

## DAFTAR PUSTAKA

- Abdellaoui, R., F. Yahyaoui, & M. Neffati. 2014. Population structure and genetic diversity of a medicinal plant species *Retama raetam* in Southern Tunisia. *Pakistan Journal of Biological Sciences*. 17(2): 182-189.
- Al Shaye, N., H. Migdadi, A. Charbaji, S. Alsayegh, S. Daoud, W. Al-Anazi, & S. Alghamdi. 2018. Genetic variation among Saudi tomato (*Solanum lycopersicum* L.) landraces studied using SDS-PAGE and SRAP markers. *Saudi journal of biological sciences*. 25(6): 1007-1015.
- Allendorf, F. W., O. Hössjer, & N. Ryman. 2024. What does effective population size tell us about loss of allelic variation?. *Evolutionary Applications*. 17(6): 1-8.
- Almarri, N. B., S.S. Alghamdi, M.H. ElShal, & M. Afzal. 2023. Estimating genetic diversity among durum wheat (*Triticum durum* desf.) landraces using morphological and SRAP markers. *Journal of the Saudi Society of Agricultural Sciences*. 22(5): 273-282.
- Amiryousefi, A., J. Hyvönen, and P. Poczai. 2018. iMEC: Online Marker Efficiency Calculator. *Applications in Plant Sciences* 6(6): 1-4.
- Anantasaran, J., M.B. Schröder, K. Eimert, & K. Kanchanapoom. 2007. Cytogenetic characterization of Zinnia species and cultivars. *Floriculture and Ornamental Biotechnology*. 1(2): 125-130.
- Anderson, N., 1987. Reclassifications of the Genus *Chrysanthemum* L. HortScience, USA.
- Anderson, N.O., 2006. Flower Breeding and Genetics: Issues, Challenges and Opportunities For the 21st Century. Springer Science & Business Media, Netherlands.
- Andriani, T. 2016. Aplikasi metode UPGMA untuk identifikasi kekerabatan jenis virus dan penyebaran epidemi ebola melalui pembentukan pohon filogenetik. Institut Teknologi Sepuluh November. Tesis.
- Aneja, B., N.R. Yadav, V. Chawla, & R.C. Yadav. 2012. Sequence-related amplified polymorphism (SRAP) molecular marker system and its applications in crop improvement. *Molecular breeding*. 30(4): 1635-1648.
- Arokiyaraj, S.M.V. Arasu, S. Vincent, N.U. Prakash, S.H. Choi, Y.K. Oh, K.C. Choi, & K.H. Kim. 2014. Rapid green synthesis of silver nanoparticles from *Chrysanthemum indicum* L. and its anti-bacterial and cytotoxic effects: an in vitro study. *Intern. J. Nanomed*. 9: 379–388.
- Azmi, W.A., Husnawati, P.J. Puspita, U.M. Safira, D. Subositi, & A. Maruzy. 2022. Keragaman genetik *Graptophyllum pictum* (L.) Griff dari etnis Indonesia Timur berbasis *Sequence-Related Amplified Polymorphism*. *J. Agron. Indonesia*. 50(2): 209-217.
- Bag, M.R., Pragya, & J.K. Ranjan. 2017. Zinnia In: Commercial Ornamental Crops: Cut Flowers. Kruger Brentt Publisher, UK.

- Baghele, R. D. 2021. Breeding aspect for improvement in *Chrysanthemum*: A review. *International Journal of Current Microbiology and Applied Sciences*. 10(05): 101-111.
- Bano, M., S. Anver, S.A. & Tiyagi SA. 1986. Evaluation of nematicidal properties of some members of the family Compositae. *Int Nematol Netw*, 3(10):1
- Beaumont, M.A., K.M. Ibrahim, P. Boursot, & M.W. Bruford. 1998. *Measuring Genetic Distance: Molecular Tools for Screening Biodiversity*. Chapman and Hall, London.
- Beeks, R.M. 1954. *The Herbaceous Zinnias: History, Cytology, Development of Cultivars*. Claremont Colleges. Thesis.
- Bi, Y.F., Jia L., Shi S.P., Sun X.L., Chen Y.Y., & Zhang Y.B., 2010. New sesquiterpenes from the flowers of *Chrysanthemum indicum* L. *Helv. Chim. Acta*. 93: 1953–1959.
