UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

# DAFTAR PUSTAKA

Adi Jaya., J.O Rieley., T. Artiningsih., Y. Sulistiyanto and Y. Jagau. 2001. *Utilization of Deep Tropical Peatland for Agriculture in Central Kalimantan*. *Dalam* : Rieley. J.O & S.E. Page (Eds) Jakarta Symposium Proceeding on Peatlands for Natural Resources Function and Suistanable Management, Jakarta. Hal 125-131.

Agus, F. dan I.G.M. Subiksa, 2008. Lahan Gambut : *Potensi Untuk Pertanian dan Aspek Lingkungan. Balai Penelitian Tanah*. Badan Penelitian dan Pengembangan Pertanian. Bogor.

Aksi Agraris Kanisius, 1993, *Budidaya Jagung*, Penerbit Kanisius; Yogyakarta

Amonette, J. E & S. Joseph. 2009. *Characteristics of Biochar: Microchemical Properties* Hal 33-43 *in* Lehmann, J. and S. Joseph, 2009. Biochar for Environmental Management.First published by Earthscan in the UK and USA in 2009. P416

Andriesse, J.P. (1988). *Nature and Management of Tropical Peat Soils*. FAO Soils Bulletin 59. Food and Agriculture Organization of the United Nations, Rome, Italy.

Antelo, J, F. Arce, M. Avena, S. Fiol, R. Lopez & F. Macias. 2006. *Adsorption of a Soil Humic Acid at the Surface of Goethite and its Competetive Interaction with Phosphate*, Journal. Elsevier.

Ardjakusuma, S. Nuraini, Soemantri. 2001. *Teknik Penyiapan Lahan Gambut untuk Tanaman Hortikultura*. Buletin Teknik Pertanian. Vol 6. No 1. Badan Ltbang Pertanian, Jakarta.

Balai Penelitian Pertanian Lahan Rawa (Balittra), Banjarbaru, Indonesia. 2013. *Biochar sebagai Pembenah Tanah di Lahan Rawa Pasang Surut*. email : balittra@litbang.deptan.go.id.

Balittanah, 2009. *Analisis Kimia Tanah, Tanaman, Air dan Pemupukan*. Panduan Teknik Analisis Edisi 2. Bogor.

Basuki, 2004. *Gambut : Pembentukkan, Karakteristik, Klasifikasi dan Pengelolaan*. Lokakarya Nasional Pengembangan Kompetensi Pendidikan Tinggi dan Peneliti Ilmu Tanah di Indonesia. Jurusan Tanah UGM. Yogyakarta. HTI Pusat. Yogyakarta.

Bintoro, H.M.H.,M. Januar, J. Purwanto & S. Amarillis. 2010. *Sagu di Lahan gambut*. IPB Press. 169 h+xvii.

Blanchard, A Arthur.1986. *Synthetic Inorganic Chemisrty*, New York: John and Willey Sons.

Brady. 1990. *Factor Of Soil Formation*. Mr Graw Hill Book. New York.

Brown, R. 2009. *Biochar Production Technology*. In: Biochar for Environmental Management: Science and Technology (Eds). J. Lehmann & S. Joseph. 2009. Biochar for Environmental Management. First published by Earthscan in the UK and USA in 2009. 416 p.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Cartes, P., A. Jara, R. Demanet and M. de la Luz Mora. 2009. *Urease activity and nitrogen mineralization kinetics as affected by temperature and urea input rate in southern Chilean Andisol*. J. Soil Sc. Plant Nutr. 9 (1) : 69-82.

Chan, K.Y. & Z. Xu. 2009. *Biochar: Nutrient Properties and Their Enhancement*, hal : 67-81 *dalam* Lehmann. J. and S. Joseph, 2009. Biochar for Enviromental Management. First Published by Earthscan in the UK and USA in 2009, P416.

Chapman,S.J., C.D. Campbell, A.R. Fraser, and G. Puri. 2001. *FTIR Spectroscopy of peat in and bordering Scots pine woodland : relationship with chemical and biological properties.* Soil Biology and Biochemestry 33:1190-1200.

Charman, D. 2002. *Peatlands and Eviromental Change*. Jhon Wiley and Sons. Ltd. England.

Chen, L., d. Kost, and Dick. 2008. *Flu Gas Desulfurization Products as Sulfur Sources from Corn*. *Soil Sci.Soc.Am.J*. 72: 1464-1470.

Cheng, C.H., Lehmann J., Thies, J., Burton S.D and Engelhard M.H. 2006. *Oxidation of Black Carbon by biotic and abiotic process*. *Organic Geochemestry 37* : 1477-1488.

Chien, S.H., Clayton, W.R., 1980. *Application of Elovich Equation to the Kinetics of Phosphate Release and Sorption in Soils*. *Soil Sci. Soc. Am. J*. 44, 265-268.

Clarkson, D.T. and Hanson, J.B. 1980. *The mineral nutrition of higher plants*. Annual Review of Plant Physiology 31: 239-298.

Clough, T. J.; Bertram, J. E.; Ray, J. L.; Condron, L. M.; O'Callaghan, M.; Sherlock, R. R.; Wells, N. S*. Unweathered Wood Biochar Impact on Nitrous Oxide Emissions from a Bovine-Urine Amended Pasture Soil*. *Soil Science Society of America Journal*. Vol. 74.3:852-860

Cocozza, C., D'Orazio, V., Miano, T.M and Shotyk, W. 2003. *Characterization of solid and aqueous phases of a peat bog profile using Moleculer Fluorescence Sprectroscopy, ESR and FTIR and comparison with physical properties*. *Organic Geochemestry 34* (2007) 49-60.

Dang, Y.P, Dalal, R.C., Edwards, D.G., Tiller, K.G., 1994. *Kinetics of Zinc Desorption from Vertisols*. Soil Sci. Soc. Am. J. 58. 1392-1399.

Darmawan, 1995. *Perubahan Sifat Sifat Kimia Tanah Gambut Ombrogen Akibat Pemberian Abu Vulkan dan Abu Terbang*. Skripsi. Fakultas Pertanian UGM. Yogyakarta.

Darmawati, N. 2010. *Tanggapan Beberapa Sifat Fisiko-Kimia Gambut Ombrogen Kabupaten Siak Terhadap Proses Pengeringan dan Pembasahan*. Tesis. Fakultas Pertanian UGM. Yogyakarta.

