REFERENCES

Ahmad, S. S., Tahir, I., Wani, A. S., Dar, R. A., & Nisar, S. (2018). Adenine type and diphenyl urea derived cytokinins improve the postharvest performance of Iris germanica L. cut scapes. Physiology and Molecular Biology of Plants, 24(6), 1127-1137.

Akbaş, F., Kuru, İ. S., & Orcan, P. K. (2015). The effects of BAP and Kin on micropropagation of Ajuga vestita Boiss.; a rare endemic medicinal plant.

Badan Pusat Statistik Provinsi Jawa Tengah (2022). Production of Ornamental Plants by Kind of Plant in jawa Tengah Province (stalks), 2020 and 2021. https://jateng.bps.go.id/statictable/2022/03/15/2539/produksi-tanaman-hias-menurut-jenis-tanaman-tanaman-di-provinsi-jawa-tengah-tangkai-2020-dan-2021.html

Baldauf, C., & Dos Reis, M. S. (2010). Effects of harvesting on population structure of leatherleaf fern (Rumohra adiantiformis (G. Forst.) Ching) in Brazilian Atlantic Rainforest. American Fern Journal, 100(3), 148-158.

Baskaran, P., Moyo, M., & Van Staden, J. (2014). In vitro plant regeneration, phenolic compound production and pharmacological activities of Coleonema pulchellum. South African Journal of Botany, 90, 74-79.

Bhatia, S. (2015). Application of plant biotechnology. Modern applications of plant biotechnology in pharmaceutical sciences, 5, 157-207.

Bhojwani, S. S., & Dantu, P. K. (2013). Micropropagation. In Plant tissue culture: an introductory text (pp. 245-274). Springer, India.

Bielach, A., Hrtyan, M., & Tognetti, V. B. (2017). Plants under stress: involvement of auxin and cytokinin. International journal of molecular sciences, 18(7), 1427.

Bouré, N., Kumar, S. V., & Arnaud, N. (2019). The BAP module: a multisignal integrator orchestrating growth. Trends in plant science, 24(7), 602-610.

Bozsó, Z., & Barna, B. (2021). Diverse Effect of Two Cytokinins, Kinetin and Benzyladenine, on Plant Development, Biotic Stress Tolerance, and Gene Expression. Life, 11(12), 1404.

Cassab, G. I., Eapen, D., & Campos, M. E. (2013). Root hydrotropism: an update. American journal of botany, 100(1), 14-24.

Christiaens, F., Canher, B., Lanssens, F., Bisht, A., Stael, S., De Veylder, L., & Heyman, J. (2021). Pars Pro Toto: Every Single Cell Matters. Frontiers In Plant Science, 12. doi: 10.3389/fpls.2021.656825

Cortleven, A., & Schmülling, T. (2015). Regulation of chloroplast development and function by cytokinin. Journal of experimental botany, 66(16), 4999-5013.

Dahanayaka, N., Dissanayaka, D. M. P., Inoka, K. P. I., Ranawake, A. L., Mapalana, K., & Lanka, S. (2014). Effect of Different Cytokinin (BAP and Kinetin) for growth and yield performances of Sri Lankan Traditional Rice varieties (Oryza sativa L.) Suwadal and Kahatawee. In Proceedings of Jaffna University International Research Conference.

De Souza, G. C., Kubo, R., Guimarães, L., & Elisabetsky, E. (2006). An ethnobiological assessment of Rumohra adiantiformis (samambaia-preta) extractivism in Southern Brazil. *Biodiversity & Conservation*, *15*(8), 2737-2746.

Dragoni, F., Volpi, I., Lwin, A. K., Triana, F., Tozzini, C., & Ragaglini, G. (2021). Comparing different propagation methods for giant reed (Arundo donax L.) across three years from planting. Biomass and Bioenergy, 154, 106258.

Erland, L. A., Giebelhaus, R. T., Victor, J. M., Murch, S. J., & Saxena, P. K. (2020). The Morphoregulatory Role of Thidiazuron: Metabolomics-guided hypothesis generation for mechanisms of activity. Biomolecules, 10(9), 1253.

Gruber, B. D., Giehl, R. F. H., Friedel, S., and von Wirén, N. (2013). Plasticity of the Arabidopsis root system under nutrient deficiencies. Plant Physiol. 163, 161–179. doi: 10.1104/pp.113.218453

Gubišová, M., Gubiš, J., Žofajová, A., Mihálik, D., & Kraic, J. (2013). Enhanced in vitro propagation of Miscanthus× giganteus. Industrial crops and products, 41, 279-282.

