

## DAFTAR PUSTAKA

- Adedeji, O., & Jewoola, O. a. (2008). Importance of Leaf Epidermal Characters in the Asteraceae Family. *Not. Bot. Hort. Agrobot. Cluj*, 36(2), 7–16.
- Afidah, S. N., Agustien, I. D., Dewanti, P., & Sugiharto, B. (2022). Increased activity of sugarcane sucrose-phosphate synthase in transgenic tomato in response to N-terminal truncation. *Indonesian Journal of Biotechnology*, 27(1), 43–50. <https://doi.org/10.22146/IJBIOTECH.69337>
- Aharoni, A., & Galili, G. (2011). Metabolic engineering of the plant primary – secondary metabolism interface. *Current Opinion in Biotechnology*, 22(2), 239–244. <https://doi.org/10.1016/j.copbio.2010.11.004>
- Alhozaimy, A., Hussain, R. R., Al-Negheimish, A., Ahmed, M., & Singh, D. D. N. (2024). Kinetics and mechanism of gallic acid as an ecofriendly corrosion inhibitor for steel rebars in mortar. *Scientific Reports*, 14(1), 1–24. <https://doi.org/10.1038/s41598-024-82166-4>
- Ali, M., Abbasi, B. H., Ahmad, N., Ali, S. S., Ali, S., & Ali, G. S. (2016). Sucrose-enhanced biosynthesis of medicinally important antioxidant secondary metabolites in cell suspension cultures of *Artemisia absinthium* L. *Bioprocess and Biosystems Engineering*, 39(12), 1945–1954. <https://doi.org/10.1007/s00449-016-1668-8>
- Andrushchenko, O., & Levon, V. (2021). The content of flavonoids in *Cosmos sulphureus*. *Plant Introduction*, 89–90, 83–88. <https://doi.org/10.46341/pi2021003>
- Anur, R. M., Mufithah, N., Sawitri, W. D., Sakakibara, H., & Sugiharto, B. (2020a). Overexpression of sucrose phosphate synthase enhanced sucrose content and biomass production in transgenic sugarcane. *Plants*, 9(2), 1–11. <https://doi.org/10.3390/plants9020200>
- Anur, R. M., Mufithah, N., Sawitri, W. D., Sakakibara, H., & Sugiharto, B. (2020b). Overexpression of Sucrose Phosphate Synthase Enhanced Sucrose Content and Biomass Production in Transgenic Sugarcane. *Plants*, 9(200), 1–11.
- Anwar, K., Mardhiansyah, M., & Yoza, D. (2020). Pemanfaatan Ekstrak Daun Tanaman Pulai (*Alstonia scholaris*) Sebagai Herbisida Nabati Untuk Menekan Pertumbuhan Gulma Rumput Teki (*Cyperus rotundus*). *Jurnal Ilmu-Ilmu Kehutanan*, 4(2), 22. <https://doi.org/10.31258/jiik.4.2.22-28>
- Arini, N., Respatie, D. W., & Waluyo, S. (2015). Pengaruh Takaran SP36 Terhadap Pertumbuhan, Hasil dan Kadar Karotena Bunga *Cosmos sulphureus* Cav. dan *Tagetes erecta* L. di Dataran Rendah. *Vegetalika*, 4(1), 1–14.
- Ayeb-Zakhama, A. El, & Harzallah-Skhiri, F. (2016). Allelopathic activity of extracts of *Citharexylum spinosum* L. from Tunisia. *Journal of Plant Breeding and Crop Science*, 8(10), 189–196. <https://doi.org/10.5897/jpbcs2015.0501>
- Bagus Nur Sudrajat, A., Suherman, & Sugiharto, B. (2020). Comparative evaluation of nutritional and mineral composition between transgenic sugarcane overexpressing SoSPS1 gene and non-transgenic counterpart. *Pakistan Journal of Biological Sciences*, 23(11), 1424–1430. <https://doi.org/10.3923/pjbs.2020.1424.1430>
- Ballester, A., Cervera, M., & Peña, L. (2008). Evaluation of selection strategies alternative to *nptII* in genetic transformation of citrus. *Plant Cell Reports*, 27(6), 1005–1015. <https://doi.org/10.1007/s00299-008-0523-z>



- Bibi, S., Bibi, A., Al-Ghouti, M. A., & Abu-Dieyeh, M. H. (2023). Allelopathic Effects of the Invasive *Prosopis juliflora* (Sw.) DC. on Native Plants: Perspectives toward Agrosystems. *Agronomy*, 13(2). <https://doi.org/10.3390/agronomy13020590>
- Bordin, E. R., Frumi Camargo, A., Stefanski, F. S., Scapini, T., Bonatto, C., Zanivan, J., Preczeski, K., Modkovski, T. A., Reichert Júnior, F., Mossi, A. J., Fongaro, G., Ramsdorf, W. A., & Treichel, H. (2021). Current production of bioherbicides: mechanisms of action and technical and scientific challenges to improve food and environmental security. *Biocatalysis and Biotransformation*, 39(5), 346–359. <https://doi.org/10.1080/10242422.2020.1833864>
- Busov, V. B., Brunner, A. M., Meilan, R., Filichkin, S., Ganio, L., Gandhi, S., & Strauss, S. H. (2005). Genetic transformation: A powerful tool for dissection of adaptive traits in trees. *New Phytologist*, 167(1), 9–18. <https://doi.org/10.1111/j.1469-8137.2005.01412.x>
- Caretto, S., Linsalata, V., Colella, G., Mita, G., & Lattanzio, V. (2015). Carbon fluxes between primary metabolism and phenolic pathway in plant tissues under stress. *International Journal of Molecular Sciences*, 16(11), 26378–26394. <https://doi.org/10.3390/ijms161125967>
- Cervera, M., Pina, J. A., Juárez, J., Navarro, L., & Peña, L. (2000). A broad exploration of a transgenic population of citrus: Stability of gene expression and phenotype. *Theoretical and Applied Genetics*, 100(5), 670–677. <https://doi.org/10.1007/s001220051338>
- Christou, P., Swain, W. F., Yang, N.-S., & McCabe, D. E. (1989). Inheritance and expression of foreign genes in transgenic soybean plants. *Proceedings of the National Academy of Sciences*, 86(19), 7500–7504. <https://doi.org/10.1073/pnas.86.19.7500>
- Cui, H. (2021). Challenges and Approaches to Crop Improvement Through C3-to-C4 Engineering. *Frontiers in Plant Science*, 12(September). <https://doi.org/10.3389/fpls.2021.715391>
- Cui, X. H., Chakrabarty, D., Lee, E. J., & Paek, K. Y. (2010). Production of adventitious roots and secondary metabolites by *Hypericum perforatum* L. in a bioreactor. *Bioresource Technology*, 101(12), 4708–4716. <https://doi.org/10.1016/j.biortech.2010.01.115>
- Dai, S., Zheng, P., Marmey, P., Zhang, S., Tian, W., Chen, S., Beachy, R. N., & Fauquet, C. (2001). Comparative analysis of transgenic rice plants obtained by *Agrobacterium*-mediated transformation and particle bombardment. *Molecular Breeding*, 7(1), 25–33. <https://doi.org/10.1023/A:1009687511633>
- Darana, S. (2011). Efektivitas ekstrak daun lamtoro (*Leucaena* sp.) terhadap pertumbuhan gulma di pertanaman teh belum menghasilkan. *Jurnal Penelitian Teh Dan Kina*, 1(14), 32–37.
