



REFERENCES

- Ampong-Nyarko, K. and Murray, C. 2011. Utility of forage grass nutrient composition databases in predicting ethanol production potential. *Journal Biobased Materials Bioenergy*, 5, 295–305. <https://doi.org/10.1166/jbmb.2011.1167>
- Animasaun, D. A., Rathod, H. P., and Krishnamurthy, R. 2018. Analysis of forage yield and nutritional contents of *Pennisetum glaucum* (pearl millet) and *Pennisetum purpureum* (Napier grass) accessions. *Cuban Journal Agricultural Science*, 52(4), 447-455.
- Animasaun, D., Morakinyo, J., Krishnamurthy, R., and Mustapha, O. 2017. Genetic divergence of Nigerian and Indian pearl millet accessions based on agronomical and morphological traits. *Journal Agricultural Sciences, Belgrade*, 62(2), 115–131. <https://doi.org/10.2298/JAS1702115A>
- AOAC. 2005. *Official methods of analysis* (16th ed.). Arlington, VA: Association of Official Analytical Chemists, International.
- Arif, I. A., Bakir, M. A., Khan, H. A., Al Farhan, A. H., Al Homaidan, A. A., Bahkali, A. H., Al Sadoon, M., and Shobrak, M. 2010. Application of RAPD for molecular characterization of plant species of medicinal value from an arid environment. *Genetics Molecular Research*, 9(4), 2191–2198. <https://doi.org/10.4238/vol9-4gmr848>
- Azevedo, A. L. S., Costa, P. P., Machado, J. C., Machado, M. A., Van der Pereira, A., and da Silva Léo, F. J. 2012. Cross species amplification of *Pennisetum glaucum* microsatellite markers in *Pennisetum purpureum* and genetic diversity of Napier grass accessions. *Crop Science*, 52(4), 1776–1785. <https://doi.org/10.2135/cropsci2011.09.0480>
- Babu, C., Sundaramoorthi, J., Vijayakumar, G., and Ram, S. G. 2009. Analysis of genetic diversity in Napier grass (*Pennisetum purpureum* Schum) as detected by RAPD and ISSR markers. *Journal Plant Biochemistry Biotechnology*, 18(2), 181–187. <https://doi.org/10.1007/BF03263317>
- Calzada-Marín, J. M., Ortega-Jiménez, E., Enríquez-Quiroz, J. F., Vaquera-Huerta, H., Escalante-Estrada, J. A. S., and Antonio-Medina, A. 2024. Analysis of the growth of Chetumal grass established in a tropical climate. *Agro Productividad*, 16(12), 147-153. <https://doi.org/10.32854/agrop.v16i12.2781>
- Cid, M. S., Ferri, C. M., Brizuela, M. A., and Sala, O. 2008. Structural heterogeneity and productivity of a tall fescue pasture grazed rotationally by cattle at four stocking densities. *Japanese Society Grassland Science*, 54(1), 9–16. <https://doi.org/10.1111/j.1744-697X.2008.00099.x>
- de Lima, R. S. N., Daher, R. F., Gonçalves, L. S. A., Rossi, D. A., do Amaral Júnior, A. T., Pereira, M. G., and Léo, F. J. S. 2011. RAPD and ISSR markers in the evaluation of genetic divergence among accessions of elephant grass. *Genetics Molecular Research*, 10(3), 1304–1313. <https://doi.org/10.4238/vol10-3gmr1107>



