



DAFTAR PUSTAKA

- Abdi, H. 2003. Multivariate Analysis. In: Lewis-Beck M., Bryman, A., Futing T. (Eds.) *Encyclopedia of Social Sciences Research Methods*. Thousand Oaks (CA): Sage. pp:1-4
- Ackerfield, J., & Wen, J. 2002. A morphometric analysis of *Hedera* L. (the ivy genus, Araliaceae) and its taxonomic implications. *Adansonia* 24 (2): 197-212
- Ammar, I. B.,1 Harzallah-Skhiri, F., & Dridi, B. Al M. 2014. Morphological variability of Wild Cardoon (*Cynara cardunculus* L. var. *sylvestris*) populations in North of Tunisia. *Hindawi* 10: 1-9
- Anggraeni, E. 2008. Random Amplified Polymorphic DNA (RAPD), suatu metode analisis DNA dalam menjelaskan berbagai fenomena biologi. *Biospecies* 1(2):73-76
- Anonymous. 2002. *Pengenalan budidaya talas, garut, ganyong, suweg, gembili, ubi kelapa, iles-iles*. Direktorat Jenderal Bina Produksi Tanaman Pangan. Direktorat Kacang-kacangan dan Umbi-umbian. Jakarta. 85 hlm.
- Anonymous. 2011. *Bioteknologi Jalan Pintas Angkat Produksi Petani* “Peran Markah Molekuler dalam Pemuliaan Tanaman”. Badan Litbang Pertanian. Bogor.
- Anonymous. 2013. *Studi Prospek dan Peluang Pasar Industri Tepung Terigu (Gandum) di Indonesia*. Central Data Mediatama Indonesia. Jakarta. 112 hlm.
- Anshary, S.S. 2010. *Studi keragaman ganyong (*Canna edulis Ker.*) di wilayah Eks-Karesidenan Surakarta berdasarkan ciri morfologi dan pola pita isozim*. Skripsi. Jurusan Biologi FMIPA Universitas Sebelas Maret. Surakarta
- Asy'ari, M. & Noer, A. S. 2005. Optimasi konsentrasi MgCl₂ dan suhu annealing pada proses amplifikasi *multifragmens* mtDNA dengan metoda PCR. *JKSA*. 8(1):24-28
- Ayana, A., & Bekele, E. 1999. Multivariate analysis of morphological variation in sorghum (*Sorghum bicolor* (L.) Moench) germplasm from Ethiopia and Eritrea. *Genet. Resour. Crop Ev.* 46: 273–284
- Azrai, M. 2006. Sinergi Teknologi Marka Molekular Dalam Pemuliaan Tanaman Jagung. *Jurnal Litbang Pertanian* 25(3):81-89
- Bardakci, F. 2001. Random Amplified Polymorphic DNA (RAPD) Markers. *Turkey J. Biology*, 25: 185–196
- Boratyński, A., Jasińska, A.K., Marcysiak, K., Mazur, M., Romo, A.M., Boratyńska, K., Sobierajska , K. & Iszkuło, G. 2013. Morphological differentiation supports the genetic pattern of the geographic structure of *Juniperus thurifera* (Cupressaceae). *Plant Syst. Evol.* 299:773–784
- Bozokalfa, M.K., Esiyok, D. & Turhan, K.. 2009. Patterns of phenotypic variation in a germplasm collection of pepper (*Capsicum annuum* L.) from Turkey. *Spanish J. Agric. Res.* 7(1): 83-95