Guo, L., Plunkert, M., Luo, X., & Liu, Z. (2021). Developmental regulation of stolon and rhizome. Current opinion in plant biology, 59, 101970.

Haikal Amirullah (2020) | Rakyat Merdeka.id: Promising Leatherleaf Export https://rm.id/baca-berita/ekonomi-bisnis/27066/ekspor-leather-leaf-kian-menjanjikan

Harshitha, H. M., Chandrashekar, S. Y., Thippesha, D., Sarvajna, B. S., & Ganapathi, M. (2021). Influence of growing media on the growth and morphology of Leatherleaf fern (Rumohra adiantiformis G. Forst.) under protected condition.

Hayes, W. J. (2010). Hayes' Handbook of Pesticide Toxicology (Vol. 2). Elsevier/AP.

Hill, K., & Schaller, G. E. (2013). Enhancing plant regeneration in tissue culture: a molecular approach through manipulation of cytokinin sensitivity. Plant signaling & behavior, 8(10), 212-24.

Hluska, T., Hlusková, L., & Emery, R. N. (2021). The Hulks and the Deadpools of the cytokinin universe: A dual strategy for cytokinin production, translocation, and signal transduction. Biomolecules, 11(2), 209.

Hong, M. J., Kim, J. B., Yoon, Y. H., Kim, S. H., Ahn, J. W., Jeong, I. Y., et al. (2014). The effects of chronic gamma irradiation on oxidative stress response and the expression of anthocyanin biosynthesis-related genes in wheat (Triticum aestivum). Int. J. Radiat. Biol. 90, 1218–1228. doi: 10.3109/09553002.2014.934930

Jang, B. K., Cho, J. S., Park, K., & Lee, C. H. (2020). Practical methodology for gametophyte proliferation and sporophyte production in green penny fern (Lemmaphyllum microphyllum C. Presl) using mechanical fragmentation. In Vitro Cellular & Developmental Biology-Plant, 56(3), 318-324.

Jang, C. S., Kamps, T. L., Skinner, D. N., Schulze, S. R., Vencill, W. K., & Paterson, A. H. (2006). Functional classification, genomic organization, putatively cis-acting regulatory elements, and relationship to quantitative trait loci, of sorghum genes with rhizome-enriched expression. Plant physiology, 142(3), 1148-1159.

Jones, B., & Ljung, K. (2012). Subterranean space exploration: the development of root system architecture. Current opinion in plant biology, 15(1), 97-102.

Kieber, J. J., & Schaller, G. E. (2014). Cytokinins. The Arabidopsis Book/American Society of Plant Biologists, 12.

Lata, H., Chandra, S., Wang, Y. H., Raman, V., & Khan, I. A. (2013). TDZ-induced high frequency plant regeneration through direct shoot organogenesis in Stevia rebaudiana Bertoni: an important medicinal plant and a natural sweetener.

Le Bris, M. (2017). Hormones in growth and development.

Luayana (2022). Green Fern with Rhizome and Roots [Clip Art]. Dreamstime. https://www.dreamstime.com/green-fern-rhizome-roots-white-background-green-fern-rhizome-roots-image120195041

Marwoto, B. (2010). (Efforts on Development of Ornamental Plant Areas for Export [Ebook]. Cianjur, Jawa Barat: Litbang Pertanian. Retrieved from https://www.litbang.pertanian.go.id/buku/memperkuat_dayasaing_produk_pe/BAB-III-9.pdf

Márquez, G., Alarcón, M., & Salguero, J. (2019). Cytokinin inhibits lateral root development at the earliest stages of lateral root primordium initiation in maize primary root. Journal of Plant Growth Regulation, 38(1), 83-92.

Nisler, J. (2018). TDZ: mode of action, use and potential in agriculture. In Thidiazuron: from urea derivative to plant growth regulator (pp. 37-59). Springer, Singapore.

Orlikowska, T., Nowak, K., & Reed, B. (2017). Bacteria in the plant tissue culture environment. Plant Cell, Tissue and Organ Culture (PCTOC), 128(3), 487-508.

Pai, S. R., & Desai, N. S. (2018). Effect of TDZ on various plant cultures. In Thidiazuron: From urea derivative to plant growth regulator (pp. 439-454). Springer, Singapore.