- Dewi, S. A., Chozin, M. A., & Guntoro, D. D. (2017). Identifikasi Senyawa Fenol Beberapa Aksesori Teki (*Cyperus rotundus* L.) serta Pengaruhnya terhadap Perkecambah Biji *Borreria alata* (Aubl.) DC. *Jurnal Agronomi Indonesia (Indonesian Journal of Agronomy)*, 45(1), 93–99. <https://doi.org/10.24831/jai.v45i1.12730>
- Duan, Y., Yang, L., Zhu, H., Zhou, J., Sun, H., & Gong, H. (2021). Structure and expression analysis of sucrose phosphate synthase, sucrose synthase and invertase gene families in *Solanum lycopersicum*. *International Journal of Molecular Sciences*, 22(9). <https://doi.org/10.3390/ijms22094698>
- Fajrina, S. N., Aziz-Purwantoro, & Sawitri, W. D. (2022). Optimasi Metode Penyisipan Gen SoSPS1 melalui *Agrobacterium tumefaciens* secara In Vitro pada Tanaman Kosmos (*Cosmos sulphureus* Cav.) SHANIA NUR FAJRINA, Dr. Ir. Aziz Purwantoro, M. Sc. & Widhi Dyah Sawitri, S. Si., M. Agr., Ph. D. UGM.



- Fatonah, S., Murtini, & Isda, N. . (2014). Potensi Alelopati Ekstrak Daun *Pueraria javanica* Benth terhadap Perkecambah dan Pertumbuhan Anakan Gulma (*Asytasia gangetica* L.) T.Anderson. *BioETI*, 21–27.
- Fatumi, N. C. (2020). *Pengembangan Metode Transformasi Genetik Secara In Planta Pada Tanaman Kosmos (Cosmos sulphureus Cav.)*.
- Feng, Z., Bartholomew, E. S., Liu, Z., Cui, Y., Dong, Y., Li, S., Wu, H., Ren, H., & Liu, X. (2021). Glandular trichomes: new focus on horticultural crops. *Horticulture Research*, 8(1), 1–11. <https://doi.org/10.1038/s41438-021-00592-1>
- Ferraz, R. L. de S., Costa, P. da S., Dias, G. F., da SILVA, J. R., Viégas, P. R. A., Medeiros, A. de S., Dantas Neto, J., & de MELO, A. S. (2023). Allelopathy Of *Ricinus communis* And Light Spectrum Variation Decrease Emergence And Growth Of *Cyperus rotundus*. *Bioscience Journal*, 39, 1–15. <https://doi.org/10.14393/BJ-v39n0a2023-63062>
- Fibriani, S., Agustien, I. D., Sawitri, W. D., & Sugiharto, B. (2019). Transformasi Genetik dan Ekspresi Mutan Sucrose Phosphate Synthase pada Tanaman Tomat. *Jurnal Bioteknologi & Biosains Indonesia (JBBi)*, 6(1), 130. <https://doi.org/10.29122/jbbi.v6i1.3341>
- Fredikson, D., Lau, W., & Mirza, A. (2021). Ekstrak Rimpang Alang-Alang (*Imperata cylindrica* L.) sebagai Herbisida Nabati untuk Mengendalikan Gulma Rimpang Alang-Alang (*Imperata cylindrica* L.) Extact as a Vegetable Herbicide to Control Sugar. *Jurnal Agroteknologi Tropika Lembab*, 4(1), 29–34.
