UNIVERSITAS GADJAH MADA
Evaluasi Metode Transformasi Genetik Tebu (Saccharum officinarum L.) Berbasis Agrobakterium dengan Penyisipan Gen DREB2
Citra Andriani Galingging, Widhi Dyah Sawitri, S.Si., M.Agr., Ph.D ; Agus Budi Setiawan, S.P., M.Sc., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Ahmed, M. O., M. I. Adepoju., and K. O. Iwuozor. 2025. Enhancing climate resilience in sugarcane: a review of physiological and molecular responses to water stress. Climate Resilient and Sustaineble Agriculture 2(7).

Al-Habsy, S. M. 2025. Aplikasi teknologi sinergitas mikrobia terhadap pertumbuhan dan produksi tanaman tebu (*Saccharum officinarum* L.) di kebun traktakan pg prajekan PTPN XI. Jurnal Ilmu Pertanian 2(1): 39-60.

Amaliya, A., A. Supriono., R. Yanuarti., J. M. M. Aji., J. A. Ridjal., D. Soejono., dan I. Ibanah. 2025. Proyeksi produksi dan konsumsi gula pasir di indonesia 2022–2025 serta implikasinya terhadap target swasembada nasional. Journal of Agribusiness, Social And Economic 5(1): 73-85.

Chanprame, S., T. Promkhlibnil., S. Suwanno., and C. Laksana. 2019. Isolation, characterization and expression of transcription factor Sc*DREB2* from wild, commercial and interspecific hybrid sugarcane in salinity condition. Journal Plant Biotechonology 46(2): 97-105.

Cheavegatti-Gianotto, A., H. M. C. de Abreu., P. Arruda., J. C. B. Filho., W. L. Burnquist., S. Creste., L. di Ciero., J. A. Ferro., A. V. de O. Figueira., T. de S. Filgueiras., M. de F. Grossi-de-Sá., E. C. Guzzo., H. P. Hoffmann., M. G. de A. Landell., N. Macedo., S. Matsuoka., F. de C. Reinach., E. Romano., W. J. da Silva., M. de Castro Silva Filho., and E. C. Ulian. 2011. Sugarcane (*Saccharum* X *officinarum*): A reference study for the regulation of genetically modified cultivars in Brazil. Tropical Plant Biology 4(1): 62–89.

Chen, Y., Z. Liu., T. Sun., D. Wang., Z. Wang., C. Zhang., Y. Quo., J. Guo., L. Xu., and Y. Su. 2022. Sugarcane Sc*DREB2*B-1 confers drought stress tolerance in transgenic nicotiana benthamiana by regulating the aba signal, ros level and stress-related gene expression. International Journal of Molecular Science 23(17): 9557.

Cole-Osborn, L. F., E. Meehan., and Lee-Parsons, C. W. 2024. Critical parameters for robust *Agrobacterium*-mediated transient transformation and quantitative promoter assays in *Catharanthus roseus* seedlings. Plant Direct 8(6): 1-14.

Contiliani, D. F., J. F. C. de O. Nebo., R. V. Ribeiro., M. G. de A. Landell., T. C. Pereira., R. Ming., A. Figueira., and S. Creste. 2023. Drought-triggered leaf transcriptional responses disclose key molecular pathways underlying leaf water use efficiency in sugarcane (*Saccharum* spp.). Frontiers in Plant Science, 14: 1182461.

Costa, T. R. D., L. Harb., P. Khara., L. Zeng., B. Hu., and P. J. Christie. 2021. Type IV secretion systems: Advances in structure, function, and activation. Molecular Microbiology 115(3): 436-452.

Ekpélikpézé, O. S., P. Agre., I. Dossou-Aminon., A. Adjatin., A. Dassou., and A. Dansi. 2016. Characterization of sugarcane (*Saccharum officinarum* L.) cultivars of republic of benin. International Journal of Current Research in Biosciences and Plant Biology 3(5): 147-156.

Ferreira, T. H. S., M. S. Tsunad., D. Bassi., P. Araujo., L. Mattiello., G. V. Guidelli., G. L. Righetto., V. R. Goncalves., P. Lakshmanan., and M. Menossi. 2017.

UNIVERSITAS GADJAH MADA
Evaluasi Metode Transformasi Genetik Tebu (Saccharum officinarum L.) Berbasis Agrobakterium dengan Penyisipan Gen DREB2
Citra Andriani Galingging, Widhi Dyah Sawitri, S.Si., M.Agr., Ph.D ; Agus Budi Setiawan, S.P., M.Sc., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Sugarcane water stress tolerance mechanisms and its implications on developing biotechnology solutions. Frontiers in Plant Science, 8:1077.

