, 7: 83-92.

Baptista P., R. M. Tavares, and T. L. Neto. 2011. Signaling in ectomycorrhizal symbiosis establishment. Dalam: Rai M dan Varma A, editor. Diversity and Biotechnology of Ectomycorrhizae. Portugal: Springer.

Begum, M., Q. Naher, and R. Karim. 2019. Performance of legumes on weed Suppression with hybrid maize intercropping. Bangladesh Agronomy Journal, 21: 33-44.

Bennett, A. E., and K. Groten. 2022. The costs and benefit sof plant arbuscular mycorrhizal fungal interactions. Annual Review of Plant Biology, 73(1): 649-672.

Berruti, A., E. Lumini, R. Balestrini, and V. Bianciotto. 2014. Arbuscular mycorrhizal fungi as natural biofertilizers: let's benefit from past successes. Frontiers in Microbiology, 6: 1-13.

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Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Bi, Y. L., F. Wu, and Y. Wu. 2005. Application of arbuscular mycorrhizal in ecological restoration of areas affected by coal mining in China. Acta Ecologica Sinica, 25: 2068-2073.

Birhane, E., F. Sterck, M. Fetene, F. Bongers, and T. Kuyper. 2012. Arbuscular mycorrhizal fungi enhance photosynthesis, water use efficiency, and growth of frankincense seedlings under pulsed water availability conditions. Oecologia, 169: 895–904.

Brunndett, M., N. Bougher, B. Dell, T. Grove, and N. Malajczuk. 1996. Working with mycorrhizas in forestry and agriculture. Canberra, ACT, Australia: Australian Center for International Agriculture Research, 1-374.

Cavalcante, S., Muhadiono, L. Aznam, S. Haran, dan N. T. Mathius. 2001. Mycorrhizal dependency of passion fruit (*Passiflora edulis* f. *flavicarpa*). Fruits, 56:317-324.

Corkidi, L., M. Evans, and J. Bohn. 2008. An introduce to propagation of arbuscular mycorrhuzal fungsi in pot cultures for inoculation of native plant nursery stock. Native Plants Journal, 9: 29-38.

Dewi, R. S., Sumarsono, dan E. Fuskhah. 2021. Pengaruh pembenah tanah terhadap pertumbuhan dan produksi tiga varietas padi pada tanah asal karanganyar berbasis pupuk organik bio-slurry. Jurnal Buana Sains, 21: 65.

Eck, J. L., B. Barrès, S. Soubeyrand, J. Sirén, E. Numminen, and A. L. Laine. 2022. Strain diversity and spatial distribution are linked to epidemic dynamics in host populations. The American Naturalist, 199: 59–74

Feldman, F., and E. Idczak. 1992. Inoculum production of vesicular arbuscular mycorrhizal fungi for use tropical nurseries. Emthode in Microbiology, 24: 339-357.

Garg, N., and S. Chandel. 2010. Arbuscular mycorrhizal networks: process and functions, a review. Agronomy for Sustainable Development, 30: 581-599.

Gerdemann, J. W., and T. H. Nicolson. 1963. Spores of mycorrhizal endogone species extracted from soil by wet sieving and decanting. Transactions of the British Mycological Society, 46: 235–244.

Giovannetti, M., and B. Mosse. 1980. An evaluation of techniques for measuring vesicular arbuscular mycorrhizal infection in roots. New Phytologist 84, 489–500.

Gneve, M. 1995. Sunflower, a modren herbal home page. Electric Newt.

UNIVERSITAS GADJAH MADA
PERBANYAKAN JAMUR SPORA JAMUR MIKORIZA (JMA) MENGGUNAKAN BUNGA MATAHARI KERDIL (Helianthus annuus) DWARF SOLEIL
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Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Habte M., and N. W. Osorio. 2001. Arbuscular mycorrhizas: producing and applying arbuscular mycorrhizal inoculum. Manoa, HI, USA: College of Tropical Agriculture and Human Resources, University of Hawaii.