- Gray, W. M., Östin, A., Sandberg, G., Romano, C. P., & Estelle, M. (1998). High temperature promotes auxin-mediated hypocotyl elongation in Arabidopsis. *Proceedings of the National Academy of Sciences of the United States of America*, 95(12), 7197–7202. <https://doi.org/10.1073/pnas.95.12.7197>
- Guntoro, Yazid, A., & Thalia, A. (2022). Uji Efektivitas Perasan Sari Dedaunan Mangga (*Mangifera indica* L. Var. Arumanis) Sebagai Herbisida Nabati Pada Pengaruh Tingkat Kematian Gulma Teki (*Cyperus rotundus* L.). *Jurnal Agrohitia*, 7(3), 1–6. <http://jurnal.um-tapsel.ac.id/index.php/agrohitia>
- Han, A.-R., Nam, B., Kim, B.-R., Lee, K.-C., Song, B.-S., Kim, S. H., Kim, J.-B., & Jin, C. H. (2019). *molecules Phytochemical Composition and Antioxidant Activities of Two Different Color Chrysanthemum Flower Teas*. <https://doi.org/10.3390/molecules24020329>
- Han, H. R. (2025). Antibiotic Action, Drug Delivery, Biodegradability, and Wound Regeneration Characteristics of Surgical Sutures and Cutting-Edge Surgical Suture Manufacturing Technologies. *Journal of Functional Biomaterials*, 16(4). <https://doi.org/10.3390/jfb16040135>
- Hasan, M., Ahmad-Hamdani, M. S., Rosli, A. M., & Hamdan, H. (2021). Bioherbicides: An eco-friendly tool for sustainable weed management. *Plants*, 10(6), 1–21. <https://doi.org/10.3390/plants10061212>
- Hasanah, S. N., Wardoyo, E. R. P., & Mukarlina, M. (2019). Aktivitas Ekstrak Etanol Kulit Buah Jengkol (*Pithecellobium jiringa* (Jack) Prain.) Sebagai Bioherbisida Gulma Bayam Duri (*Amaranthus spinosus* L.) Dan Rumput Paitan (*Paspalum conjugatum* Berg.). *Jurnal Protobiont*, 8(3). <https://doi.org/10.26418/protobiont.v8i3.36727>
- Hastuti, D. (2021). Pengendalian Gulma Jajagoan (*Echinochloa crus-galli*) Dengan Herbisida Nabati Dari Ekstrak Daun Tembelean (*Lantana camara*). *Jurnal Ilmu Pertanian Tirtayasa*, 3(2), 327–338. <https://doi.org/10.33512/jipt.v3i2.13739>



- Hatfield, J. L., & Prueger, J. H. (2015). Temperature extremes: Effect on plant growth and development. *Weather and Climate Extremes*, 10, 4–10. <https://doi.org/10.1016/j.wace.2015.08.001>
- Hikmah, A. U., Bilkis, F., Maelani, D., & Triastinurmiatiningsih. (2018). Pemanfaatan Ekstrak Daun Babandotan (*Ageratum conyzoides*) Sebagai Bioherbisida Gulma Rumput Teki (*Cyperus rotundus*). *Ekologia*, 18(1), 25–30.
- Himanshu, H., Kaur, M., & Sohal, H. S. (2024). Sulfur cosmos (*C. sulphureus*)-A Multifaceted Botanical Treasure: A Review of Ethnobotanical Knowledge and Phytochemical Insights. *Bioscene*, 2422(June), 569–612.
- Hite, D. R. C., Outlaw, W. H., & Tarczynski, M. C. (1993). Elevated levels of both sucrose-phosphate synthase and sucrose synthase in *Vicia* guard cells indicate cell-specific carbohydrate interconversions. *Plant Physiology*, 101(4), 1217–1221. <https://doi.org/10.1104/pp.101.4.1217>
- Hossen, K., Das, K. R., Asato, Y., Teruya, T., & Kato-Noguchi, H. (2022). Allelopathic Activity and Characterization of Allelopathic Substances from *Elaeocarpus floribundus* Blume Leaves for the Development of Bioherbicides. *Agronomy*, 12(1). <https://doi.org/10.3390/agronomy12010057>
- Huber, S. C., & Huber, J. L. (1992). Role of Sucrose-Phosphate Synthase in Sucrose Metabolism in Leaves. *Plant Physiology*, 1992(99), 1275–1278.
- Huchelmann, A., Boutry, M., & Hachez, C. (2017). Plant glandular trichomes: Natural cell factories of high biotechnological interest. *Plant Physiology*, 175(1), 6–22. <https://doi.org/10.1104/pp.17.00727>
- Irsyadi, M. B. (2022). *Penyisipan Gen SoSPS1 Secara Floral Dip Melalui Agrobacterium tumefaciens Pada Tanaman Kosmos (Cosmos sulphureus Cav.)*. UGM.
- Irsyadi, M. B., Sawitri, W. D., & Purwantoro, A. (2022). Molecular and phenotypic characteristics of T1 transgenic yellow cosmos (*Cosmos sulphureus*) carrying neomycin phosphotransferase II gene. *Biodiversitas*, 23(12), 6097–6105. <https://doi.org/10.13057/biodiv/d231202>
- Ishimaru, K., Hirotsu, N., Kashiwagi, T., Madoka, Y., Nagasuga, K., Ono, K., & Ohsugi, R. (2008). Overexpression of a maize SPS gene improves yield characters of potato under field conditions. *Plant Production Science*, 11(1), 104–107. <https://doi.org/10.1626/pp.11.104>
- Izza, F., & Laily, A. N. (2015). Karakteristik Stomata Tempuyung (*Sonchus arvensis* L.) dan Hubungannya dengan Transpirasi Tanaman di Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang. *Seminar Nasional Konservasi Dan Pemanfaatan Sumber Daya Alam*, 177–180.
- Kaab, S. Ben, Lins, L., Hanafi, M., Rebey, I. B., Deleu, M., Fauconnier, M. L., Ksouri, R., Jijakli, M. H., & De Clerck, C. (2020). *Cynara cardunculus* crude extract as a powerful natural herbicide and insight into the mode of action of its bioactive molecules. *Biomolecules*, 10(2). <https://doi.org/10.3390/biom10020209>
- Kabera, J. N., Semana, E., Mussa, A. R., & He, X. (2014). Plant Secondary Metabolites : Biosynthesis, Classification, Function and Pharmacological Properties. *Journal of Pharmacy and Pharmacology*, 2, 377–392.
- Kale, S., Naik, S., & Deodhar, S. (2005). Edible Medical and Non-Medical Plants: Utilization of *Cosmos sulphureus* Cav flower dye on wool using mordant combination. In *Flowers* (pp. 288–290).