- Brandenburg, W.A. 1986. *Objectives in classification of cultivated plants*. In: Styles, B.T. (Ed.). *Infraspecific Classification of Wild and Cultivated Plants*. The Systematics Association Special Volume No.29. Oxford University Press, New York. pp.87-98
- Brickel, C.D., Alexander, C., David, J.C., Hetterscheid, W.L.A., Leslie, A.C., Mallcot, V., Jin, X.B. & Cubey, J.J. 2009. *International Code of Nomenclature for Cultivated Plants*. Scientia Horticulturae 10. International Society for Horticultural Science, Leiden. 184 pp.
- Brus, R., Ballian, D., Zhelev, P., Pandža, M., Bobinae, M., Acevski, J., Raftoyannis, Y., & Jarni, K. 2011. Absence of geographical structure of morphological variation in *Juniperus oxycedrus* L. subsp. *oxycedrus* in the Balkan Peninsula. *Eur. J. Forest Res.* 130: 657-670
- Cronquist, A. 1981. *An Integrated System of Classification of Flowering Plants*. Columbia University Press
- Davis, P.H. & Heywood, V.H.. 1973. *Principles of Angiosperm Taxonomy*. New York: Robert E.Kreiger Publisher Company
- De Lima, M.S., Carneiro, J.E.S., Carneiro , P.C.S., Pereira, C.S., Vieira, R.F., & Cecon, P.R. 2012. Characterization of genetic variability among common bean genotypes by morphological descriptors. *Crop Breed. Appl. Biot.* 12:76-84
- Decraene, L. P. R., & Smets, E. F. 2001. Staminodes: Their Morphological and Evolutionary Significance. *The Botanical Review* 67(3): 351-402
- Dewi, K., Trisunaryanti, W., & Soetarto, E.S. 2011. Development of Bioethanol Production from Canna (Canna edulis kerr.) Rhizome. *International Conference on Biology, Environment and Chemistry* 1:237-240
- Diederichsen, A. 2004. Case Studies for the Use of Infraspecific Classifications in Managing Germplasm Collections of Cultivated Plants. In: C.G. Davidson and P. Trehane (Eds.). Proc. XXVI IHC – IVth Int. Symp. Taxonomy of Cultivated Plants Ed. *Acta Hort.* 634:127-139
- Donald, C.M. & Hamblin, J. 1983. The convergent evolution of annual seed crops in agriculture. *Advances in Agron.* 36:97-143
- Doyle, J. J. & J. L. Doyle. 1987. A rapid DNA isolation procedure for small quantities of fresh leaf tissue. *Phytochemical Bulletin* 19: 11-15
- Dwiatmini, K., Mattjik, N.A., Aswidinoor, H., & Matius, N.I.T. 2003. Analisis pengelompokan dan hubungan kekerabatan spesies anggrek *Phalaenopsis* berdasarkan kunci determinasi fenotifik dan marka molekuler RAPD. *J. Hort.* 13(1):16-27
- Edwin-Wosu, N.L. 2012. Biosystematics studies in Loganiaceae (Series 4): Phytomorphological characterization in relation to the intraspecific delimitation among members of the three species in the genus *Anthocleista* found in parts of the Niger Delta Tropical rainforest, Nigeria. *European Journal of Experimental Biology* 2 (6): 1962-1973.
- Ellison, A.M., Buckley, H.L., Miller, T.E., & Gotelli, N.J. 2004. Morphological variation in *Sarracenia purpurea* (Sarraceniaceae): geographic, environmental, and taxonomic correlates. *Am. J. Bot.* 91(11): 1930–1935



