

## DAFTAR PUSTAKA

- Abdel-Mawgoud, M., Bouqellah, N. A., Korany, S. M., Reyad, A. M., Hassan, A. H. A., Alsherif, E. A., & Abdelgawad, H. (2023). Arbuscular Mycorrhizal Fungi as an Effective Approach to Enhance the Growth and Metabolism of Soybean Plants under Thallium (TI) Toxicity. *Plant Physiology and Biochemistry*, 203, 77–108. <https://doi.org/https://doi.org/10.1016/j.plaphy.2023.108077>
- Abdullah, M., Kholily, F., Sartono, Y., Santosa, J., & Triyono, K. (2021). Kajian Macam Pupuk Organik Cair terhadap Pertumbuhan Hasil Tanaman Kedelai (Glycine max (L.) Merrill) Varietas Anjasmoro. *Jurnal Inovasi Pertanian*, 23(2).
- Abo-Doma, A., Edrees, S., & Abdel-Aziz, S. H. (2011). The Effect of Mycorrhiza Growth and Expression of Some Genes in Barley. *J. Genet. Cytol*, 40, 301–313. <https://doi.org/10.21608/ejgc.2011.10794>
- Adie, M., & Krisnawati, A. (2016). *Biologi Tanaman Kedelai*. Balai Penelitian Kacang-kacangan dan Umbi-Umbian (BALITKABI).
- Adinurani, P. G., Rahayu, S., Budi, L. S., Pambudi, S., & Soni, P. (2019). Production potensial of sweet corn (*Zea mays* Linn. var. *Saccharata* Sturt ) “Bonanza” to different planting pattern and phosphorus sources. *IOP Conference Series: Earth and Environmental Science*, 293(1). <https://doi.org/10.1088/1755-1315/293/1/012032>
- Adinurani, P. G., Rahayu, S., Purbajanti, E. D., Siskawardani, D. D., Stankeviča, K., & Setyobudi, R. H. (2021). Enhanced of Root Nodules, Uptake NPK, and Yield of Peanut Plant (*Arachis hypogaea* L.) using Rhizobium and Mycorrhizae Applications. *Sarhad Journal of Agriculture*, 37(SpecialIssue 1), 16–24. <https://doi.org/10.17582/journal.sja/2021/37.s1.16.24>
- Ahanger, M. A., Hashem, A., Abd-Allah, E. F., & Ahmad, P. (2014). Arbuscular Mycorrhiza Crop Improvement Under Environmental Stress. In *Emergong Technologies and Management of Crop Stress Tolerance* (Vol. 2, pp. 69–95).
- Alam, P., Albalawi, T. H., Altalayan, F. H., Bakht, M. A., Ahanger, M. A., Raja, V., Ashraf, M., & Ahmad, P. (2019). 24-epibrassinolide (EBR) Confers Tolerance Against NaCl Stress in Soybean Plants by Up-Regulating Antioxidant System, Ascorbate-Glutathione Cycle, and Glyoxalase system. *Biomolecules*, 9(11). <https://doi.org/10.3390/biom9110640>
- Amiri, R., Nikbakht, A., & Etemadi, N. (2015). Alleviation of Drought Stress on Rose Geranium [*Pelargonium graveolens* (L.) Herit.] in Terms of Antioxidant Activity and Secondary Metabolites by Mycorrhizal Inoculation. *Scientia Horticulturae*, 197, 373–380. <https://doi.org/10.1016/j.scienta.2015.09.062>
- Andajani, W., & Yuliarsha Sidhi, E. (2019). *Efisiensi Usahatani Kedelai Hitam melalui Pola Kemitraan dengan Koperasi* (Vol. 3, Issue 2).
- Andriani, V., & Karmila, D. R. (2019). Pengaruh Temperatur Terhadap Kecepatan Pertumbuhan Kacang Tolo (*Vigna* sp.). In *Stigma* (Vol. 12, Issue 1). Mei.
- Anugrahtama, P. C., Supriyanta, & Taryono. (2020). Pembentukan Bintil Akar dan

- Ketahanan Beberapa Aksesori Kacang Hijau (*Vigna radiata* L.) pada Kondisi Salin. *Agriculture Innovation*, 3(1), 1–5. <https://jurnal.ugm.ac.id/Agrinova/>
- Aprisal, R., I, D., E, R., & Fajriwandi. (2016). Dinamika Beberapa Sifat Fisika Tanah di Bawah Sistem Usahatani Konservasi pada Lahan Kritis Aripin di DTA Singkara. *Journal of Suboptimal Land*, 5(2), 175–182.
- Arifiyatun, L., Maas, A., & Nuryani Hidayah Utami, S. (2016). Pengaruh Dosis Pupuk Majemuk NPK + Zn terhadap Pertumbuhan, Produksi, dan Serapan Zn Padi Sawah di Inceptisol, Kebumen. *Planta Tropika: Journal of Agro Science*, 4(2), 101–106. <https://doi.org/10.18196/pt.2016.062.101-106>
- Ashwin, R., Bagyaraj, D. J., & Mohan Raju, B. (2023). Ameliorating the Drought Stress Tolerance of a Susceptible Soybean Cultivar, MAUS 2 through Dual Inoculation with Selected Rhizobia and AM Fungus. *Fungal Biology and Biotechnology*, 10(1). <https://doi.org/10.1186/s40694-023-00157-y>
- Asra, R., Samarlina, R. A., & Silalahi, M. (2020). *Hormon Tumbuhan*. UKI Press. <https://doi.org/http://repository.uki.ac.id/id/eprint/1579>
- Atmaja, I. W. D. (2001). *Bioteknologi Tanah*. Udaya University Press.
- Atman. (2014). *Produksi Kedelai*. Graha Ilmu.
- Aziziah Saloka. (2018). *Pengujian Galur Kedelai Hitam (Glycine max L.) pada Beberapa Tingkat Cekaman Kekeringan*. Universitas Brawijaya.
- Badan Pusat Statistik. (2023). *Statistik Kelapa Sawit Indonesia 2022* (Vol. 16). Badan Pusat Statistik.
- Bailey, L. F., Rothacher, J. S., & Cumming, W. H. (1952). A Critical Study of the Cobalt Chloride Method of Measuring Transpiration. *Plant Physiology*, 27(3), 563–574.
- Barendse, G. W. M., Werken, P. H. Van De, & Takahashi, N. (1987). High Performance Liquid Chromatography of Gibberelins. *High Performance Liquid Chromatography in Plant Sciences*, 198(4), 449–455. [https://doi.org/https://doi.org/10.1016/S0021-9673\(00\)80514-2](https://doi.org/https://doi.org/10.1016/S0021-9673(00)80514-2)
- Bárzana, G., Aroca, R., Paz, J. A., Chaumont, F., Martinez-Ballesta, M. C., Carvajal, M., & Ruiz-Lozano, J. M. (2012). Arbuscular Mycorrhizal Symbiosis Increases Relative Apoplastic Water Flow in Roots of the Host Plant under Both Well-watered and Drought Stress Conditions. *Annals of Botany*, 109(5), 1009–1017. <https://doi.org/10.1093/aob/mcs007>
- Bates, L., Waldren, R. P., & Teare, I. D. (1973). Rapid Determination of Free Proline for Water Stress Studies. *Plant Soil*, 39, 205–207. <https://doi.org/https://doi.org/10.1007/BF00018060>
- Bejo Suroso, O. ;, & Sodik, A. J. (2016). Potensi Hasil dan Kontribusi Sifat Agronomi terhadap Hasil Tanaman Kedelai (*Glycine max* L. Merrill) pada Sistem Pertanaman Monokultur. *Agritrop Jurnal Ilmu-Ilmu Pertanian*.
- Bhattacharjee, S., & Dutta, G. S. (2012). Effect of Dual Inoculation of Arbuscular