- Karataş, I. (2023). Optimization of sucrose concentration to promote root proliferation and secondary metabolite accumulation in adventitious root cultures of *Ocimum basilicum*. *In Vitro Cellular and Developmental Biology - Plant*, 59(3), 365–377. <https://doi.org/10.1007/s11627-023-10341-9>
- Kim, S., Kim, J., Kim, N., Lee, D., Lee, H., Lee, D. Y., & Kim, K. H. (2020). Metabolomic Elucidation of the Effect of Sucrose on the Secondary Metabolite Profiles in *Melissa officinalis* by Ultraperformance Liquid Chromatography-Mass Spectrometry. *ACS Omega*, 5(51), 33186–33195. <https://doi.org/10.1021/acsomega.0c04745>
- Kohli, A., Gahakwa, D., Vain, P., Laurie, D. A., & Christou, P. (1999). Transgene expression in rice engineered through particle bombardment: Molecular factors controlling stable expression and transgene silencing. *Planta*, 208(1), 88–97. <https://doi.org/10.1007/s004250050538>
- Kostina-Bednarz, M., Płonka, J., & Barchanska, H. (2023). Allelopathy as a source of bioherbicides: challenges and prospects for sustainable agriculture. In *Reviews in Environmental Science and Biotechnology* (Vol. 22, Issue 2). Springer Netherlands. <https://doi.org/10.1007/s11157-023-09656-1>
- Krahmer, J., & Fankhauser, C. (2024). Environmental Control of Hypocotyl Elongation. *Annual Review of Plant Biology*, 75(1), 489–519. <https://doi.org/10.1146/annurev-arplant-062923-023852>
- Kratz, J. M., Andrighetti-Fröhner, C. R., Kolling, D. J., Leal, P. C., Cirne-Santos, C. C., Yunes, R. A., Nunes, R. J., Trybala, E., Bergström, T., Frugulhetti, I. C. P. P., Barardi, C. R. M., & Simões, C. M. O. (2008). Anti-HSV-1 and anti-HIV-1 activity of gallic acid and pentyl gallate. *Memorias Do Instituto Oswaldo Cruz*, 103(5), 437–442. <https://doi.org/10.1590/S0074-02762008000500005>
- Kurniah, N. I., Dyah, W., Muhammad, S., Rohman, S., Nugraha, Y., & Hase, T. (2021). Mutation of UDP - glucose binding motif residues lead to increased affinity for ADP - glucose in sugarcane sucrose phosphate synthase. *Molecular Biology Reports*, 48(2), 1697–1706. <https://doi.org/10.1007/s11033-021-06181-8>
- Labra, M., Vannini, C., Grassi, F., Bracale, M., Balsemin, M., Basso, B., & Sala, F. (2004). Genomic stability in *Arabidopsis thaliana* transgenic plants obtained by floral dip. *Theoretical and Applied Genetics*, 109(7), 1512–1518. <https://doi.org/10.1007/s00122-004-1773-y>
- Langenkämper, G., Fung, R. W. M., Newcomb, R. D., Atkinson, R. G., Gardner, R. C., & MacRae, E. A. (2002). Sucrose phosphate synthase genes in plants belong to three different families. *Journal of Molecular Evolution*, 54(3), 322–332. <https://doi.org/10.1007/s00239-001-0047-4>
- Lee, H. S., Yi, G., & Kim, K. M. (2015). Stability of PAC (Psy-2A-CrtI) gene and agronomic traits in the F2:3 of IR36/PAC transgenic plants. *Journal of Integrative Agriculture*, 14(6), 1163–1170. [https://doi.org/10.1016/S2095-3119\(14\)60865-0](https://doi.org/10.1016/S2095-3119(14)60865-0)
- Lee, S. M., Radhakrishnan, R., Kang, S. M., Kim, J. H., Lee, I. Y., Moon, B. K., Yoon, B. W., & Lee, I. J. (2015). Phytotoxic mechanisms of bur cucumber seed extracts on lettuce with special reference to analysis of chloroplast proteins, phytohormones, and nutritional elements. *Ecotoxicology and Environmental Safety*, 122, 230–237. <https://doi.org/10.1016/j.ecoenv.2015.07.015>
- Li, X., Liang, T., & Liu, H. (2022). How plants coordinate their development in response to light and temperature signals. *Plant Cell*, 34(3), 955–966. <https://doi.org/10.1093/plcell/koab302>



- Li, Y., Sun, Y., Jiang, J., & Liu, J. (2019). Spectroscopic determination of leaf chlorophyll content and color for genetic selection on *Sassafras tzumu*. *Plant Methods*, 15(1), 1–11. <https://doi.org/10.1186/s13007-019-0458-0>
- Liu, H. yun, Wang, K., Wang, J., Du, L. pu, Pei, X. wu, & Ye, X. guo. (2020). Genetic and agronomic traits stability of marker-free transgenic wheat plants generated from *Agrobacterium*-mediated co-transformation in T2 and T3 generations. *Journal of Integrative Agriculture*, 19(1), 23–32. [https://doi.org/10.1016/S2095-3119\(19\)62601-8](https://doi.org/10.1016/S2095-3119(19)62601-8)
- Liu, J. K. (2022). Natural products in cosmetics. *Natural Products and Bioprospecting*, 12(1). <https://doi.org/10.1007/s13659-022-00363-y>
