

DAFTAR PUSTAKA

- Adnan, A.M., Rapar, C., and Zubachtirodin, 2010. Diskripsi Varietas Unggul Jagung. Kementerian Pertanian. Pusat Penelitian dan Pengembangan Tanaman Pangan. Balai Penelitian Tanaman Sereal.
- Abiko, T., L. Kotula, K. Shiono, Al I. Malik, T.D. Colmer, and M. Nakazono, 2012. Enhanced Formation of Aerenchyma and Induction of A Barrier to Radial Oxygen Loss in Adventitious Roots of *Zea nicaraguensis* Contribute to Its Waterlogging Tolerance as Compared with Maize (*Zea mays* ssp. *mays*). Plant Cell Environ. 35(9):1618-30. doi: 10.1111/j.1365-3040.2012. 02513.x. Epub 2012 May.
- Agropedia, 2011. Classification of Maize. <http://agropedia.iitk.ac.in?q=content/classification-maize> diakses 13 Desember 2011.
- Ahmed, F., M.Y. Rafii, M.R. Ismail, A.S. Juraimi, H.A.Rahim, R.Asfaliza, and M.A. Latif, 2013. Waterlogging Tolerance of Crops: Breeding, Mechanism of Tolerance, Molecular Approach and Future Prospects. BioMed Research International. Article ID 963525, 10p. <http://dx.doi.org/10.1155/2013/963525>.
- Akhtar, I. and N. Nazir, 2013. Effect of Water logging and Drought Stress in Plant. Intl. J. Water Resources & Environ Sci. 2(2): 34-40.
- Almeselmani, M., F. Abdullah, F. Hareri, M. Naaesan, M.A. Ammar, O. Zuher Kanbar, and A.A. Saud, 2011. Effect of Drought on Different Physiological Characters and Yield Component in Different Varietas of Syrian Durum Wheat. J. Agr Sci 3(3): 127-133.
- Amri, M., M.H. El Ouni and M.B. Salem, 2014. Waterlogging Affect the Development, Yield and Component, Chlorophyll Content and Chlorophyll Fluorescence of Six Bread Wheat Genotypes (*Triticum aestivum* L.). Bulgarian Journal of Agriculture Science, 20(3):647-657.
- Armstrong W., Brändle R., and Jackson MB., 1994. Mechanisms of Flood Tolerance in Plants. Acta Botanica Neerlandica 43:307–358. <http://goo.gl/wqeFhB>
- Anonim, 1994. The Biology of *Zea mays* (L.) (Maize). Biologi Document. BIO1994-11. Published by Plant Biosafety Office. Canada.
- Anonim, 2000. Jagung (*Zea mays* L.). dalam Budidaya Pertanian. Kantor Deputi Menegristek Bidang Pendayagunaan dan Pemasyarakatan Ilmu Pengetahuan dan Teknologi. 17 hal.
- Anonim, 2007. Laporan Akhir Penyusunan Roadmap Tanaman Jagung Kota Palangka Raya. Dinas Pertanian Kota Palangka Raya dan Fakultas Pertanian Universitas Palangka Raya. 74 hal.

- Anonim, 2008. The Biology of *Zea mays* L. ssp *mays* (maize or corn). Australian Government. Departement of Health and Ageing. Office of the Gene Technology Regulator. Version: September 2008.
- Anonim, 2009. Corn Field Guide. A Reference for Identifying, Diseases, Insect Pests, and Disorders of Corn. Iowa State University. University Extension.
- Anonim, 2010. Indonesia Climate Change Sectoral Roadmap (ICCR). Sektor Pertanian. Program Konsorsium Penelitian dan Pengembangan Perubahan Iklim Sektor Pertanian (KP3I). Badan Penelitian dan Pengembangan Pertanian.
- Anonim, 2011a. Bab.5. Kerentanan Terhadap Kerawanan Pangan Transien. (<http://foodsecurityatlas.org>, 27 Oktober 2011).
- Anonim, 2011b. Bahan Ajar. <http://www.Elearning.tp.ugm.ac.id>, 26 Oktober 2011.
- Anonim, 2011c. Corn Flood. <http://msucares.com>, 27 Januari 2011.
- Anonim, 2011d. Peta Digital sawah Rawan Kekeringan dan Banjir: Penting untuk Pembuatan Crop Modeling. <http://www.Litbang.Deptan.go.id>, 24 Oktober 2011.
- Arianingrum, R., 2012. Kandungan Kimia Jagung dan Manfaatnya bagi Kesehatan. <http://staff.uny.ac.id>, 26 Januari 2012.
- Badan Nasional Penanggulangan Bencana, 2017. Data dan Informasi Bencana Indonesia. <http://dibi.bnpb.go.id>. 20 April 2017.
- Bai, T., C. Li, D. Liang, and F. Ma., 2013. Contrasting Hypoxia Tolerance and Adaptation in *Malus* Species is Linked to Differences in Stomatal Behavior and Photosynthesis. *Physiologia Plantarum* 147:514-523.
- Bailey, L.F., J. S. Rothacher and W. H. Cummings, 1951. A Critical, Study of The Cobalt Chloride Method of Measuring Transpiration. *Plant Physiology*. p 563-574.
- Balai Penelitian Tanaman Serealia. Balitbang Departemen Pertanian, 2011. <http://balitsereal.litbang.deptan.go.id> , 23 September 2011.
- Bansal, R. and J.P. Srivastava. 2015. Effect of Waterlogging on Photosynthetic and Biochemical Parameters in *Picea*. *Russian J.Plant Physiology*. 62(3): 322-327.
- Beckman, T.G., R.L. Perry, and J.A. Flore. 1992. Short-term Flooding Effects Gas Exchange Characteristic of Containerized Sour Cherry trees. *Hort. Science*. 27: 1297 – 1301.
- Blaydes, Glenn W. 1928. A Survey of Rates of Water Loss from Leaves. *The Ohio Journal of Science*. 28 (2): 99-119. <http://hdl.handle.net/1811/2372>