Mycorrhiza and Rhizobium on the Chlorophyll, Nitrogen and Phosphorus Contents of Pigeon Pea L.). *Advances in Microbiology*, 02(04), 561–564. <https://doi.org/10.4236/aim.2012.24072>

Brady, N. C., & Weil, R. R. (2002). *The Nature and Properties of Soils* (13th Edition). Prentice Hall.

Brestic, M., Zivcak, M., Hauptvogel, P., Misheva, S., Kocheva, K., Yang, X., Li, X., & Allakhverdiev, S. I. (2018). Wheat Plant Anatomical and Biochemical Traits Including Tolerance to Non-optimal Temperature Conditions. *Photosynthesis Research*, 136, 136–255.

Casieri, L., Lahmidi, N. A., Doidy Joan, Veneault-Fourrey, C., Migeon-Aude, Bonneau, L., Courty, P.-E., Gracia, K., Charbonner, M., Delteil, A., Brun, A., Zimmermann, S., Plassard, C., & Wipf, D. (2013). Biotrophic Transportome in Mutualistic Plant-Fungal Interactions. *Mycorrhiza*, 23, 597–625. <https://doi.org/10.1007/s00572-013-0496-9>.

Chakrabarti, J., Chatterjee, S., Ghosh, S., Chatterjee, N. C., & Dutta, S. (2010). Synergism of VAM and Rhizobium on Production and Metabolism of IAA in Roots and Root Nodules of Vigna mungo. *Current Microbiology*, 61(3), 203–209. <https://doi.org/10.1007/s00284-010-9597-2>

Cherlinka, V. (2022, September 10). *Soil Moisture: How to Measure and Monitor Its Level*. EOS Data Analytics.

Chesworth, W. (2008). *Encyclopedia of Soil Science*. Springer.

Chitarra, W., Pagliarini, C., Maserti, B., Lumini, E., Siciliano, I., Cascone, P., Schubert, A., Gambino, G., Balestrini, R., & Guerrieri, E. (2016). Insights on the Impact of Arbuscular Mycorrhizal Symbiosis on Tomato Tolerance to Water Stress. *Plant Physiology*, 171(2), 1009–1023. <https://doi.org/10.1104/pp.16.00307>

Chun, S. C., Paramasivan, M., & Chandrasekaran, M. (2018). Proline Accumulation Influenced by Osmotic Stress in Arbuscular Mycorrhizal Symbiotic Plants. In *Frontiers in Microbiology* (Vol. 9). Frontiers Media S.A. <https://doi.org/10.3389/fmicb.2018.02525>

Declerck, S., Risede, J.-M., Rufyikiri, G., & Delvaux, B. (2002). Effects of Arbuscular Mycorrhizal Fungi on Severity of Root Rot of Bananas caused by Clindrocladium spathiphylli. *Plant Pathology*, 51(1), 109–115.

Diagne, N., Ngom, M., Djighaly, P. I., Fall, D., Hoher, V., & Svistoonoff, S. (2020). Roles of Arbuscular Mycorrhizal Fungi on Plant Growth and Performance: Importance in Biotic and Abiotic Stressed Regulation. *Diversity*, 12(10), 1–25. <https://doi.org/10.3390/d12100370>

Dita, A. S., & Widiatmanta, J. (2019). Respon Kandungan Logam Berat dan Pertumbuhan Tanaman Sawi (Brassica juncea) Terhadap Kombinasi Media Tanam Lumpur Lapindo dan Mikoriza. *Jurnal Viabel Pertanian*, 13(2), 16–25. <https://doi.org/10.35457/viabel.v13i2.837>

Djaenuddin, D., Marwan, Subagjo, & Hidayat. (2011). *Petunjuk Teknis Evaluasi Lahan*

untuk Komoditas Pertanian (A. Hidayat, H. Suhardjo, & Hikmatullah, Eds.; 2nd ed.). Balai Besar Penelitian dan Pengembangan.

Dobo, B. (2022). Effect of Arbuscular Mycorrhizal Fungi (AMF) and Rhizobium Inoculation on Growth and Yield of Glycine max L. Varieties. *International Journal of Agronomy*, 2022. <https://doi.org/10.1155/2022/9520091>

Dominguez-Nuñez, J. A., Benito, B., Berrocal-Lobo, M., & Albanesi, A. (2016). Mycorrhizal Fungi: Role in the Solubilization of Potassium. In *Potassium Solubilizing Microorganisms for Sustainable Agriculture* (pp. 77–98). Springer India. [https://doi.org/10.1007/978-81-322-2776-2\\_6](https://doi.org/10.1007/978-81-322-2776-2_6)

Effendy, I., Novianto, & Utami, D. (2020). Pertumbuhan dan Hasil Tiga Varietas Kedelai di Gawangan dengan Pemotongan Ujung Pelepah Kelapa Sawit. *Agroteknologi Tropika*, 2(2), 207–2016. <https://doi.org/http://dx.doi.org/10.23960/jat.v8i2.3500>