- Budak, H.R.C, I. Shearman, R.E. Parmaksiz, T.P. Gaussoin, & D. Riosdan. 2004. Molecular characterization of Buffalograss germplasm using sequence-related amplified polymorphism markers. *Theor Appl Genet*. 108: 328–334.
- Calderón, M.V., J.O. Mijangos-Cortés, J.Z.L. Manuel, F.S. Teyer, Q.M. Adriana, M.O.G. Matilde, A.C.M. Fernand, E.G. Francisco, G.F. Ortiz, J.M. Santamaría. 2016. Genetic characterization by amplified fragment length polymorphism (AFLP) markers and morphochemical traits of *Carica papaya* L. genotypes. *Afr. J. Biotechnol*. 15: 948-959.
- Chen, S.M., Li C.H., Zhu X.R., Deng Y.M., Sun W., Wang L.S., Chen F.D., & Zhang Z. 2012. The identification of flavonoids and the expression of genes of anthocyanin biosynthesis in the chrysanthemum flowers. *Biol. Plant*. 56: 458–464.
- Chen, C., Deng C., Zhao L., & Han Z. 2015. Textual research on medicine origin of wild *Chrysanthemum*, *J. Hunan Univ. Chin. Med*. 35: 69–72.
- Cheng, W., Li J., You T., & Hu C. 2005. Anti-inflammatory and immunomodulatory activities of the extracts from the inflorescence of *Chrysanthemum indicum* Linne, *J. Ethnopharmacol*. 101: 334–337.
- Dai S.L. & Chen J.Y. 1997. A cladistics study on some *Dendranthema* spp. in China. *J Wuhan Bot Res*. 15: 27–34.
- Datta, S. & T. Janakiram. 2015. Breeding and genetic diversity in *Chrysanthemum morifolium* in India: a review. *Indian J. Agric. Sci*. 85: 1379–1395.
- De, L.C. & S.K. Bhattacharjee. 2011. *Ornamental Crop Breeding*. Aavishkar Publishers, India.
- Devi, K.D., K. Punyarani, S. Singh, & H.S. Devi. 2013. An efficient protocol for total DNA extraction from the members of order *Zingiberales*: suitable for diverse PCR based downstream applications. *Springer Plus*. 2(669): 1-9.

- Dierck, R., E. De Keyser, J. De Riek, E. Dhooghe, J. Van Huylenbroeck, E. Prinsen, & D. Van Der Straeten. 2016. Change in auxin and cytokinin levels coincides with altered expression of branching genes during axillary bud outgrowth in *Chrysanthemum*. PLoS ONE. 11(8): 1-30.
- Dierck, R., L. Leus, E. Dhooghe, J. Van Huylenbroeck, J. De Riek, D. Van Der Straeten, & E. De Keyser. 2018. Branching gene expression during chrysanthemum axillary bud outgrowth regulated by strigolactone and auxin transport. Plant Growth Regulation. 86(1): 23-36.
- Din, A., Z. Qadri, M. Wani, S. Iqbal, S. Malik, S. Zargar, N. Banday, & I. Nazki. 2023. Comparative analysis of physical and chemical mutagenesis in *Chrysanthemum* cv. 'Candid': assessing genetic variation and breeding potential. ACS Omega. 8: 43836-43849.
- Domonkos, I., M. Kis, Z. Gombos, & B. Ughy. 2013. Carotenoids, versatile components of oxygenic photosynthesis. Prog. Lipid Res. 52: 539–561.
- Doyle, J.J. & J.L. Doyle. 1990. Isolation of plant DNA from fresh tissue. Focus. 12: 13-15.
- Ellegren, H. & N. Galtier. 2016. Determinants of genetic diversity. Nature Reviews Genetics. 17(7): 422-433.
- El-Twab, A.M.H. & K. 2008 Kondo. Visualization of genomic relationships in allotetraploid hybrids between *Chrysanthemum lavandulifolium* X *C. chanetii* by fluorescence in situ hybridization and genomic in situ hybridization. Chromosome Bot. 3: 19–25.
- Endo, T., Fujii H., Sugiyama A., Nakano M., Nakajima N., Ikoma Y., Omura M., & Shimada T., 2016. Overexpression of a citrus basic helix-loop-helix transcription factor (CubHLH1), which is homologous to arabidopsis activation-tagged bri1 suppressor 1 interacting factor genes, modulates carotenoid metabolism in transgenic tomato. Plant Sci. 243: 35–48.
- Engler, A.A.K.P. 1926. Die Natuerlichen Pflanzenfamilien Vol. 4. W.Engelmann, Germany.