- Bloom, C.W., and Voesenek, L.A., 1996. Flooding: The Survival Strategies of Plants. *Tree Physiology*. 11:290-295.
- Bohrerova, Z., R. Stralkova, J. Podesvova, G. Bohrer, and E. Pokorny. 2004. The Relationship Between Redox Potential and Nitrification Under Different Sequences of Crop Rotations. *Soil & Tillage Research* 77:25 – 33.
- Bradford, K.J. and S.F. Yang, 2008: Pioneer in Plant Ethylene Biochemistry. *Plant Sci*. 172:2-7.
- , 1980. Stress-induced Ethylene Production in the Ethylene-requiring Tomato Mutant *Diageotropica*. *Plant Physiol*. 65:327-330.
- Budiasih, R., 2007. Respons Tiga Genotipe Kedelai Terhadap Genangan dan Pemupukan Nitrogen Selama Fase Generatif (R1-R8). Disertasi. Program Pascasarjana Universitas Padjadjaran. Bandung. 158 hal.
- Cauee, I., Defontaine, J.P. Carde, and A. Fradet, 1992. Effects of Anoxia on Mitochondrial Biogenesis in Rice Shoots. *Plant Physiol*, 98: 411 – 421.
- Celik, G. and Ece Turhan, 2011. Genotype Variation in Growth and Physiological Responses of Common Bean (*Phaseolus vulgaris*, L.) Seedling to Flooding. *Afr. J. Biotechnol*. 10(36): 7372-7380.
- De-Campos, A. B., C.-h. Huang, and C. T. Johnston (2011), Biogeochemistry of Terrestrial Soils as Influenced by Short-Term Flooding, *Biogeochemistry*, 111(1–3): 239–252. doi:10.1007/s10533-011-9639-2.
- De Datta, S. K. 1981. Principles and Practices of Rice Production. John Wiley and Sons. New York. 618 p.
- Dennis, ES., R. Dolferus, M. Ellis, M. Rahman, Y. Wu, F. U. Hoeren, A. Grover, K. P. Ismond, A. G. Good, and W. J. Peacock, 2000. Molecular Strategies for Improving Waterlogging Tolerance in Plants. *Journal of Experimental Botany*, 51(342): 89-97.
- Doreste, S.E., Carlos Arias, and Anthony Bellotti, 1979. Field Evaluations of Cassava Cultivars for Resistance to Tetranychid Mites. Pp. 161-164. In: T. Brekelbaum, Anthony Bellotti and J.C. Lozano (ed). *Proc. Cassava Protection Workshop*. Cali.
- Evans, D.E., 2003. Aerenchyma Formation. *New Phytologist* 161: 35-49.
- Eviati dan Sulaeman, 2009. Petunjuk Teknis Edisi 2. Analisis Kimia Tanah, Tanaman, Air, dan Pupuk. Balai Penelitian Tanah. Bogor. 234 hal.
- Ezint VR, De la Pena, and A Ahanchede, 2010. Flooding Tolerance of Tomato Genotypes During Vegetative and Reproductive Stages. *EJEAFChe*. 9(10): 1665- 1678.
- Fernandez, GCJ., 1992. Effective Selection Criteria for Assessing Plant Stress Tolerance. Pp 257-270. In: C.G. Kuu (ed). *Adaptation of Food Crops to*

Temperature and Water Stress. Proc. of an Inter. Sym., Taiwan, 13-18 August 1992. AVRDC.

