References

Aksakal, O. (2013). Assessment of paraquat genotoxicity on barley (Hordeum vulgare L.) seedlings using molecular and biochemical parameters. *Acta Physiologiae Plantarum*, *35*(7), 2281–2287. https://doi.org/10.1007/s11738-013-1265-2.

Amare, E. M. (2023). New Insight in Herbicides Science: Non-Target Site Resistance and Its Mechanisms. *IntechOpen EBooks*. https://doi.org/10.5772/intechopen.105173.

Arasan, A. P., Radhamani, S., Sudha, M., Sundarrajan, R. V., & Prasad, S. A. (2025). Development of herbicide resistant weeds and their impact on future weed management. *Discover Applied Sciences*, *7*(12). https://doi.org/10.1007/s42452-025-07680-0.

Ardiwinata, A. N., Harsanti, E. S., Kurnia, A., Sulaeman, E., Fauriah, R., & Paputri, D. M. W. (2019). Contamination of Paraquat Residues in Soil and Water from Several Provinces in Indonesia [Review of *Contamination of Paraquat Residues in Soil and Water from Several Provinces in Indonesia*]. *International Conference on Biology and Applied Science (Icobas)*. https://doi.org/10.1063/1.5115662.

Ardiwinata, A. N., Harsanti, E. S., Kurnia, A., & Sulaeman, E. (2021). The distribution of paraquat and carbosulfan residues in Indonesia. *IOP Conference Series: Earth and Environmental Science*, *648*(1), 012033. https://doi.org/10.1088/1755-1315/648/1/012033

Azlan, M. I., Kamarudin, K. N., & Chuah, T.-S. (2025). Preliminary investigation of multiple resistance in goosegrass (Eleusine indica) to premix of diuron and MSMA, glyphosate, clethodim, quizalofop in Malaysia. *Advances in Weed Science*, *43*. https://doi.org/10.51694/advweedsci/2025;43:00016.

Badhai, S., & Kumar Gupta, A. (2021). ECOLOGICAL/CULTURAL MEASURES OF WEED MANAGEMENT FOR SUSTAINABLE AGRICULTURE. *JOURNAL of WASTES and BIOMASS MANAGEMENT*, *3*(2), 41–43. https://doi.org/10.26480/jwbm.02.2021.41.43.

Bagale, S. (2022). Modes of Herbicide Action. *IntechOpen EBooks*. https://doi.org/10.5772/intechopen.105356.

Barbieri G. F., Young, B. G., Dayan, F. E., Streibig, J. C., Hudson Kagueyama Takano, Merotto, A., & Antônio, L. (2022). Herbicide mixtures: interactions and modeling. *Advances in Weed Science*, *40*(spe1). https://doi.org/10.51694/advweedsci/2022;40:seventy-five011.

Blejan, R., & Ionescu, A. (2024). *INVASIVE WEEDS IN AGRICULTURAL ECOSYSTEMS ON CLIMATE CHANGE: IMPACT, MANAGEMENT AND RESTORATION*. *2*(1), 25. https://www.researchgate.net/publication/378303641_INVASIVE_WEEDS_IN_AGRICULTURAL_ECOSYSTEMS_ON_CLIMATE_CHANGE_IMPACT_MANAGEMENT_AND_RESTORATION.

Bodah, T., E. (2017). Root Rot Diseases in Plants: A Review of Common Causal Agents and Management Strategies. *Agricultural Research & Technology: Open Access Journal*, *5*(3). https://doi.org/10.19080/artoaj.2017.05.555661.

Carlsen, S. C. K., Spliid, N. H., & Svensmark, B. (2006). Drift of 10 herbicides after tractor spray application. 1. Secondary drift (evaporation). *Chemosphere*, *64*(5), 787–794. https://doi.org/10.1016/j.chemosphere.2005.10.061.