Ende, S., Salawati, S., Kadekoh, I., Fathurrahman, F., Darman, S., & Lukman, L. (2022). Aktivitas Nitrat Reduktase (ANR) Tanaman Jagung pada Pola Tumpangsari yang Diberi Serasah Jagung-Kedelai serta Biochar di Lahan Suboptimal Sidondo Sulawesi Tengah. *Jurnal Ilmu Pertanian Indonesia*, 27(4), 528–535. <https://doi.org/10.18343/jipi.27.4.544>

Fall, A. F., Nakabonge, G., Ssekandi, J., Founoune-Mboup, H., Apori, S. O., Ndiaye, A., Badji, A., & Ngom, K. (2022). Roles of Arbuscular Mycorrhizal Fungi on Soil Fertility: Contribution in the Improvement of Physical, Chemical, and Biological Properties of the Soil. *Frontiers in Fungal Biology*, 3. <https://doi.org/10.3389/ffunb.2022.723892>

Fitriana, J., Pukan, K. K., & Herlina, L. (2011). Aktivitas Enzim Nitrat Reduktase Kedelai Kultivar Burangrang akibat Variasi Kadar Air Tanah pada Awal Pengisian Polong. *Unnes J Life Sci*, 1(1), 14–21. <https://doi.org/https://doi.org/10.15294/biosaintifika.v1i1.36>

Follet, R. M., Murphy, L. s., & Donahue, R. L. (1981). *Fertilizer and Soil Amendments*. Prentice-Hall Inc.

G, A. H., & A, A. M. (2017). Effect of Four Mycorrhizal Products on Squash Plant Growth and its Effect on Physiological Plant Elements. *Advances in Crop Science and Technology*, 05(01). <https://doi.org/10.4172/2329-8863.1000260>

Gardner, F. P., Pearce, R. B., & Mitchel, R. (1985). *Physiology of Crop Plants*. The Iowa State Univeristy Press.

Glodsworthy, P. R., & Fisher, N. M. (1992). *Fisiologi Tanaman Budidaya Tropik*. Gadjah Mada University Press.

Grant, R. F., P. Rochette, R. L., & Desjardins. (1993). Energy Exchange and Water Use Efficiency of Field Crops: Validation of a Simulation Model. *Agronomi*, 85, 916–928.

Gunadi, S., & Sudyastuti, T. (2005). *Dinamika Ketersediaan Bahan Organik dari Residu Pupuk Hijau Daun dan Kompos dalam Kaitannya dengan Fisik Tanah Pasiran di Lahan Pantai*.

- Gusmayanti, E., & Sholahuddin. (2015). Luas Daun Spesifik dan Indeks Luas Daun Tanaman Sagu di Desa Sungai Ambangah Kalimantan Barat. *Prosiding Semirata 2015*, 184–192.
- Gyogluu, C., Jaiswal, S. K., Kyei-Boahen, S., & Dakora, F. D. (2018). Identification and Distribution of Microsymbionts Associated with Soybean Nodulation in Mozambican Soils. *Systematic and Applied Microbiology*, 41(5), 506–515. <https://doi.org/10.1016/j.syapm.2018.05.003>
- Hakim, N., Nyakpa, M. Y., Lubis, A. M., Nugroho, S. G., Diha, M. A., Hong, G. B., & Bailey, H. H. (1986). *Dasar-Dasar Ilmu Tanah*. Universitas Lampung.
- Hamel, C., & Plenchette, C. (2017). Implication of Past, Current, and Future Agriculture Practices for Mycorrhiza-Mediated Nutrient Flux. In N. C. G. C. and J. J. Johnson (Ed.), *Mychorrhizal Mediation of Soil Fertility, Structure and Carbon Storage* (pp. 175–186). Elsevier.
- Hamim. (2004). Underlying drought stress effect on plant: Inhibition of photosynthesis. *Hayati*, 11, 164–169.
- Hapsani, A., & Basri, H. (2012). Kajian Peranan Mikoriza dalam Bidang Pertanian. *Agrica Ekstensia*, 12(2), 74–78.
- Harahap, A. F. S., & Munir, M. (2022). Factors Affecting Productivity of Oil Palm (*Elaeis guineensis* Jacq.) at Various Afdelings in Bah Jambi Farm PT. Perkebunan Nusantara IV. *Jurnal Tanah Dan Sumberdaya Lahan*, 9(1), 99–110. <https://doi.org/10.21776/ub.jtsl.2022.009.1.11>
- Harnoto, Naito, A., & Iqbal, A. (1984). Control of Etiella Pod Borers on Soybean. *Penelitian Pertanian*, 4(3), 124–127.
- Haryadi, D., Yetti, H., & Yoseva, S. (2015). Pengaruh Pemberian Beberapa Jenis Pupuk terhadap Pertumbuhan dan produksi Tanaman Kailan (*Brassica albogabra* L.). In *Jom Faperta* (Vol. 2, Issue 2).
- Hashem, A., Allah, A. E. F., Alwarawi, A. A., & Egamberdieva, D. (2018). Arbuscular Mycorrhizal Fungi and Plant Stress Tolerance. In *Plant Microbiome: Stress Response* (1st ed., pp. 81–103). Springer . [https://doi.org/10.1007/978-981-10-5514-0\\_4](https://doi.org/10.1007/978-981-10-5514-0_4)
- Hayashi, S., Gresshoff, P., & Ferguson, B. (2014). Mechanistic Action of Gibberellins in Legume Nodulation. *Integration Plant Biology*.
- Hindumathi, A., & Reddy, B. N. (2012). Synergistic Effect of Arbuscular Mycorrhizal Fungi and Rhizobium on the Growth and Charcoal Rot of Soybean (*Glycine max*). *World Journal of Science and Technology*, 2012(10), 2231–2587.
- Hu, D., Baskin, J. M., Baskin, C. C., Wang, Z., Zhang, S., Yang, X., & Huang, Z. (2019). Arbuscular mycorrhizal symbiosis and achene mucilage have independent functions in seedling growth of a desert shrub. *Journal of Plant Physiology*, 232, 1–11. <https://doi.org/10.1016/j.jplph.2018.11.010>
- Igiehon, N. O., & Babalola, O. O. (2017). Biofertilizers and sustainable agriculture:

exploring arbuscular mycorrhizal fungi. In *Applied Microbiology and Biotechnology* (Vol. 101, Issue 12, pp. 4871–4881). Springer Verlag.  
<https://doi.org/10.1007/s00253-017-8344-z>