- Fitri, S., 2016. Kementan: Sawah Banjir Belum Tentu Puso. <http://www.republika.co.id/berita/kementan/berita-kementan/16/02/16> akses 23 April 2017.
- Fitter, A. H., 1991. The Ecological Significance of Root System Architecture an Economic Approach. In Plant Root Growth an Ecological Perspective. Ed. D. Atkinson. pp 229-246. Blackwell Scientific Publications. Oxford.
- Fitter, A.H. and R.K.M. Hay, 1992. Fisiologi Tanaman. Edisi Terjemahan. S. Andani dan Purbayanti. Ed. B. Srigandono. Gajah Mada University Press. 421 h.
- Gambrell, R.P. and Patrick, Jr., 1978. Chemical and Microbiological Properties of Anaerob Soils and Sediment. In Hook, D.D. and R.M.M, Crawford. Plant Life in Anaerobic Environments . p 375-423.
- Giles KL, Cohen D, and Beardsell MF., 1976. Effects of Water Stress on The Ultrastructure of Leaf Cells of *Sorghum bicolor*. Plant Physiology. 57: 11–14. PMID: 16659415.
- Ghulamahdi, M. dan Aziz, S.A., 1992. Pengaruh Penggenangan pada Pertumbuhan Vegetatif Tanaman Jagung (*Zea mays* L.). Bul Agro. XX(2):23-28
- He, C.J., M.C. Drew, and P.W. Morgan, 1994. Induction of Enzymes Associated with Lysigenous Aerenchyma Formation in Roots of *Zea mays* During Hipoxia or Nitrogen Starvation. Plant Physiology 105:861-865.
- Herrera, A., 2013. Responses to Flooding of Plant Water Relations and Leaf Gas Exchange in Tropical Tolerant Tress of a Black Water Wetland. Front. PlanSci. 4:106. Doi:10.3389/fpls.
- Hernandez, L., O. Loyola-Gonzalez, B. Valle, J. Martinez, L. Diaz-Lopez, C. Aragon, O. Vicente, J. Papenbrock, R. Trethowan, L. Yabor , and J. C. Lorenzo, 2015. Identification of Discriminant Factors after Exposure of Maize and Common Bean Plantlets to Abiotic Stresses. Not Bot Horti Agrobo, 43(2):589-598. DOI:10.15835/nbha4329916.
- Herzog, M., G.G. Striker, T.D. Colmer, and O. Pedersen, 2016. Mechanisme of Waterlogging Tolerance in Wheat – A Review of Root and Shoot Physiology. Plant Cell and Environment. Doi:10.1111/pce.12676.19p.
- Hörtensteiner, S. and B. Kräutler, 2011. Chlorophyll Breakdown in Higher Plants. Biochimica et Biophysica Acta (BBA) - Bioenergetics. 1807 (8): 977–988.
- Horchani, F. and Aschi-Smiti, 2010. Prolonged Root Hypoxia Effects on Enzymes involved in Nitrogen Assimilation Pathway in Tomato Plants. Plant Signal & Behavior 5(12):1583-1589
- Hossain, Md.A. and S.N. Uddin, 2011. Mechanism of Waterlogging Tolerance in Wheat: Morphological and Metabolic Adaptations under Hypoxia or Anoxia. AJCS 5(9):1094-1101.

- Hwang, S.Y., and T.T. VanToai. 1991. Absciscic Acid Induces Anaerobiosis Tolerance in Corn. *Plant Physiology* 97:593-597.
- Hyene, K., 1987. Tumbuhan Berguna Indonesia Jilid III. Cetaka ke 1. Badan Litbang Kehutanan Departemen Kehutanan. Jakarta. Yayasan Sarana Wana Jaya.
- Iriany, R.N., M. Yasin, H.G., dan A. Takdir, 2007. Asal, Sejarah, Evolusi dan Taksonomi Tanaman Jagung. *dalam* Jagung: Teknik Produksi dan Pengembangannya. Pusat Penelitian dan Pengembangan Tanaman Pangan. Bogor. p 1-15. <http://pustaka.litbang.deptan.go.id>, 26 Januari 2012.
- Islam, M. R., A. Hamid, A.Karim, M. M. Haque, Q.A. Khaliq and J.U Ahmed, 2008. Gas Exchanges and Yield Responses of Mungbean (*Vigna radiata* L. Wilczek) Genotypes Differing in Flooding Tolerance. *Acta Physiol Plant.* 30: 697-707.
- Islam, M.R., A. Hamid., Q.A. Khaliq, M.M. Haque, J.U.Ahmed., and Karim, M.A., 2010. Effects of Soil Flooding on Roots, Photosynthesis and Water Relations in Mungbean (*Vigna radiata* (L) Wilczek). *Bangladesh J. Bot.* 39(2):241-243.
- Islam, M.S., M. Hasanuzzaman, M. Rokonuzzaman, and K. Nahar, 2009. Effect of Split Application of Nitrogen Fertilizer on Morphophysiological Parameters of Rice Genotypes. *International Journal of Plant Production* 3(1):51-61.
- Jackson, M.B and Armstrong, W., 1999. Formation of Aerenchyma and The Processes of Plant Ventilation in Relation to Soil Flooding and Submergence. *Abstract. Plant Biol.* 1: 274-287.
- Jackson, M.B. and Drew, M.C., 1984. Effects of Flooding on Growth and Metabolism of Herbaceous Plants. *In* Kozlowski, T.T. (Ed) *Flooding and Plant Growth*. Academic Press, Inc. (London) LTD. London.p 47-128.
- Jaiswal, A. and J.P. Srivastava, 2015. Effect of Nitric Oxide on Some Morphological and Physiological Parameters in Maize Exposed to Waterlogging Stress. *Afr. J.agric. Res.* 10(35): 3462-3471.DOI:10.5897/AJAR2015.9790.
- Jumin, H.B. , 2002. Agroekologi. Suatu Pendekatan Fisiologis. PT Raja Grafindo Persada. Jakarta. 178 h.
- Justin, S.H.F.W. and W. Armstrong, 1987. The Anatomical Characteristic of Roots and Plant Response to Soil Flooding. *New Phytologist.* 106: 465-495.
- Kawano, N., Ito,O, and Sakagami, J., 2009. Morphological and Physiological Responses of Rice Seedlings to Complete Submergence (Flas Flooding). *Annals of Botany.* 103:161-69.
- Kennedy, R.A.; M.E. Rumpho, and T. C. Fox. , 1992. Aerobic Metabolism in Plants. *Plant Physiol*, 100:1-6.
- Kling, J.G and G. Edmeades, 1997. Morphology and Growth of Maize. IITA/CIMMYT Research Guide 9. <http://old.iita.org> akses 30 Nopember 2011.

