

REFERENCES

- Abbas, S.M. 2013. The Influence of Biostimulant on The Growth and on The Biochemical Composition of *Vicia faba* CV. Giza 3 beans. *Romanian Biotechnological Letters*, 18(2); 8061-8068.
- Abdalla, M.M. 2013. The Potential of Moringa oleifera Extract as a Biostimulan in Enhancing the Growth, Bichemichal and Hormonal Contents in Rocket (*Eruca Vesicaria* Subsp. Sativa). *International Journal of Plant Physiology and Biochemistry*. 5 (3): 42-49.
- Adie, M.M., dan A. Krisnawati. 2013. *Biologi Tanaman Kedelai*. Balai Penelitian Tanaman Kacang-kacangan dan Umbi-umbian, Malang.
- Aisyah. 2018. Pengaruh Aplikasi Ekstrak Beberapa Jenis Rumpun Laut sebagai Biostimulan terhadap Perkecambahan dan Pertumbuhan Tanaman Kedelai (*Glycine max* L.). *Skripsi*. Fakultas Matematika dan Ilmu Pengetahuan Alam. Universitas Andalas. Padang.
- Barker, A.V and D. J. Pilbeam. 2015. *Handbook of Plant Nutrition Second Edition*. CRC Press.
- Billard V., P. Etienne., L. Jannin., M. Garnica., F. Cruz., J. Maria., G. Mina., J. Claude Yvin., A. Ourry. 2013. Two Biostimulants Derived from Algae or Humic Acid Induce Similar Responses in the Mineral Content and Gene Expression of Winter Oilseed Rape (*Brassica napus* L.). *J Plant Growth Regul.* DOI 10.1007/s00344-013-9372-2.
- Bold, H. C. dan M. J. Wayne. 1985. *Introduction to The Algae. Second Edition*. Prentice Hall, Inc. Englewood Cliff. New Jersey.
- Brown, P., S. Sebastian. 2015. Biostimulants in Agriculture. *Frontier in Plant science*. Vol 6: 671.
- Buntoro, H.B., R. Rogomulyo dan S. Trisnowati. 2014. Pengaruh Takaran Pupuk Kandang dan Intensitas Cahaya Terhadap Pertumbuhan dan Hasil Temu Putih (*Curcuma zedoaria* L.). *Jurnal Vegetalika*. 3 (4): 29-39.
- Caffarri, Stefano, T. Tibiletti, R. C. Jennings, and S. Santabarbara. 2017. A Comparison Between Plant Photosystem I and Photosystem II Architecture and Functioning. *Current Protein & Peptide Science*. Bentham Science Publishers.
- Campbell, N. A. & J. B. Reece. 2010. *Biologi, Edisi Kedelapan Jilid 2 Terjemahan: Damaring Tyas Wulandari*. Jakarta. Erlangga.
- Calvo, P., L. Nelson, dan J. W. Kloepper. 2014. Agricultural Uses of Plant Biostimulants. *Plant and Soil*, 383 (1-2): 3-41, DOI 10.1007/s11104-014-2131-8.

- Chitra, R., D. Janaki and P. Jansirani. 2020. Influence of Bio-stimulants on Growth and Rhizome Yield of Black Turmeric (*Curcuma caesia*). *International Journal of Chemical Studies* 2020; 8(4): 2304-2307.
- Culver, M., T. Fanuel., A. Chiteka. 2012. Effect of Moringa Extract on Growth and Yield of Tomato. *Greener Journal of Agricultural Sciences*. 2 (5): 207-211.
- Desnilia., Herman., D. I. Roslim. 2014. Polong Paling Sedikit pada Galur Kacang Hijau (*Vigna radiata* (L.) Wilczek) Lokal Kampar. *JOM FMIPA*. Volume 1 No. 2 Oktober 2014.
- Du Jardin, P. 2012. The Science of Biostimulant: A Bibliography Analysis. Contract 30-CE0455515/00-96, Ad Hoc Study On Bio-Stimulant Products. handle.net /2268/169257.
- El-Hasan., A. Walker., F. Schone., J. Bucheanauer. 2007. Antagonistic effect of 6-pentyl-alpha-pyrone produced by *Trichoderma harzianum* toward *Fusarium moniliforme*. *Journal of Plant Disease and protection*. 114, 62-28.
- Hadi, F., I. J Zakaria., Z. Syam. 2016. Diversity of Macroalgae in Kasiak Gadang Island Nirwana Beach, Padang, West Sumatra, Indonesia. *The Journal of Tropical Life Science*. Vol. 6, No. 2, pp. 97-100.
- Fan, D., Hodges, D.M., Critchley, A.T., and Prithiviraj, B. 2013. A Commercial Extract of Brown Macroalga (*Ascophyllum nodosum*) Affects Yield and The Nutritional Quality of Spinach in Vitro. *Commun. Soil Sci. Plant* 44 (12): 1873–1884.
- Gawronska, H. 2008. *Biostimulators: In Modern Agriculture, General Aspect*. Editorial House Wic. Jutra, Limited. Warszawa.
- Gireesh. R, C. K. Haridevi, and J. Salikutty. 2011. Effect of *Ulva lactuca* Extract on Growth and Proximate Composition of *Vigna unguiculata* L. Walp. *Journal of Research in Biology*. 8 (1): 624-630.
- Grabowska, A., E. Kunicki, A. Sekara, dan A. Kalisz. 2012. The Effect of Cultivar and Biostimulant Treatment on The Carrot Yield and its Quality. *Vegetable Crops Research Bulletin* 11: 37-48.
- Guiry, M. D. 2018. di dalam Guiry, M. D. & Guiry, G. M. 2000. *Algae Base*. World-wide electronic publication, National University of Ireland, Galway. <http://www.algaebase.org>; searched on 05 November 2019.
- Huang, W., D. A. Ratkowsky, C. Hui., P. Wang., J. Su and P. Shi. 2019. Leaf Fresh Weight Versus Dry Weight: Which is Better for Describing the Scaling Relationship between Leaf Biomass and Leaf Area for Broad-Leaved Plants? *Forests*. page 10, 256.