Casimero, M., Abit, M. J., Ramirez, A. H., Dimaano, N. G., & Mendoza, J. (2022). Herbicide use history and weed management in Southeast Asia. *Advances in Weed Science*, *40*(spe1). https://doi.org/10.51694/advweedsci/2022;40:seventy-five013.

Chaachouay, N. (2025). Synergy, Additive Effects, and Antagonism of Drugs with Plant Bioactive Compounds. *Drugs and Drug Candidates*, *4*(1), 4. https://doi.org/10.3390/ddc4010004.

Chen Delai, Ghulam Muhae-Ud-Din, Abid, R., Tian, T., Liu, R., Xiong, Y., Ma, S., & Ghorbani, A. (2024). A comprehensive review of integrated management strategies for damping-off disease in chili. *Frontiers in Microbiology*, *15*. https://doi.org/10.3389/fmicb.2024.1479957.

Chen, L., Gu, G., Wang, C., Chen, Z., Yan, W., Jin, M., Xie, G., Zhou, J., Deng, X. W., & Tang, X. (2021). Trp548Met mutation of acetolactate synthase in rice confers resistance to a broad spectrum of ALS-inhibiting herbicides. *The Crop Journal*, *9*(4), 750–758. https://doi.org/10.1016/j.cj.2020.11.003.

Chen, T., Ling, X., Yu, Y., & Zhang, B. (2023). A nonsynonymous mutation in an acetolactate synthase gene (Gh_D10G1253) is required for tolerance to imidazolinone herbicides in cotton. *Journal of Cotton Research*, *6*(1). https://doi.org/10.1186/s42397-023-00141-2.

Cochemé, H. M., & Murphy, M. P. (2007). Complex I Is the Major Site of Mitochondrial Superoxide Production by Paraquat. *Journal of Biological Chemistry*, *283*(4), 1786–1798. https://doi.org/10.1074/jbc.m708597200.

Cokol, M., Chua, H. N., Tasan, M., Mutlu, B., Weinstein, Z. B., Suzuki, Y., Nergiz, M. E., Costanzo, M., Baryshnikova, A., Giaever, G., Nislow, C., Myers, C. L., Andrews, B. J., Boone, C., & Roth, F. P. (2011). Systematic exploration of synergistic drug pairs. *Molecular Systems Biology*, *7*(1), 544. https://doi.org/10.1038/msb.2011.71.

Costa, A. G. F., Sofiatti, V., & De Moraes Falleiro Suassuna, T. (2024). Pre-and post-emergence herbicide selectivity in peanuts at an early stage. *Bioscience Journal*, *40*, e40049. https://doi.org/10.14393/bj-v40n0a2024-71339.

Dai, S.-Z., Wang, Y., Yook, M.-J., Wu, H.-Z., Chen, M., & Zhang, C.-J. (2025). Screening of Pre- and Post-Emergence Herbicides for Weed Control in Camelina sativa (L.) Crantz. *Agronomy*, *15*(3), 640. https://doi.org/10.3390/agronomy15030640.

Defrianto, Minarni Shiddiq, Malik, U., Vepy Asyana, & Soerbakti, Y. (2022). Fluorescence spectrum analysis on leaf and fruit using the ImageJ software application. *˜SœCience, Technology, and Communication Journal.*, *3*(1), 1–6. https://doi.org/10.59190/stc.v3i1.218.

Diggle, A. J., Neve, P. B., & Smith, F. P. (2003). Herbicides used in combination can reduce the probability of herbicide resistance in finite weed populations. *Weed Research*, *43*(5), 371–382. https://doi.org/10.1046/j.1365-3180.2003.00355.x.

Duke, S. O., & Dayan, F. E. (2011). Bioactivity of Herbicides. *Comprehensive Biotechnology*, 23–35. https://doi.org/10.1016/b978-0-08-088504-9.00273-7.

Feng, W., Lindner, H., Robbins, N. E., & Dinneny, J. R. (2016). Growing Out of Stress: The Role of Cell- and Organ-Scale Growth Control in Plant Water-Stress Responses. *The Plant Cell*, *28*(8), 1769–1782. https://doi.org/10.1105/tpc.16.00182.