Inbaraj, M. P. (2021). Plant-Microbe Interactions in Alleviating Abiotic Stress—A Mini Review. In *Frontiers in Agronomy* (Vol. 3). Frontiers Media S.A.  
<https://doi.org/10.3389/fagro.2021.667903>

Ishaq, L. F., Manehat, I. J. A., Tae, A. S. J. A., & Benggu, Y. I. (2023). Dual Inoculation of Rhizobium and Arbuscular Mycorrhizal Fungi Increases Soil-Total Nitrogen, Available Phosphorus, and Yield of Soybean in Vertisols. *Jurnal Penelitian Pendidikan IPA*, 9(5), 2444–2451. <https://doi.org/10.29303/jppipa.v9i5.3162>

Ismail, I. G., & S. Effendi. (1985). *Pertanaman Kedelai pada Lahan Kering* (pp. 103–120). Puslitbangtan.

Jamil, F., Mukhtar, H., Fouillaud, M., & Dufossé, L. (2022). Rhizosphere Signaling: Insights into Plant–Rhizomicrobiome Interactions for Sustainable Agronomy. In *Microorganisms* (Vol. 10, Issue 5). MDPI.  
<https://doi.org/10.3390/microorganisms10050899>

Januwarti, M., J. Pitono, & Ngadimin. (1994). *Pengaruh Pemangkasan terhadap Pertumbuhan dan Produksi Terna Tanaman Sambiloto*. Balai Penelitian Tanaman Rempah dan Obat.

Johnson, N. C., Graham, J. H., & Smith, F. A. (1997). Functioning of Mycorrhizal Associations along The Mutualism-Paratism Continuum. *New Phytologist*, 135(4), 1–11.

Kartasapoetra, G., & Sutedjo, M. M. (1991). *Teknologi Konservasi Tanah dan Air*. Rineka Cipta.

Kementerian Pertanian. (2022). *Proyeksi Luas Panen Kedelai RI Terus Menurun sampai 2024*. <https://Databoks.Katadata.Co.Id/Datapublish/2022/02/24/Proyeksi-Luas-Panen-Kedelai-Ri-Terus-Menurun-Sampai-2024>.

Kementerian Pertanian. (2023). *Laporan Kinerja Direktorat Jenderal Tanaman Pangan*.

Kertonegoro, B. D., Hastuti, S., Supriyanto, N., & Handayani, S. (1998). *Panduan Analisis Fisika Tanah*. Laboratorium Fisika Tanah, Fakultas Pertanian, UGM.

Koike, Y. (2013). Effects of Irradiance Level on the Growth and Photosynthesis of *Salvia*. *International Journal of Environmental Science and Development*, 479–482. <https://doi.org/10.7763/ijesd.2013.v4.398>

Kumar, A., Choudhary, A. K., & Suri, V. K. (2016). Influence of AM Fungi, Inorganic Phosphorus and Irrigation Regimes on Plant Water Relations and Soil Physical Properties in Okra (*Abelmoschus esculentus* L.) – pea (*Pisum sativum* L.) Cropping System in Himalayan Acid Alfisol. *Journal of Plant Nutrition*, 39(5), 666–682. <https://doi.org/10.1080/01904167.2015.1087030>

Kumari, S. M. P., & Prabina, B. J. (2019). Protection of Tomato, *Lycopersicon esculentum* from Wilt Pathogen, *Fusarium oxysporum* f.sp. *lycopersici* by

Arbuscular Mycorrhizal Fungi, Glomus sp. *International Journal of Current Microbiology and Applied Sciences*, 8(04), 1368–1378.  
<https://doi.org/10.20546/ijcmas.2019.804.159>

Kurniaty, R., Bustomi, S., & Widyati, E. (2013). Penggunaan Rhizobium dan Mikoriza dalam Pertumbuhan Kaliandra (*Calliandra calothyrsus*) Umur 5 Bulan. *Perbenihan Tanaman Hutan*, 1(2), 71–81.

Laila Rajmi, S., & Refliaty. (2018). Peningkatan Ketersediaan P Ultisol dengan Pemberian Fungsi Mikoriza Arbuskular. *J. Agroecotania*, 1(2).  
<https://doi.org/https://doi.org/10.22437/agroecotania.v1i2.6340>

Lambert, K., A. Syukur, & E. Hanudin. (1993). *Petunjuk Penggunaan Alat dan Dasar-Dasar Metode Analisis Kimia Tanah Laboratorium Kimia dan Kesuburan Tanah*. UGM Press.

Li, R., Guo, P., Baum, M., Grando, S., & Ceccarelli. (2006). *Evaluation of Chlorophyll Content and Fluorescence Parameter as Indicators of Drought Tolerance in Barley*. 5(10).

Li, X. L., George, E., & Marschner, H. (1991). Extension of The Phopsporus Depletion Zone in VA-Mycorrhizal White Clover in a Calcareous Soil. *Plant and Soil*, 136(1), 41–48.

Loveless, A. R. (1991). *Prinsip-Prinsip Biologi Tumbuhan untuk Daerah Tropik*. PT. Gramedia.

Marwoto, Taufiq, A., & Suyamto. (2012). Potential of soybean development in oil palm plantation. *J. Litbang Pertanian*, 31(4), 169–174.

Meitasari, A. D., & Wicaksono, K. P. (2017). Inokulasi Rhizobium dan Perimbangan Nitrogen pada Tanaman Kedelai (*Glycine max (L.) Merrill*) Varietas Wilis. *Plantropika Journal of Agricultural Science*, 2(1), 55–63.

Mitra, D., Djebaili, R., Pellegrini, M., Mahakur, B., Sarker, A., Chaudhary, P., Khoshru, B., Gallo, M. Del, Kitouni, M., & Barik, D. P. (2021). Arbuscular Mycorrhizal Symbiosis: Plant Growth Improvement and Induction of Resistance Under Stressful Conditions. *Plant Nutrition*, 44(13), 1993–2028.  
<https://doi.org/https://doi.org/10.1080/01904167.2021.1881552>

Mohanty, P., & Matysik, J. (2001). Effect of Proline on the Production of Singlet Oxygen Short Communication. *Amino Acids*, 21, 195–200.