- Excoffier, L., P.E. Smouse, & J.M. Quattro. 1992. Analysis of molecular variance inferred from metric distances among DNA haplotypes: application to human mitochondrial DNA restriction data. Genetics. 131:479–491.
- Fisher, J. 1982. The Origins of Garden Plants. Constable, London.
- Gharghani, A., Z. Zamani, A. Talaie, N.C. Oraguzie, R. Fatahi, H. Hajnajari, C. Wiedow, & S.E. Gardiner. 2009. Genetic identity and relationships of Iranian apple (*Malus × domestica* Borkh.) cultivars and landraces, wild *Malus* species and representative old apple cultivars based on simple sequence repeat (SSR) marker analysis. Genetic Resources and Crop Evolution. 56(6): 829-842.
- Grissell, E. 2020. A History of Zinnias. Purdue University Press, USA.

- Hadizadeh, H., L. Samiei, & A. Shakeri. 2022. *Chrysanthemum*, an ornamental genus with considerable medicinal value: a comprehensive review. *South African Journal of Botany*. 144: 23-43.
- Hang, H., Chen R., Wang C., Sun Y., & Du D. 2025. A review of the extraction processes and biological characteristics of *Chrysanthemum* polysaccharides. *International Journal of Biological Macromolecules*. 285(138224): 1-12.
- Handoyo, D. dan A. Rudiretna. 2000. Prinsip umum dan pelaksanaan *Polymerase Chain Reaction* (PCR). *Unitas*. 9(1): 17-29.
- Hardtke, C.S. 2007. Transcriptional auxin-brassinosteroid crosstalk: who's talking? *Bioessays*. 29: 1115–1123.
- Hodaei, M., M. Rahimmalek, & A. Arzani. 2019. Genetic diversity of Iranian *Chrysanthemum morifolium* cultivars using morphological traits and sequence-related amplified polymorphism (SRAP) markers. *Horticulture, Environment, and Biotechnology*. 60: 753-765.
- Huang, C.H., Gao Y.H., Zhu Y.Q., Tong Z.K., & Jiang X.F. 2013. Cloning and expression analysis of flavanone 3-hydroxylase gene LrF3H from *Lycoris radiata*. *Acta. Hortic. Sin.* 40(5): 960–970.
- Imtiaz, M., A.M. Khattak, M.A. Khan, F. Jalal, S. Hussain, F. Said, & H. Bo. 2019. Rapid in vitro propagation of *Chrysanthemum morifolium* through shoot bud explants. *Pak. J. Bot.* 51: 1093–1098.
- Irga, P., T. Pettit, & F. Torpy. 2018. The phytoremediation of indoor air pollution: a review on the technology development from the potted plant through to functional green wall biofilters. *Rev. Environ. Sci. Bio Technol.* 17: 395-415.
- Ishak, A., Dong L., Rong H., Zhang S., & Zhao L. 2018. Isolation and functional analysis of the regulation of branching by isopentenyl transferase gene CmIPT1 in *Chrysanthemum morifolium* cv.'Jinba'. *American Journal of Molecular Biology*. 8(2): 92-101.
- Khan, M.K., A. Pandey, G. Thomas, M.S. Akkaya, S.A. Kayis, Y. Ozsensoy, M. Hamurcu, S. Gezgin, A. Topal, & E.E. Hakki. 2015. Genetic diversity and population structure of wheat in India and Turkey. *AoB Plants*. 7(87): 1-14.
- Khouane, A.C., A. Akkak, & H. Benbouza. 2020. Molecular identification of date palm (*Phoenix dactylifera* L.) "Deglet noor" pollinator through analysis of genetic diversity of Algerian male and female ecotypes using SSRs markers. *Scientia Horticulturae*. 274(109668): 1-11.
- Kim, C., Kim M.C., Kim S.M., Nam D., Choi S.H., Kim S.H., Ahn K.S., Lee E.H., Hoon J.S., & Ahn K.S. 2013. *Chrysanthemum indicum* L. extract induces apoptosis through suppression of constitutive STAT3 activation in human prostate cancer DU145 cells. *Phytother. Res.* 27: 30–38.

- Kim, S.J., Lee C.H., Kim J., & Kim K.S. 2014. Phylogenetic analysis of Korean native *Chrysanthemum* species based on morphological characteristics. *Sci. Hortic.* 175: 278–289.