Ferhatoglu, Y., & Barrett, M. (2006). Studies of clomazone mode of action. *Pesticide Biochemistry and Physiology*, *85*(1), 7–14. https://doi.org/10.1016/j.pestbp.2005.10.002.

Fernandes, M. (2012). *The Influence of Stress Conditions on Intracellular Dimethylsulphoniopropionate (DMSP) and Dimethylsulphide (DMS) Release in Emiliania huxleyi* . https://doi.org/10.13140/2.1.4114.5282.

Fraga, D. S., Agostinetto, D., Langaro, A. C., Oliveira, C., Ulguim, A. R., & Silva, J. D. G. (2019). Morphological and Metabolic Changes in Soybean Plants Cultivated in Irrigated Rice Rotation and as Affected by Imazapyr and Imazapic Herbicides Carryover. *Planta Daninha*, *37*. https://doi.org/10.1590/s0100-83582019370100023.

Fudge, J. B., & Fitzpatrick, T. B. (2025). Paraquat resistance mutations have differential effects on plant fitness in two rice cultivars. *Biochemical Journal*, *482*(08), 401–412. https://doi.org/10.1042/bcj20240683.

Gaillard, B., Turnheim, B., Belmin, R., & Loconto, A. M. (2025). Socio-technical lock-in as alignment process: tracing the joint development of pesticide dependency and vegetable production in Senegal (1900–2024). *Environmental Innovation and Societal Transitions*, *56*, 100997. https://doi.org/10.1016/j.eist.2025.100997.

Gao, W.-T., & Su, W.-H. (2024). Weed Management Methods for Herbaceous Field Crops: A Review. *Agronomy (Basel)*, *14*(3), 486–486. https://doi.org/10.3390/agronomy14030486.

Gerowitt, B., Bàrberi, P., Darmency, H., Petit, S., Storkey, J., & Westerman, P. (2017). Weeds and Biodiversity. *Weed Research*, 115–147. https://doi.org/10.1002/9781119380702.ch5.

Ghersa, F., Sebastián Pessah, Duarte, A. C., & Ferraro, D. O. (2020). Theory and Practice for Environmental Risk Assessment: Understanding the Trade-Off Between the Benefits and Risks Behind Herbicide Use as Tool for Designing Sustainable Weed Management Systems. *Springer EBooks*, 161–189. https://doi.org/10.1007/978-3-030-44402-0_8.

Gianessi, L. P. (2013). The increasing importance of herbicides in worldwide crop production. *Pest Management Science*, *69*(10), 1099–1105. https://doi.org/10.1002/ps.3598.

Goldwasser, Y., Rabinovitz, O., Gerstl, Z., Nasser, A., Paporisch, A., Kuzikaro, H., Sibony, M., & Rubin, B. (2021). Imazapic Herbigation for Egyptian Broomrape (Phelipanche aegyptiaca) Control in Processing Tomatoes—Laboratory and Greenhouse Studies. *Plants*, *10*(6), 1182. https://doi.org/10.3390/plants10061182.

Gonzali, S., & Perata, P. (2021). Fruit Colour and Novel Mechanisms of Genetic Regulation of Pigment Production in Tomato Fruits. *Horticulturae*, *7*(8), 259. https://doi.org/10.3390/horticulturae7080259.

Handayani, L., Kurniasari, Y., Asysyafaat, A. A., Hambali, B., Deden, D., & Budirokhman, D. (2023). The Effect of Dose Herbicide Active Ingredient Metsulfuron methyl on Weed Control, Growth and Yield of Rice Plants (Oryza sativa L.) Inpari 32 varieties. *Interdiciplinary Journal and Hummanity (INJURITY)*, *2*(10), 836–845. https://doi.org/10.58631/injurity.v2i10.135.