Darmawijaya, M.I. 1997. *Klasifikasi Tanah. Dasar Teori Bagi Peneliti dan Pelaksana Pertanian di Indonesia*. Gadjah Mada University Press. Yogyakarta.

Deng, S.P and M.A. Tabatabai. 2000. *Effect of cropping systems on nitrogen mineralization in soils*. Biol Fertil Soils. 31:211–218.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Demirbas, A. (2004). *Effects of temperature and Particle Size On Bio-Char Yield from Pyrolysis of Agricultural Residues*. Journal of Analytical and Applied Pyrolysis. 72(2): 243-248

Departemen Kelautan dan Perikanan. 2006.. *Naskah Akademis dalam Rangka Menuju Perbaikan Kebijakan Lingkungan pada Aktivitas Industri Maritim*, Laporan Akhir. Jakarta.

Drajad, M., Suprapto S., M.H.Hidayat dan M.Nitisapto. 2003. *Subsidence of Peat Soils in The Tidal Swamplands of Barambai, South Kalimantan*. Jurnal Ilmu Tanah dan Lingkungan. Vol.1.1. No.2

Driessen, P.M. 1978. *Peat Soils*. pp. 763-779. *In*: IRRI. Soil and rice. IRRI. Los Banos. Philippines.

Driessen, P.M. and Soepraptohardjo. 1974. O*rganic soil*. .*In*: Soil for Agricultural Expansion in Indonesia. ATA 106 Bulettin.Soil Reseach Institute Bogor.

Driessen, P.M., dan H. Suhardjo, 1976. *On the defective grain formation of sawah rice on peat*. Soil Res.Ins.Bull.3:20 – 44. Bogor.

Driessen, P.M & R. Dudal. 1989. *Lecture Note on The Geography, Formation, Properties and Use of The Mayor Soil The World*. Agricultural University Wegeningen, The Netherland and Katholike Universiteut, Belgium.

Earnshaw, A. 1997. *Chemistry of The Element 2nd Edition*. New York: Elsevier.

Feng,Y.Y., Xin-Hua HE, Ren GAO, Hong-liang MA, Yu shen Yang. 2014*. Effects of Rice Straw and its biochar addition on soil labile carbon and soil organic carbon*. ELSEVIER. Journal of Integrative Agriculture, Vol 13. Issue 3. March 2014. Pages 491-498.

Freeman, C., G. Liska, N.J.Ostle, M.A.Lock, B. Reynold and J. Hudson, 1996. *Microbial activity and enzyme decomposition processes following peatland water table drawdown*. Plant and Soil 180: 121-127.

Gadner F.P., R.B. Pearce and R.I. Mitchell. 1985. *Pysiologi of Crop Plants*. The Iowa State University Press. USA.

Gani, A. 2009a. *Charcoal Biological "Biochar" as a Component of Land Productivity Improvement*. Iptek Tanaman Pangan. 4(1):33-48. (in Indonesian)

Gani, A. 2009b. *Biochar Enviromental Rescue. Warta Penelitian dan Pengembangan Lingkungan*. 31(6):15-16. (in Indonesian) Glaser, B., J. Lehmann, W. Zech. 2002. Ameliorating Physical and Chemical Properties of Highly Wenthered Soils in With Charcoal: A. Review. Biol Fertil Soils. 35:219-230.

Gaskin, J.W., C. Steiner, K. Harris, K.C. Das, K.C.and B. Bibens.(2008). *Effect of Low-Temperature Pyrolysis Conditions on Biochar for Agricultural Use*. Transactions of the ASABE. 51(6): 2061-2069.

Gogo, S. and D.M.E. Pearce, 2009. *Carbon, Cation and CEC : Interactions and Effects on Microbial Actifity in Pea*t. Geoderma Journal. 153 : 76-86.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Gomez, Kwancai A, and Arturo A. Gomez. 1984. *Statistical Procedures for Agricultural Research* Second Edition. An International Rice Research Institute Book. A wiley Interscience Publication.

Gieseking, JE. 1975. *Soils Component*, Vol. I: Organic Components, Springer-Verlag, New York.

Glaser, B., L. Haumaier, G. Guggenberger and W. Zech. 2001. *The "Terra Preta Phenomenon, A Model for Sustainable Agriculture in The Humid Tropics*. Natur wissen schaften 88(1): 37-41.

Glasser B, J. Lehmann dan W. Zech. 2002. *Ameliorating physical and chemical properties of highly weathered soils in the tropics with charcoal – A review.* Biology and Fertility of Soils. 35 : 219 - 230.

Grimme, H. 1984. *Alumunium tolerance of soybean plants as related to magnesium nutrient*. In *Proc VI.* Internal Colluqu. Optimizing of Plant Nutrium Montpellier, France (P.Martin-Prevel,ed).pp. 243-249.

Hakim, N., M.Y.Nyakpa, A.M Lubis, S.G Nugroho, M.R Saul, M.A Diha, Go Ban Hong dan H.H Bailey.1986. *Dasar-Dasar Ilmu Tanah*. Universitas Lampung. Lampung.

Hakim, N. 2006. *Pengelolaan Kesuburan Tanah Masam dengan Teknologi Pengapuran Terpadu*. Penerbit Universitas Andalas: Padang.

Halim, A. 1987. *Pengaruh Pencampuran Tanah Mineral dan Basa dengan Tanah Gambut Pedalaman Kalimantan Tengah dalam Budidaya Tanaman Kedelai*. Disertasi.. Fakultas Pasca Sarjana ITB. Bogor.

Hardjowigeno, S. 1986. *Sumber Daya Fisik Wilayah dan Tata Guna Lahan : Histosol.* Fakultas Institute Pertanian Bogor. H. 86-94

Hardjowigeno, S. 1987. *Ilmu Tanah*. Akademika Pressindo. Jakarta.

Hartatik, W dan D.A. Suriadikarta. 2006. *Teknologi Pengelolaan Hara Lahan Gambut dalam Karakteristik dan Pengelolaan Lahan Rawa, I*. Las (eds). Balai Besar Penelitian dan Pengembangan Sumberdaya Lahan Pertanian. Bogor.