Park, H. Y., Kang, K. W., Kim, D. H., & Sivanesan, I. (2018). In vitro propagation of Cymbidium goeringii Reichenbach fil. through direct adventitious shoot regeneration. Physiology and Molecular Biology of Plants, 24(2), 307-313.

Prasad, J., Tripathi, D. K., Singh, O. P., Rawat, D. K., & Singh, M. (2022). Effect of growth regulators on growth parameters of lentil (Lens culinaris L.).

Ravi, B. X., Varuvel, G. V. A., & Robert, J. (2015). Apogamous sporophyte development through spore reproduction of a South Asia's critically endangered fern: Pteris tripartita Sw. Asian Pacific Journal of Reproduction, 4(2), 135-139.

Rezali, N. I., Sidik, N. J., Saleh, A., Osman, N. I., & Adam, N. A. M. (2017). The effects of different strength of MS media in solid and liquid media on in vitro growth of Typhonium flagelliforme. Asian Pacific Journal of Tropical Biomedicine, 7(2), 151-156.

Roy, A. R., Sajeev, S., Pattanayak, A., & Deka, B. C. (2012). TDZ induced micropropagation in Cymbidium giganteum Wall. Ex Lindl. and assessment of genetic variation in the regenerated plants. Plant Growth Regulation, 68(3), 435-445.

Schaller, G. E., Street, I. H., & Kieber, J. J. (2014). Cytokinin and the cell cycle. Current opinion in plant biology, 21, 7-15.

Schaller, G. E., Bishopp, A., & Kieber, J. J. (2015). The yin-yang of hormones: cytokinin and auxin interactions in plant development. The Plant Cell, 27(1), 44-63.

Shi, F., Wang, M., & An, Y. (2020). Overexpression of a B-type cytokinin response regulator (OsORR2) reduces plant height in rice. Plant signaling & behavior, 15(8), 1780405.

Shibasaki, K., Takebayashi, A., Makita, N., Kojima, M., Takebayashi, Y., Kawai, M., ... & Sakakibara, H. (2021). Nitrogen Nutrition Promotes Rhizome Bud Outgrowth via Regulation of Cytokinin Biosynthesis Genes and an Oryza longistaminata Ortholog of FINE CULM 1. Frontiers in Plant Science, 12, 788.

Shukla, S. P., & Khare, P. B. (2012). In-vitro mass multiplication of a threatened tree fern, Cyathea spinulosa Wall. ex Hook. International Journal of Genetic Engineering and Biotechnology, 3(1), 15-23.

Sivanesan, I., Song, J. Y., Hwang, S. J., & Jeong, B. R. (2011). Micropropagation of Cotoneaster wilsonii Nakai—a rare endemic ornamental plant. Plant Cell, Tissue and Organ Culture (PCTOC), 105(1), 55-63.

Su, Y. H., & Zhang, X. S. (2014). The hormonal control of regeneration in plants. Current topics in developmental biology, 108, 35-69.

Taiz, L., Zeiger, E., Møller, I. M., & Murphy, A. (2015). Plant physiology and development (No. Ed. 6). Sinauer Associates Incorporated.

Yildiz, M. (2012). The prerequisite of the success in plant tissue culture: high frequency shoot regeneration. Recent advances in plant in vitro culture. Intech, Rijeka, 63-90.

Yu, R., Zhang, G., Li, H., Cao, H., Mo, X., Gui, M., ... & Wang, J. (2017). In vitro propagation of the endangered tree fern Cibotium barometz through formation of green globular bodies. Plant Cell, Tissue and Organ Culture (PCTOC), 128(2), 369-379.

Wang, Yan, Yiting Wang, Kunfeng Li, Xijiao Song, and Jianping Chen. "Characterization and comparative expression profiling of browning response in Medinilla formosana after cutting." Frontiers in plant science 7 (2016): 1897.

Wendrich, J. R., Yang, B., Vandamme, N., Verstaen, K., Smet, W., Van de Velde, C., ... & De Rybel, B. (2020). Vascular transcription factors guide plant epidermal responses to limiting phosphate conditions. Science, 370(6518), eaay4970.

Winarto, B., & da Silva, J. A. T. (2012). Improved micropropagation protocol for leatherleaf fern (Rumohra adiantiformis) using rhizomes as donor explant. Scientia horticulturae, 140, 74-80.