- Komariah, A., 2008. Identifikasi Varietas Kedelai Toleran Terhadap Genangan. *J. Agrivigor* 8(1):93-102.
- Kozlowski, T.T., 1984. Responses of Woody Plants to Flooding. *In* Kozlowski, T.T. (Ed) Flooding and Plant Growth. Academic Press, Orlando. pp 129- 163.
- Kozlowski, T.T. and G.S. Pallardy, 1984. Effect of Flooding on Water, Carbohydrate, and Mineral Relations. *In*: Kozlowski TT (ed) Flooding and Plant Growth. Academic Press, Orlando. pp 165-193.
- Kreuzwieser ,J., J. Hauberg, K.A. Howell, A. Carrol, H. Rennenberg, A.H. Millar, and J. Whelan, 2009. Diffrential Response of Gray Poplar Leaves and Roots Underpins Stress Adaptation during Hypoxia. *Plant Physiol* 149:461-473.
- Kumar, P., M. Pal, R. Joshi and R.K.Sairam, 2013. Yield Growth and Physiological of The Mungbean Vegetative Stage. *Physiol Mol Biol plants*.19(2):209-220.
- Kumudini, S. and T. Tollenaar, Corn Phenology, 1998. <http://www.plant.uoguelph.ca/research/homepages/ttollena/research/corn.html>
- Lakitan,B. dan N. Gofar, 2013. Kebijakan Inovasi Teknologi untuk Pengelolaan Lahan Suboptimal Berkelanjutan. Makalah Seminar Nasional Lahan Suboptimal. Palembang, 20-21 September. 11hal.
- Lal, R. 1985. Tillage in Low Land Rice-based Cropping System. p : 283 – 303. *In* Soil Physics and Rice. IRRI. Los Banos, Laguna, Philipines.
- Lauer, J., 2008. Flooding Impacts on Corn Growth and Yield. *Agronomy Advice*. <http://corn.agronomy.wisc.edu> Field Crops 28.49-56. Juni 2008, 1 Januari 2011.
- Lawson, T. and M.R. Blatt, 2014. Stomatal Size, Speed Stomatal Size, Speed, and Responsiveness Impact on Photosynthesis and Water Use Efficiency. *Plant Physiology*. 164:1556-1570.
- Lee, C., 2007. Corn Growth and Development. University of Kentucky.
- Lee, C., J Herbek, G. Schwab, and L. Murdock, 2011. Evaluating Flood Damage in Corn. Cooperative Extention service. University of Kentucky. College of Agriculture. AGR-193. <http://www.ca.uky.edu>, 1 Januari 2011.
- Levitt, J., 1980. Responses of Plants to Environmental Stresses. Vol II. Water, Radiation, Salt, and Other Stresses. Academic Press. New York-London-Toronto-Sydney-San Fransisco.607 p.
- Lewis, C.F., 1982. Breeding Plants for Less Favorable Environments. A Wiley-Interscience Publication. John Wiley & Sons. New York-Chlehester-Brisbane-Toronto-Singapore. 459p.
- Li, C., D. Jiang, B. Wollenweber, Y. Li, T. Dai, and W. Cao, 2011. Waterlogging Pretreatment During Vegetative Growth Improves Tolerance to Waterlogging After Anthesis in Wheat. *Plant Science* 180:672 – 678.

- Li, H., J.P. Syvertsen, C.W. McCoy, R.J. Stuart, and A.W. Schumann, 2006. Water Stress and Root Injury from Simulated Flooding and *Diaprepes abbreviatus* Root Weevil Larval Feeding in Citrus. *Soil Science* 171(2):138-151
- Liao, Chung-Ta and Chin-Ho Lin., 2001. Physiological Adaptation of Crop Plants to Flooding Stress. *Proc. Natl. Sci. Counc. ROC (B)* 25(3):148-157
- Liu, P., F. Sun, R. Gao, and H. Dong, 2012. *RAP2.6L* Overexpression Delays Waterlogging Induced Premature Senescence by Increasing Stomatal Closure More Than Antioxidant Enzyme Activity. *Plant Molecular Biology*. 79 (6):609–622.
- Lone, A.A. and M.Z.K. Warsi, 2009. Responses of Maize (*Zea mays* L.) to Excess Soil Moisture Tolerance at Different Stages of Life Cycle. *Bot. Res. Intl.* 2(3): 211–217.
- Maaz, A., 2000. Peluang dan Konsekuensi Pemanfaatan Lahan Rawa pada Masa Mendatang. Pidato Pengukuhan Guru Besar Fakultas Pertanian. UGM. Yogyakarta, 17 hal.
- Mano, Y., F. Omori, T. Takamizo, B. Kindiger, R. McK. Bird and C.H. Loaisiga, 2006. Variation for Root Aerenchyma Formation in Flooded and Non-flooded Maize and Teosinte Seedlings. *Plant and Soil*. 281:269-279
- Manzoor, T., and K. Jayalalitha, 2015. Effect Waterlogging on Biochemical Parameters and Yield in Maize Hybrids. *International Journal of Food, Agriculture and Veterinary Sciences*. 5(2):92 - 97.
- McWilliams, D.A., D.R. Berglund, and G.J. Endres. 1999. Corn Growth and Management Quick Guide. North Dakota State University.
- Meisrimler, C.N., F. Buck, and S. Luthje, 2014. Alterations in Soluble Class III Peroxidases of Maize Shoot by Flooding Stress. *Proteomas*. 2: 303 – 322.
- Ministry of Environment Republik of Indonesia, 2007. Indonesia Country Report. Climate Variability and Climate Changes, and Their Implication.
- Miro B. and AM Ismail, 2013. Tolerance of Anaerobic Conditions Caused by Flooding During Germination and Early Growth in Rice (*Oryza sativa* L.). *Frontiers in Plant Science*. 4(269): 1-18.
- Murni, A.M. dan R.W. Arief, 2008. Teknologi Budidaya Jagung. Seri buku inovasi: TP/04/2008. Balai Besar Pengkajian dan Pengembangan Teknologi Pertanian. Balitbang Pertanian. 17 h.
- Najeeb, U., Bange M.P., Tan D.K.Y., and Atwell B.J., 2015. Consequences of Waterlogging in cotton and Opportunities for Mitigation of Yield Losses. *AoB Plants* 7: plv080; doi:10.1093/aobpla/plv080.17p.
- Nan, R., J. G. Carman, and F.B. Salisbury, 2002. Water Stress, CO₂ and Photoperiod Influence Hormone Levels in Wheat. *J. Plant Physiology*. 159 (3):307-312.