Havlin, J.L., J.D.Beaton.,Tisdale and W.L. Nelson, 2005.. *Soils. Air Fertility and Fertilizers, An Introduction to Nutrient Management.* Pearson Education. Inc., Upper Saddle River, New Jersey. 515.p

Hendayana, Sumar. 1994. *Kimia Analitik Instrumen*. Semarang : IKIP Press.

Hidayat, A. 2001. *Mengatur Pemberian Air. Modul Program Keahlian Budidaya Tanaman. Proyek Pengembangan Sistem dan Standar Pengelolaan SMK*. Departemen Pendidikan Nasional. Jakarta. 38 hal.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Hua, L., Wu, W.X., Liu, Y.X., McBride, M., Chen, Y.X., 2009*. Reduction of nitrogen loss and Cu and Zn mobility during sludge composting with bamboo charcoal amendment*. Environ. Sci. Pollut. Res. 16, 1-9.

Hunt,J. Mu Ponte, D. Sato, A. Kawabata. 2010. *The Basic of Biochar : A Natural Soil Amandement*. College Tropical Agricultur and Human Resources University of Hawai'I at Manoa, Honolulu, Hawai. *J. Soil and Crop Management* Dec. 2010 SCM-30.

Iriany, R.N., M. Yasin H.G., dan A. Takdir. 2008. *Asal, Sejarah, Evolusi dan Taksonomi Tanaman Jagung.* Dalam : Jagung, Teknik Produksi dan Pengembangan Balai Penelitian Tanaman Serealia. Maros. Sulawesi Selatan.

Islami, T., Guritno, B., Basuki, N., and Suryanto, A. 2011. *Biochar for sustaining productivity of cassava based cropping systems in the degraded lands of East Java*, Indonesia. J. Trop. Agric. 49: 31–39.

Islami, T. 2012. *Pengaruh Residu Bahan Organik Pada Tanaman Jagung (Zea Mays L) Sebagai Tanaman Sela Pertanaman Ubi Kayu (Manihot Esculenta L.).* Jurusan Agronomi, Fakultas Pertanian, Universitas Brawijaya, Malang. *Buana Sains* Vol 12 No 1:131 136,2012 http://jurnal.unitri.ac.id/index.php/buanasains/article/ viewFile/160/161 . [Diakses Sabtu 04 April 2015]. Nurida, NL., A.

James, G., Sabatini, D. A., Chiou, C. T., Rutherford, D., Scott, A. C., Karapanagioti, H. K., 2002. *Evaluating phenanthrene sorption on various wood chars*. Water Research 39: 549-558.

Jaya, A., J.O. Rieley, I. Artiningsih, Y. Sulistiyanto, and Y. Jagan, 2002. *Utilization of Deep Tropical Peatland for Agricultural in Central Kalimantan Indonesia*. Jakarta Simposium Proceeding on Suistable Management. Jakarta.

Jonathan, L., A.T. Mc Clellan & G.Uehara. 2009. *Biochar Volatile Matter Content Effects On Plant Growth and Nitrogen Transformation in A Tropical Soil*. Department of Tropical Plant and Soil Sciences. University of Hawaii. Honolulu. HI Western Nutrient Management Conference. 2009. Vol.8. Salt Lake City. UT. Hal 26-31.

Kalimantan Barat Dalam Angka. 2014. *Badan Pusat Statistik Provinsi Kalimantan Barat.* Pontianak, Kalimantan Barat.

Kamara A., S.U. Kamara, M.S. Kamara*. Effect of Rice Straw Biochar on Soil Quality and the Early Growth and Biomass Yield of Two Rice Varieties.* Journal Agricultural Sciences, *6.* 798-806 Kolb, S.E., K.J. Fermanich and M.E. Dornbush. 2009. Effect of charcoal quantity on microb.

Keenan, C. Curt Richardson, Nial Flanagan., 2016. *The effects of biochar on wetland and agricultural soil carbon and nitrogen emissions in North Carolina*. Masters project proposal submitted in partial fulfillment of the requirements for the Master of Environmental Management degree in the Nicholas School of the Environment of Duke University.

Kim, I, M. Deurer, S. Sivakumaran, K. Young Huh, S. Green and B. Clothier. 2011. *The impact of soil carbon management and environmental conditions on N mineralization*. Biol Fertil Soils. 47:709 –714.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Koretsky, C.M., M. haveman, L. Beuving, A. Cuellar, T. Shattuck and M. Wagner. 2007**.** *Spatial variation of redox and trace metal geochemistry in a minerothropic fen*. Biogeochemistry, 86; 33-62

Kurnain, A. 2005. *Dampak Kegiatan Pertanian dan Kebakaran atas Watak Gambut Ombrogen.* Disertasi. Program Pascasarjana UGM. Yogyakarta.

Lan, W &M. Liu.2008, Preparation *and Properties Of Chitosan-Coated NPK Compound Fertilizer With controlled-release and Water-Retention*. Carbohydrate Polymers 72, 240–247.

Latupono, H. Dj. Shieddieq., Abd. Syukur dan E.Hanudin. 2012. *Kajian Daya Sangga Biochar Limbah Sagu Pada Pelindian Terhadap Ketersediaan NPK Di Tanah Ultisol.* Jurnal Buana Sains *Vol 12* No 2. 91-99, 2012. Fakultas Pertanian. Universitas Gadjahmada. Yohyakarta.

Latupono, H. 2013. *Pemanfaatan Biochar Limbah Sagu Untuk Meningkatkan Ketersediaan N,P,K, Stok Karbon Tanah dan Hasil Tanaman Jagung di Ultisol.* Disertasi. Program Pasasarjana UGM. Yogyakarta.

Laird, D.A. 2008. *The charcoal vision: a win–win–win scenario for simultaneously producing bioenergy, permanently sequestering carbon, while improving soil and water quality*. Agronomy Journal 100: 178- 181.

Laird, D., P. Flaiming, D.D. Davis, R. Horton, B. Wang & D.L.Karlen. 2010a. *Biochar Impact on Nutrient Leaching from a Midwestern.* Agricultural Soil. Journal. Elseiver. *Geoderma* 158 (2010) 436-442.

Laird, D., P. Flaiming, D.D. Davis, R. Horton, B. Wang & D.L.Karlen. 2010b*. Impact of Biochar Amandement on the Quality of a Typical Midwestern*. Agricultural Soil. *Journal. Elseiver. Geoderma 158* (2010) 443-449.