- Frankham, R., Briscoe, D. A. & Ballou, J. D. 2002. *Introduction to conservation genetics*. Cambridge University Press, New York, New York, USA.
- Gade, D. W. 1966. Achira, the Edible Canna, Its Cultivation and Use in the Peruvian Andes. *Economic Botany* 20(4): 407-415
- Gottlieb, L.D. 1984. Genetics and morphological evolution in plants. *The American Naturalist* 123 (5): 681-700
- Gower, J.C. 1971. A general coefficient of similarity and some of its properties. *Biometrics* 27: 857-874
- Hammer, K. & Morimoto, Y. 2011. *Classification of infraspecific variation in crop plants*. In: Guarino, L. et al. (Eds.). Collecting Plant Genetic Diversity: Technical Guidelines. Bioversity International.
- Hanelt, P. 1986. *Formal and informal classification of the infraspecific variability of cultivated plants – advantages and limitations*. In: Styles, B.T. (Ed.). *Infraspecific Classification of Wild and Cultivated Plants*. The Systematics Association Special Volume No.29. Oxford University Press, New York. pp.139-156.
- Hartati, S. N., Prana, T. K., & Prana, M.S. 2001. Comparative study on some Indonesian Taro (*Colocasia esculenta* (L.) Schott.) samples using morphological characters, RAPD markers, and isozyme banding pattern. *Annales Bogoriensis* 7(2):65-73
- Henderson, A. 2006. Traditional morphometrics in plant systematics and its role in palm systematics. *Bot. J. Linn. Soc.* 151: 103–111
- Hetterscheid, W. L. A. & Brandenburg, W. A. 1995. Culon versus Taxon: conceptual issues in cultivated plant systematics. *Taxon* 44(2):161-175
- Horry, P. 1989. *Chimico Taxinomiceet Organization Genetique*. Sud Centre de Orsay: University de Paris
- Indrawan, M., Primack, R. B. & Supriatna, J.. 2007. *Biologi Konservasi*. Jakarta: Yayasan Obor Indonesia.
- Izhaki, I., Tsahar, E., Paluy, I., & Friedman, J. 2002. Within population variation and interrelationships between morphology, nutritional content, and secondary compounds of *Rhamnus alaternus* fruits. *New Phytologist* 156: 217-223
- Jeffrey, C. 1968. Systematic categories for cultivated plants. *Taxon* 17(2): 109-114
- Jensen, R. 2009. Phenetics: revolution, reform or natural consequence. *Taxon* 58(1): 50-60.
- Jiri, U. & Bela, S. 2001. A preliminary synopsis of Canna descriptors. *Proceedings of 9th International conference of Horticulture*. 2:401-406
- Jones, S.B. Jr. & Luchsinger, A. 1986. *Plant Systematics*. McGraw-Hill Book Company. New York. Pp. 587
- Julisaniah, N.I., Sulistyowati, L., & Sugiharto, A.N. 2008. Analisis Kekerabatan Mentimun (*Cucumis sativus L.*) menggunakan Metode RAPD-PCR dan Isozym. *Biodiversitas* 9 (2):99-102
- Kovach, W.L. 2007. *MVSP-A Multivariate Statistical Package, 3.1*. Kovach Computing Service, Pentraeth, Wales.



- Kumar, A., Kaul, M.K., Bhan, M. K. Khanna, P.K., and Suri, K. A. 2007. Morphological and chemical variation in 25 collections of the Indian medicinal plant, *Withania somnifera* (L.) Dunal (Solanaceae). *Genet. Resour. Crop Evol.* 54:655–660
- Langga, I.F., Restu, M., & Kuswinanti, T. 2012. Optimalisasi Suhu dan Lama Inkubasi dalam Ekstraksi DNA Tanaman Bitti (*Vitex cofassus* Reinw.) serta Analisis Keragaman Genetik dengan Teknik RAPD-PCR. *J. Sains & Teknologi* 12 (3) : 265 – 276
- Lawrence, G.H.M. 1995. An *Introduction to Plant Taxonomy*. The Macmillan Company. New York. Pp. 15-17
- Lewis, J. 1986. *The Classification of Cultivars in Relation to Wild Plants. Infraspecific Classification of Wild and Cultivated Plant*. The Systematic Association. No. 29. Clarendon Press, Oxford. P:115-137
- Maas-van de Kamer, H. & Maas, P. J. M.. 2008. The Cannaceae of the world. *Blumea*. 53: 247-318
- Matoba, H., Tanaka, N., Uchiyama, H., & Koyama, T. 2011. The Origin of Southeastern Asian Triploid Edible Canna (*Canna discolor* Lindl.) Revealed by Molecular Cytogenetical Study. *Economic Botany* 65(3):308-314
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, N., Greuter, W., Hawksworth, D.L., Herenton, P.S., Knapp, S., Marhold, K., Prado, J., van Reine, W.F.P., Smith, G.F., Wiersma, J.H. & Turland, N.J. 2012. *International Code of Nomenclature for Algae, Fungi, and Plants (Melbourne Code)*. Regnum Vegetabile 154. Koeltz Scientific Books, Koenigstein, Germany. 240 pp.
- Moore, B.R., Moore, T., & Narkkong, N.A. 2010. A preliminary systematic analysis of leaf epidermal characters for six *Smilax* species in Thailand. *Science Asia* 36: 175-179
- Mulumba, J.W. & Kakudidi, E. 2011. Infraspecific delimitation of *Acacia senegal* (Fabaceae) in Uganda. *American Journal of Plant Sciences* 2: 345-353
- Oliveira,F.I.C., Bordallo, P.N., Castro, A.C.R., & Correia, D. 2013. Genetic diversity of spineless *Cereus jamacaru* accessions using morphological and molecular markers. *Genetics and Molecular Research* 12 (4): 4586-4594
- Ong, H.C. & Siemonsma, J.S. 1996. *Canna indica L.* in:Flach, M. & Rumawas, F. (editors): *plants resources of south-east asia no.9 plants yielding non-seed Carbohydrates*. Backhuys Publishers, Leiden. Pp. 63-66
- Pandin, D. S. 2009. Keragaman genetik kultivar kelapa dalam Mapanget (DMT) dan dalam tenaga (DTA) berdasarkan penanda RAPD. *Buletin Plasma* 36:17-27
- Pangesti, T.L. 2009. Pemanfaatan Ganyong (*Canna edulis*) pada Pembuatan Mie Segar sebagai Upaya Penganekaragaman Pangan Non Beras. *Media Pendidikan, Gizi & Kuliner* 1(1):1-7
- Pharmawati, M. 2009. Optimalisasi ekstraksi DNA dan PCR RAPD pada *Grevillea spp.* (Proteaceae). *Jurnal Biologi* (1) : 12 -16
- Padmalatha, K., M.N.V. & Prasad. 2006. Optimization of DNA isolation and PCR protocol for RAPD analysis of selected medicinal and aromatic plants of conservation concern from Peninsular India. *African J. Biotech.* 5: 230-234