- Kimura, M. & Crow, J.F. 1964. The number of alleles that can be maintained in a finite population. *Genetics.* 49: 725–738.
- Kishimoto, S., Sumitomo K., Yagi M., Nakayama M., & Ohmiya A. 2007. Three routes to orange petal color via carotenoid components in 9 Compositae species. *J. Japan. Soc. Hort. Sci.* 76(3): 250–257.
- Klie, M., I. Menz, M. Linde, & T. Debener. 2016. Strigolactone pathway genes and plant architecture: association analysis and QTL detection for horticultural traits in chrysanthemum. *Mol Genet Genomics.* 291:957–969.
- Lathifah, A.U., I.D. Buwono, & U. Subhan. 2016. Deteksi keragaman genotip hibrid ikan lele sangkuriang, mutiara transgenik dan mutiara non transgenik pada keturunan pertama. *J. Perikanan Kelautan.* 7:111-120.
- Lee, M. & Shim S.Y., 2020. Inhibitory effects of eriodictyol-7-O-b-D-glucuronide and 5, 7 dihydroxy-4-chromene isolated from *Chrysanthemum zawadskii* var. *latilobum* in FceRI-mediated human basophilic KU812F cell activation. *Molecules.* 25: 994–1005.
- Lemos, S.C.M., R.L.R. Silveira, S.K. Buuron, R.S.M.D. Santos, & S.C. Moro. 2019. Determining the polymorphism information content of a molecular marker. *Gene.* 14475: 1-14.
- Li, H. 1993. Chinese Chrysanthemum. Nanjing: Jiangsu Scientific and Technological Publishing Co, China.
- Li, G. & C.F. Quiros. 2001. Sequence-related amplified polymorphism (SRAP), a new marker system based on a simple PCR reaction: its application to mapping and gene tagging in *Brassica*. *Theor. Appl. Genet.* 103(2): 455–461.
- Li, Y., Fan X., Shi T., & Zhang Z. 2009. SRAP marker reveals genetic diversity in tartary buckwheat in China. *Frontiers Agric China.* 3(4): 383–387.
- Li, P., Zhang F., Chen S., Jiang J., Wang H., Su J., Fang W., Guan Z., & Chen F. 2016. Genetic diversity, population structure and association analysis in cut chrysanthemum (*Chrysanthemum morifolium* Ramat.). *Molecular Genetics and Genomics.* 291(3): 1117-1125.
- Liu, B.H. 1998. *Statistical Genomics: Linkage, Mapping and QTL Analysis.* CRC Press, USA.
- Liu, P.L., Wan Q., Guo Y.P., Yang J., & Rao G.Y. 2012. Phylogeny of the genus *Chrysanthemum* L.: evidence from single-copy nuclear gene and chloroplast DNA sequences. *PLoS One.* 7(11):1-13.
- Liu, Y.H., Mou X., Zhou D.Y., Zhou D.Y., & Shou C.M. 2018. Extraction of flavonoids from *Chrysanthemum morifolium* and antitumor activity in vitro. *Exp. Ther. Med.* 15: 1203–1210.

- Liu, X., Qing H., Xu M., Song C., Chen Y., Cao K., Fu J., & Zhang C. 2025. Light-responsive transcription factor ZeMYB32 negatively regulates ZeCCD4-2 to affect carotenoid accumulation in *Zinnia elegans* petals. *Plant Physiology and Biochemistry*. 228: 1-13.
- Lowe, A., S. Harris, & P. Ashto. 2004. *Ecological genetics; design, analysis and application*. Blackwell publishing, Oxford.
- Lu, S., Ye J., Zhu K., Zhang Y., Zhang M., Xu Q., & Deng X. 2021. A fruit ripening-associated transcription factor CsMADS5 positively regulates carotenoid biosynthesis in citrus. *J. Exp. Bot.* 72: 3028–3043.
- Luyen, N.T., Hanh T.T.H., Binh P.T., Dang N.H., Van Minh C., & Dat, N.T. 2013. Inhibitors of  $\alpha$ -glucosidase,  $\alpha$ -amylase, and lipase from *Chrysanthemum morifolium*. *Phyto chem. Lett.* 6: 322–325.
- Maaty, N.A.F.A. & H.A.S. Oraby. 2019. Extraction of high-quality genomic DNA from different plant orders applying a modified CTAB-based method. *Bulletin of the National Research Centre*. 43(1): 1-10.