Leiwakabessy, F.M & Wahyudin, M. (1979). *Peat Density and Paddy Production*, In: Proceedings of National Symposium III Development of Tidal Areas in Indonesia, February 1979, Palembang, Indonesia. P18.

Leiwakabessy, F.M., Sutandi. A.2004. *Pupuk dan Pemupukan*. Bogor. Departemen Tanah. Fakultas Pertanian. Institute Pertanian Bogor.

Lehmann, J. dan M. Rondon. 2005. *Biochar soil management on highly- weathered soils in the humid tropics*. In: N. Uphoff (ed.), Biological Approaches to Sustainable Soil Systems, Boca Raton, CRC Press. Hlm: 517–530.

Lehmann, J., Gaunt, J. and Rondon, M. 2006. *Biochar sequestration in terrestrial ecosystem : A review*. Mitigation and Adaptation Strategy of Global Change 11: 403-427.

Lehmann, J. 2007. *Bio-energy in the Black*. Department of Crop and Soil Sciences, College of Agriculture and Life Sciences, Cornell University, Ithaca, NY 14853 (CL273@cornell.edu). © The Ecological Society of America. Front Ecol Environ 2007; 5(7): 381–387.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Lehmann, J &Joseph, 2009. *Biochar for Environmental Management*. First Published by Earthscan in the UK and USA in 2009. P416.

Li, H., Y. Han,and Z. Cai. 2003. Nitrogen *mineralization in paddy soils of the Taihu Region of China under anaerobic conditions: dynamics and model fitting*. *Geoderma 115*: 161–175.

Liang, B, J. Lehmann, D. Solomon, J. Kinyangi, J. Grossman, B. O'Neill, J. O. Skjemstad, J. Thies, F. J. Luiza˜o, J. Petersen, & E. G. Neves. 2006*. Black Carbon Increases Cation Exchange Capacity in Soils*. Published online August 22, 2006. *SOIL SCI. SOC. AM. J., VOL. 70, hal 1719-1730* Life Sciences, Cornell University, Ithaca, NY 14853 (CL273@ cornell.edu)Front Ecol Environ. 2007; 5(7): 381–387.

Lima, D.L., S.M.Santos, H.W. Scherer, R.J. Scheneider, A.C. Duarte, E. B.H. Santos, V.I. Esteves, 2009. *Effects of Organic and In organic Amandemends on Soil Organic Matter Properties*. Geoderma. Journal*.* 150 :38-45.

Lua, A. C., T. Yang and J. Guo.2004*. Effects of Pyrolysis Conditions on The Properties of ActivatedCarbons Prepared from Pistachio-NutShells'*, Journal of Analytical and Applied Pyrolysis*,* vol 72, pp279–287.

Luan, W & M. Liu. 2008. *Preparation and Properties of Chitosan-Coated NPK Compound Fertilizer With Controlled-Release and Water-Retention.* Carbohydrate Polymers 72, 240-247.

Maas, A and T. Notohadiprawiro. 1993. *Constraint and prospect of tidal swamp developments in Indonesia*. International Seminar Swampland Development & management, Direktorat Rawa, September 1993.

Ma'as, A. 1997a. *Sustainable Peatland Management and Enviromentally Friendly*. Jurnal Alami. BPP Teknologi, Jakarta. (in Indonesia). 2(1): 12-16

Ma'as, A., S. Kabirun, dan H. U. Sri Nuryani. 2000. *Laju Dekomposisi Gambut dan Dampaknya Pada Status Hara Pada Berbagai Tingkat Pelindian*. Jurnal Ilmu Tanah dan Lingkungan *2* (1): 23-32

Ma'as, A. 2010. *Interpretasi Gambut untuk Budidaya Pertanian*. Balai Penelitian Tanah Rawa. Badan Penelitian dan Pengembangan Pertanian. Kementrian Pertanian. Friday, 18 June 2010 07:09. Banjar Baru, Indonesia.

Maftu'ah, Eni dan Linda Indrayati. 2013. *The Use Biochar to Improve Soil Properties and Growth of Paddy in Peatland. Publish on Line October 2013*, AGRIVITA Vol 35 No.3. P290-295. Indonesian.

Maftu'ah, Eni. 2012. *Ameliorasi lahan gambut terdegradasi dan Pengaruhya terhadap Produksi Tanaman Jagung Manis.* Disertasi. UGM. Yogyakarta

Major, J, Ch. Steiner, A. Downie & J. Lehmann. 2009. *Biochar Effects on Nutrient Leaching 271-282*. dalam Lehmann J. and S. Joseph. 2009. Biochar for Environmental Management. First published by Earthscan in the UK and USA in 2009. P416.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Mardian, I. (2004*). Pengaruh cara penyiapan dan sistem ekstraksi contoh tanah gambut terhadap hasil analisis kimia*. Skripsi Jurusan Tanah, Fakultas Pertanian UGM. Yogyakarta.

Mawardi, E., Azwar dan Tambidjo, A., 2001. *Potensi dan Peluang Pemanfaatan Harzeburgite sebagai Amelioran tanah Gambut*. Prosiding Seminar Nasional Memantapkan Rekayasa Paket Teknologi Pertanian dan Ketahanan Pangan dalam Era Otonomi Daerah, 31 Oktober – 1 November 2001. Bengkulu.

Marschner, H. 1995. Mineral Nutrition of Higher Plants, 2nd ed. Academic Press. London.

Masganti, T. Notohadikusumo, A. Maas, dan B, Radjagukguk, 2001. *Hydrophobicity and Impact on Chemical Properties of Peat*. Jakarta Symposium Proceeding on Peatland for People, Natural Reseorces Fuction, and Sustainable Management, Jakarta.

Masganti, Notohadikusumo, T., Maas, A. dan Radjagukguk, B. 2002. *Hidrofobisitas dan perubahan sifat kimia bahan gambut.* Prosiding Seminar Gambut IV, Jakarta.

Masganti, 2003. *Kajian upaya meningkatkan daya penyediaan fosfat dalam gambut oligotrofik.* Disertasi. Program Pascasarjana Universitas Gadjah Mada. Yogyakarta. 350 hal.

Masulili, A. 2010. Rice Husk Biochar for Rice Based Cropping System in Acid Soil 1. The Characteristic of Rice Husk Biochar and Its Influenced on the Properties of Acid Sulfate Soils and Rice Growth in West Kalimantan, Indonesia. J*. Agriculturan Science.*

McLaughlin, J.W. and K.L. Webster. 2010. *Alkalinity and Acidity and fluxes in an intermediate peatland in Nothern Ontorio*. Biogeochemestry. 99: 143-155.