Nadeem, S. M., Ahmad, M., Zahir, Z. A., Javaid, A., & Ashraf, M. (2014). The role of mycorrhizae and plant growth promoting rhizobacteria (PGPR) in improving crop productivity under stressful environments. In *Biotechnology Advances* (Vol. 32, Issue 2, pp. 429–448). Elsevier Inc.  
<https://doi.org/10.1016/j.biotechadv.2013.12.005>

Nasution, Z. P., Farrasati, R., & Sutarta, E. S. (2022). Analisis Usahatani Tumpang Sari Hortikultura pada Fase Tanaman Kelapa Sawit Belum Menghasilkan (TBM) serta Dampaknya terhadap Kesuburan Tanah di Kecamatan Tandun, Rokan Hulu, Riau. *Jurnal Ekonomi Pertanian Dan Agribisnis*, 6(2), 642.

<https://doi.org/10.21776/ub.jepa.2022.006.02.28>

- Nilahayati, Rizky, M., Hafifah, Nazimah, & Safrizal. (2022). Pertumbuhan dan Hasil Beberapa Genotipe Kedelai pada Berbagai Konsentrasi Pupuk Organik Cair. *Agrium*, 19(3). <https://ojs.unimal.ac.id/index.php/agrium>
- Nita, I., Listyarini, E., Kusuma, Z., Tanah, J., Pertanian, F., & Brawijaya, U. (2014). Kajian Lengan Tersedia pada Toposekuen Lereng Utara G. Kawi Kabupaten Malang Jawa Timur. In *Jurnal Tanah dan Sumberdaya Lahan* (Vol. 1, Issue 2). <http://jtsl.ub.ac.id>
- Nugraha, A. (2022). *Respon Pemberian Mulsa Jerami Padi dan POC Limbah Pepaya terhadap Pertumbuhan dan Produksi Tanaman Kedelai (Glycine max (L.) Merrill)*. Universitas Islam Sumatra Utara.
- Nugroho, G. A., & Hidayat, M. T. (2021). Pengambilan Sampel Tanah. In *Modul Praktikum MK. Dasar Ilmu Tanah*. Universitas Brawijaya.
- Nuha, U. M. (2022, August 17). *Kelembaban Tanah Ideal untuk Tanaman Pertanian*. Alat Ukur Indonesia.
- Nurhayati, N., Usman, U., Emisari, R., & Ida, N. I. (2020). Potensi Pengembangan Tumpang Sari Kedelai di Perkebunan Kelapa Sawit belum Menghasilkan di Provinsi Riau. *Seminar Nasional Lahan Sub Optimal Ke-8*.
- Nurmasyitah, S., & Sayuthi, M. (2013). Pengaruh Jenis Tanah dan Dosis Fungi Mikoriza Arbuskular pada Tanaman Kedelai terhadap Sifat Kimia Tanah. *Agrista*, 17(3), 102–110.
- Nurmayani, N. (2019). *Keragaman Genetik Generasi M2 Hasil Iradiasi Sinar Gamma 60Co Tanama Kedelai (Glycine max (L.) Varietas Mutiara 1 untuk Umur Genjah*. Universitas Islam Negeri Syarif Hidayatullah.
- Ogou, A., Tchabi, A., Tounou, A. K., Agboka, K., & Sokame, B. M. (2019). Effet de Quatre Souches de Champignons Mycorhiziens Arbusculaires sur Meloidogyne spp., Principal Nématode Parasitaire du Soja (*Glycine max* L.) au Togo. *Journal of Applied Biosciences*, 127(1), 12758. <https://doi.org/10.4314/jab.v127i1.1>
- Olivera, M., Tejera, N., Iribarne, C., Ocana, A., & Liuch, C. (2004). Growth Nitrogen Fixation and Ammonium Assimilation in Common Bean (*Phaseolus vulgaris*): Effect of Phosphorus. *Physiologia Plantarum*, 121, 498–505. <https://doi.org/https://doi.org/10.1111/j.0031-9317.2004.00355.x>
- Orabi, S. A., & Abou-Hussein, S. D. (2019). Antioxidant Defense Mechanisms Enhance Oxidative Stress Tolerance in Plants. A review. *Current Science International*, 8(3).
- Ortiz, N., Armada, E., Duque, E., Roldán, A., & Azcón, R. (2015). Contribution of Arbuscular Mycorrhizal Fungi and/or Bacteria to Enhancing Plant Drought Tolerance under Natural Soil Conditions: Effectiveness of Autochthonous or Allochthonous Strains. *Journal of Plant Physiology*, 174, 87–96. <https://doi.org/10.1016/j.jplph.2014.08.019>
- Ouledali, S., Ennajeh, M., Ferrandino, A., Khemira, H., Schubert, A., & Secchi, F.