- Liu, X. Y., Ou, H., Gregersen, H., & Zuo, J. (2023). Deep eutectic solvent-based ultrasound-assisted extraction of polyphenols from *Cosmos sulphureus*. *Journal of Applied Research on Medicinal and Aromatic Plants*, 32(November 2022), 100444. <https://doi.org/10.1016/j.jarmap.2022.100444>
- Liu, Y., Li, F., & Huang, Q. (2013). Allelopathic effects of gallic acid from *Aegiceras corniculatum* on *Cyclotella caspia*. *Journal of Environmental Sciences (China)*, 25(4), 776–784. [https://doi.org/10.1016/S1001-0742\(12\)60112-0](https://doi.org/10.1016/S1001-0742(12)60112-0)
- Lysenko, E. A., Kozuleva, M. A., Klaus, A. A., Pshybytko, N. L., & Kusnetsov, V. V. (2023). Lower air humidity reduced both the plant growth and activities of photosystems I and II under prolonged heat stress. *Plant Physiology and Biochemistry*, 194(July 2022), 246–262. <https://doi.org/10.1016/j.plaphy.2022.11.016>
- Ma, P., Zhang, X., Chen, L., Zhao, Q., Zhang, Q., Hua, X., Wang, Z., Tang, H., Yu, Q., Zhang, M., Ming, R., & Zhang, J. (2020). Comparative analysis of sucrose phosphate synthase (SPS) gene family between *Saccharum officinarum* and *Saccharum spontaneum*. *BMC Plant Biology*, 20(1), 1–15. <https://doi.org/10.1186/s12870-020-02599-7>
- Maestre Rodríguez, L., Palacios Ortega, E., Moreno Medina, B. L., Balaguera-López, H. E., & Hernandez, J. P. (2023). Hydroalcoholic Extracts of *Campomanesia lineatifolia* R. & P. Seeds Inhibit the Germination of *Rumex crispus* and *Amaranthus hybridus*. *Horticulturae*, 9(2). <https://doi.org/10.3390/horticulturae9020177>
- Mahanta, B. P., Kemprai, P., Bora, P. K., Lal, M., & Haldar, S. (2022). Phytotoxic essential oil from black turmeric (*Curcuma caesia* Roxb.) rhizome: Screening, efficacy, chemical basis, uptake and mode of transport. *Industrial Crops and Products*, 180 (January), 114788. <https://doi.org/10.1016/j.indcrop.2022.114788>
- Mahbubur Rahman, A. H. M. (2013). Systematic Studies on Asteraceae in the Northern Region of Bangladesh. *American Journal of Life Sciences*, 1(4), 155. <https://doi.org/10.11648/j.ajls.20130104.13>
- Maloney, V. J., Park, J. Y., Unda, F., & Mansfield, S. D. (2015). Sucrose phosphate synthase and sucrose phosphate phosphatase interact in planta and promote plant growth and biomass accumulation. *Journal of Experimental Botany*, 66(14), 4383–4394. <https://doi.org/10.1093/jxb/erv101>
- Maqbool, R., Khan, B. A., Nadeem, M. A., Parvez, S., Amin, M. M., Hassan, A., Elahi, M. A., Haider, J., Irfan, M., & Shahid, M. G. (2021). Allelopathic Effect of *Cinnamomum verum* on Emergence and Seedling Growth of Radish. *Pakistan Journal of Weed Science Research*, 27(4), 485–494. <https://doi.org/10.28941/pjwsr.v27i4.975>
- Marques, M. E. M., de Carvalho, A. C., Yendo, A. C. A., Magedans, Y. V. S., Zachert, E., & Fett-Neto, A. G. (2023). Phytotoxicity of *Quillaja lancifolia* Leaf Saponins and Their Bioherbicide Potential. *Plants*, 12(3). <https://doi.org/10.3390/plants12030663>



- Mertawan, I. G. A. I., Dwiyanti, R., & Yuswanti, H. (2018). Transformasi Gen SoSPS1 Melalui *Agrobacterium tumefaciens* pada Tanaman Anggur Bali (*Vitis vinifera* L. var. Alphonso Lavalle) Secara In Planta. *Agrotrop*, 8(1), 93–102.
- Miswar, M., Sugiharto, B., Soedarsono, J., & Moeljapawiro, S. (2007a). Transformasi Gen Sucrose Phosphate Synthase (SoSPS1) Menggunakan *Agrobacterium tumefaciens* Untuk Meningkatkan Sintesis Sukrosa pada Tanaman Tebu (*Saccharum officinarum* L.). *Berkala Penelitian Hayati*, 12(2), 137–143. <https://doi.org/10.23869/bphjbr.12.2.20077>
- Miswar, Sugiharto, B., Handoyo, T., & Made, S. A. (2007). Peranan Sucrose Phosphate Synthase (SPS) dan Acid Invertase (AI) Internoda Tebu (*Saccharum officinarum* L.) dalam Akumulasi Sukrosa. *Agrotrop*, 26(4), 187–193.
- Moenandir, J. (2010). *Ilmu Gulma*. UB Press.
- Morra, M. J., Popova, I. E., & Boydston, R. A. (2018). Bioherbicidal activity of *Sinapis alba* seed meal extracts. *Industrial Crops and Products*, 115(February), 174–181. <https://doi.org/10.1016/j.indcrop.2018.02.027>
- Moulton, K., Diaz, S., Strother, A., & Hancock, C. N. (2020). A partial T-DNA insertion near *KNAT1* results in lobed *Arabidopsis thaliana* leaves. 2018–2020.
- Muayyad, A. (2017). *Transformasi Tanaman Singkong (Manihot esculenta Crantz) dengan Gen SoSPS1 Menggunakan A.tumefaciens*. University of Jember.