- Delevatti, L. M., Cardoso, A. S., Barbero, R. P., Leite, R. G., Romanzini, E. P., Ruggieri, A. C., and Reis, R. A. 2019. Effect of nitrogen application rate on yield, forage quality, and animal performance in a tropical pasture. *Scientific Reports*, 9(1), 7596. <https://doi.org/10.1038/s41598-019-44138-x>
- Dhakshanamoorthy, D., Selvaraj, R., and Chidambaram, A. 2015. Utility of RAPD marker for genetic diversity analysis in gamma rays and ethyl methane sulphonate (EMS)-treated *Jatropha curcas* plants. *Comptes Rendus - Biologies*, 338(2), 75–82. <https://doi.org/10.1016/j.crv.2014.12.002>
- Doyle, J. J. and Doyle, J. J. 1990. Isolation of plant DNA from fresh tissue. *Focus*, 12(1), 13–15.
- Ernawati, A., Abdullah, L., Permana, I. G., and Karti, P. D. M. H. 2023. Forage production and nutrient content of different elephant grass varieties cultivated with *Indigofera zollingeriana* in an intercropping system. *Tropical Animal Science Journal*, 46(3), 321–329. <https://doi.org/10.5398/tasj.2023.46.3.321>
- Figueiredo Daher, R., Gonzaga Pereira, M., Vander Pereira, A., and Teixeira do Amaral Jr, A. 2002. Genetic divergence among elephant grass cultivars assessed by RAPD markers in composit samples. *Scientia Agricola*, 59(4), 623–627. <https://doi.org/10.1590/S0103-90162002000400001>
- González, C. and Martínez, R. O. 2019. Genetic characterization of clones and varieties of *Cenchrus purpureus* with microsatellite markers. *Cuban Journal Agricultural Science*, 53(3), 307-318.
- Hapsoro, D., Warganegara, H. A., Utomo, S. D., Sriyani, N., and Yusnita. 2015. Genetic diversity among sugarcane (*Saccharum officinarum* L.) genotypes as shown by randomly amplified polymorphic DNA (RAPD). *Agrivita*, 37(3), 247–257. <https://doi.org/10.17503/Agrivita-2015-37-3-p247-257>
- Hartadi, H., Reksohadiprojo, S., and Tillman, A. D. 2005. Feed composition table for Indonesia: Vol. Fifth Printing. Gadjah Mada University Press.
- Hasan, N., Choudhary, S., Naaz, N., Sharma, N., and Laskar, R. A. 2021. Recent advancements in molecular marker-assisted selection and applications in plant breeding programs. *Journal Genetic Engineering Biotechnology*, 19(1), 128. <https://doi.org/10.1186/s43141-021-00231-1>
- Hazelton, P. and Murphy, B. 2016. Interpreting soil test results: what do all the numbers mean? (2nd ed.). CSIRO Publishing. <https://doi.org/10.1071/9781486303977>
- Islam, M. R., Garcia, S. C., Sarker, N. R., Islam, M. A., and Clark, C. E. F. 2023. Napier grass (*Pennisetum purpureum* Schum) management strategies for dairy and meat production in the tropics and subtropics: yield and nutritive value. *Frontiers Plant Science*, 14, 1269976. <https://doi.org/10.3389/fpls.2023.1269976>
- Jaime, A., Rosemberg, M., and Echevarría, M. 2019. Effect of age and season on the yield and nutritive value of Morado elephant grass (*Pennisetum purpureum* x *Pennisetum americanum*) in the central coast. *Scientia Agropecuaria*, 10(1), 137–141. <https://doi.org/10.17268/sci.agropecu.2019.01.15>