- (2019). Influence of arbuscular mycorrhizal fungi inoculation on the control of stomata functioning by abscisic acid (ABA) in drought-stressed olive plants. *South African Journal of Botany*, 121, 152–158. <https://doi.org/10.1016/j.sajb.2018.10.024>
- Palad, M. S., Aminah, & Nirwana. (2017). Respon Varietas Kedelai (Glycine max L.Merr) pada Tingkat Kelengasan Tanah yang Berbeda. *Agrotek*, 1(2), 14–23.
- Patten, C. L., & Glick, B. R. (2002). The Role of Bacterial Indoleacetic Acid in the Development of the Host Plant Root System. *Applied and Environmental Microbiology*, 68(8).
- Pereira, S. I. A., Monteiro, C., Vega, A. L., & Castro, P. M. L. (2016). Endophytic Culturable Bacteria Colonizing Lavandula dentata L. Plants: Isolation, Characterization and Evaluation of Their Plant Growth-Promoting Activities. *Ecological Engineering*, 87, 91–97. <https://doi.org/10.1016/j.ecoleng.2015.11.033>
- Permadi, K., & Haryati, Y. (2015). Pemberian Pupuk N, P dan K Berdasarkan Pengelolaan Hara Spesifik Lokasi untuk Meningkatkan Produktivitas Kedelai. *Agrotop*, 5(1), 1–8.
- Permatasari, A. D., & Nurhidayati, T. (2014). Pengaruh Inokulan Bakteri Penambat Nitrogen, Bakteri Pelarut Fosfat dan Mikoriza Asal Desa Condoro, Lumajang, Jawa Timur terhadap Pertumbuhan Tanaman Cabai Rawit. *Jurnal Sains Dan Seni Pomits*, 3(2), 2337–3520.
- Prasad, K. (2021). Effect of Dual Inoculation of Arbuskular Mycorrhiza Fungus and Bradyrhizobium Japonicum on the Growth, Yield, Chlorophyll, Nitrogen and Phosphorus Contents of Soybean (Glycine Max (L.) Merrill.) Grow on Alluvial Soil. *Innovation in Applied Research*, 4(1), 2581–4281. <https://doi.org/10.51323/JIAR.4.1.2021.7-18>
- Prawirowardoyo. (1987). *Panduan Analisis Kimia Tanah*. Jurusan Tanah, Fakultas Pertanian, UGM.
- Price, A., & Courtois, B. (1991). *Mapping QTLs Associated with Drought Resistance in Rice; Progress Problem and Prospect*. International Rice Research Institute.
- Priyadharsini, P., & Muthukumar, T. (2016). Interactions Between Arbuscular Mycorrhizal Fungi and Potassium-Solubilizing Microorganisms on Agricultural Productivity. In *Potassium Solubilizing Microorganisms for Sustainable Agriculture* (pp. 111–125). Springer India. [https://doi.org/10.1007/978-81-322-2776-2\\_8](https://doi.org/10.1007/978-81-322-2776-2_8)
- Puja Santana, F., Ghulamahdi, M., & Lubis, I. (2020). Respons Pertumbuhan, Fisiologi, dan Produksi Kedelai terhadap Pemberian Pupuk Nitrogen dengan Dosis dan Waktu yang Berbeda. *Jurnal Ilmu Pertanian Indonesia*, 26(1), 24–31. <https://doi.org/10.18343/jipi.26.1.24>
- Purwaningsih, O., Indradewa, D., Kabirun, S., & Shiddiq, D. (2012). Tanggapan Tanam Kedelai terhadap Inokulasi Rhizobium. *Agro Tropika*, 1, 25–32.
- Putri, T. E., Yuliani, & Trimulyono, G. (2019). Penggunaan Mikoriza Vesikular Arbuskular (MVA) Genus Glomus untuk Meningkatkan Pertumbuhan dan Produksi

- Tanaman Kacang Hijau (*Vigna radiata*) Pada Cekaman Air T. *Lentera Bio.*, 8(2), 107–112. <http://ejournal.unesa.ac.id/index.php/lenterabio>
- Rahayu, Y. S. (2019). *Pengelolaan Tanah Tercemar Minyak sebagai Media Tanam: Kajian Peran Multisimbiosis Organisme* (Yuliani, Ed.). Absolute Media.
- Rahman, R. A. (2021). *Pengaruh Biochar Tongkol Jagung dan Fermentasi Air Beras terhadap Pembungaan Tanaman Kakao (Theobromae cacao L.)*. Universitas Hasanuddin.
- Rani, B., Madan, S., Sharma, K. D., ja, P., Berwal, M. K., & Kumar, A. (2017). Effect of Mycorrhizal Colonization on Nitrogen and Phosphorous Metabolism in Wheat (*Triticum aestivum* L.) under Water Deficit Stress. *International Journal of Current Microbiology and Applied Sciences*, 6(10), 916–929. <https://doi.org/10.20546/ijcmas.2017.610.110>
- Ratna, D. H., Suryaman, M., & Saepudin, A. (2023). The Effect of Phosphate Solublizing Bacteria at Various Soil pH on Plant Growth and Yield of Soybean (*Glycine max* (L.) Merr). *JA-CROPS Journal of Agrotechnology and Crop Science*, 1(1), 26–34.
- Rauf, A. (2018). Evaluasi Karakteristik Sifat Kimia Tanah Di Lahan Perkebunan Kelapa Sawit Kebun Adolina PTPN IV Serdang Bedagai Pada Beberapa Generasi Tanam. *Jurnal Agroekoteknologi FP USU*, 6(3), 453–459.
- Regar, M. K., Meena, R. H., Jat, G., & Mundra, S. L. (2017). Effect of Different Rhizobial Strains on Growth and Yield of Soybean [*Glycine max* (L.) Merrill]. *International Journal of Current Microbiology and Applied Sciences*, 6(11), 3653–3659. <https://doi.org/10.20546/ijcmas.2017.611.427>
- Rentsch, D., Hirner, B., Schmelzer, E., & Frommer, W. B. (1996). Salt Stress-Induced Proline Transporter and Salt Stress-Repressed Broad Specificity Amino Acid Permeases Identified by Suppression of a Yeast Amino Acid Permease-Targeting Mutant. In *The Plant Cell* (Vol. 8). American Society of Plant Physiologists. <https://academic.oup.com/plcell/article/8/8/1437/5985247>
- Rochma, Z., Rana, F., & Edy, S. S. (2022). Optimasi Lahan Replanting Kelapa Sawit dengan Sistem Tumpangsari Jagung (*Zea mays* L.) dan Kacang Tanah (*Arahis hypogaea*). *Simetrik*, 10(1), 2581–2866.
- Rukmana, R., & Yuniarsih. (1996). *Kedelai Budidaya dan Pasca Panen*. Kanisisu.
- Sadikin, M. (2022). *Biokimia Enzim*. Widya Medika.
- Safitri, R., Fuskah, E., & Karno, D. (2018). Karakteristik Fotosintesis dan Produksi Kedelai (*Glycine max* L. Merrill) akibat Salinitas Air Penyiraman yang Berbeda. *J. Agro Complex*, 2(3), 244–247. <https://doi.org/10.14710/joac.2.3.244-247>
- Salisbury, F. B., & Cleon, W. R. (1995). *Fisiologi Tumbuhan Jilid 2*. Institut Teknologi Bandung.
- Santoso BB., & Hariyadi. (2008). Metode Pengukuran Luas Daun Jarak Pagar (*Jatropha curcas* L.) . *Jurnal Ilmu-Ilmu Pertanian*, 8(1), 17–22.