- Malakar, M., R. Gokiladevi, S. Biswas, & S.K. Dutta. 2025. *Breeding Overview on Ornamental Youth-and-Age Flower (Zinnia spp.)*. Springer Nature, Switzerland.
- McVaugh, R. 1984. *Flora Novo-Galiciana: A Descriptive Account of The Vascular Plants of Western Mexico*. Ann Arbor: University of Michigan Press, USA.
- Mekapogu, M., B.M.K. Vasamsetti, Kwon O.K., Ahn M.S., Lim S.H., & Jung J.A. 2020a. Anthocyanins in floral colors: biosynthesis and regulation in chrysanthemum flowers. *International Journal of Molecular Sciences*. 21(18): 1-25.
- Mekapogu, M., Kwon O.K., Hyun D.Y., Lee K.J., Ahn M.S., Park J.T., & Jung J.A. 2020b. Identification of standard type cultivars in *Chrysanthemum (Dendranthema grandiflorum)* using SSR markers. *Hortic. Environ. Biotechnol.* 61(53): 153-161.
- Mekapogu, M., Kwon O.K., Song H.Y., & Jung J. A. 2022. Towards the improvement of ornamental attributes in chrysanthemum: recent progress in biotechnological advances. *International Journal of Molecular Sciences*. 23(20): 1-24.
- Mekapogu, M., Song H.Y., Lim S.H., & Jung J.A. 2023. Assessment of genetic diversity in the white-colored variants of spray-type chrysanthemum cultivars using SSR markers. *Hortic. Environ. Biotechnol.* 9(7): 1-12.
- Mekapogu, M., Lim S.H., Choi Y.J., Lee S.Y., & Jung J. A. 2025. Evaluation of genetic diversity and identification of cultivars in spray-type chrysanthemum based on SSR markers. *Genes*. 16(1): 1-14.
- Meng, Q., F. Ling, G. Zhen, F. Yin, H. Yao, & B. Feng. 2015. Comparison on different extraction processes of total flavonoids in *Chrysanthemum indicum* and its antioxidant effect. *Chin. Trad. Herb Drug.* 46: 3194–3197.

- Metcalf, H.N. & J.N. Sharma. 1971. Germplasm resources of the genus *Zinnia* L. *Economic Botany*. 25(2): 169-181.
- Michiels, A., W. Van den Ende, M. Tucker, & L. Van Riet. 2003. Extraction of high-quality genomic DNA from latex-containing plants. *Analytical Biochemistry*. 315(1): 85-89.
- Mohammadi, S.A. & B.M. Prasanna. 2003. Analysis of genetic diversity in crop plants—salient statistical tools and considerations. *Crop Science*. 43(4): 1235-1248.
- Monel, C. 2021. Bunga Zinnia: Ciri, Menanam, Merawat, Manfaat dan Gambar. Diperbaharui 17 September 2021. <https://duniatumbuhan.com/bunga-zinnia>.
- Mudaningrat, A., F. Umayu, F.A.A. Syahriza, Y.U. Anggraito, & N. Setiati. 2023. Aplikasi penanda molekuler untuk analisis keanekaragaman genetik hewan. *Biopendix*. 10(1): 11-25.
- Nordström, A., P. Tarkowski, D. Tarkowska, R. Norbaek, C. Åstot, K. Dolezal, & G. Sandberg. 2004. Auxin regulation of cytokinin biosynthesis in *Arabidopsis thaliana*: a factor of potential importance for auxin–cytokinin-regulated development. *Proceedings of the National Academy of Sciences*. 101(21): 8039-8044.
- Nugroho, K., D. Satyawan, I.M. Tasma, & P. Lestari. 2022. Ekstraksi DNA genomik: tahap kritis dalam kegiatan analisis molekuler tanaman. *Jurnal Agro Biogen*. 18(1): 33-44.
- Oberprieler, C., R. Vogt, & L.E. Watson. 2006. *Tribe Anthemideae Cass.* Springer, Germany.
- Ohmiya, A. 2018. Molecular mechanisms underlying the diverse array of petal colors in chrysanthemum flowers. *Breeding Science*. 68(1): 119-127.
- Olorode, O. & A.M. Torres. 1970. Artificial hybridization of the genera *Zinnia* (Sect. *Mendezia*) and *tragoceras* (Compositae-Zinninae). *Brittonia*. 22(4): 359-369.