- Kasim, W.A., Hamada, E.A.M., El-Din, N.G.S., and Eskander, S. 2015. Influence of Seaweed Extracts on The Growth, Some Metabolic Activities and Yield of Wheat Grown Under Drought Stress. *Int. J. Agron. Agric. Res.* 7 (2): 173–189.
- Katarzyna, G., M. Izabela, T. Aukasz dan C. Katarzyna. 2016. Plant Growth Biostimulants Based on Different Methods of Seaweed Extraction with Water. *BioMed Research International.* 25 (11): 50-372.
- Kavipriya, R dan T. Nallamuthu. 2012. Effect of Seaweed Liquid Fertilizers on The Biostimulan on Early Seed Germination and Growth Parameters of *Oryza Sativa* L. Center of Advanced Studies in Botany. *INT J CURR SCI* 2012, 3: 15-20. ISSN 2250-1770, India.
- Kementan. 2015. *Produksi, Lada, Panen, dan Produktivitas Padi Indonesia 2011–2015*. Kementerian Pertanian Sub Sektor Tanaman Pangan. http://www.pertanian.go.id/ap_pages/mod/datap.
- Kementrian Kelautan dan Perikanan/KKP. 2015. *Kelautan dan Perikanan dalam Angka 2015*. Jakarta: Pusat Data, Statistik dan Informasi Kementerian Kelautan dan Perikanan (KKP).
- Khan, W, U.P. Rayirath, S. Subramanian, M.N. Jithesh, P. Rayorath, D.M. Hodges, T.C. Alan,, J.S. Craigie, J. Norrie, B. Prithiviraj. 2009. Seaweed Extracts as Biostimulants of Plant Growth and Development. *Journal of Plant Growth Regulation.* 28:386–399.
- Kocira A., M. Swieca., S. Kocira., U. Złotek and A. Jakubczyk. 2018. Enhancement of Yield, Nutritional and Nutraceutical Properties of Two Common Bean Cultivars Following the Application of Seaweed Extract (*Ecklonia maxima*), *Saudi. J. Biol. Sci.* 25, 563-571 (2018).
- Kumar, H. J., A. Purkait. 2020. Role of Biostimulant Formulations in Crop Production: An Overview. *International Journal of Agricultural Sciences and Veterinary Medicine.* Vol. 8 (2) May (2020).
- Kumari, R., L. Kaur, and A.K. Bhattacharya. 2014. Effect of Aqueous Extract of *Sargassum johnstonii* Setchell & Gardner on Growth, Yield and Quality of *Lycopersicon esculentum* Mill. *J. Appl. Phycol.* 23 (3): 623–633.
- Lovatt. C.J. 2013. Properly Timing Foliar-Applied Fertilizers Increases Efficacy: a Review and Update on Timing Foliar Nutrient Applications to Citrus and Avocado. *HortTechnology*, 23 (2013), pp. 536-541.
- Nardi, S., D. Pizzeghello., M. Schiavon., A. Ertani. 2016. Plant Biostimulants: Physiological Responses Induced by Protein Hydrolyzed-Based Products and Humic Substances in Plant Metabolism. *Sci. Agric.* v.73, n.1, p.18-23, Italy.