Hasanuzzaman, M., Nahar, K., Alam, M. M., Bhuyan, M. H. M. B., Oku, H., & Fujita, M. (2018). Exogenous nitric oxide pretreatment protects Brassica napus L. seedlings from paraquat toxicity through the modulation of antioxidant defense and glyoxalase systems. *Plant Physiology and Biochemistry*, *126*, 173–186. https://doi.org/10.1016/j.plaphy.2018.02.021.

Haukkapää, A-L., Junilla, S., & Eriksson, C. (2008). Efficacy of imazamox in imidazolinone-resistant spring oilseed rape in Finland. *Agricultural and Food Science*, *14*(4), 377. https://doi.org/10.2137/145960605775897650.

Heintze, A., Görlach, J., Leuschner, C., Hoppe, P., Hagelstein, P., Schulze-Siebert, D., & Schultz, G. (1990). Plastidic Isoprenoid Synthesis during Chloroplast Development. *PLANT PHYSIOLOGY*, *93*(3), 1121–1127. https://doi.org/10.1104/pp.93.3.1121.

Huang, Y., Zhan, H., Bhatt, P., & Chen, S. (2019). Paraquat Degradation From Contaminated Environments: Current Achievements and Perspectives. *Frontiers in Microbiology*, *10*. https://doi.org/10.3389/fmicb.2019.01754.

Jahns, P., & Holzwarth, A. R. (2012). The role of the xanthophyll cycle and of lutein in photoprotection of photosystem II. *Biochimica et Biophysica Acta (BBA) - Bioenergetics*, *1817*(1), 182–193. https://doi.org/10.1016/j.bbabio.2011.04.012.

Jugulam, M., & Shyam, C. (2019). Non-Target-Site Resistance to Herbicides: Recent Developments. *Plants*, *8*(10), 417. https://doi.org/10.3390/plants8100417.

Kássio Ferreira Mendes, Kamila Cabral Mielke, L. D'Antonino, & Alberto. (2022). Retention, Absorption, Translocation, and Metabolism of Herbicides in Plants. *Springer EBooks*, 157–186. https://doi.org/10.1007/978-3-031-01938-8_5.

Kim, W., Park, Y., Son, Y., Yoo, N., Chung, E.-H., & Park, W. (2026). Rapid and selective disruption of photosystem I in toxic cyanobacteria protects aquatic ecosystem health. *Journal of Hazardous Materials*, *501*, 140736. https://doi.org/10.1016/j.jhazmat.2025.140736.

Kodali, S., Flores-Lopez, C., Lobdell, I., Kim, B., Russell, J. C., Michna, L., & Turner, B. L. (2024). A Case of One Step Forward and Two Steps Back? An Examination of Herbicide-Resistant Weed Management Using a Simple Agroecosystem Dynamics Model. *Systems*, *12*(12), 587–587. https://doi.org/10.3390/systems12120587.

Liu, D., Yu, S., Ji, B., Peng, Q., Gao, J., Zhang, J., Guo, Y., & Hu, M. (2025). Molecular Mechanisms of Herbicide Resistance in Rapeseed: Current Status and Future Prospects for Resistant Germplasm Development. *International Journal of Molecular Sciences*, *26*(17), 8292–8292. https://doi.org/10.3390/ijms26178292.

Maldani, M., Aliyat, F. Z., Cappello, S., Morabito, M., Giarratana, F., Nassiri, L., & Ibijbijen, J. (2021). Effect of glyphosate and paraquat on seed germination, amino acids, photosynthetic pigments and plant morphology of Vicia faba, Phaseolus vulgaris and Sorghum bicolor. *Environmental Sustainability*, *4*(4), 723–733. https://doi.org/10.1007/s42398-021-00170-0.

Merritt, L. H., Ferguson, J. C., Brown-Johnson, A. E., Reynolds, D. B., Tseng, T.-M., & Lowe, J. W. (2020). Reduced Herbicide Antagonism of Grass Weed Control through Spray Application Technique. *Agronomy*, *10*(8), 1131. https://doi.org/10.3390/agronomy10081131.