- Sari, R., & Prayudyaningsih, R. (2015). Rhizobium: Pemanfaatannya Sebagai Bakteri Penambat Nitrogen Rhizobium: Pemanfaatannya sebagai Penambat Nitrogen. *Info Teknis EBONI*, 12(1).
- Sari, T., & Taryono. (2021). Jumlah Bintil Fase Vegetatif Penentu Mutu dan Hasil Kacang Hijau (*Vigna radiata* L.) di Lahan Sawah Bekas Padi. *Journal of Agrotechnology Innovation*, 4(2), 1–6.
- Sasmitamihardja, D. (1996). *Fisiologi Tumbuhan*. Direktorat Jenderal Pendidikan Tinggi Proyek Pendidikan Tenaga Akademik.
- Sayer, E. J., Crawford, J. A., Edgerley, J., Askew, A. P., Hahn, C. Z., Whitlock, R., & Dodd, I. C. (2021). Adaptation to Chronic Drought Modifies Soil Microbial Community Responses to Phytohormones. *Communications Biology*, 4(1). <https://doi.org/10.1038/s42003-021-02037-w>
- Shibles, R. M., & Weber, C. R. (1965). *Leaf Area, Solar Radiation Interception and Dry Matter Production by Soybeans*.
- Singh, A. K., Zhu, X., Chen, C., Wu, J., Yang, B., Zakari, S., Jiang, X. J., Singh, N., & Liu, W. (2022). The Role of Glomalin in Mitigation of Multiple Soil Degradation Problems. *Environmental Science and Technology*, 52(9), 1604–1638. <https://doi.org/https://doi.org/10.1080/10643389.2020.1862561>
- Singh, H. B., Keswani, C., Reddy, M. S., Sansinenea, E., & Garcia-Estrada, C. (2019). *Secondary Metabolites of Plant Growth Promoting Rhizomicroorganisms* (1st ed.). Springer Singapore. <https://doi.org/https://doi.org/10.1007/978-981-13-5862-3>
- Siregar, B. (2017). Analisa Kadar C-Organik dan Perbandingan C/N Tanah di Lahan Tambak Kelurahan Sicanang Kecamatan Medan Belawan. *Jurnal Warta*, 53, 1829–7463. <https://doi.org/https://doi.org/10.46576/wdw.v0i53.266>
- Siviero, M. A., Motta, A. M., Lima, D. dos S., Birolli, R. R., Huh, S. Y., Santinoni, I. A., Murate, L. S., de Castro, C. M. A., Miyauchi, M. Y. H., Zangaro, W., Nogueira, M. A., & Andrade, G. (2008). Interaction Among N-fixing Bacteria and AM Fungi in Amazonian Legume Tree (*Schizolobium amazonicum*) in Field Conditions. *Applied Soil Ecology*, 39(2), 144–152. <https://doi.org/10.1016/j.apsoil.2007.12.004>
- Soetarso. (1989). Indeks Panen sebagai Kriteria Seleksi dalam Pemuliaan Tanaman Kedelai. *Ilmu Pertanian*, 4(5).
- Somantri, R. U., Syahri, S., & Thamrin, T. (2019). Keragaan Agronomis dan Kelayakan Usahatani Kedelai yang Dibudidayakan Secara Monokultur dan Polikultur di Sumatera Selatan. *Jurnal Lahan Suboptimal: Journal of Suboptimal Lands*, 8(2), 159–172. <https://doi.org/10.33230/jlso.8.2.2019.426>
- Subaedah, St., Said, N. S., & Ralle, A. (2020). Growth and Yield of Two Soybean Varieties by Phosphate Fertilization and Arbuscular mycorrhizal Application. *Journal of Biological Sciences*, 20(4), 147–152. <https://doi.org/10.3923/jbs.2020.147.152>
- Suherman, A. A., Rasyad, A., & Herman, D. (2019). Adaptasi Berbagai Genotipe Kedelai (*Glycine max* (L.) Merrill) pada Dua Kondisi Naungan Sesuai Umur

- Tanaman Kelapa Sawit Adaptation of Some Soybean Genotypes (Glycine max (L) Merrill) to Shading Conditions Under Two Oil Palm Plant Age. In *J. Agrotek. Trop* (Vol. 8, Issue 2).
- Sulaeman, Suparto, & Eviati. (2005). *Petunjuk Teknis: Analisis Kimia Tanah, Tanaman, Air dan Pupuk*. Balai Penelitian Tanah.
- Sumarno, M. (2016). *Persyaratan Tumbuh dan Wilayah Produksi Kedelai di Indonesia*. Pusat Penelitian dan Pengembangan Tanaman Pangan.
- Sunarko. (2007). *Petunjuk Praktis Pengolahan dan Budidaya Kelapa Sawit*. Agromedia.
- Surayntini. (2015). *Pembintilan dan Penambatan Nitrogen pada Kacang Tanah*. Balai Penelitian Tanaman Aneka Kacang dan Umbi.
- Surtiningsih, T., Farida, & Tri, N. (2009). Biofertilisasi Bakteri Rhizobium pada Tanaman Kedelai (Glycine Max (L.) Merr.). *Berkala Penelitian Hayati*, 1.
- Suryadi, M., Subaedah, Saida, Suriyanti, & Syarif, M. (2020). Pertumbuhan dan Produksi Berbagai Varietas Kedelai di Lahan Sawah Tadah Hujan setelah Padi. *Jurnal AgrotekMAS*, 67–74.
- Suryono, E. (2016). Analisis Nitrat Reduktase secara “In-Vivo” pada Tanaman Jagung, Kacang Hijau, Tebu, Uwi dan Cabai. *Integrated Lab Journal*, 4(1), 11–18.
- Sutariati, G. A. K., Khaeruni, A. R., & Muhidin. (2014). *Biofertilizer: Solusi Teknologi Pengembangan Lahan Sub Optimal*. Unhalu Press.
- Taktek, S., St-Arnaud, M., Piché, Y., Fortin, J. A., & Antoun, H. (2017). Igneous Phosphate Pock Solubilization by Biofilm-Forming Mycorrhizobacteria and Hyphobacteria Associated with Rhizoglomus irregulare DAOM 197198. *Mycorrhiza*, 27(1), 13–22. <https://doi.org/10.1007/s00572-016-0726-z>
- Talanca, H. (2010). Status Cendawan Mikoriza Vesikular Arbuskular (MVA) pada Tanaman. *Prosiding Pekan Serealia Nasional*.
- Taluta, H. E., Rampe, H. L., & Rumondor, M. J. (2017). Pengukuran Panjang dan Lebar Pori Stomata Daun Beberapa Varietas Tanaman Kacang Tanah (Arachis hypogaea L.). *Jurnal MIPA UNSRAT*, 6(2), 1–5.
- Tan, K. H. (2000). *Environmental Soil Science*. Marcel Dikker Inc.
- Unyayar, S., Topcoglu, S., & Unyayar, A. (1996). A Modified Method for Extraction and Identification of Indole-3-Acetic Acid (IAA), Gibberellic Acid (GA), Absisic Acid (ABA), and Zeatin produced by Phanerochaeta chrysosporium ME446. *Bulgarian Journal of Plant. Physiology*, 22(3–4), 105–110.
- Valentovic, P., Luxova, M., Kolarovic, L., & Gasparikova, O. (2006). Effect of Osmotic Stress on Compatible Solutes Content, Membrane Stability and Water Relations in Two Maize Cultivars. *Plant Soil Environment*, 52(4).
- Wahyu, G., & Mutmaidah, S. (2022). Kelayakan Teknis dan Finansial Budidaya Kedelai Naungan Tanaman Kelapa Sawit di Sumatera Utara. *Buletin Agritek*, 3(1), 35–52.