Wybouw, B., & De Rybel, B. (2019). Cytokinin–a developing story. Trends in plant science, 24(2), 177-185.

APPENDICES

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Media Treatment	Statistic	df	Sig.	Statistic	df	Sig.
Height of Explants (cm)	1/2 MS Control	.265	5	.200*	.909	5	.462
	BA 0.5 mg/L	.229	5	.200*	.867	5	.254
	BA 1 mg/L	.145	5	.200*	.994	5	.991
	BA 2 mg/L	.216	5	.200*	.885	5	.332
	BA 4 mg/L	.307	5	.141	.775	5	.050
	Kin 0.5 mg/L	.229	5	.200*	.867	5	.254
	Kin 1 mg/L	.300	5	.161	.921	5	.537
	Kin 2 mg/L	.141	5	.200*	.979	5	.928
	Kin 4 mg/L	.127	5	.200*	.999	5	1.000
	TDZ 0.0125 mg/L	.237	5	.200*	.961	5	.814
	TDZ 0.025 mg/L	.268	5	.200*	.806	5	.090
	TDZ 0.05 mg/L	.221	5	.200*	.953	5	.758
	TDZ 0.1 mg/L	.267	5	.200*	.939	5	.656

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Height of Explants (cm)	Based on Mean	2.459	12	52	.013
	Based on Median	1.274	12	52	.262
	Based on Median and with adjusted df	1.274	12	27.271	.288
	Based on trimmed mean	2.392	12	52	.015

Appendix 1. Height of Explants Normality Test (Kolmogorov-Smirnov and Shapiro-Wilk) and Homogeneity of Variances Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Media Treatment	Statistic	df	Sig.	Statistic	df	Sig.
Total Fronds Number (n)	1/2 MS Control	.223	5	.200*	.907	5	.447
	BA 0.5 mg/L	.185	5	.200*	.980	5	.937
	BA 1 mg/L	.232	5	.200*	.914	5	.492
	BA 2 mg/L	.202	5	.200*	.920	5	.530
	BA 4 mg/L	.146	5	.200*	.992	5	.985
	Kin 0.5 mg/L	.256	5	.200*	.837	5	.157
	Kin 1 mg/L	.224	5	.200*	.842	5	.171
	Kin 2 mg/L	.300	5	.161	.842	5	.171
	Kin 4 mg/L	.184	5	.200*	.912	5	.479
	TDZ 0.0125 mg/L	.219	5	.200*	.916	5	.507
	TDZ 0.025 mg/L	.227	5	.200*	.897	5	.395
	TDZ 0.05 mg/L	.193	5	.200*	.933	5	.619
	TDZ 0.1 mg/L	.348	5	.047	.779	5	.054

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Total Fronds Number (n)	Based on Mean	1.693	12	52	.096
	Based on Median	1.068	12	52	.405
	Based on Median and with adjusted df	1.068	12	32.685	.416
	Based on trimmed mean	1.685	12	52	.097

Appendix 2. Fronds Number Normality Test (Kolmogorov-Smirnov and Shapiro-Wilk) and Homogeneity of Variances Test

Tests of Normality

	Media Treatment	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Total Roots Number (n)	1/2 MS Control	.178	5	.200*	.981	5	.940
	BA 0.5 mg/L	.224	5	.200*	.842	5	.171
	BA 1 mg/L	.287	5	.200*	.914	5	.490
	BA 2 mg/L	.273	5	.200*	.852	5	.201
	BA 4 mg/L	.253	5	.200*	.854	5	.207
	Kin 0.5 mg/L	.234	5	.200*	.928	5	.585
	Kin 1 mg/L	.203	5	.200*	.976	5	.914
	Kin 2 mg/L	.141	5	.200*	.979	5	.928
	Kin 4 mg/L	.268	5	.200*	.806	5	.090
	TDZ 0.0125 mg/L	.300	5	.161	.833	5	.146
	TDZ 0.025 mg/L	.246	5	.200*	.956	5	.777
	TDZ 0.05 mg/L	.263	5	.200*	.951	5	.747
	TDZ 0.1 mg/L	.250	5	.200*	.885	5	.332

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Total Roots Number (n)	Based on Mean	1.090	12	52	.388
	Based on Median	.538	12	52	.880
	Based on Median and with adjusted df	.538	12	41.134	.877
	Based on trimmed mean	1.040	12	52	.428