- Nielsen, R.L., 2003. Bacterial Ear Rot in Corn Due to Flooding. <http://www.agry.purdue.edu>, 28 Januari 2011
- NongYe, Gong-Cheng, and Xue-Bao, 2014. Effect of Waterlogging at Jointing and Tasselling Stages on Growth and Yield of Summer Maize. Transactions of The Chinese Society of Agriculture Engineering. 30(13):127-136.
- Notohadiprawiro, T., 1989. Pola Kebijakan Pemanfaatan Sumberdaya lahan Basah, Rawa, dan Pantai. Makalah disampaikan dalam Seminar Ilmiah Dies Natalis ke 25 Universitas Jember. 14-15 Juli 1989. 13 h.
- Nurtirtayani dan H. S. Raihan, 2000. Penampilan Genotipe Varietas Jagung Introduksi di Lahan Lebak Dangkal Kalimantan Selatan. But. Agron. 28(3):91 – 93.
- Odiyi, B.O., 2013. The effect of flooding and drought stress on the growth of maize (*Zea Mays*, LINN) Seedlings. Journal Biological and Food Science Research. 2(3):30-32. Available Online at <http://www.onlineresearchjournals.org/JBFSR>
- Patel P. K., Singh A. K., Tripathi N., Yadav D., and Hemantaranjan A., 2014. Flooding: Abiotic Constraint Limiting Vegetable Productivity. Adv Plants Agric Res 1(3):00016. <http://dx.doi.org/10.15406/apar.2014.01.00016>
- Patrick JR, W.H. and C.N. Reddy, 1978. Chemical Changes in Rice Soil. In Soil and Rice. IRRI. Los Banos.Laguna. Philippines. P 361-379
- Pearce, D.M.E., Hall K.C. and Jackson, M.B., 1992. The Effects of Oxygen Carbon and Ethylene on Ethylene Biosynthesis in Relation to Shoot Extension of Rice (*Oryza sativa*) and Barnyard Grass (*Echinochloa oryzoides*). Abstract Ann. Bot. 69:441-447
- Ponnamperuma, F.N., 1972. The Chemistry of Submerged Soils. Advances Agronomy. Vol 24. p.29 – 96.
- , 1978. Chemical and Electrochemical Changes in Rice Soils. In: Soils and Rice. IRRI. Los Banos, Philippines. p.421-441.
- , 1984. Effect of Flooding on Soil in TT Kozlowski (Ed). Flooding and Plant Growth. Academic Press. Inc. (London). p 10-25
- Prasanna and Rao, 2014. Effect of Waterlogging on Growth and Seed Yield in Greengram Genotypes. International Journal of Food. Agriculture and Veterinary Sciences. 4(2):124 -128.
- Promkhambut, A. Younger, A. Polthanee and C. Akkasaeng. (2010). Morphological and Physiological Responses of Sorghum (*Sorghum bicolor* L., Moench) to Waterlogging. Asian J. Plan Sci., 9(4):183-193
- Purwantoro, A., S. Trisnawati, S. Fatimah, Toekijo dan Suyadi, 1991. Tanggapan Beberapa Kultivar Kacang Hijau pada Berbagai Tingkat Kelengasan dan Macam Tanah. Fakultas Pertanian UGM Yogyakarta. 18p.