Najiyati, S., Lili Muslihat dan I. Nyoman N. Suryadiputra. 2005. *Panduan Pengelolaan Lahan Gambut untuk Pertanian Berkelanjutan*, Proyek Climate Change, Forest and Peatlands in Indonesia. Werlands International-Indonesia Programme and Wildlife Habitat Canada, Bogor.

Nishio, T, H. Sekiya, K. Toriyama dan K. Kogano. 1994*. Changes in gross rates of nitrogen transformations in soil caused by conversion of paddy fields to upland fields.* Soil Science and Plant Nutrition. 40(2) : 301-309.

Niemeyer,J. Y.Chen and L.M. Bollag. (1992). *Characterization fo Humic Acid, compost, and peat by Diffuse Reflaction Fourier Transform Infrared Spectroscopy.* Soil Sci.Soc.Am.J*. 56*: 135-140 (1992).

Noor, M. 2001. *Pertanian Lahan Gambut : Potensi dan Kendala*. Kanisius. Yogyakarta.

Noor, M. 2013. *Penggunaan dan Permasalahan Tanah Gambut dalam* Lahan Gambut : Pemanfaatan dan Pengembangannya Untuk Pertanian. Penerbit Kanisius. Yogyakarta.

Noor, M., M. Alwi dan Raihan. 2005. *Teknologi Peningkatan Produktivitas Lahan Gambut.* Laporan Akhir. Balai Penelitian Pertanian Lahan Rawa. Banjarbaru.

Nugroho dan Widodo., 2001. *The Effect of Drywet Condition to Peat Soil Physical Characteristics of Different Degree of Decomposition*. Dalam Rieley, J.O,. and S.E. Page *(eds).* Jakarta Simposium Proceedings on Peatland for People. Natural Resource Function.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Notohadiprawiro, T. 1985. *Selidik Cepat Ciri Tanah di Lapangan*. Ghalia Indonesia. Jakarta, IndonesiaNotohadiprawiro, T. (1985). Selidik Cepat Ciri Tanah di Lapangan. Ghalia Indonesia. Jakarta, Indonesia

Notohadiprawiro, T, 1990. *Farming Acid Mineral Soils For Food Crop: An Indonesia Experience* in Craswell & Pushparajah, 1990, Management of Acid Soils in The Humic Tropic of Asia. IBSRAM technical Note. 1 : 62-68.

Pangudijatno. 1984. *Potensi tanah Gambut Bagi Tanaman Perkebunan*, Dalam Menara Perkebunan No.4 tahun 52. Balai Penelitian Perkebunan. Bogor.

Poerwowidodo. 1991. *Ganesha Tanah*. Penerbit Rajawali Pers. Jakarta.

Peng, X., L.L. Ye, C.H. Wang, H. Zhou, B. Sun. 2011. *Temperature and Duration Dependent Rice Straww Derived Biochar: Characteristics and its effects on Soil Properties of an Ultisol in Southern China*. ELSEIVER. Journal. Soil & Tillage Research.112(2011) 159-166.

Proctor, M.C.F. 2003. *Malham tam moss: The surface water chemistry of an ombrotropic bog*. Field studies. 10: 553-578.

Priyono, J. 2005. *Kimia tanah*. Mataram university press. Mataram Purnamayani R., R. Sabiham, Sudarsono dan L.K. Darusman. 2004. Nilai Muatan Titik Nol (MTN) dan hubungannya dengan erapan Kalium tanah gambut pantai Jambi dan Kalimantan Tengah. *J Tanah Lingkungan*. 6(2):75-82.

Purnamayani, R., S. Sabiham, Sudarsono dan L.K. Darusman. 2004. *Nilai Muatan Titik nol (MTN) dan hubungannya dengan erapan kalium tanah gambut pantai Jambi dan Kalimantan Tengah*. J.Tanah Lingk, 6(2):75-82.

Rachim, A. 1995. *Penggunaan Kation Kation Polivalen Dalam Kaitannya Dengan Ketersediaan Fosfat Untuk Meningkatkan Produksi Jagung Pada Tanah Gambut*. Disertasi. Program Pascasarjana IPB. Bogor. 268 halaman.

Radovic, L. R.,C. MorenoCastillaand R.J. Utrilla. 2001. *Carbon Materials asAdsorbents in Aqueous Solutions,* Chemistry and Physics of Carbon: A Series of Advances, vol 27, pp 227–405.

Rahayu, E. 1993. *Kajian Nisbah Lignin/Selulosa Sebagai Indeks Kualitas Bahan Organik Dalam Hubungannya Dengan Beberapa Sifat Fisika Tanah Vertisol.* Tesis. Program Pasca Sarjana Universitas Gadjah Mada. Yogyakarta.

Radjagukguk, B. 1997. *Utilization and Management of Peat Land in Indonesia for Agricultural and Forestry*. Symposium on Tropical Peatland. Kucing, serawak, Malaysia. 7 p.

Radjagukguk, B. 2000. *Perubahan Sifat Sifat Fisika dan Kimia Tanah Gambut Akibat Reklamasi Tanah Gambut Untuk Pertanian*. Jurnal Ilmu Tanah dan Lingkungan *2* (1): 1-15

Radovic, L. R.,C. Moreno Castillaand R.J. Utrilla. 2001. *Carbon Materials asAdsorbents in Aqueous Solutions, Chemistry and Physics of Carbon*: A Series of Advances, vol 27, pp227–405

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Rasmadi, M dan A. Kurnain. 2004. *Memahami Watak gambut sehubungan kegiatan reklamasi di lahan gambut tropis*. Agroscientiae 11 (1) : 28-36.

Reksohadiprodo, S. 1993. *Prediciton of Dray Matter Degestible Energy and Digestibel Crude Protein Intake of Agricultural by Productts in Small Ruminants and the Feeding of Crop Resides and Idustrial Waste by Products in System of Goat Production in Indonesia*. Research Report *:* The International Foundation for Science. Sweeden Through The Indonesian Institute of Science. Indonesia and Gadjah Mada University.

Renner, R., 2007. *Rethinking biochar*. Environmental Science and Technology 41(17): 5932-5933.