- Özşensoy, Y.U.S.U.F. & E. Kurar. 2014. Genetic diversity of native Turkish cattle breeds: mantel, AMOVA, and bottleneck analysis. *Journal of Advanced Veterinary and Animal Research*. 1(3): 86-93.
- Park, S., Lee J.B., & Kang S., 2012. Topical application of *Chrysanthemum indicum* L. attenuates the development of atopic dermatitis-like skin lesions by suppressing serum IgE levels, IFN-g, and IL-4 in Nc/Nga mice. *Evid. Based Complement. Altern. Med.* 2012(1): 1–8.
- Poczaj, P., I. Varga, M. Laos, A. Cseh, N. Bell, J.P.T. Valkonen, and J. Hyvonen. 2013. Advances in plant gene-targeted and functional markers: a review. *Plant Methods*. 9(6): 1-31.
- Pongoh, J., F.J. Paat, & R. Soputan. 2022. The diversity of several flower color types of the zinnia plant (*Zinnia elegans* Jacq.). *Jurnal Agroekoteknologi Terapan*. 3(1): 108-115.

- Powell, W., M. Morgante, C. Andre, M. Hanafey, J. Vogel, S. Tingey, & A. Rafalski. 1996. The comparison of RFLP, RAPD, AFLP and SSR (microsatellite) markers for germplasm analysis. *Molecular Breeding*. 2: 225–238.
- Prevost, A. & M. J. Wilkinson. 1999. A new system of comparing PCR primers applied to ISSR fingerprinting of potato cultivars. *Theoretic and Applied Genetics*. 98: 107–112.
- Qi, W., Chen Y., Sun S., Xu X., Zhan J., Yan Z., Shang P., Pan X., & Liu H. 2021. Inhibiting TLR4 signaling by linarin for preventing inflammatory response in osteoarthritis. *Aging*. 13: 5369–5382.
- Qian, J., Lai W., Jiang L., Fu J., & Zhang C. 2020. Effect of pigment distribution on the petal coloration in *Zinnia elegans* 'Dreamland'. *Proc. Advances in Ornamental Horticulture of China*. 2020: 148–152.
- Qian, J., Lai W., Jiang L., Zhan H., Zhai M., Fu J., & Zhang C. 2021. Association between differential gene expression and anthocyanin biosynthesis underlying the diverse array of petal colors in *Zinnia elegans*. *Scientia Horticulturae*. 277: 1-8.
- Qing, H.S., Qian J.Y., Chen J.H., Jiang L.L., Fu J.X., Huang X.Q., & Zhang C. 2022. Carotenoid analysis and functional characterization of lycopene cyclases in *Zinnia elegans* L. *Industrial Crops and Products*. 188: 1-10.
- Qing, H., Liu X., Chen J., Li L., Qian J., Fu J., & Zhang C. 2024. Carotenoid cleavage dioxygenase catalyzes carotenoid degradation and regulates carotenoid accumulation and petal coloration in *Zinnia elegans*. *Ornamental Plant Research*. 4: 1-10.
- Qiu, T., Li S., Zhao K., Jia D., Chen F., & Ding L. 2023. Morphological characteristics and expression patterns of CmCYC2c of different flower shapes in *Chrysanthemum morifolium*. *Plants*. 12(21): 1-15.
- Rahayu, F., Saryono, dan T.T. Nugroho. 2015. Isolasi DNA dan amplifikasi PCR daerah ITS rDNA fungi endofit umbi tanaman dahlia (*Dahlia variabilis*) LBKURCC69. *JOM FMIPA*. 2(1): 100-109.
- Rincon, F., B. Johnson, J. Crossa, and S. Taba. 1996. Cluster analysis, an approach to sampling variability in maize accessions. *May dica* 41:307–316.
- Ritland, K. 1996. Estimators for pairwise relatedness and individual in breeding coefficients. *Genetical Research*, 67(2), 175– 185.
- Roy, P., Sogir, S. B., & Basak, T. 2023. On the polymorphism information content (PIC)—a practical application for the DNA sequencing data. *European Journal of Medical and Health Research*, 1(1), 21-29.
- Ruane, J., 1999. A critical review of the value of genetic distance studies in conservation of animal genetic resources. *J. Anim. Breed. Genet*. 116: 317–323.
- Sang, J.C., Sang M.K., Yong T.J., & Chi H.S. 2013. Hepatoprotective effect of water extract from *Chrysanthemum indicum* L. flower. *Chin. Med. Sci. J*. 8: 1–8.