- Muir, R. M., Ibáñez, A. M., Uratsu, S. L., Ingham, E. S., Leslie, C. A., McGranahan, G. H., Batra, N., Goyal, S., Joseph, J., Jemmis, E. D., & Dandekar, A. M. (2011). Mechanism of gallic acid biosynthesis in bacteria (*Escherichia coli*) and walnut (*Juglans regia*). *Plant Molecular Biology*, 75(6), 555–565. <https://doi.org/10.1007/s11103-011-9739-3>
- Mulyatama, R. A., Neliana, I. R., Sawitri, W. D., Sakakibara, H., Kim, K. M., & Sugiharto, B. (2022). Increasing the Activity of Sugarcane Sucrose Phosphate Synthase Enhanced Growth and Grain Yields in Transgenic Indica Rice. *Agronomy*, 12(12), 1–12. <https://doi.org/10.3390/agronomy12122949>
- Niazi, R., Parveen, G., Noman, M., Mukhtar, N., Hidayat, N., Sami, A., Khaliq, B., Shrestha, J., & Ullah, I. (2023). Comparative expression analysis of sucrose phosphate synthase gene family in a low and high sucrose Pakistani sugarcane cultivars. *PeerJ*, 11, 1–22. <https://doi.org/10.7717/peerj.15832>
- Noman, A., Aqeel, M., Deng, J., Khalid, N., Sanullah, T., & Shuilin, H. (2017). Biotechnological advancements for improving floral attributes in ornamental plants. *Frontiers in Plant Science*, 8(April), 1–15. <https://doi.org/10.3389/fpls.2017.00530>
- Nurhalina, D. L., Erari, D. K., Tola, K. S. K., & Mustamu, Y. A. (2021). Konsentrasi beberapa ekstrak daun ketapang (*Terminalia catappa* L.) sebagai herbisida nabati pada pertumbuhan gulma rumput grinting (*Cynodon dactylon* (L.) Pers.). *Agrotek*, 9(1), 24–32. <https://doi.org/10.46549/agrotek.v9i1.193>
- Ohsugi, R., & Huber, S. C. (1987). Light Modulation and Localization of Sucrose Phosphate Synthase Activity between Mesophyll Cells and Bundle Sheath Cells in C 4 Species . *Plant Physiology*, 84(4), 1096–1101. <https://doi.org/10.1104/pp.84.4.1096>
- Oku, T., Takahashi, H., Yagi, F., Nakamura, I., & Mii, M. (2008). Hybridisation between chocolate cosmos and yellow cosmos confirmed by phylogenetic analysis using plastid subtype identity (PSID) sequences. *Journal of Horticultural Science and Biotechnology*, 83(3), 323–327. <https://doi.org/10.1080/14620316.2008.11512386>
- Ortega-Medrano, R. J., Ceja-Torres, L. F., Vázquez-Sánchez, M., Martínez-Ávila, G. C. G., & Medina-Medrano, J. R. (2023). Characterization of *Cosmos sulphureus* Cav.

- (Asteraceae): Phytochemical Screening, Antioxidant Activity and Chromatography Analysis. *Plants*, 12(4). <https://doi.org/10.3390/plants12040896>
- Osman, N. I., Jaafar Sidik, N., & Awal, A. (2018). Efficient enhancement of gallic acid accumulation in cell suspension cultures of *Barringtonia racemosa* L. by elicitation. *Plant Cell, Tissue and Organ Culture*, 135(2), 203–212. <https://doi.org/10.1007/s11240-018-1456-z>
- Palta, J. P. (1990). Leaf chlorophyll content. *Remote Sensing Reviews*, 5(1), 207–213. <https://doi.org/10.1080/02757259009532129>
- Pannacci, E., Masi, M., Farneselli, M., & Tei, F. (2020). Evaluation of mugwort (*Artemisia vulgaris* L.) aqueous extract as a potential bioherbicide to control amaranthus retroflexus L. in Maize. *Agriculture (Switzerland)*, 10(12), 1–13. <https://doi.org/10.3390/agriculture10120642>
- Pardo-Muras, M., Puig, C. G., Lopez-Nogueira, A., Cavaleiro, C., & Pedrol, N. (2018). On the bioherbicide potential of *Ulex europaeus* and *Cytisus scoparius*: Profiles of volatile organic compounds and their phytotoxic effects. *PLoS ONE*, 13(10), 1–21. <https://doi.org/10.1371/journal.pone.0205997>
- Park, J. Y., Canam, T., Kang, K. Y., Ellis, D. D., & Mansfield, S. D. (2008). Over-expression of an arabidopsis family A sucrose phosphate synthase (SPS) gene alters plant growth and fibre development. *Transgenic Research*, 17(2), 181–192. <https://doi.org/10.1007/s11248-007-9090-2>
- Patel, S. R., Pathak, A. R., Joshi, A. G., Shrivastava, N., & Sharma, S. (2021). Chemical Profiling of *Tylophora indica* (Burm. F.) Merrill. Shoot Cultures Established Through Leaf Explant. *Proceedings of the National Academy of Sciences India Section B - Biological Sciences*, 91(1), 37–43. <https://doi.org/10.1007/s40011-020-01194-y>
- Pathak, S. B., Niranjana, K., Padh, H., & Rajani, M. (2004). TLC densitometric method for the quantification of eugenol and gallic acid in clove. *Chromatographia*, 60(3–4), 241–244. <https://doi.org/10.1365/s10337-004-0373-y>
- Pujiswanto, H., Yudono, P., Sulistyani, E., & Sunarminto, B. H. (2013). Effect of acetic acid as pre-plant herbicide on Maize Germination. *International Journal of Agricultural & Biological Science*, 8(10), 696–701.