Rieley, J.O., A.A. Ahmad Shah and M.A Brady. 1996. *The Extend and Nature of Tropical Peat Swamps* dalam E. Maltyby, C.P. Immirzi & R.J. Saffords (eds) Tropical Lowland Peatlands of Southeast Asia. Proceeding of a Workshop on Integrated Planning and Management of Tropical Lowland Peatlands. IUCN. Gland, Switzerland.

Rieley, J.O & Page, S.E., 1998. *Tropical Petlands : Natural Resources characteristics and Functions Problem for Sustainable management*. In : Annual Report and Proceedings for International Workshop 6-9 August, 1997. Japan Society for Promotion of Science. Palangka Raya. Pp. 23-28.

Richardson, C. J.; Wang, H.; Ho, M.; Flanagan, N. *Phenolic Compounds and Black Carbon Feedback Controls on Peat Decomposition and Carbon Accumulation in Southeastern Peatlands* Presented at the Sixth International Workshop on Soil and Sedimentary Organic Matter Stabilization and Destabilization (SOM6).

Ritung. S, Wahyunto dan Nugroho, K. 2012. *Karakteristik dan Sebaran Lahan Gambut di Sumatera, Kalimantan dan Papua*, *dalam* Edi Husen,M. Noor, Mamat HS, Maswar, A. Fahmi dan Y. Sulaiman (ed). Pengelolaan Lahan Gambut. Bogor: Balai Besar Litbang. SLDB.

Riwandi, 2000. *Kajian Stabilitas Gambut Tropika Indonesia berdasarkan analisis Kehilangan Carbon-Organik, sifat Fisiko-Kimia dan Komposisi Bahan Gambut.* Disertasi. Program Pasca Sarjana IPB. Bogor.

Roelcke, M, Y. Han, Z. Cai and J. Richter. 2002. *Nitrogen mineralization in paddy soils of the Chinese Taihu Region under aerobic conditions*. Nutrient Cycling

Rondon, M. A., J. Lehmann, J. Ramirez, and M. Hurtado. 2007. *Biological Nitrogen Fixation by Common Beans (Phaseolus vulgaris l.) Increases with Biochar Additions*. Biology and Fertility of Soils 43, 69- 708

Rukmana dan H. Rahmat. 1997. *Usaha Tani Jagung*. Kanisius: Jakarta.

Rutherford, D. W., Wershaw, and L. G. Cox. 2004. *Changes in composition and porosity during the thermal degradation of wood and wood components*. USGS Sei. Invest, Rep. 2004-5292. Available at http://pubs.usgs.gov/sir/5292 (verified November 6, 2008).

Sabiham, S. (2000). *Kadar air kritik gambut Kalimantan Tengah dalam kaitannya dengan kejadian kering tidak balik*. *Jurnal Tanah Tropika* 11: 21-30.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Sabiham, S. dan M. Ismangun, 1987. *Potensi dan Kendala Pengembangan Lahan Gambut Untuk Pertanian*. Dalam Prosiding Simposium Nasional dan Kongres V PERAGI. 25-27 Januari 1976. Jakarta. 68-91.

Salampak, 1999. Peningkatan *Produktivitas Tanah Gambut yang disawahkan dengan Pemberian Amelioran Tanah Mineral Berkadar Besi Tinggi.* Disertasi. Program Pascasarjana, IPB Bogor. 171 p.

Salmah, Z., G. Spoor, A.B. Zuhri, and D.N. Welch. 1992. *Importance of Water Management in Peat Soil at Farm Level*. In : Aminuddin, B. Y et al., (Eds). P : 228-238. Proc. Of the inter. Trop. Peatland. Kuching Sarawak. Alaysia. 6-10 May, 1991. MARDI-Dep. Agric.

Salmah, Z., G. Spoor, A.B. Zuhri, and D.N. Welch. 1992. *Importance of Water Management in Peat Soil at Farm Level*. In : Aminuddin, B. Y *et al*., (Eds). P : 228-238. Proc. Of the inter. Trop. Peatland. Kuching Sarawak. Alaysia. 6-10 May, 1991. MARDI-Dep. Agric.

Sambroek, W., M.L. Ruivo, P.M. Fearnside, B. Glaser & J. Lehmann. 2003. *Amazonian Dark Earths as Carbon Stores and Sinks*, In: J. Lehmann et al. (eds) Amazonian Dark Earths: Origin, Properties,Management, Dordrecht. Kluwer Academic Publisher. P. 125-139.

Sanchez, P.A. 1992. *Sifat dan Pengelolaan Tanah Tropika*. Jilid II (terjemahan oleh Johara T. Jayadinata).ITB Bandung.hal: 75-137.

Santi, L.P., F.H. Goenadi. 2010. *Pemanfaatan Biochar Sebagai Pembawa Mikroba Untuk Pemantap Agregat Tanah Ultisol dari Taman Bogo-Lampung*. Menara Perkebunan 2010, 78(2). 49-57.

Sastrohamidjojo.H, 2007. *Dasar Dasar Sprektroskopi*. Liberty Yogyakarta: Yogyakarta. P38.

Schmidt, M.W.I., and A.G. Noack. 2000. *Black Carbon in Soils and Sediments: Analysis, Distribution, Implications, and Current Challenges*.Global Biogeochem. Cycles 14:777–793.

Schmidt, M.W.I., J.O. Skjemstad, and C. Jager. 2002. *Carbon Isotope Geochemistry and Nanomorphology of Soil Black carbon: Black Chernozemic Soils in Central Europe Originate from Ancient Biomass Burning*. Global Biogeochem.Cycles 16:1123.

Segarra, K.; Comerford, C.; Slaughter, J.; Jove, S.B. 2013. *Impact of electron acceptor availability on the anaerobic oxidation of methane in coastal freshwater and brackish wetland sediments.* Geochimica et Cosmochimica Acta. Vol. 115:15-30

Setiadi, B. 1995. *Aspek Agronomi Budaya Kedelai di Lahan Gambut*, Suatu kajian Tanggap Tanaman Terhadap Ameliorasi. UGM. Yogyakarta: hal 1-5.

Shariatmadari, H, M. Shirvani and A. Jafari. 2006. *Phosphorus release kinetics and availability in calcareous soils of selected arid and semiarid toposeguences*. Geoderma. 132 : 261-272.