Appendix 3. Root Number Normality Test (Kolmogorov-Smirnov and Shapiro-Wilk) and Homogeneity of Variances Test

Tests of Normality

	Media Treatment	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Root Length (cm)	1/2 MS Control	.300	5	.161	.841	5	.168
	BA 0.5 mg/L	.265	5	.200*	.836	5	.154
	BA 1 mg/L	.227	5	.200*	.910	5	.468
	BA 2 mg/L	.253	5	.200*	.925	5	.560
	BA 4 mg/L	.241	5	.200*	.902	5	.421
	Kin 0.5 mg/L	.231	5	.200*	.881	5	.314
	Kin 1 mg/L	.337	5	.065	.800	5	.081
	Kin 2 mg/L	.254	5	.200*	.914	5	.492
	Kin 4 mg/L	.265	5	.200*	.836	5	.154
	TDZ 0.0125 mg/L	.251	5	.200*	.868	5	.257
	TDZ 0.025 mg/L	.224	5	.200*	.931	5	.603
	TDZ 0.05 mg/L	.221	5	.200*	.953	5	.758
	TDZ 0.1 mg/L	.246	5	.200*	.956	5	.777

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Root Length (cm)	Based on Mean	1.830	12	52	.067
	Based on Median	.945	12	52	.511
	Based on Median and with adjusted df	.945	12	17.213	.529
	Based on trimmed mean	1.728	12	52	.087

Appendix 4. Root Length Normality Test (Kolmogorov-Smirnov and Shapiro-Wilk) and Homogeneity of Variances Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Media Treatment	Statistic	df	Sig.	Statistic	df	Sig.
Rhizome Grown (n)	1/2 MS Control	.300	5	.161	.813	5	.103
	BA 0.5 mg/L	.243	5	.200*	.884	5	.329
	BA 1 mg/L	.256	5	.200*	.843	5	.174
	BA 2 mg/L	.201	5	.200*	.881	5	.314
	BA 4 mg/L	.220	5	.200*	.923	5	.547
	Kin 0.5 mg/L	.246	5	.200*	.956	5	.777
	Kin 1 mg/L	.256	5	.200*	.955	5	.775
	Kin 2 mg/L	.265	5	.200*	.836	5	.154
	Kin 4 mg/L	.231	5	.200*	.881	5	.314
	TDZ 0.0125 mg/L	.241	5	.200*	.821	5	.119
	TDZ 0.025 mg/L	.237	5	.200*	.961	5	.814
	TDZ 0.05 mg/L	.231	5	.200*	.881	5	.314
	TDZ 0.1 mg/L	.201	5	.200*	.881	5	.314

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Rhizome Grown (n)	Based on Mean	.856	12	52	.595
	Based on Median	.473	12	52	.921
	Based on Median and with adjusted df	.473	12	39.482	.918
	Based on trimmed mean	.841	12	52	.609

Appendix 5. Rhizome Grown Normality Test (Kolmogorov-Smirnov and Shapiro-Wilk) and Homogeneity of Variances Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Media Treatment	Statistic	df	Sig.	Statistic	df	Sig.
Rhizome Length (cm)	1/2 MS Control	.273	5	.200*	.852	5	.201
	BA 0.5 mg/L	.218	5	.200*	.846	5	.182
	BA 1 mg/L	.241	5	.200*	.821	5	.119
	BA 2 mg/L	.235	5	.200*	.955	5	.775
	BA 4 mg/L	.335	5	.069	.860	5	.228
	Kin 0.5 mg/L	.198	5	.200*	.957	5	.787
	Kin 1 mg/L	.270	5	.200*	.916	5	.502
	Kin 2 mg/L	.231	5	.200*	.881	5	.314
	Kin 4 mg/L	.213	5	.200*	.939	5	.656
	TDZ 0.0125 mg/L	.291	5	.191	.905	5	.440
	TDZ 0.025 mg/L	.300	5	.161	.836	5	.154
	TDZ 0.05 mg/L	.224	5	.200*	.865	5	.246
	TDZ 0.1 mg/L	.300	5	.161	.833	5	.146

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Rhizome Length (cm)	Based on Mean	.847	12	52	.603
	Based on Median	.497	12	52	.907
	Based on Median and with adjusted df	.497	12	36.741	.903
	Based on trimmed mean	.817	12	52	.632

Appendix 6. Rhizome Length Normality Test (Kolmogorov-Smirnov and Shapiro-Wilk) and Homogeneity of Variances Test