Hartoyo, B., M. Ghulamahdi, L. K. Darusman, S. A. Ariz, dan I. Mansur. 2011. Keanekaragaman Fungi Mikoriza Arbuskula (FMA) pada Rhizosfer Tanaman Pegagan (*Centella asiatica* L.) Urban. Littri, 17(1): 32-40.

INVAM (International Culture Collection of (Vesicular) Arbuscular Mycorrhizal Fungi). 2017a. Choice of host plant species. https://invam.wvu.edu/methods/cultures/host-plant-choices. Diakses pada tanggal 09 Juli 2025.

INVAM (International Culture Collection of (Vesicular) Arbuscular Mycorrhizal Fungi). 2017b. Single species culture. https://invam.wvu.edu/methods/cultures/single-species-cultures. Diakses pada tanggal 09 Juli 2025.

Janos, D. P. 2007. Plant responsiveness to mycorrhizas differs from dependence upon mycorrhizas. Mycorrhiza, 17(2): 75-91.

Jenkins, R. 1964. A Rapid Centrifugal-Flotation Technique for Separating Nematodes from Soil. Plant Disease Report, 48: 692.

Johnson, N. C., J. H. Graham, and F. A. Smith. 1997. Functioning of mycorrhizal associations along the mutualism-parasitism continuum. New Phytol, 135: 575-585.

Jung, S. C., A. M. Medina, J. A. Lopez-Raez, and M. J. Pozo. 2012. Mycorrhiza-induced resistance and priming of plant defenses. Journal of Chemical Ecology 38: 651-664.

Kakouridis, A., J.A. Hagen, M.P. Kan, S. Mambelli, L.J. Feldman, D.J. Herman, and M.K. Firestone. 2022. Routes to roots: direct evidence of water transport by arbuscular mycorrhizal fungi to host plants. New Phytologist, 236(1): 210-221.

Kumalawati, Z., kafrawi, and Asmawati. 2015. Indentifikasi dan isolasi spora tunggal cendawan mikoriza arbuskular (CMA) pada rhizospheren tebu (*Sacchrum officinarum* L.). Prosding Seminar Nasional Mikrobiologi Kesehatan dan Lingkungan.

Langeroodi, A. S., P. Tedeschi, E. Allevato, S. R. Stazi, R. M. Aadil, R. Mancinelli, and E. Radicetti. 2022. Agronomic response of sunflower subjected to biochar and arbuscular mycorrhizal fungi application under drought conditions. Italian Journal of Agronomy, 17(3): 1-10.

PERBANYAKAN JAMUR SPORA JAMUR MIKORIZA (JMA) MENGGUNAKAN BUNGA MATAHARI KERDIL (Helianthus annuus) DWARF SOLEIL
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Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Lekberg, Y., and R. T. Koide. 2005. Is plant performance limited by abundance of arbuscular mycorrhizal fungi? A meta-analysis of studies published between 1988 and 2003. New Phytologist, 168(1): 189-204.

Li, W., H. Zhang, Y. Zeng, L. Xiang, Z. Lei, Q. Huang, T. Li, F. Shen, and Q. Cheng. 2020. A salt tolerance evaluation method for sunflower (*Helianthus annuus* L.) at the seed germinator stage. Scientific Reports, 10: 1-9.

Majewska, M. L, R. Kaja, M. S. Anna, N. Marcin, B. Janusz, and Z. Szymon. 2018. Do the impacts of alien invasive plants differ from expansive native ones An experimental study on arbuscular mycorrhizal fungi communities. Biology and Fertility of Soils. 54: 631– 643.

Marwani, E., P. Suryatmana, I. W. Kerana, D. L. Puspanikan, M. R. Setiawati, dan R. Manurung. 2013. Peran mikoriza vesikular arbuskular dalam penyerapan nutrien, pertumbuhan, dan kadar minyak jarak (*Jatropha curcas* L.). Bionatura-Jurnal Ilmu-ilmu Hayati dan Fisik, 15(1): 1-7.