- Purwati, R.D., 1991. Pengujian beberapa Varietas Kenaf dan Yute Terhadap Genangan. Penelitian Tanaman Tembakau dan serat. 6(2):141-147.
- Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian, 2015. Outlook. Komoditas Pertanian Subsektor Tanaman Pangan. Jagung. 102 hal.
- Rahayuningsih, S.E.A., D. Indradewa, E. Sulistyaningsih dan A. Maas, 2013. Respon Dua Varietas Jagung terhadap Durasi Genangan. Jurnal Agrienvi. 7(1):42 - 47.
- Rahayuningsih, S.E.A., D. Indradewa, E. Sulistyaningsih, dan A. Maas. 2017. Anatomi Akar dan Sifat Agronomi Empat Kultivar Jagung Pada Kondisi Tercekam Genangan. Prosiding Seminar Nasional Lahan Basah Tahun 2016. Universitas Lambung Mangkurat. Banjarmasin: 213-216.
- Ramadhan, R.A., S. Avivi, dan Slameto, 2015. Studi Pertumbuhan Tanaman Tebu Toleran Cekaman Air Berdasarkan Karakter Fisiologisnya. Buletin Ilmiah Pertanian. 1(1):11-17.
- Reddy K.R. and DeLaune R.D., 2008. Biogeochemistry of Wetlands: Science and Applications. CRC Press; Boca Raton, FL, USA: 2008. p. 774.
- Ren B, Zhang J, Dong S, Liu P, and Zhao B., 2016. Effects of Waterlogging on Leaf Mesophyll Cell Ultrastructure and Photosynthetic Characteristics of Summer Maize. PLoS ONE 11(9): e0161424. doi:10.1371/journal.pone.0161424.
- Riche, C.J., 2004. Identification of Soybean Cultivars Tolerance to Waterlogging Through Analyses of Leaf Nitrogen Concentration. Thesis. The Department of Agronomy and Environment Management. B.S. Louisiana State University, 2000. 36 p.
- Rifianto, 2011. Jagung Manis Master Sweet Benar-benar Master. <http://azisrifianto.blogspot.com>, 15 september 2011.
- Rodríguez-Gamir, J., G. Ancillo, M. C. González-Mas, E. Primo-Millo, D. J. Iglesias, and M. A. Forner-Giner. 2011. Root Signalling and Modulation of Stomatal in Flooded Citrus Seedlings. Plant Physiology and Biochemistry. 49(6):636 – 645.
- Rosado, A., I. Amaya, V. Valpuesta, J. Cuartero, M. A. Botella, and O. Borsani. 2006. ABA and Ethylene-mediated Responses in Osmotically Stressed Tomato are Regulated by the *TSS2* and *TOS1* loci. J Exp Bot. 57 (12): 3327-3335.
- Rosielle, A.A., and Hamblin, 1981. Theoretical Aspects of Selection for Yield in Stress and Non Stress Environments. Crop Sci. 21:943 – 946.
- Saab, I. and S. Butzen, 2011. Diagnosing Chilling and Flooding Injury to Corn Prior to Emergence. <http://www.grains.cses.vt.edu/publications/>. Akses 28 Januari 2011.

- Saab, I. and M.M. Sachs, 1996. A Flooding-induced Xyloglucan Endotransglycoylase Homolog Maize in Responsive to Ethylene and Associated with Aerenchyma. *Plant Physiol.* 108:439-440.
- Sairam, R.K. , D. Kumutha, K. Ezhilmathi, P.S. Deshmukh, and G.C. Srivastava, 2008. Physiology and Biochemistry of Waterlogging Tolerance in Plants. *Biologi Plantarum* 52 (3):401-412.
- Sairam, R.K. , D. Kumutha, and K. Ezhilmathi, 2009. Waterlogging Tolerance: Nonsymbiotic Haemoglobin-Nitric Oxide Homeostasis and Antioxidants. *Current Science*. 96 (5):674-682.
- Salazar, C., C.Hernandez, and M.T. Pino. 2015. Plant Water Stress: Associations Between Ethylene and Abscissic Acid Response. *Chilean J. Agric. Res.* 75(1):71-79.
- Salisbury, F.B. and C.W. Ross, 1991. *Plant Physiology*. 4th edd. Wadsworth Publishing Company. California. 681p.
- Sanchez, P.A., 1992. Sifat dan Pengelolaan Tanah Tropika. *Terjemahan* oleh Jakari T. Jayadinata. ITB, Bandung.
- Scandalios, J.G., 1993. Oxygen Stress and Superoxide Dimustases. *Plant Physiol.* 101:7-12
- Shimamura, S., Yoshida, S., and Mochizuki, T., 2007. Coertical Aerenchyma Fomation in Hypocotyl and Adventitious Roots of *Luffa cylindrica* Subjected to Soil Flooding. *Annals of botany*. 100(7):1431 - 1439.
- Shimamura, S., T. Yoshioka, R. Yamamoto, S. Hiraga, T. Nakamura, S. Shimada and S. Komatsu, 2014. Role of Abscissic Acid in Flood-Induced Secondary Aerenchyma Formation in Soybean (*Glycine max*) Hypocotyls. *Plant Prod. Sci.* 17(2):131 – 137.
- Sitompul, S.M., dan B. Guritno, 1995. Analisis Pertumbuhan tanaman. Gadjah Mada University Press. Yogyakarta. 412 hal.
- Snyder, C.S. 2002. Effects of Soil Flooding and Drying on Phosphorus Reactions. A Regional Newsletter. The Potash & Phosphate Institute (PPI) and The Potash dan Phosphate Institute of Canada (PPIC).
- Srivastata, J.P., P. Singh, V.P. Singh and R. Bansal, 2010. Effect of waterlogging on Carbon Exchange Rate, Stomatal Conductance and Mineral Nutrient Status in Maize and Pigeonpea. *Plant Stress*. 4 (Special Issue 1):94 – 99
- Striker, G.G., 2012. Flooding Stress on Plants: Anatomical, Morphological and Physiological Responses. <http://www.docstoc.com/>. 28p. 3 September 2012.
- Subbaiah, C.C. and M.M. Sachs, 2011. Molecular and Cellular Adaptation of Maize to Flooding Stress. *Annals Botani* (91):119-127
- Subekti, N.A., Syafruddin, R. Efendi, dan S. Sunarti, 2007. Morfologi Tanaman dan Fase Pertumbuhan Jagung. *dalam* Jagung: Teknik Produksi dan