- Kamal, M. (1997). Kontrol Kualitas Pakan. Yogyakarta: Fakultas Peternakan, Universitas Gadjah Mada.
- Kamruzali, M. A., Rahman, M. M., Mat, K., Rusli, N. D., and Umami, N. 2021. Effects of cutting process and drying period using sunlight on hay quality of dwarf Napier grass (*Pennisetum purpureum*) and *Asystasia gangetica*. *Pertanika Journal Tropical Agricultural Science*, 44(3), 685–695.
- Kandel, R., Singh, H. P., Singh, B. P., Harris-Shultz, K. R., and Anderson, W. F. 2016. Assessment of genetic diversity in Napier grass (*Pennisetum purpureum* Schum.) using microsatellite, single-nucleotide polymorphism and insertion-deletion markers from Pearl Millet (*Pennisetum glaucum* [L.] R. Br.). *Plant Molecular Biology Reporter*, 34(1), 265–272. <https://doi.org/10.1007/s11105-015-0918-2>
- Korir, N. K., Han, J., Shangguan, L., Wang, C., Kayesh, E., Zhang, Y., and Fang, J. 2013. Plant variety and cultivar identification: Advances and prospects. *Critical Reviews Biotechnology*, 33(2), 111–125. <https://doi.org/10.3109/07388551.2012.675314>
- Kumari, N. and Thakur, S. K. 2014. Randomly amplified polymorphic DNA-a brief review. *American Journal Animal Veterinary Sciences*, 9(1), 6–13. <https://doi.org/10.3844/ajavsp.2014.6.13>
- Mansyur, Karti, P. M., Abdullah, L., Husni, A. L. I., and Lestari, P. 2019. Genetic diversity of mutant napiergrass using expressed sequence tag simple sequence repeat (EST-SSR). *Biodiversitas*, 20(8), 2403–2409. <https://doi.org/10.13057/biodiv/d200839>
- McBenedict, B., Chimwamurombe, P., Kwembeya, E., and Maggs-Kölling, G. 2016. Genetic diversity of Namibian *Pennisetum glaucum* (L.) R. BR. (Pearl Millet) landraces analyzed by SSR and morphological markers. *Scientific World Journal*, 2016, 1439739. <https://doi.org/10.1155/2016/1439739>
- Mudhita, I. K., Putra, R. A., Rahman, M. M., Widyobroto, B. P., Agussalim, and Umami, N. 2024. The Silage quality of *Pennisetum purpureum* cultivar Gamma Umami mixed with *Calliandra calothyrsus* and *Lactiplantibacillus plantarum*. *Tropical Animal Science Journal*, 47(1), 112–124. <https://doi.org/10.5398/tasj.2024.47.1.112>
- Muktar, M. S., Bizuneh, T., Anderson, W., Assefa, Y., Negawo, A. T., Teshome, A., Habte, E., Muchugi, A., Feyissa, T., and Jones, C. S. 2023. Analysis of global Napier grass (*Cenchrus purpureus*) collections reveals high genetic diversity among genotypes with some redundancy between collections. *Scientific Reports*, 13(1), 14509. <https://doi.org/10.1038/s41598-023-41583-7>
- Negawo, A. T., Teshome, A., Kumar, A., Hanson, J., and Jones, C. S. 2017. Opportunities for napier grass (*Pennisetum purpureum*) improvement using molecular genetics. *Agronomy*, 7(2), 28. <https://doi.org/10.3390/agronomy7020028>
- Onjai-uea, N., Paengkoum, S., Taethaisong, N., Thongpea, S., Sinpru, B., Surakhunthod, J., Meethip, W., Purba, R. A. P., and Paengkoum, P. 2023. Effect of cultivar, plant spacing and harvesting age on yield, characteristics,