- Panwar, B. S., Singh, R., Dwivedi, V. K., Kumar, A. & Kumari, P. 2013. Genetic diversity among Indian Aloe accession based on RAPD analysis. *Int. J. Med. Arom.* 3(3):326-333
- Patra, B., Acharya, L., Mukherjee, A.K., Panda, M.K., & Panda, P.C. 2008. Molecular characterization of ten cultivar of Canna lilies (Canna Linn.) using PCR based molecular markers (RAPDs and ISSRs). *International Journal of Integrative Biology* 2(2):129-137
- Pi, E.X, Peng, Q.F., Lu, H.F., Shen, J.B. & Du, Y.Q. 2009. Leaf morphology and anatomy of *Camellia* section *Camellia* (Theaceae). *Bot. J. Linn. Soc.* 159: 456–476
- Piyachomkwan, K., Chotineeranat, S., & Kijkhunasatian, C. 2002. Edible canna (*Canna edulis*) as a complementary starch source to cassava for starch industry. *Industrial Crops and Products* 16:11-21
- Prince, L.M. 2010. Phylogenetic relationships and species delimitation in *Canna* (Cannaceae). Pp. 307-331, in SEBERG, O., PETERSEN, G., BARFOD, A.S., & DAVIS, J.I. (eds), *Diversity, Phylogeny, and Evolution in the Monocotyledons*, Aarhus University Press, Århus.
- Purnomo, Daryono, B. S., Rugayah, Sumardi, I., & Shiwachi, H. 2012. Phenetic analysis and intraspesific classification of Indonesian water yam germplasm (*Dioscorea alata* L.) based on morphological characters. *SABRAO Journal of Breeding and Genetics* 44(2):277-291
- Poulsen, A.D. & Nordal, I. 2005. A phenetic analysis and revision of Guineo-Congolean rain forest taxa of *Chlorophytum* (Anthericaceae). *Bot. J. Linn. Soc.* 148: 1-20.
- Rohlf F.J. 1970. Adaptive hierarchical clustering schemes. *Syst. Zool.* 18: 58-82.
- Sambrook, J. & Russel, D.W.. 1989. *Molecular Cloning: A Laboratory Manual* 2nd edition. New York: Cold-Spring Harbor Laboratory Press. Pp.165
- Stepansky, A., Kovalski, I., & Perl-Treves, R. 1999. Intraspecific Classification of Melons (*Cucumis melo* L.) in View of Their Phenotypic and Molecular Variation. *Plant Syst. Evol.* 217: 313-332
- Sapir, Y., Shmida, A., Fragman, O., & Comes, P. 2002. Morphological variation of the *Oncocyclus* irises (Iris: Iridaceae) in the southern Levant. *Bot. J. Linn. Soc.* 139: 369-282
- Sastrapradja, S., Niniek, W.S., Sarkat, D., & Rukmini, S. 1977. *Ubi-ubian*. Lembaga Biologi Nasional. LIPI. PN Balai Pustaka. 113 hlm.
- Sastrapradja, S. & Rifai, M.A. 1989. *Mengenal Sumber Pangan Nabati dan Plasma Nutfahnya*. Puslibang bioteknologi-LIPI, Bogor. Pp:1-25
- Semagn, K., Bjørnstad, A., & Ndjiondjop, M.N. 2006. An overview of molecular marker methods for plants. *African Journal of Biotechnology* 5(25): 2540-2568
- Singh, G. 1999. *Plant Systematics*. New Hampshire: Science Publisher, Inc.
- Sneath, P.A. & Sokal, R. H. 1973. *Numerical Taxonomy: The Principles and Practice of Numerical Classification*. W.H. Freeman and Company, San Francisco.
- Sokal, R. H & Sneath, P.A. 1963. *Principles of Numerical Taxonomy*. W. H. Freeman and Co. San Francisco, pp. 291-303