- Pengembangannya. Pusat Penelitian dan Pengembangan Tanaman Pangan. Bogor. p 16-28 <http://pustaka.litbang.deptan.go.id>, 26 Januari 2011.
- Supardi, G., 1983. Sifat dan Ciri Tanah. Jurusan Ilmu-ilmu Tanah, Fakultas Pertanian, IPB, Bogor.
- Sutikno, 2006. Petunjuk Praktikum Mikroteknik Tumbuhan. Lab. Mikroteknik dan Embriologi Tumbuhan Fakultas Biologi UGM.
- Suwarti, R. Efendi, M. Azral dan N. Thahir, 2013. Pertumbuhan, Hasil dan Indeks Sensitivitas Tanaman Jagung terhadap Genangan Air. Prosiding Seminar Nasional Serealia. p 169-180.
- Suzuki, S. and H. Nakamoto, M. S. B.Ku, and G. Edwards, 1987. Influence of Leaf Age on Photosynthesis, Enzyme Activity, and Metabolite Levels in Wheat. *Plant Physiol.* (84):1244-1248
- Taiz, L. and E. Zeiger, 2006. *Plant Physiology*. Fourth Edition. Sinauer Associates, Inc Publishers. Massachusetts. 762 p.
- Tampubolon, B., J. Wiroatmodjo, J. S. Baharsjah, dan Soedarsono, 1989. Pengaruh Penggenangan pada Berbagai Fase Pertumbuhan Kedelai (*Glycine max* (L.) Merr Terhadap Pertumbuhan dan Produksi. *Forum Pascasarjana* 12:17-25
- Tan, KH., 1982. *Principle of Soils Chemistry*. The University of Georgia. College of Agriculture, Athens, Georgia. 568p.
- Thomison, P.R., 2011. Effects of Flooding and Ponding on Corn. AGF-118-95. Ohio State University Extension. Departement of Horticulture and Crop Science. <http://ohioline.osu.edu>, 29 Januari 2011.
- Troedson, R.J., R.J. Lawn, D.E. Byth and G.L. Wilson. 1983. Saturated Soil Culture in Innovated Water Management Option for Soybean in The Tropics and Subtropics. p : 171 - 180. *In* S. Shanmuga Sundaran and E.W. Sultzbeyer (ed). *Proc. symp.* Tsukuba, Japan.
- Valerie, P. and N. Moses, 2016. Effect of Waterlogging on Selected Morphological Characteristics in Maize. *J.Agric.Sci. Food Technol.* 2(6): 80-92. <http://peariresearchjournals.org/journals/jasft/index>. Html
- Van-Breemen, N. and L.J. Pons. 1978. Acid Sulfate Soils and Rice., *In*: Soils and Rice. Inst., Los banos, the Philippines. Pp 739 – 762.
- Van-Toai, T.T., Steven K., St. Martin, K. Chase, G. Boru, V. Schnipke, A. F. Schmitthenner, and K. G. Lark, 2001. Identifications of a QTL, Associated with Tolerance of Soybean to Soil Waterlogging. *Crop. Sci.* 40: 1247-1252.
- Vasellati, V., M. Oesterheld, D. Medan, and J. Loreti, 2001. Effect of Flooding and Drought on the Anatomy of *Paspalum dilatatum*. *Annals of Botany* 88:355-360. Doi:1006/anbo.2001. 1469, available online at <http://www.ideallibrary.com.on>