- Purwantoro, A., Irsyadi, M. B., Sawitri, W. D., Fatumi, N. C., & Fajrina, S. N. (2023). Efficient floral dip transformation method using *Agrobacterium tumefaciens* on *Cosmos sulphureus* Cav. *Saudi Journal of Biological Sciences*, 30(7), 103702. <https://doi.org/10.1016/j.sjbs.2023.103702>
- Purwantoro, A., Swandari, T., Respatie, D. W., Sawitri, W. D., & Murti, R. H. (2024). Evaluation of phenotypic characters and total phenol content in T1 putative transgenic yellow cosmos (*Cosmos sulphureus* Cav.) with SoSPS 1 transgene. *Indian Journal of Biochemistry & Biophysics*, 61(November), 704–713. <https://doi.org/10.56042/ijbb.v61i11.8591>
- Radhakrishnan, R., Alqarawi, A. A., & Abd Allah, E. F. (2018). Bioherbicides: Current knowledge on weed control mechanism. *Ecotoxicology and Environmental Safety*, 158(April), 131–138. <https://doi.org/10.1016/j.ecoenv.2018.04.018>
- Rankel, K. (2024). *Temperature Tolerance of Sulphur Cosmos*. <https://greg.app/sulphur-cosmos-hardiness-zone/>



- Respatie, D. W., Purwanto, A., Yudono, P., & Trisyono, Y. A. (2025). Identification of Allelochemical Compounds In *Cosmos sulphureus* Cav.: Exploring Its Potensial For Sustainable Weed Management. *Rasayan Journal of Chemistry*, 18(2), 875–881. <https://doi.org/10.31788/RJC.2025.1829201>
- Respatie, D. W., Yudono, P., Purwanto, A., & Andi Trisyono, Y. (2019). The potential of *Cosmos sulphureus* Cav. extracts as a natural herbicides. *AIP Conference Proceedings*, 2202(December). <https://doi.org/10.1063/1.5141690>
- Respatie, D. W., Yudono, P., Purwanto, A., & Trisyono, Y. A. (2019). The potential of *Cosmos sulphureus* flower extract as a bioherbicide for *Cyperus rotundus*. *Biodiversitas*, 20(12), 3568–3574. <https://doi.org/10.13057/biodiv/d201215>
- Respatie, D. W., Yudono, P., Purwanto, A., & Trisyono, Y. A. (2021). Effect Spraying Volume of *Cosmos sulphureus* Cav. Flower Extract on Weed Dominance and Soybean Yield. *IOP Conference Series: Earth and Environmental Science*, 662(1). <https://doi.org/10.1088/1755-1315/662/1/012017>
- Roberts, J., Florentine, S., Fernando, W. G. D., & Tennakoon, K. U. (2022). Achievements, Developments and Future Challenges in the Field of Bioherbicides for Weed Control: A Global Review. *Plants*, 11(17), 1–18. <https://doi.org/10.3390/plants11172242>
- Rodríguez-Bernal, A., Piña-Escutia, J. L., Vázquez-García, L. M., & Arzate-Fernández, A. M. (2013). Genetic diversity of *Cosmos* species revealed by RAPD and ISSR markers. *Genetics and Molecular Research*, 12(4), 6257–6267. <https://doi.org/10.4238/2013.December.4.13>
- Rohmah, M. (2017). Transformasi Mutan Gen SoSPSI-S162A pada Tanaman Tomat (*Lycopersicum esculentum*) Menggunakan Vektor *Agrobacterium tumefaciens*. In *Skripsi*.
- Rook, F., & Bevan, M. W. (2003). Genetic approaches to understanding sugar-response pathways. *Journal of Experimental Botany*, 54(382), 495–501. <https://doi.org/10.1093/jxb/erg054>
- Ruan, C. J., Shao, H. B., & Teixeira Da Silva, J. A. (2012). A critical review on the improvement of photosynthetic carbon assimilation in C 3 plants using genetic engineering. *Critical Reviews in Biotechnology*, 32(1), 1–21. <https://doi.org/10.3109/07388551.2010.533119>
- Saijo, R. (2014). Biosynthetic Pathways of Gallic Acid. *Chagyo Kenkyu Hokoku (Tea Research Journal)*, 2014(118), 118\_27-118\_31. [https://doi.org/10.5979/cha.2014.118\\_27](https://doi.org/10.5979/cha.2014.118_27)
- Schouten, H. J., vande Geest, H., Papadimitriou, S., Bemer, M., Schaart, J. G., Smulders, M. J. M., Perez, G. S., & Schijlen, E. (2017). Re-sequencing transgenic plants revealed rearrangements at T-DNA inserts, and integration of a short T-DNA fragment, but no increase of small mutations elsewhere. *Plant Cell Reports*, 36(3), 493–504. <https://doi.org/10.1007/s00299-017-2098-z>
- Sharma, S., Sreenivasulu, N., Harshavardhan, V. T., Seiler, C., Sharma, S., Khalil, Z. N., Akhunov, E., Sehgal, S. K., & Röder, M. S. (2010). Delineating the structural, functional and evolutionary relationships of sucrose phosphate synthase gene family II in wheat and related grasses. *BMC Plant Biology*, 10. <https://doi.org/10.1186/1471-2229-10-134>
- Signora, L., Galtier, N., Sköt, L., Lucas, H., & Foyer, C. H. (1998). Over-expression of sucrose phosphate synthase in *Arabidopsis thaliana* results in increased foliar sucrose/starch ratios and favours decreased foliar carbohydrate accumulation in plants after prolonged growth with CO<sub>2</sub> enrichment. *Journal of Experimental Botany*, 49(321), 669–680. <https://doi.org/10.1093/jxb/49.321.669>



- Skara, E., Olszewska, M. A., Makowczyńska, J., & Kicel, A. (2022). Effect of Sucrose Concentration on *Rhaponticum carthamoides* (Willd.) Iljin Transformed Root Biomass, Caffeoylquinic Acid Derivative, and Flavonoid Production. *International Journal of Molecular Sciences*, 23(22). <https://doi.org/10.3390/ijms232213848>
- Solfanelli, C., Poggi, A., Loreti, E., Alpi, A., & Perata, P. (2006). Sucrose-Specific Induction of the Anthocyanin Biosynthetic Pathway in Arabidopsis. *Plant Physiology*, 140(February), 637–646. <https://doi.org/10.1104/pp.105.072579.the>
- Soltys, D., Krasuska, U., Bogatek, R., & Gniazdowski, A. (2013). Allelochemicals as Bioherbicides — Present and Perspectives. In *Herbicides - Current Research and Case Studies in Use*. InTech. <https://doi.org/10.5772/56185>
- Song, X., Guo, H., Liu, Y., Wan, F., Zhang, J., & Chang, X. (2020). Effects of salicylic acid and sucrose on pigment content in *Pistacia chinensis* leaves. *Scientia Horticulturae*, 259(July 2019), 108783. <https://doi.org/10.1016/j.scienta.2019.108783>
- Srilakshmi, P., & Naidu, K. C. (2014). A Study on Foliar Epidermal Features in Artemisia , Chrysanthemum and Cosmos of the Family Asteraceae. *International Journal of Advances in Pharmacy, Biology and Chemistry*, 3(1), 164–166.