Moise, A. R., Al-Babili, S., & Wurtzel, E. T. (2013). Mechanistic Aspects of Carotenoid Biosynthesis. *Chemical Reviews*, *114*(1), 164–193. https://doi.org/10.1021/cr400106y.

Nazish, T., Huang, Y.-J., Zhang, J., Xia, J.-Q., Alfatih, A., Luo, C., Cai, X.-T., Xi, J., Xu, P., & Xiang, C.-B. (2022). Understanding paraquat resistance mechanisms in Arabidopsis thaliana to facilitate the development of paraquat-resistant crops. *Plant Communications*, *3*(3), 100321. https://doi.org/10.1016/j.xplc.2022.100321.

Ngawit, I. K., Sudika, I. W., & Suana, I. W. (2024). Weed Biology and Ecology Studies: Diversity, Dominance and Prediction of Yield Loss of Corn (Zea mays L.) Due to Broadleaf Weeds Competition in Dryland. *Jurnal Penelitian Pendidikan IPA*, *10*(5), 2879–2890. https://doi.org/10.29303/jppipa.v10i5.7229.

Oad, F. C., Siddiqui, M. H., & Buriro, U. A. (2006). Growth and Yield Losses in Wheat Due to Different Weed Densities. *Asian Journal of Plant Sciences*, *6*(1), 173–176. https://doi.org/10.3923/ajps.2007.173.176.

Pala, F., & Mennan, H. (2019). Clomazone Aktif Maddesinin Yarı Kurak Koşullarda Geleneksel Pamuk (Gossypium hirsutum L.) Tarlalarında Yabancı Ot Kontrolünde Çıkış Öncesi Herbisitlerle Tank Karışımı. *European Journal of Science and Technology*, 1256–1262. https://doi.org/10.31590/ejosat.658839.

Palma-Bautista, C., Belluccini, P., Vázquez-García, J. G., Alcántara-de la Cruz, R., Barro, F., Portugal, J., & De Prado, R. (2023). Target-site and non-target-site resistance mechanisms confer multiple resistance to glyphosate and 2,4-D in Carduus acanthoides. *Pesticide Biochemistry and Physiology*, *191*, 105371. https://doi.org/10.1016/j.pestbp.2023.105371.

Pierella Karlusich, J. J., & Carrillo, N. (2017). Evolution of the acceptor side of photosystem I: ferredoxin, flavodoxin, and ferredoxin-NADP+ oxidoreductase. *Photosynthesis Research*, *134*(3), 235–250. https://doi.org/10.1007/s11120-017-0338-2.POMAIS. (2025, September 18). *Clomazone Mode of Action*. Allpesticides.com. https://www.allpesticides.com/clomazone-mode-of-action.html.

Prado, R., Rioboo, C., Herrero, C., & Cid, A. (2009). The herbicide paraquat induces alterations in the elemental and biochemical composition of non-target microalgal species. *Chemosphere*, *76*(10), 1440–1444. https://doi.org/10.1016/j.chemosphere.2009.06.003.

Rannando, R., Tujannah, M., Azmi, Y., & Sahfitra, A. A. (2025). Economic Analysis of the Losses of Oil Palm (Elaeis guineensis Jacq.) Loose Fruits on Flat Terrain at Agritasari Prima Ltd. *Open Science and Technology*, *5*(1). https://doi.org/10.33292/ost.v5i1.144.

Rey-Caballero, J., Menéndez, J., Osuna, M. D., Salas, M., & Torra, J. (2017). Target-site and non-target-site resistance mechanisms to ALS inhibiting herbicides in Papaver rhoeas. *Pesticide Biochemistry and Physiology*, *138*, 57–65. https://doi.org/10.1016/j.pestbp.2017.03.001.

Saunders, L., & Pezeshki, R. (2015). Glyphosate in Runoff Waters and in the Root-Zone: A Review. *Toxics*, *3*(4), 462–480. https://doi.org/10.3390/toxics3040462.