- Visser, E.J.W., G. M.B. Gemann, H.M.V.D. Steeg, R. Pierik and C. W. P. M. Blom, 2000. Flooding Tolerance of *Carex* Species in Relation to Field Distribution and Aerenchyma Formation. *New Phytol.* 148:93-103
- Visser, E.J.W., and L.A.C.J. Voesenek, 2004. Acclimation to Soil Flooding – Sensing and Signal-Transduction. *Plant and Soil* 254:197-214.
- Visser, E.J.W., L.A.C.J. Voesenek, B. B. Vartapetian and M.B. Jackson, 2003. Flooding and Plant Growth. *Annals of Botany* 91:107-109.
- Voesenek, L.A.C.J. and R. Sasidharan, 2013. Ethylene and Oxygen Signalling Drive Plant Survival During Flooding. *Plant Biology* 15:426–435. doi:10.1111/plb.12014
- Wang M., Shi S., Lin F., Hao Z., Jiang P., and Dai G., 2012. Effects of Soil Water and Nitrogen on Growth and Photosynthetic Response of Manchurian Ash (*Fraxinus mandshurica*) Seedlings in Northeastern China. *PLoS ONE* 7(2): e30754. doi:10.1371/journal.pone.0030754.
- Wang, T.W. and R.N. Arteca, 1992. Effects of Low O₂ Root Stress on Ethylene Biosynthesis in Tomato Plants. *Plant Physiol.* 98: 97 – 100.
- Wang X, Deng Z, Zhang W, Meng Z, Chang X, and Lv M., 2017. Effect of Waterlogging Duration at Different Growth Stages on the Growth Yield and Quality of Cotton. *PLoS ONE* 12(1): e0169029. doi:10.1371/journal.pone.0169029
- Wang, X., T.Liu, C. Li, and H. Chen, 2012. Effects of Soil Flooding on Photosynthesis and Growth of *Zea mays* L. Seedlings under Different Light Intensities. *African Journal of Biotechnology*.11(30):7676-768. [Online]. Available. <http://www.academicjournals.org/AJB>.
- Watanabe, K., S. Nishiuchi, K. Kulichikhin, and M. Nakazono, 2013. *Front. Plant Sci.*, 4 (178): 7p <https://doi.org/10.3389/fpls.2013.00178>
- Widowati, L.R., D. Nursyamsi, J., dan S. Adiningsih, 1997. Perubahan Sifat Kimia Tanah dan Pertumbuhan Tanaman Padi pada Lahan Sawah Baru di Rumah Kaca. *Jurnal Tanah dan Iklim.* 15:50-60
- Wiebold, B., 2007. Flood Effects on Grain Crops. AGW1014 March 2009. University of Missouri Extension. <http://extension.missouri.edu>, 28 Januari 2011
- Wikipedia, 2011. Maize. <http://en.wikipedia.org/wiki/Maize>, 3 Juli 2011.
- Yamamoto, F., T. Sakata, and K. Terazawa, 1995. Growth, Morphology, Stem Anatomy, and Ethylene production in Flooded *Alnus Japonicum* Seedlings. *IAWA Journal* 16(1):47-59.
- Yan, B., Q. Dai, X. Liu, S. Huang and Z. Wang, 1996. Flooding-induced Membrane Damage, Lipid Oxidation and Activated Oxygen Generation in Corn Leaves. *Abstract. Plant and Soil* Vol. 179 (2)261-268. <http://www.springerlink.com> akses 28 Januari 2011.

- Yokota, T., M. Nakayama, I. Harasawa, M. Sato, M. Katsuhara and S. Kawabe, 1994. Polyamines, Indole-3-Acetic Acid and Abscic Acid in Rice Phloem sap. *Plant Growth Regulation* 15:125-128.
- Yong-zhong, L., T. Bin, Z. Yong-lian, M.A. Ke-jun, XU Shang-zhong and Q. Fa-zhan, 2010. Screening Methods for Waterlogging Tolerance at Maize (*Zea mays* L.) Seedling Stage *Agricultural Sciences in China* 2010, 9(3):362-369
- Yordanova, R. Y. and L. P. Popova, 2007. Flooding-induced Changes in Photosynthesis and Oxidative Status in Maize Plants. *Acta Physiol Plant.* 29: 535-541
- Yudha GP, Z.A. Noli, dan M. Idris, 2013. Pertumbuhan Daun Angsana (*Pterocarpus indicus willd*) dan Akumulasi Logam Timbal (Pb). *Jurnal Biologi Universitas Andalas.* 2(2):8 - 89.
- Zaidi, P. H., S. Rafique, N.N. Singh and G. Srinivasan, 2002. Physio-Breeding Approach for Soil Moisture Tolerance in Maize (*Zeamays* L.). *Progress and Prospectst.. Proceeding of the 8th Asian Regional Maize Workshop, Bangkok, Thailand: August 5-8. 2002.* p 398 -412.
- Zaidi, P.H., S. Rafique, P.K. Rai, and N.N. Singh, 2003. Response of Maize (*Zea mays* L.) Genotypes to Excess Soil Moisture Stress: Morpho-physiological Effects and Basis of Tolerance. *Europ. J. Agronomy* 19:383-399.
- Zaidi, P.H., S. Rafique, P.K. Rai, N.N. Singh, and G. Srinivasan, 2004. Tolerance to Excess Moisture in Maize (*Zea mays* L.): Susceptible Crop Stages and Identification of Tolerant Genotypes. *Field Crop Research* 90:189-202.
- Zaidi, P.H., Y. Mamata, D.K. Singh, and R.P. Singh, 2008. Relationship Between Drought and Excess Moisture Tolerance in Tropical Maize (*Zea mays* L.) *Australian Journal of Crop Science.* 1(3): 78–96.
- Zaidi, P.H., P. Maniselvan, A. Srivastava, P. Yadav, and R.P. Singh, 2010. Genetic Analysis of Waterlogging Tolerance in Tropical Maize (*Zea Mays* L.) *Maydica.* 55:17- 26.
- Zelitch, I., and P. R. Day., 1968. Variation in Photorespiration. The Effect of Genetic Differences in Photorespiration on Net Photosynthesis on Photo Photosynthesis in Tobacco. *Plant Physiol.* 13:1838-1844.
- Zubachtirodin, M.S. Pabbage dan Subandi. 2011, Wilayah, Produksi dan Potensi Pengembangan Jagung. *dalam Jagung: Teknik Produksi dan Pengembangannya.* Pusat Penelitian dan Pengembangan Tanaman Pangan. Bogor. p 462-473. <http://www.gorontaloprov.go.id>, 3 September 2011.
- Zubairi, Z., Z. Saeed, and A. Nazir, 2012. Water Logging a Serious Problem for The Growth of Maize (*Zea mays* L.) *Intl. J. Water Resources & Environ.Sci.* 1(4): 109 -112.