- Wahyuni, S., Trisnaningsih, U., & Prasetyo, M. (2018). Pertumbuhan dan Hasil Sembilan Kultivar Kedelai (Glycine max (L.) Merrill) di Lahan Sawah. *J. Agrosintesa*, 1(2), 96–102.
- Walters, R. G. (2005). Towards an Understanding of Photosynthetic Acclimation. *J. Exp. Bot.*, 56, 435–447.
- Wang, Y., Wang, M., Li, Y., Wu, A., & Huang, J. (2018). Effects of Arbuscular Mycorrhizal Fungi on Growth and Nitrogen Uptake of Chrysanthemum Morifolium under Salt Stress. *PLoS ONE*, 13(4). <https://doi.org/10.1371/journal.pone.0196408>
- Warouw, V., & Kainde, R. P. (2010). Population of Vesicular Arbuscular Mycorrhizal Fungi in Rhizosphere Zone of Teak. In *Eugenia* (Vol. 16, Issue 1).
- Wen, Z., Yang, M., Han, H., Fazal, A., Liao, Y., Ren, R., Yin, T., Qi, J., Sun, S., Lu, G., Hu, S., & Yang, Y. (2023). Mycorrhizae Enhance Soybean Plant Growth and Aluminum Stress Tolerance by Shaping the Microbiome Assembly in an Acidic Soil. *Microbiology Spectrum*, 11(2). <https://doi.org/10.1128/spectrum.03310-22>
- Wilkes, T. I. (2021). Arbuscular Mycorrhizal Fungi in Agriculture. *Encyclopedia*, 1(4), 1132–1154. <https://doi.org/10.3390/encyclopedia1040085>
- Wilmowicz, E., Kućko, A., Golińska, P., Burchardt, S., Przywieczerski, T., Świdziński, M., Brzozowska, P., & Kapuścińska, D. (2020). Absciscic acid and ethylene in the control of nodule-specific response on drought in yellow lupine. *Environmental and Experimental Botany*, 169. <https://doi.org/10.1016/j.envexpbot.2019.103900>
- Wu, Q. S., Srivastava, A. K., & Zou, Y. N. (2013). AMF-induced tolerance to drought stress in citrus: A review. In *Scientia Horticulturae* (Vol. 164, pp. 77–87). <https://doi.org/10.1016/j.scienta.2013.09.010>
- Xu, C. C., Zaho, S. J., & Zuo, Q. (1993). Interference in Measurement of Lipid Peroxidation by Thiobarbituric acid Test in Plant Tissues. *Plant Physiology Commun.*, 29, 361–363.
- Yadav, A. N., Kour, D., Kaur, T., Devi, R., Yadav, A., Dikilitas, M., Abdel-Azeem, A. M., Ahluwalia, A. S., & Saxena, A. K. (2021). Biodiversity and Biotechnological Contribution of Beneficial Soil Microbiomes for Nutrient Cycling, Plant Growth Improvement and Nutrient Uptake. *Biocatalysis and Agricultural Biotechnology*, 33(102009).
- Yakubu, H., Kwari, J. D., & Sandabe, M. K. (2010). Effect of Phosphorus Fertilizer on Nitrogen Fixation by Some Grain Legume Varieties in Sudano-Sahelian Zone of North Eastern Nigeria. *Nigerian Journal of Basic and Applied Science*, 18(1), 19–26. <https://doi.org/10.4314/njbas.v18i1.56837>
- Yang, G., Yang, X., Zhang, W., Wei, Y., Ge, G., Lu, W., Sun, J., Liu, N., Kan, H., Shen, Y., & Zhang, Y. (2016). Arbuscular Mycorrhizal Fungi Affect Plant Community Structure under Various Nutrient Conditions and Stabilize the Community productivity. *Oikos*, 125(4), 576–585. <https://doi.org/10.1111/oik.02351>
- Ye, Q., Wang, H., & Li, H. (2022). Arbuscular Mycorrhizal Fungi Improve Growth, Photosynthetic Activity, and Chlorophyll Fluorescence of Vitis vinifera L. cv. Ecolly

under Drought Stress. *Agronomy*, 12(7).  
<https://doi.org/10.3390/agronomy12071563>

Yuliani, N., Sabur, A., & Napisah, K. (2021). Soybean as Ground Cover Plant and Intercrop in Immature Oil Palm Plantation. *E3S Web of Conferences*, 306.  
<https://doi.org/10.1051/e3sconf/202130605011>

Zhang, L., Xu, M., Liu, Y., Zhang, F., Hodge, A., & Feng, G. (2016). Carbon and phosphorus exchange may enable cooperation between an arbuscular mycorrhizal fungus and a phosphate-solubilizing bacterium. *New Phytologist*, 210(3), 1022–1032. <https://doi.org/10.1111/nph.13838>

Zhang, X., & Shangguan, S. (2007). Plant Nutrition. *Fertility Science*.

Zou, Y. N., Wang, P., Liu, C. Y., Ni, Q. D., Zhang, D. J., & Wu, Q. S. (2017). Mycorrhizal Trifoliate Orange has Greater Root Adaptation of Morphology and Phytohormones in Response to Drought Stress. *Scientific Reports*, 7.  
<https://doi.org/10.1038/srep41134>