- Sari, M.F., A. Purwanto, Y.A. Purwestri, & E. Sulistyaningsih. 2025. Morphological and SRAP-based genetic diversity analysis of *Zinnia elegans* Jacq. accessions. *Ornamental Horticulture*. 31: 1-8.
- Serrote, C.M.L., L.R.S. Reiniger, K.B. Silva, S.M. dos Santos Rabaiolli, & C.M. Stefanel. 2020. Determining the polymorphism information content of a molecular marker. *Gene*. 726(144175): 1-4.
- Shibata, M. 2008. Importance of genetic transformation in ornamental plant breeding. *Plant Biotechnol*. 25: 3–8.
- Shimizu-Sato, S., Tanaka M., & Mori H. 2009. Auxin-cytokinin interactions in the control of shoot branching. *Plant Mol Biol*. 69:429–435.
- Silva, J.A.T.D., Shinoyama H., Aida R., Matsushita Y., S.K. Raj, & Chen F. 2013. *Chrysanthemum* biotechnology: quo vadis?. *Critical Reviews in Plant Sciences*. 32(1): 21-52.
- Sitepu, A.F., E.S. Bayu, & L.A.M. Siregar. 2019. Analisis pola pita beberapa genotipe kurma (*Phoenix dactylifera* L.) menggunakan primer RAPD. *Jurnal Online Agroekoteknologi*. 7(3): 502-507.
- Solin, N.W.N.M., Sobir, & N.T. Mathius. 2013. Keragaman genetik populasi tetua saudara kandung (Sibs) kelapa sawit Dura Deli berdasarkan penanda DNA mikrosatelit. *B. Palma*. 14:100-108.
- Song, X., Gao K., Fan G., Zhao X., Liu Z., & Dai S. 2018. Quantitative classification of the morphological traits of ray florets in large-flowered chrysanthemum. *HortSci. Horts*. 53: 1258–1265.
- Song, C., Liu X., Xu M., Ying M., Fu J., & Zhang C. 2025. Germplasm resource and genetic breeding of Zinnia: a review. *Ornamental Plant Research*. 5(15): 1-10.
- Stimart, D. & T. Boyle. 2007. *Zinnia In Flower Breeding and Genetics*. Springer, Netherlands.
- Su, J., Jiang J., Zhang F., Liu Y., Ding L., Chen S., & Chen F. 2019. Current achievements and future prospects in the genetic breeding of chrysanthemum: a review. *Horticulture Research*. 6(109): 1-19.
- Sun, D., Zhang L., Su J., Yu Q., Zhang J., Fang W., Wang H., Guan Z., Chen F., & Song A. 2022. Genetic diversity and genome-wide association study of architectural traits of spray cut chrysanthemum varieties. *Horticultrae*. 8(5): 1-13.
- Sundari, S. & B. Priadi. 2019. Teknik isolasi dan elektroforesis DNA ikan tapah. *Buletin Teknik Litkayasa Akuakultur*. 17(2): 87-90.
- Tanaka, Y. and F. Brugliera. 2013. Flower colour and cytochromes P450. *Philos. Trans. R. Soc Lond B. Biol. Sci*. 368: 1-14.
- Teichmann, T. & M. Muhr. 2015. Shaping plant architecture. *Frontiers in Plant Science*. 6(233): 1-18.

- Tessier, C., J. David, P. This, J. M. Boursiquot, & A. Charrier. 1999. Optimization of the choice of molecular markers for varietal identification in *Vitis vinifera* L. *Theoretical and Applied Genetics*. 98: 171–177.
- Torres, A.M. 1963. Taxonomy of zinnia. *Brittonia*. 15:1–25.
- Torres, A.M. 1964. Revision of *sanvitalia* (Compositae-Heliantheae). *Brittonia*. 16: 417–433.
- Torres, S., Y. Dailey, & K. White. 2021. *Practical Applications of Medical Geology*. Springer Nature, Switzerland.
- Vellend, M. & M.A. Geber. 2005. Connections between species diversity and genetic diversity. *Ecology Letters*. 8(7): 767-781.
- Wang, Y. & Yan G. 2013. Genetic diversity and population structure of *Opisthopappus longilobus* and *Opisthopappus taihangensis* (Asteraceae) in China determined using sequence-related amplified polymorphism markers. *Biochemical Systematics and Ecology*. 49: 115-124.