Miller, M. H. 2000. Arbuscular mycorrhizae and the phosphorus nutrition of maize: A review of Guelph studies. Canadian Journal of Plant Science, 80: 47-52.

Miransari, M., H. A. Bahrami, F. Rejali, and M. J. Malakouti. 2009. Effects of soil compaction and arbuscular mycorrhiza on corn (*Zea mays* L.) nutrient uptake. Soil and Tillage Research, 102: 282-290.

Nadeem, S. M., M. Ahmad, Z. A. Zahir, A. Javaid, and M. Ashraf. 2014. The role of mycorrhizae and plant growth promoting rhizobacteria (PGPR) in improving crop productivity under stressful environments. Biotechnology Advance, 32: 429-448.

Nasrullah, 2019. Pengaruh Fungi Mikoriza Arbuskula dan Fungi Selulolitik Indegenous terhadap Pertumbuhan dan Hasil Jagung (*Zea mays* L.) pada Cekaman Kekeringan di Inceptisol. Universitas Syiah Kuala, Banda Aceh.

Nusantara, A. D., Y. H. Bertham, and I. Mansur. 2016. Bekerja dengan fungi mikoriza arbuskular. Bogor. Seameo Biotrop.

Öpik, M., M. Zobel, J. J. Cantero, J. Davison, J. M. Facelli, I. Hiiesalu, T. Jairus, J. M. Kalwij, K. Koorem, M. E. Leal, J. Liira, M. Metsis, V. Neshataeva, J. Paal, C. Phosri, S. Põlme, Ü. Reier, Ü. Saks, H. Schimann, O. Thiéry, M. Vasar, and M. Moora. 2013. Global sampling of plant roots expands the describe d molecular diversity of arbuscular mycorrhizal fungi. Mycorrhiza, 23: 411-430.

PERBANYAKAN JAMUR SPORA JAMUR MIKORIZA (JMA) MENGGUNAKAN BUNGA MATAHARI KERDIL (Helianthus annuus) DWARF SOLEIL
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Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Ortas, I., and C. Akpinar. 2011. Resonse of maize genotypes to several yccorhizal inoculums in terms of plant growth, nutrient uptake and spore production. Journal of Plant Nutrition, 34: 970-987.

Pekcan, V., G. Evci, M. I. Yilmaz, A. S. B. Nalcaiyi, Ş.Ç. Erdal, N. Cicek, Y. Ekmekci, and Y. Kaya. 2015. Drought effects on yield traits of some sunflower inbred lines. Agriculture and Forestry, 61(4): 101–107.

Peraturan Menteri Pertanian Nomor 70. 2011. Pupuk Organik, Pupuk Hayati, dan Pembenah Tanah. Kementerian Pertanian Republik Indonesia.

Puspitasari, D., K. I. Purwani, and A. Muhibuddin. 2012. Eksplorasi Vesicular Mycorrizha Indigenous pada Lahan Jagung di Desa Torjun, Sampang Madura. Sains dan Seni ITS, 1(1): 22-19.

Rillig, M. C., S. F. Wright, and V. T. Eviner. 2002. The role of arbuscular mycorrhizal fungi and glomalin in soil aggregation: comparing effects of five plant species. Plant and Soil 238: 325-333.

Sawers, R. J. H., C. Gutjahr, and U. Paszkowski. 2008. Cereal mycorrhiza: an ancient symbiosis in modern agriculture. Trends in Plant Science, 13(2): 189-204.

Selvakumar, G., C. C. Shagol, Y. Kang, B. N. Chung, S. G. Han, and T. M. Sa. 2017. Arbuscular mycorrhizal fungsi spore propagation using single spore as starter inoculum and a plant host. Original Article.

Sharma, S., and P. Subehia. 2003. Effect of twenty-five years of fertilizer use on maize and wheat yields and quality of an acidic soil in the western Himalayans. Exerimental Agriculture 29, 55-64.

Singh, V., R. Naveenkumar, and A. Muthukumar. 2019. Arbuscular mycorrhizal fungi and their effectiveness againts soil borne diseases. Bio-intensive Approaches: Application and Effectiveness in Plant Diseases Management. New Dehli: Today and Tomorrow’s Printers and Publishers.