Shen, W., Z. Li, Y. Liu. 2008. *Surface Chemical Fungtional Groups Modification of Porous Carbon.* Bentham Science Publishers. Recent Patents on Chemical Engineering.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Sheng, R., M. Huang,H. Xiao, T. Ge, J. Wu, C. Tong, Z. Tan and D. Xie. 2010. *Kinetic of microbial immobilization of phosphorus in a weathered subtropical soil following threatment with organic amendment and Pseudomonas sp.* Front Agric. Cina 4 (4): 430-437..

Silverstein. 2002. *Identification of Organic Compund, 3rd Edition*. New York: John Wiley & Sons Ltd

Siringoringo, H.H. dan Siregar, C.A.2011. *Pengaruh Aplikasi Arang Terhadap Pertumbuhan Awal Michelia Montana Blume Dan Perubahan Sifat Kesuburan Tanah Pada Tipe Tanah Latosol.* Pusat Litbang Konservasi dan Rehabilitasi. Bogor.

Sjöström, E., 1993. *Wood Chemistry: Fundamentals and Applications*, Second edition, Academic Press, San Diego, U.S.A.

Soepardi, G. 1983. *Sifat dan Ciri Tanah*. Bogor. 591h.

Sparks, D.L., 1985. *Kinetics of Ionic Reactions in Clay Minerals and Soils*. Adv. Agron. 38, 231-266.

Steiner, C. 2007. *Soil charcoal amendments maintain soil fertility and establish carbon sink-research and prospects*. Soil Ecology Res Dev. 1 - 6

Steiner, C., B. Glaser, W.G., Teixeira, J. Lehmann, W.E.H Blum and W. Zech. 2008. *Nitrogen Retention and Plant Uptake on A Highly Weathered Central Amosonian Ferralsol Amended With Compost and Choarcoal*. Journal of Plant Nutrition and Soil Science 171(6):893-899.

Steffens, D., 1994. *Phosphorus release kinetics and extractable phosphorus after long-time fertilization*. Soil Sci. Soc. Am. J 58. 1702-1708.

Stevenson, F.J. 1994. *Humus Chemistry: Genesis, composition and reaction. Sec Edition*. John Wiley&Son Inc. New York.P496.

Subekti, N.A., Safrudin, R. Efendi, dan S. Sunarti, 2007. Morfologi Tanaman dan Fase Pertumbuhan Jagung. Balai Penelitian Tanaman Serealia. Maros.

Suhardi, 2005. *Pengaruh Penggunaan Tanah Gambut sebagai Lahan pertanian Terhadap Pola Perubahan Laju Mineralisasi Nitrogen*. Jurnal Ilmu Ilmu Pertanian Indonesia. 7(2);104-110.

Sulistyowati E. dan Machmud M. 2009. *Pendugaan aksi gen dan daya waris ketahanan kapas terhadap Amarasca bigutta.* Jurnal Litri 15(3): 131-138

Suhardjo, H and I.P.G. Widjaja-Adhi. 1976. *Chemical Characteristics of the upper 30 cm of peat soils from Riau.* In. Proc. Peat and Podzolic soils and their potential for agricultural in Indonesia. Soil Research Institute. Bogor. Bull 3. P. 74-92.

Sukartono, 2011. *Pemanfaatan biochar sebagai bahan amendemen tanah untuk meningkatkan efisiensi penggunaan air dan nitrogen tanaman jagung (Zea mays) di lahan kering*

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

*Lombok Utara.* Laporan Hasil Penelitian Disertasi Doktor. Bidang Ilmu Pertanian. Universitas Brawijaya. Malang.

Sukartono dan W.H. Utomo. 2012. *Peranan Biochar Sebagai Pembenah Tanah Pada Pertanaman Jagung di tanah Lempung Berpasir (Sandy Loam) semiarid tropis Lombok Utara.* Jurnal Buana Sains Vol 12 No 1 : 91-98, 2012.

Sulistiyanto, Y., H. Vasander, J. Jauhiainen, J.O, Rieley and S.H. Limin, 2007. *Mineral Nutrient content of water at different depths in peatland in Central Kalimantan. Indonesia*. *Dalam* : J.O. Rieley, C.J. Banks and B. Radjagukguk (Eds) Carbon climate Human Interaction On Tropical Peatland; Carbon pools, fire, mitigation, restoration and wise use. Proceedings of International Symposium and Workshoop on Tropical Peatland. Yogyakarta. Pp 77-82.

Supriyo, A. 2006. *Dampak Penggenangan, Pengatusan dan Ameliorasi Terhadap Sifat Kimia dan Hasil Padi Sawah di Tanah Gambut (Studi Kasus Pangkoh, Kalimantan Tengah).* Disertasi. Program Studi Ilmu Ilmu Pertanian, Minat Ilmu Tanah. Program Pascasarjana UGM. Yogyakarta.

Supriyo, A and A. Ma'as. 2005. *Leaching Impact on Chemical Properties of Different Reclamation Stage of Ombrogenous Peat. Paper Presented at International Symposium and Workshop Restoration and Wise Use of Tropical Peatland : "Problem of Biodevirsity Fire, Proverty and Water Management"* held in Palangkaraya, at Sep 21-24, 2005.

Suprapto, H.S. 1988. *Bertanam Jagung*. Penerbit Surabaya, Jakarta.

Suryanto. 1994. *Improvement of the P Nutrient Status of Tropical Ombrogenous Peat Soils from Pontianak, West Kalimantan, Indonesia*. Dissertation. Faculty of Agricultural and Applied Biological Science, RUG, Ghent, 216 p.

Suswati, Denah. 2012. *Pemanfaatan Bahan Amelioran Dalam Meningkatkan Potensi Kesesuaian Lahan Gambut untuk Pengembangan Jagung di Desa Rasau Jaya III, Pontianak*. Disertasi. UGM. Yogyakarta.

Swiatkowski, A, M. Pakula, S. Biniak, M. Walczyk. 2004. *Influence of TheSurface Chemistry of Modified Activated Carbon on itsElectrochemical Behavior in The Presence of Lead (II) Ions*. Carbon 2004; 42: 3057-3069.

Taufik,M.(1997). *Pengaruh Pengapuran dan Pengeringan terhadap Watak Kelengasan Tanah Gambut Ombrogen*, Skripsi Fakultas Pertanian UGM, Yogyakarta.