UNIVERSITAS
GADJAH MADA

Keragaman dan Klasifikasi Intraspesies Ganyong (*Canna indica L.*) di Pulau Jawa Berdasarkan

Karakter

Morfologis dan Molekular

NOVITA SARI, Dr. Purnomo, M.S.; Dr. Budi Setiadi Daryono, M.Agr.Sc.

Universitas Gadjah Mada, 2015 | Diunduh dari <http://etd.repository.ugm.ac.id/>

- Steenis, C. G. G. J. van. 2002. *Flora Untuk Sekolah di Indonesia*. Cetakan Kedua Belas. (diterjemahkan oleh Moeso Surjowinoto, dkk.). Pradnya Paramita, Jakarta
- Stuessy, T.F. 1990. *Plant Taxonomy. The Systematic Evaluation of Comparative Data*. New York: Columbia University Press
- Suhartini, T. & Hadiatmi. 2010. Keragaman Karakter Morfologi Tanaman Ganyong. *Buletin Plasma Nutfah* 16 (2):118-125
- Susandarini, R. 2014. *Biosistematis Pamelo (Citrus maxima (Burm.) Merr.) di Indonesia Berdasarkan Morfologi, Fitokimia, dan Molekular*. Disertasi. UGM.
- Supriyanta, Kurniasih, B., Triwitono, P., Suharno, & Sundari., T. 2000. *Eksplorasi dan Identifikasi Plasma Nutfah Ganyong (canna edulis) sebagai Sumber Pati*. Laporan Hibah. Lemlit UGM.
- Susantidiana, Surahman, M., Wijaya, A., & Lakitan, B. 2009. Identifikasi Beberapa Aksesi Jarak Pagar (*Jatropha curcas L.*) Melalui Analisis RAPD dan Morfologi. *J. Agron. Indonesia* 37 (2) : 167– 173
- Tanaka, N. 2001. Taxonomic revision of the Family Cannaceae in the New World and Asia. *Makinoa* 1: 1-70
- Ugent, D., Pozorski, S., & Pozorski ,T. 1984. New Evidence for Ancient Cultivation of *Canna edulis* in Peru. *Economic Botany* 38(4): 417-432
- Williams, J.G.K., Kubelik, A.R., Livak, K.J., Rafalski, J.A., & Tingey, S.V. 1990. DNA polymorphisms amplified by arbitrary primers are useful as genetic markers. *Nucleic Acids Res.* 18: 6531-6535
- Zhao, K., Zhou, M.Q., & Chen, L.Q. 2007. Genetic diversity and discrimination of *Chimonanthus praecox* L. Link germplasm using ISSR and RAPD markers. *Hort. Science* 42(5): 1144-1148