- Noli, Z. A., Mansyurdin, Izmiarti, O. Sriyuni, and S. Rimayani. 2018 a. Effect of Seaweeds Extract as Biostimulant on Germination of *Glycine max*. Seminar Universitas Mulawarman, Samarinda.
- Noli, Z. A., Suwirman, and Aisyah. 2018 b. Effect of Seaweeds Extract as Biostimulant on Growth of *Glycine max* on Ultisol, 2nd International Conference SFRN 2018, Universitas Andalas, Padang.
- Noli, Z. A., Mansyurdin, Izmiarti, O. Sriyuni, and S. Rimayani. 2018. Effect of Seaweeds Extract as Biostimulant on Growth of Rice (*Oryza sativa*) on Ultisol, 2nd International Conference SAFE, Manila, Philippine.
- Norra, L., A. Aminah, and R. Suci. 2015. Effects of Drying Methods, Solvent Extraction and Particle Size of Malaysian Brown Seaweed, *Sargassum* sp. on The Total phenolic and Free Radical Scavenging Activity. *International Food Research Journal*. 23 (4): 1558-1563.
- Nuzapril1, M., S. B. Susilo, dan J. P. Panjaitan. 2017. Hubungan antara Konsentrasi Klorofil-a dengan Tingkat Produktivitas Primer Menggunakan Citra Satelit Landsat-8. *Jurnal Teknologi Perikanan dan Kelautan*. Vol. 8 No. 1 Mei 2017: 105-114.
- Oancea F., I. Raut., T. E. Şesan and P. C. Cornea. 2016. Dry Flowable Formulation of Biostimulants *Trichoderma* strains. *Agric. Agric. Sci. Procedia*. 10, 494-502.
- Osman, H. E., dan O. M. A. Saleh. 2011. Effect of Seaweed Extracts as Foliar Spray on Sunflower Yield and Oil Content. *Egyptian Journal of Phycology*. 12 (2): 59-72.
- Pakidi, C.S., H. S. Suwoyo. 2017. Potensi dan Pemanfaatan Bahan Aktif Alga Cokelat *Sargassum* sp. *Octopus Jurnal Perikanan Indonesia*. Vol 6 No. 1.
- Pielesz, A. 2016. *Algi I alginy-leczenie, zdrowie I uroda*. Wydawnictwo Internetowe e-bookowo.
- Rengasamy, K. R., R. M. G. Kulkarni, S. C. Pendota., and J. V. Staden. 2016. Enhancing Growth, Phytochemical Constituents and Aphid Resistance Capacity in Cabbage with Foliar Application of Eckol – a Biologically Active Phenolic Molecule from Brown Seaweed. *New Biotechnol.* 33 (2): 273-279.
- Ronga, D., E. Biazzi., K. Parati., D. Carminati., E. Carminati and A. Tava. 2019. Microalgal Biostimulants and Biofertilisers in Crop Productions. *Agronomy*. Page: 8 of 22.
- Russo R. O., G. P. Berlyn. 1991. The Use of Organic Biostimulants to Help Low Input Sustainable Agriculture. *J. Sustain. Agric.* 1, 19-42. 10.1300/J064v01n02_04
- Salisbury and C. W. Ross. 1992. *Fisiologi Tumbuhan Jilid 2*. Penerbit ITB. Bandung, hal. 40.

Sasidharan, S., Chen, Y., Saravanan, D. et al. 2011. Extraction, Isolation and Characterization of Bioactive Compounds from Plants' Extracts. *Afr. J. Tradit. Complem.* 8 (1): 1–10.

Statistik Sumber Daya Laut dan Pesisir. 2016. Badan Pusat Statistik (BPS)-Statistics Indonesia. Katalog: 3312002.

Stirk W. A. and J. V. Staden. 2014. Comparison of Cytokinin and Auxin Like Activity in Some Commercially Used Seaweed Extracts. *J. Appl. Phycol.*, 8, 503-8.

Stirk W. A., K. R. R. Rengasamy., M. G. Kulkarni and J. V. Staden. 2020. *Plant Biostimulant from Seaweed: An Overview: Examples of Biostmulants*. South Salt Lake City: John Wiley & Sons Ltd.

Sutharsan S., S. Nishanthi and S. Srikrishnah. 2014. Effects of Foliar Application of Seaweed (*Sargassum crassifolium*) Liquid Extract on the Performance of *Lycopersicon esculentum* Mill. In Sandy Regosol of Batticaloa District Sri Lanka. *American-Eurasian J. Agric. & Environ. Sci.*, 14 (12): 1386-1396, 2014

Sutharsan S., S. Nishanthi and S. Srikrishnah. 2017. Effect of Seaweed (*Sargassum crassifolium*) Extract Foliar Application on Seedling Performances of *Glycine max* L. *Research Journal of Agriculture and Forestry Sciences* Vol. 5(4), 1-5, April (2017).