Goodman, C. P., V. N. Padgett., E. R. Evans., and vor Arnim A. G. 2025. Paromomycin is a more effective selection agent than kanamycin in *Arabidopsis* harboring the *neomycin phosphotransferase II* transgene. PLoS One 20(6): e0325322.

Hariadi, W., Sulantari., dan A. Mustika. 2025. Peramalan produksi gula indonesia dengan model arima (2,2,0) serta bagaimana strategi swasembada gula terjadi pada tahun 2030. Journal of Mathematics and Computer Science 11(2): 34-43.

Healey, A. L., O. Garsmeur., J. T. Lovell1., S. Shengquiang., A. Sreedasyam., J. Jenkins., C. B. Plott., N. Piperidis., N. Pompidor., V. Llaca., C.J. Metcalfe., J. Doležel., P. Cápal., J. W. Carlson., J. Y. Hoarau., C. Hervouet., C. Zini., A. Dievart., A. Lipzen., M. Williams.,, L. B. Boston., J. Webber., K. Keymanesh., S. Tejomurthula., S. Rajasekar., R. Suchecki., A. Furtado., G. May., P. Parakkal., B. A. Simmons., K. Barry., R. J. Henry., J. Grimwood., K. S. Aitken., J. Schmutz., and A. D'Hont. 2024. The complex polyploid genome architecture of sugarcane. Nature, 628: 804-822.

Jia, Y., X. Yao., M. Zhao., Q. Zhao., Y. Du., C. Yu., and F, Xie. 2015. Comparison of soybean transformation efficiency and plant factory affecting transformation during the *Agrobacterium* infection process. International Journal of Molecular Science 16(8): 18522-18543

Kazemi, E. M., P. Janoubi., A. Majd., and M. Pazhouhandeh. 2014. Reduction of negative effects of cefotaxime in tomato transformation by using FeEDDHA. Internationl Journal of Farming and Allied Science 3(5): 538-542.

Khonghintaisong, J., P. Songsri,, and N, Jongrungklang. 2023. Comparison of physiological, anatomical, and morphological traits between sugarcane hybrids and ntheir parents with differen stalk dry weights in the early growth stage under hydroponic conditions. Agriculture 13(12): 2234-2353.

Kumar, N., V. A. K. Gopalakrishnan., M. P. Reddy., and A. Singh. 2009. *Agrobacterium tumefaciens*-mediated genetic transformation: mechanism and factors. Journal of Forest and Environmental Science 25(3): 195-204.

Kumar, R., V. Sagar., V. C. Verma., M. Kumar., R. S. Gujjar., S. K. Goswami., S. K. Jha., H. Pandey., A. K. Dubey., S. Srivastava., S. P. Singh., A. K. Mall., A. D. Pathak., H. Singh., P. K. Jha., and P.V.V. Prasad. 2023. Drought and salinity stresses induced physio-biochemical changes in sugarcane: an overview of tolerance mechanism and mitigating approaches. Frontiers in Plant Science 14:1225234.

Li, X., L. Chen., B. G. Forde., and W. J. Davies. 2017. The biphasic root growth response to abscisic acid in arabidopsis involves interaction with ethylene and auxin signalling pathways. Frontiers in Plant Science 8: 1493.

Liu, S., Z. Lv., Y. Liu., and L. Zhang. 2018. Network analysis of ABA-dependent and ABA-independent drought responsive genes in *Arabidopsis thaliana.* Genetics and Molecular Biology, 41(3): 624-637.

UNIVERSITAS
GADJAH MADA
**Evaluasi Metode Transformasi Genetik Tebu (Saccharum officinarum L.) Berbasis Agrobakterium dengan
Penyisipan Gen DREB2**
Citra Andriani Galingging, Widhi Dyah Sawitri, S.Si., M.Agr., Ph.D ; Agus Budi Setiawan, S.P., M.Sc., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Liu, X., J. F. Miceli., S. Patton., M. Murray., J. Evans., X. Wei., and P. Wang. 2023. Agrobacterial transformation enhancement by improved competent cell preparation and optimized electroporation. Life 13(11): 2217.

Lu, Q., S. Chen., B. Shan., A. Wei., Y. Luo., L. Wu., Q. Jiang., and Z. Chen. 2025. The ionome–hormone–flavonoid network shapes genotype-dependent yield adaptation in sugarcane. Plants 14: 3181.