Siregar, Z. K., Fikrinda, dan T. Alvisyahrin. 2020. Pengaruh Media Perbanyakan dalam Perbanyakan Spora Fungi Mikoriza Arbuskula. Mikologi Indonesia, 4(1): 125-133.

Sitorus, U. K. P., B. Siagian, dan N. Rahmawati. 2014. Respons pertumbuhan bibit kakao (*Theobroma cacao* L.) terhadap pemberian abu boiler dan pupuk urea pada media pembibitan. Jurnal Online Agroekoteknologi, 2(3): 1021-1029.

UNIVERSITAS
GADJAH MADA
PERBANYAKAN JAMUR SPORA JAMUR MIKORIZA (JMA) MENGGUNAKAN BUNGA MATAHARI KERDIL (Helianthus annuus) DWARF SOLEIL
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Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Smith, B. D., 2014. The domestication of *Helianthus annuus* L. (sunflower). Veget Hist Archaeobot. 23: 57–74.

Smith, S. E., and D. J. Read. 2008. Mycorrhizal Symbiosis 3rd. Academic Press, New York.

Smith, S. E., and F. A. Smith. 2011. Roles of arbuscular mycorrhizas in plant nutrition and growth: new paradigms from cellular to ecosystem scales. Annual Review of Plant Biology, 62: 272-50.

Sorensen, J. N., J. Larsen, and I. Jakobsen. 2005. Mycorrhiza formation and nutrient concentration in leeks (*Allium porrum*) in relation to previous crop and cover crop management on high P soils. Plant and Soil, 273: 101-114.

Souza, T. 2015. Glomeromycota Classification. Handbook of Arbuscular Mycorrhizal Fungi. Springer Nature, 87-128.

Steinkeller, S., V. Lendzemo, I. Langer, P. Schweiger, T. Khaosaad, J. P. Toussaint, and H. Vierheilig. 2007. Flavonoids and strigolactones in root exudates as signal in symbiotic and pathogenic plant dungus interactions. Journal of Molecules, 12: 1290-1306.

Sun, C. Y., Y. H. Zeng, J. Q. Ma, L. Liu, h. L. Liao, and J. H. Huang. 2019. Effects of arbuscular mycorrhizal fungi inoculation on allelopathic potential of *Artemisia annua* L. root exudates. Allelopathy J, 48: 175–90.

Supeni, S., Suharno, dan I. H. Bone. 2011. Endomikoriza yang berasosiasi dengan tanaman pertanian non-legum di lahan pertanian daerah transmigrasi Koya Barat, Kota Jayapura. Jurnal Biologi Papua, 3(1): 1-8.

Tawayara, K. 2003. Arbuscular mycorrhizal dependency of different plant species and cultivars. Soil Science and Plant Nutrition, 49: 655-668.

United States Department of Agriculture. 2018. Classification of maize plants.

Van Auken, O. W., and R. Freidrich. 2006. Growth and Mycorrhizal Infection of Two Annual Sunflowers with Added Nutrients, Fungicide or Salts. Journal of Sciences. 58(3): 195-218.

Wu, J., B. Sun, Y. Wang, G. Xin, S. Ye, and S. Peng. 2011. Arbuscular mycorrhizal fungal colonization imporves regrowth of bermudagrass (*Cynodon dactylon* L.) after cutting. Pakistan Journal of Botany, 43: 85-93.

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Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Zangaro, W., F. R. Nishidate, J. Vandresen, G. Andrade, and M. A. Nogueira. 2007. Root mycorrhizal colonization and plant responsiveness are related to root plasticity, soil fertility and successional status of native woody species in Southern Brazil. Journal of Tropical Ecology, 23: 53-62.

Zhang, L., M. X. Wang, H. Li, L. Yuan, J. G. Huang, and C. Penfold. 2014. Mobilization of in organic phosphorus from soils by ectomycorrhizal fungi. Pedosphere, 24: 683-89.