- chemical composition, and anthocyanin composition of purple Napier grass. *Animals*, 13(1), 10. <https://doi.org/10.3390/ani13010010>
- Passos, L. P., Machado, M. A., Vidigal, M. C., and Campos, A. L. 2005. Molecular characterization of elephant grass accessions through RAPD markers. *Ciência Agrotecnologia*, 29(3), 568–574. <https://doi.org/10.1590/S1413-70542005000300009>
- Pinchi-Carbajal, S. F., Quispe-Ccasa, H. A., Ampuero-Trigoso, G., Nolasco-Lozano, E., and Saucedo-Uriarte, J. A. 2024. Morphological and productive correlations of cutting *Pennisetum* varieties under conditions of peruvian humid tropics. *Tropical Animal Science Journal*, 47(3), 363–370. <https://doi.org/10.5398/tasj.2024.47.3.363>
- Respati, A. N., Umami, N., and Hanim, C. 2018. Growth and production of *Brachiaria brizantha* cv. MG5 in three different regrowth phases treated by Gamma radiation dose. *Tropical Animal Science Journal*, 41(3), 179–184. <https://doi.org/10.5398/tasj.2018.41.3.179>
- Rocha, J. R. A. S. C., Machado, J. C., Carneiro, P. C. S., Carneiro, J. C., Resende, M. D. V., Léo, F. J. S., and Carneiro, J. E. S. 2017. Bioenergetic potential and genetic diversity of elephantgrass via morpho-agronomic and biomass quality traits. *Industrial Crops Products*, 95, 485–492. <https://doi.org/10.1016/j.indcrop.2016.10.060>
- Rodrigues, R. C., Sousa, T. V. R., Melo, M. A. A., Araújo, J. S., Lana, R. P., Costa, C. S., Oliveira, M. E., Parente, M. O. M., and Sampaio, I. B. M. 2014. Agronomic, morphogenic and structural characteristics of tropical forage grasses in northeast Brazil. *Tropical Grasslands-Forrajes Tropicales* 2(2), 214-222. [https://doi.org/10.17138/TGFT\(2\)214-222](https://doi.org/10.17138/TGFT(2)214-222)
- Rohlf, F. J. 2000. NTSYS-pc: numerical taxonomy and multivariate analysis system version 2.1. Exeter Publishing Setauket.
- Steel, R. G. D., Torrie, J. H., and Dicky, D. A. 1997. Principles and procedures of statistics, a biometrical approach (3rd ed.). McGraw Hill, Inc. Book Co.
- Swarup, S., Cargill, E. J., Crosby, K., Flagel, L., Kniskern, J., and Glenn, K. C. 2021. Genetic diversity is indispensable for plant breeding to improve crops. *Crop Science*, 61(2), 839–852. <https://doi.org/10.1002/csc2.20377>
- Tilahun, G., Asmare, B., and Mekuriaw, Y. 2017. Effects of harvesting age and spacing on plant characteristics, chemical composition and yield of desho grass (*Pennisetum pedicellatum* Trin.) in the highlands of Ethiopia. *Tropical Grasslands-Forrajes Tropicales*, 5(2), 77–84. [https://doi.org/10.17138/TGFT\(5\)77-84](https://doi.org/10.17138/TGFT(5)77-84)
- Umami, N., Respati, A. N., Rahman, M. M., Umpuch, K., and Gondoe, T. 2022. Somatic embryogenesis and plant regeneration from the apical meristem of Wrukwona Napiergrass (*Pennisetum purpureum*) treated with thidiazuron and cupric sulfate. *Tropical Animal Science Journal*, 45(2), 220–226. <https://doi.org/10.5398/tasj.2022.45.2.220>
- UPOV. 2010. Guidelines for the conduct of tests for distinctness, uniformity and stability: TG/260/1, International Union for the Protection of New Varieties



of Plants: Geneve, Switzerland.
<https://www.upov.int/edocs/tgdocs/en/tg260.pdf>

- Wahyudi, D., Hapsari, L., and Sundari. 2020. RAPD analysis for genetic variability detection of mutant soybean (*Glycine max* (L.) Merr). *Journal Tropical Biodiversity Biotechnology*, 5(1), 68–77. <https://doi.org/10.22146/jtbb.53653>
- Wanjala, B. W., Obonyo, M., Wachira, F. N., Muchugi, A., Mulaa, M., Harvey, J., Skilton, R. A., Proud, J., and Hanson, J. 2013. Genetic diversity in Napier grass (*Pennisetum purpureum*) cultivars: implications for breeding and conservation. *AoB Plants*, 5, 1-10. <https://doi.org/10.1093/aobpla/plt022>
- Yongjun, F., Wei, T., Jinhua, S., Tianjing, Z., Rui, Q., Bo, X., Cunyu, Z., Zhixiong, L., and Anna, Y. T. 2014. Application of random amplified polymorphic DNA (RAPD) markers to identify *Taxus chinensis* var. *mairei* cultivars associated with parthenogenesis. *African Journal Biotechnology*, 13(24), 2385–2393. <https://doi.org/10.5897/AJB2014.13646>
- Zakiah, N. M., Handoyo, T., and Kim, K. M. 2019. Genetic diversity analysis of Indonesian aromatic rice varieties (*Oryza sativa* L.) using RAPD. *Journal Crop Science Biotechnology*, 22(1), 55–63. <https://doi.org/10.1007/s12892-018-0271-0>