Short, T. G., & Hannam, J. A. (2019). Pharmacodynamic Drug Interactions. *Pharmacology and Physiology for Anesthesia*, 113–129. https://doi.org/10.1016/b978-0-323-48110-6.00006-5.

Sreekanth, D., Pawar, D. V., Basavaraj, P., Kumar, R., Mahesh, S., Chethan, C., Jamaludheen, A., Singh, P. K., & Mishra, J. S. (2025). Interactive effects of drought and weeds on greengram: Impacts on physiological, biochemical and yield traits. *Scientific Reports*, *15*(1). https://doi.org/10.1038/s41598-025-28123-1.

Su, W. C., Sun, L. L., Wu, R. H., Ma, Y. H., Wang, H. L., Xu, H. L., Yan, Z. L., & Lu, C. T. (2017). Effect of imazapic residues on photosynthetic traits and chlorophyll fluorescence of maize seedlings. *Photosynthetica*, *55*(2), 294–300. https://doi.org/10.1007/s11099-016-0641-3.

Sulaiman, M. S., Bani, G. A., Amtiran, Muni Jitro, & Bani, M. D. (2024). *In silico* evaluation of herbicide synergism to identify effective mixtures for weed management in indonesia. *Sci Tech Asia*, *29*, 302319. https://ph02.tcithaijo.org/index.php/SciTechAsia/article/view/256483.

Szafrańska, K., Reiter, R. J., & Posmyk, M. M. (2016). Melatonin Application to Pisum sativum L. Seeds Positively Influences the Function of the Photosynthetic Apparatus in Growing Seedlings during Paraquat-Induced Oxidative Stress. *Frontiers in Plant Science*, *7*. https://doi.org/10.3389/fpls.2016.01663.

Umiyati, U., Kurniadie, D., & Pratama, A. F. (2015). Herbisida campuran Imazapic 262,5 G.L-1 dan Imazapir 87,5 G.L-1 sebagai pengendali gulma umum pada budidaya tanaman tebu (Saccharum officinarum L.). *Kultivasi*, *14*(1). https://doi.org/10.24198/kultivasi.v14i1.12096

V. Sukhoverkov, K., J. Breese, K., W. Debowski, A., W. Murcha, M., A. Stubbs, K., & S. Mylne, J. (2022). Inhibition of chloroplast translation as a new target for herbicides. *RSC Chemical Biology*, *3*(1), 37–43. https://doi.org/10.1039/D1CB00192B.

Warren, J. B. (2019). Translating the dose response into risk and benefit. *British Journal of Clinical Pharmacology*, *85*(10), 2187–2193. https://doi.org/10.1111/bcp.13949.

Xu, H., Leng, Q., Su, W., Sun, L., Li, Q., Wei, H., Cheng, J., Lu, C., & Wu, R. (2024). The synergistic effect and mechanism of different adjuvants on pinoxaden efficacy against Lolium multiflorum Lam. *Crop Protection*, *184*, 106844. https://doi.org/10.1016/j.cropro.2024.106844.

Yasuor, H., Zou, W., Tolstikov, V. V., Tjeerdema, R. S., & Fischer, A. J. (2010). Differential Oxidative Metabolism and 5-Ketoclomazone Accumulation Are Involved in *Echinochloa phyllopogon* Resistance to Clomazone . *PLANT PHYSIOLOGY*, *153*(1), 319–326. https://doi.org/10.1104/pp.110.153296.

Zainah, K., Yoshino, M., Simon, A., Arthur, W., & Solome, N. (2025). Optimizing Manual and Chemical Weeding Combinations and Herbicide Dosage for Strategic Upland Rice Weed Management. *Journal of Agricultural Studies*, *14*(1), 1. https://doi.org/10.5296/jas.v14i1.23101.

Zimdahl, R. L. (2018). Properties and Uses of Herbicides. *Elsevier EBooks*, 463–499. https://doi.org/10.1016/b978-0-12-811143-7.00016-0.