Lundgren, M. R., C. P. Osborne., and P.Christin. 2014. Deconstructing kranz anatomy to understand c4 evolution. Journal of Experimental Botany 65(13): 3357–3369.

Luo, X., J. Xu., C. Zheng., Y. Yang., L. Wang., R. Zhang., X. Ren., S. Wei., U. Aziz., J. Du., W. Liu., W. Tan., and K. Shu. 2022. Absisic acid inhibits primary root growth ny impairing ABI4-mediated cell cycle and auxin biosynthesis. Plant Physiology 191(1): 265-279.

Matsukura, S., J. Mizoi., T. Yoshida., D. Todaka., Y. Ito., K. Maruyama., K. Shinozaki., K. Yamaguchi-Shinozaki. 2010. Comprehensive analysis of rice *DREB2*-type genes that encode transcription factors involved in the expression of abiotic stress-responsive genes. Molecular Genetics Genomics 283(2):185-96.

Mehdi, F., Z. Cao., S. Zhang., Y. Gan., W. Cai., L. Peng., Y. Wu., W. Wang., B. Yang. 2024. Factors affecting the production of sugarcane yield and sucrose accumulation: suggested potential biological solutions. Frontiers in Plant Science 15: 1374228.

Mushtaq, N., F. Munir., A. Gul., R. Amir., R. Z. Paracha. 2021. Genome-wide analysis, identification, evolution and genomic organization of dehydration responsive element-binding (dreb) gene family in solanum tuberosum. PeerJ 9(1): 1-25.

Nakashima, K., K. Yamaguchi-Shinozaki., and K. Shinozaki. 2014. The transcriptional regulatory network in the drought response and its crosstalk in abiotic stress responses including drought, cold, and heat. Frontiers in Plant Science, 5:170.

Ouyang, C., X. Jin., Q. Ghuo., S. Luo., Y. Zheng., J. Zou., B. An., and D. Li. 2024. Highly efficient *Agrobacterium tumefaciens* mediated transformation of oil palm using an epsps-glyphosate selection system. Plants 13(23): 3343.

Pitzschke, A. 2013. *Agrobacterium* infection and plant defense—transformation success hangs by a thread. Frontiers in Plant Science 4: 519.

Ria, R., S. Mailayfaiza., N. Syafkitamsana., L. J. Harahap. 2025. Introduction to gel electrophoresis lab - virtual simulation in biotechnology course. Bioedunis Journal 4(2): 139-150.

Ribeiro, T. P., I. T. Lourenço-Tessutti., B. P. de Melo., C. V. Morgante., A. S. Filho., C. B. J. Lins., G. F. Ferreira., G. N. Mello., L. L. P. Macedo., W. A. Lucena., M. C. M. Silva., O. Brilhante Oliveira-Neto., and M. F. Grossi-de-Sa. 2021. Improved cotton transformation protocol mediated by *Agrobacterium* and biolistic combined-methods. Planta 254(20)

Shelake, R. M., U. S. Kadam., R. Kumar., D. Pramanik., A. K. Singh., and J. Kim. 2022. Engineering drought and salinity tolerance traits in crops through CRISPR-mediated genome editing: Targets, tools, challenges, and perspectives. Cell Press 3(6): 1-22.

UNIVERSITAS GADJAH MADA
Evaluasi Metode Transformasi Genetik Tebu (Saccharum officinarum L.) Berbasis Agrobakterium dengan Penyisipan Gen DREB2
Citra Andriani Galingging, Widhi Dyah Sawitri, S.Si., M.Agr., Ph.D ; Agus Budi Setiawan, S.P., M.Sc., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Simonton, W., C. Robacker., and S. Krueger. A programmable micropropagation apparatus using cycled liquid medium. Plant Cell Tiss Organ Culture 27, 211–218.

Singh, A., U. R. Lal., H. M. Mukhtar., P. S. Singh., G. Shah., and R. K. Dhawan. 2015. Phytochemical profile of sugarcane and its potential health aspects. Pharmacognosy Review 9(17): 45-54.

Singh, R. K & M. Prasad. 2015. Advances in *Agrobacterium tumefaciens*-mediated genetic transformation of graminaceous crops. Protoplasma 253: 691-707.

Snyman, S. J., P. D. Nkwanyana., and M. P. Watt. 2011. Alleviation of hyperhydricity of sugarcane plantlets produced in RITA® vessels and genotypic and phenotypic characterization of acclimated plants. South African Journal of Botany 77: 685-692.

Sugiharto, B. 2018. Biotechnology of drought-tolerant sugarcane. Sugarcane – Technology and Research 8: 139-165.