Taizz, L and E. Zeiger. 2002. *Plant Physiology. Publisher: Sinauer Associated; 3 editoin (30 Agustus 2002).* Language: English ISBN: 0878938230 hardcover 690 p.

Tan, K.H. 1996. *Soil Sampling, Preparation and Analysis*. Marcell Dekker. Inc., New York.

Tan, K.H. 1998. *Dasar-Dasar Kimia Tanah*. Terjemahan D.h. Goenadi dan B. Radjagukguk, 1998. Edisi ke-8. Gadjah Mada University Press. Yogyakarta.

Thomas, K.L., Benstead, J., Davies, K.L. & Lloyd, D. (1996) *Role of wetland plants in the*

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

*diurnal control of CH4 and CO2 fluxes in peat*. Soil Biology and Biochemistry, 28, 17–23.

Thompson, L.M and F.R. Troeh., 1978. *Soil and Soil Fertility*. Mc. Graww-Hill. Inc.. Hal 234.

Tida Ge, S. Nie, Y. Hong , J. Wu, H. Xiaoa, C. Tong, and K. Iwasaki. 2010. *Soluble organic nitrogen pools in greenhou se and ope n fi eld horticultural soils under organic and conventional management*: A case study. European Journal of Soil Biology. 46: 371-374.

Tim Kimia Analitik Instrumen. (2009). *Penuntun Praktikum Kimia Analitik Instrumen (KI 512).* Bandung : Jurusan Pendidikan Kimia FPMIPA UPI.

Tim Sintesis Kebijakan. 2008. *Pemanfaatan dan Konservasi Ekosistem Lahan Rawa Gambut di Kalimantan*. Jurnal Pengembangan Inovasi Pertanian. 1(2): 149-156.

Tisdale, L.M., W.L. Nelson, & J.D. Beaton. 1990. *Soil Fertility and Fertilizers*. The Mac Millan Publ. Co.Ink. New York.

Utami, S.N.H, Azwar Maas, Bostang Radjagukguk, Benito Heru Purwanto, 2009. *Restoration of Peat by Three Type Surfactants, and Its Effects on the Efficiency of Peat Depository Cation and Water Holding Capacity. AGRITECH,* Vol. 29, No. 1 Februari 2009. UGM :Yogyakarta.

Utami, S.N.H. 2010. *Recovery of hydrophobic peat with surfactant and ameliorant as well as its effect on P corn uptake*. Dissertation. UGM. Yogyakarta.

Vijarsorn, P. 1996. *Peatlands in Southest Asia: A Regional Perspective*. Dalam Maltby, E., C.P. Immirzi, dan R.J. Safford (eds) Tropical Lowland Peatlands of Sothest Asia. HJCN, Gland Switzerland.

Valat, B., C. Jouany and L.M Riviere.1991.*Characterizationof the Wetting Properties of Air-dried Peatsand Composts*. Soil Sci. 152(2): 100-107.

Wahyunto, S. Ritung, Suparto, dan H. Subagyo. 2005. *Sebaran Tanah gambut dan Kandungan Karbon di Sumatera dan Kalimantan*. Proyek Climate Change, Foresta and Peatlands in Indonesia. Wetlands International. Indonesia Programme and Wildlife Habitat Canada. Bogor.

Widowati. 2011. *Penggunaan Biochar Untuk Meningkatkan Efisiensi Pemupukan Nitrogen.* Disertasi. Program Ilmu-Ilmu Pertanian Minat Tanah dan Sumberdaya Lahan. Program Pasca Sarjana. Brawijaya. Malang.

Widowati, Asnah dan Sutoyo. 2012. *Pengaruh Penggunaan Biochar dan Pupuk Kalium Terhadap Pencucian dan Serapan Kalium Pada Tanaman Jagung.* Fakultas Pertanian Universitas Tribhuwana Tunggadewi. Buana Sains 12(1) : 2.

Widjaya-Adhi, I.P.G., 1988. *Masalah Tanaman di Lahan Gambut. Makalah disajikan dalam Pertemuan Teknis Penelitian Usaha Tani Menunjang Transmigrasi*.. Cisarua Bogor, 27-29 Februari 1988. 19 hal.

UNIVERSITAS
GADJAH MADA
**PERAN BIOCHAR UNTUK MEMPERBAIKI SIFAT KIMIA GAMBUT OMBROGEN DAN PENINGKATAN HASIL JAGUNG**
URAI SUCI YULIES , Prof.Dr.Ir.Azwar Ma'as,M.Sc; Dr.Ir.Sri Nuryani Hidayah Utami, M.Sc; Dr.Ir.Eko Hanudin,M.S
**Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/**

Yamato, M., Y. Okimori, I.F. Wibowo, S. Anshori, M. Ogawa. 2006. *Effects of The Application of Charred Bark of Acacia Mangium on The Yield of Maize, Cowpea and Peanut, and Soil Chemical Properties in South Sumatera, Indonesia*. Soil Science and Plant Nutrition 52, 489-495.

Yu, C.Y. Tang, M.Fang, Z. Luo and K. Cen. 2005. *Experimental Study on Alkali Emission During Rice Straw Pyrolysis.* Journal of Zhejiang University (Engenering Science), Vol. 39, pp 1435-1444.

Yuwono, NW dan Afandi R. 2002. *Ilmu Kesuburan Tanah*. Penerbit Kanisius. Yogyakarta.

Zhang, A.R. Bian, G. Pan, L. Cui, Q. Hussain, L. Li, J. Zheng, X. Zhang, X. Han, X. Yu. 2012. *Effects of Biochar Amandement On Soil Quality, Crp Yield and Greenhouse Gas Emission In A Chinese Rice Paddy*: *A Field Study of 2 Consecutive Rice Growing Cycles.* ELSEIVER, J. Field Crops Research 127 (2012) 153-160.

Zabaniotou, A., G. Stavropoulosand V. Skoulou. 2008*. Activated Carbon From Olive Kernels inA Two-Stage Process: Industrial Improvement*, Bioresource Technology, vol 99, pp320–326.

Zech, W., N. Senesi, G. Guggenberger, K. Kaiser, J. Lehmann, T.M. Miano, A. Miltner, and G. Schroth. 1997. *Factors controlling humification and mineralization of soil organic matter in the tropics*. Geoderma 79:117-161.