- Sugiharto, B., Sakakibara, H., Sumadi, & Sugiyama, T. (1997). Differential expression of two genes for sucrose-phosphate synthase in sugarcane: Molecular cloning of the cDNAs and comparative analysis of gene expression. *Plant and Cell Physiology*, 38(8), 961–965. <https://doi.org/10.1093/oxfordjournals.pcp.a029258>
- Suherman, Wijayanto, S. I., Anur, R. M., Neliana, I. R., Dewanti, P., & Sugiharto, B. (2022). Field Evaluation on Growth and Productivity of the Transgenic Sugarcane Lines Overexpressing Sucrose-Phosphate Synthase. *Sugar Tech*, 24(6), 1689–1698. <https://doi.org/10.1007/s12355-022-01121-7>
- Sun, Q., Zhao, Y., Sun, H., Hammond, R. W., Davis, R. E., & Xin, L. (2011). High-efficiency and stable genetic transformation of pear (*Pyrus communis* L.) leaf segments and regeneration of transgenic plants. *Acta Physiologiae Plantarum*, 33(2), 383–390. <https://doi.org/10.1007/s11738-010-0557-z>
- Suputri, N. P. A. E., Dwiyani, R., Darmawati, I. A. P., & Sugiharto, B. (2019). *Agrobacterium tumefaciens*-mediated In Planta Transformation Method For The SoSPS1 Gene In Citrus Plants (*Citrus nobilis* L.). *International Journal of Biosciences and Biotechnology*, 7(1), 31–44.
- Susanto, H. (2023). Potensi Alelopati Ekstrak Daun *Clidemia hirta* sebagai Herbisida Nabati pada Perkecambah Gulma *Cyperus kyllingia*, *Eleusine indica*, dan *Praxelis clematidea*. *Jurnal Agroteknologi Tropika Lembab*, 6(1), 15–20.
- Tang, W., Newton, R. J., & Weidner, D. A. (2007). Genetic transformation and gene silencing mediated by multiple copies of a transgene in eastern white pine. *Journal of Experimental Botany*, 58(3), 545–554. <https://doi.org/10.1093/jxb/erl228>
- Télef, N., Stammitti-Bert, L., Mortain-Bertrand, A., Maucourt, M., Carde, J. P., Rolin, D., & Gallusci, P. (2006). Sucrose deficiency delays lycopene accumulation in tomato fruit pericarp discs. *Plant Molecular Biology*, 62(3), 453–469. <https://doi.org/10.1007/s11103-006-9033-y>
- Teng, S., Keurentjes, J., Bentsink, L., Koornneef, M., & Smeekens, S. (2005). Sucrose-specific induction of anthocyanin biosynthesis in Arabidopsis requires the MYB75/PAP1 gene. *Plant Physiology*, 139(4), 1840–1852. <https://doi.org/10.1104/pp.105.066688>



- Teng, S., Rognoni, S., Bentsink, L., & Smeekens, S. (2008). The Arabidopsis GSQ5 DOG1 Cvi allele is induced by the ABA-mediated sugar signalling pathway, and enhances sugar sensitivity by stimulating ABI4 expression. *The Plant Journal*, 55, 372–381. <https://doi.org/10.1111/j.1365-313X.2008.03515.x>
- Tobias, D. J., Hirose, T., Ishimaru, K., Ishige, T., Ohkawa, Y., Kano-Murakami, Y., Matsuoka, M., & Ohsugi, R. (1999). Elevated Sucrose-phosphate Synthase Activity in Source Leaves of Potato Plants Transformed with the Maize SPS Gene. *Plant Production Science*, 2(2), 92–99.
- Untari, W. S. (2012). Aktivitas Sucrose Phosphate Synthase dan Kandungan Sukrosa pada Tanaman Tebu Transgenik Hasil Perbanyakannya Secara Vegetatif. *Agribios*, 1(1), 1–14.
- Utomo, W., & Guntoro, D. (2023). Potential Leaf Extract of Water hyacinth (*Eichornia crassipes* (Mart.) Solms-Laub.) as Bioherbicide to Control Weeds in Paddy Field. *Buletin Agrohorti*, 11(1), 136–142.
- Verma, R. C., Dass, P., Shaikh, N., & Khah, M. A. (2017). *Cytogenetic investigations in colchicine induced tetraploid of Cosmos sulphureus ( Asteraceae )*. 12, 41–45.
- Wang, J., Nayak, S., Koch, K., & Ming, R. (2013). Carbon partitioning in sugarcane (*Saccharum* species). *Frontiers in Plant Science*, 4(JUN). <https://doi.org/10.3389/fpls.2013.00201>
- Werner, R. A., Rossmann, A., Schwarz, C., Bacher, A., Schmidt, H. L., & Eisenreich, W. (2004). Biosynthesis of gallic acid in *Rhus typhina*: Discrimination between alternative pathways from natural oxygen isotope abundance. *Phytochemistry*, 65(20), 2809–2813. <https://doi.org/10.1016/j.phytochem.2004.08.020>
- Wu, S., Chen, W., Lu, S., Zhang, H., & Yin, L. (2022). *Metabolic Engineering of Shikimic Acid Biosynthesis Pathway for the Production of Shikimic Acid and Its Branched Products in Microorganisms : Advances and Prospects*.
- Xie, T., & Kawabata, S. (2025). An AP2-Family Gene Correlates with the Double-Flower Trait in *Petunia × hybrida*. *Plants*, 14(9), 1–21. <https://doi.org/10.3390/plants14091314>
- Yoon, J., Cho, L. H., Tun, W., Jeon, J. S., & An, G. (2021). Sucrose signaling in higher plants. *Plant Science*, 302(April 2020), 110703. <https://doi.org/10.1016/j.plantsci.2020.110703>
- Zhou, X., Zeng, L., Chen, Y., Wang, X., Liao, Y., Xiao, Y., Fu, X., & Yang, Z. (2020). Metabolism of gallic acid and its distributions in tea (*Camellia sinensis*) plants at the tissue and subcellular levels. *International Journal of Molecular Sciences*, 21(16), 1–13. <https://doi.org/10.3390/ijms21165684>