Sulaiman, A. A. Y. Sulaeman., N. Mustikasari., D. Nuryamsi., and A. M. Syakir. 2019. Increasing sugar production in indones through land suitability analysis and sugar mill restructuring. Land 8(4):61.

Sunday, G., G. Nwaneri., C. M. Ugwu., O. I. Onyekachi., C. C. Ruth., I. N. Ebenebe., C. H. Nedum., and A. N. Oli. 2024. *Agrobacterium tumefaciens*: Biology and application in genetic engineering. GSC Advanced Research and Review 20(1): 389-398.

Taratima, W., T. Ritmaha., N. Jongrungklang., P. Maneerattanarungroj., and. N. Kunpratum. 2020. Effect of stress on the leaf anatomy of sugarcane cultivars with different drought tolerance (*Saccharum officinarum,* Poaceae). 2020. Revista de Biologia Tropical 68(4): 1159-1170.

Uno, Y., T. Furihata., H. Abe., R. Yoshida., K. Shinozaki., and K. Yamaguchi-Shinozaki. 2000. Arabidopsis basic leucine zipper transcription factors involved in an abscisic acid-dependent signal transduction pathway under drought and high-salinity conditions. Proc Natl Acad Sci U S A. 97(21): 11632-11639.

Utami, E. S., S. Hariyanto., and Y. S. W. Manuhara. 2018. *Agrobacterium tumefaciens*-mediated transformation of *Dendrobium lasianthera* J.J.Sm: An important medicinal orchid. Journal of Genetic Engineering and Biotechnology 16(2): 703-709.

Van der Vyver, C., P. Regon., K. Fulton., S. K. Panda. 2025. Comparative transcriptomic analysis of atbbx29 transgenic and wild type sugarcane exposed to drought stress. Physiology Plant 177(3): e70306.

Wang, G., F. Wang., Q. Huang., Y. Li., Y. Liu., Y. Wang. 2015. Understanding transcription factor regulation by integrating gene expression and dnase hypersensitive sites. BioMed Research International 1(1): 1-7.

Wang, W., D. Wang., W. Zhao., Y. Zhang., Z. Zeng., Y. Hu., T. Sun., L. Shen., Q. Wu., Y. Zhang., S. Jin., S. Zhang., and Y. Que., 2025. High efficient and genotype-independent genetic transformation system in sugarcane. Plant Biotechnology Journal 24(4): 2241-2243.

UNIVERSITAS
GADJAH MADA
**Evaluasi Metode Transformasi Genetik Tebu (Saccharum officinarum L.) Berbasis Agrobakterium dengan
Penyisipan Gen DREB2**
Citra Andriani Galingging, Widhi Dyah Sawitri, S.Si., M.Agr., Ph.D ; Agus Budi Setiawan, S.P., M.Sc., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Wang, W., T. Javed., L. Shen., T. Sun., B. Yang., and S. Zhang. 2024. Establishment of an efficient sugarcane transformation system via herbicide-resistant cp4-epsps gene selection. Plants 13(6): 852.

Windiyani, I. P., Mahfut., Purnnomo., and B. S. Daryono. 2022. Morphological variations of superior sugarcane cultivars (*Saccharum officinarum*) from Lampung, Indonesia. Biodiversitas 23(8): 4109-4116.

Xiao, S., Y. Wu., S. Xu., H. Jiang., Q. Hu., W. Yao., and M. Zhang. Field evaluation of *TaDREB2B* ectopic expression sugarcane (*Saccharum* spp. hybrid) for drought tolerance. Frontiers in Plant Science 13:963377.

Xu, Y., Y. Zhang., F. Ma., J. Zhao., H. Yang., S. Song., and S. Zhang. 2024. Identification of dreb family genes in banana and their function under drought and cold stress. Plants 13(15): 2119-2134.

Zhang K., Z. Y. Zhang., J. Sun., J. Meng., T. Tao. 2021. Deterioration of orthodox seeds during ageing: Influencing factors, physiological alterations and the role of reactive oxygen species. Plant Physiology and Biochemistry 158: 475-485.

Zhang, Y & P. Xia. 2023. The DREB transcription factor, a biomacromolecule, responds to abiotic stress by regulating the expression of stress-related genes. International Journal of Biological Macromolecules 243(12): 1-12.

Zhuang, X & C. Lo. 2020. Construction and loss of bacterial flagellar filaments. Biomolecules 10(11): 1528.

Zou, X & H. Sun. 2023. DOF transcription factors: Specific regulators of plant biological processes. Frontiers in Plant Science 14:1044918