Tandon, S. and Dubey, A. 2015. Effects of Biozyme (*Ascophyllum nodosum*) Biostimulant on Growth and Development of Soybean [*Glycine max* (L.) Merrill] *Commun. Soil Sci. Plant Anal.* 46 (7): 861–874.

Titlyanov E. A., T.V. Xiubao., L. H. Huang. 2017. *Coral Reef Marine Plants of Hainan Island*. China. China Science Publishing & Media Ltd. Pages 75-228.

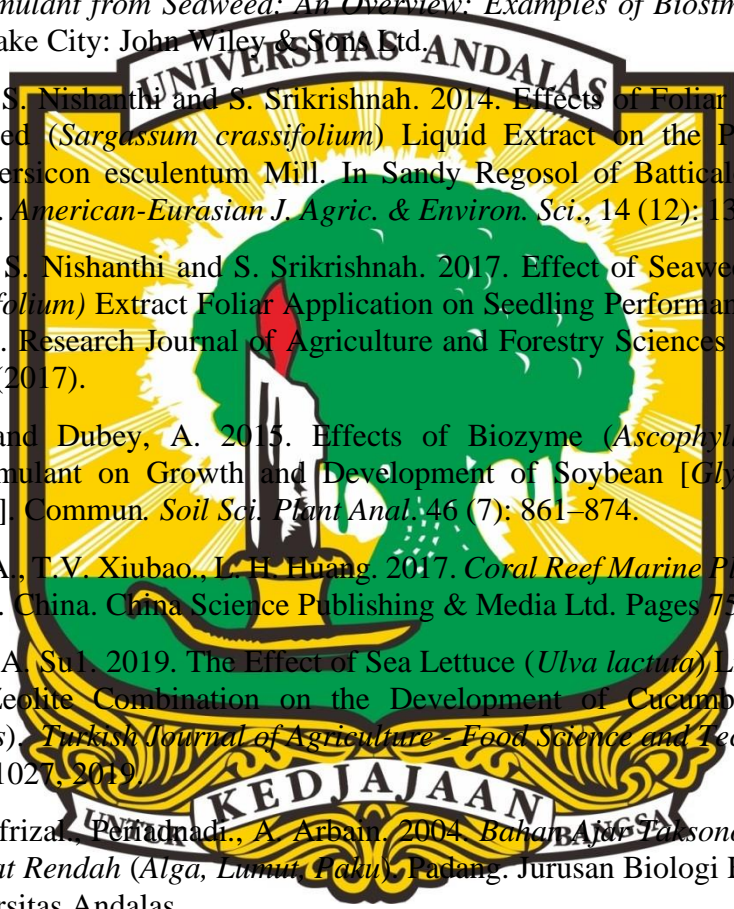
Türkmen M., A. Sul. 2019. The Effect of Sea Lettuce (*Ulva lactuca*) Liquid Fertilizer and Zeolite Combination on the Development of Cucumber (*Cucurbita sativus*). *Turkish Journal of Agriculture - Food Science and Technology*, 7(7): 1021-1027, 2019

Usman. R., Afrizal, Permadani., A. Arbain. 2004. *Bahan Biologi Taksonomi Tumbuhan Tingkat Rendah (Alga, Lumut, Paku)*. Padang. Jurusan Biologi Fakultas MIPA Universitas Andalas.

Vasconcelos, A.C.F., X. Zhang, E.H. Ervin, J.de Castro Kiehl. 2009. Enzymatic Antidiioxidant Response to Biostimulant in Soybean and Soybean Subjected to Drought. *Sci Agric (Piracicaba, Braz)*, v.66, n.3, p.395-402.

Verma, M., Jitendra, M., and Naveen, K. A. 2016. Plant Growth-Promoting Rhizobacteria: Diversity and Applications. *Environmental Biotechnology: For Sustainable Future*.

Wardani. D., D. Sujana. 2020. Analysis of Protein and Vitamin C Content in Black Soybean Tofu (*Glycine Soja* (L.) Merrill) Yellow and Soybean (*Glycine Max*



(L.) Merrill) of Kjeldahl and Iodimetri Titration Method. *Jurnal Ilmiah Farmako Bahari*.

Wozniak, E., A, Blaszcak., Pawel, W., and Michael, C. 2020. *Biostimulant Mode of Action: Impact of Biostimulant on Cellular Level*. South Salt Lake City: John Wiley & Sons Ltd.

Yang, B., Y. Jiang, J. Shi, F. Chen, and M. Ashraf. 2011. Extraction and Pharmacological Properties of Bioactive Compounds from Longan (*Dimocarpus longan* Lour.) Fruit a Review, *Food Research International*. 44 (7): 1837-1842.