- Wang, J., Dai W., Chen J., Ye K., Lai Q., & Zhao D. 2023. Assessment of genetic diversity and genetic structure of *Saussurea medusa* (Asteraceae), a “Sky Island” plant in the Qinghai–Tibet Plateau, using SRAP Markers. *Plants*. 12(13): 1-14.
- Wen, C., Zhao Q., Nie J., Liu G., Shen L., Cheng C., Xi L., Ma N., & Zhao L. 2016. Physiological controls of chrysanthemum DgD27 gene expression in regulation of shoot branching. *Plant Cell Rep*. 35: 1053–1070.
- Whitlock, M.C. & D.E. McCauley. 1999. Indirect measures of gene flow and migration:  $F_{ST} \neq 1/(4Nm + 1)$ . *Heredity*. 82(2): 117-125.
- Worku, A. & Y. Tadesse. 2017. A review on population structure, genetic diversity analysis, genetic distance between population and genetic singularity in livestock. *Advances in Life Science and Technology*. 54: 1-6.
- Wright, S. 1978. *Variability Within and Among Natural Populations*. The Univ. of Chicago Press, Chicago.
- Wurtzel, E.T., 2019. Changing form and function through carotenoids and synthetic biology. *Plant Physiol*. 179, 830–843.
- Yang, Z. & Hai T. 2016. Discussion on the classification of ornamental chrysanthemums. *Xiandai Horticult*. 11(54): 81–82.
- Yang, X., Ao N., Qu Y., Wu Y., Su J., Ding L., Chen S., Jiang J., Guan Z., Chen F., Fang W., & Zhang F. 2020. Genetic characterization of anemone-type chrysanthemum (*Chrysanthemum morifolium*) using floral morphology and SRAP markers. *Plant Breeding*. 139(2): 419-427.
- Yassin, M.Y. & A.E. Ismail. 1995. Effect of *Zinnia elegans* as a mix crop along with tomato against *Meloidogyne incognita* and *Rotylenchulus reniformis*. *Tropenlandwirt*. 96: 221–225.

- Yeboah, M.A., Xuehao C., Feng C.R., Liang G., & Gu M. 2007. A genetic linkage map of cucumber (*Cucumis sativus* L) combining SRAP and ISSR markers. *Afr J Biotechnol.* 6(24): 2784–2791.
- Yi, L., Dong Z., Lei Y., Zhao J., Xiong Y., Yang J., Xiong Y., Gou W., & Ma X. 2021. Genetic diversity and molecular characterization of worldwide prairie grass (*Bromus catharticus* Vahl) accessions using SRAP markers. *Agronomy.* 11(10): 1-12.
- Youssef, F.S., S.Y. Eid, E. Alshammari, M.L. Ashour, M. Wink, & M.Z. El-Readi, 2020. *Chrysanthemum indicum* and *Chrysanthemum morifolium*: chemical composition of their essential oils and their potential use as natural preservatives with antimicrobial and antioxidant activities. *Foods.* 9: 1460–1478.
- Zagorcheva, T., S. Stanev, K. Rusanov, & I. Atanassov. 2020. SRAP markers for genetic diversity assessment of lavender (*Lavandula angustifolia* mill.) varieties and breeding lines. *Biotechnology & Biotechnological Equipment.* 34(1): 303-308.
- Zhang, L.J. & Dai S.L. 2009. Research advance on germplasm resources of *Chrysanthemum morifolium*. *Chin. Bull. Bot.* 44: 526–535.
- Zhang, W., He H., Guan Y., Du H., Yuan L., Li Z., Yao D., Pan J., & Cai R. 2010. Identification and mapping of molecular markers linked to the tuberculate fruit gene in the cucumber (*Cucumis sativus* L.). *Theor Appl Genetics.* 120: 645–654.
- Zhao, H.B., Chen F.D., Chen S.M., Wu G.S., & Guo W.M. 2010. Molecular phylogeny of *Chrysanthemum*, *Ajania* and its allies (Anthemideae, Asteraceae) as inferred from nuclear ribosomal ITS and chloroplast trnL-F IGS sequences. *Plant Syst. Evolut.* 284: 153–169.
- Zhao, J., Xu Y., Li H., Zhu X., Yin Y., Zhang X., Qin X., Zhou J., Duan L., Liang X., Huang T., Zhang B., Wan R., Shi Z., Cao Y., & An W. 2023. ERF5.1 modulates carotenoid accumulation by interacting with CCD4.1 in lycium. *Hortic. Res.* 10 (230): 1-14.