



## June 2015 News from the International Biochar Initiative

### Register for the Online Biochar Training Course from IBI

Are you interested in gaining more in-depth knowledge on biochar and biochar systems? IBI recently launched an online course, [Biochar Training for Environmental Sustainability and Economic Development](#), which provides participants an intensive training series on all aspects of biochar, presented by leading biochar experts. Participants have the opportunity to learn about best-science updates on biochar to promote the uptake of biochar production and use, and actions necessary to overcome the barriers to commercialization of the biochar industry. Participants will study biochar production technologies; physicochemical properties; standards, classification and certification; biochar effects when used as a soil amendment; biochar carbon persistence in soils, carbon accounting and climate change; and commercialization of the biochar industry.

The course contains 19 separate lessons—each with a subject overview, a recorded audio/video presentation lasting 30 – 45 minutes (some lessons contain more than one video), and quizzes to test comprehension and retention. There is also an optional introductory presentation on the basics of biochar and the IBI so that all participants start the course with a common understanding of both. Course materials are presented in a user-friendly online format and participants can access the course at their convenience over ten weeks and will receive a certificate of completion at the conclusion of the course.

Course materials are based on presentations from the June 2014 in-person biochar training course titled, "*Biochar for Environmental Sustainability and Economic Development*" hosted by the University of Santiago de Compostela, Spain, and developed and presented by IBI and collaborators.

For more information on member and non-member pricing and registration, please see [www.biochar-international.org/online\\_course](http://www.biochar-international.org/online_course).

### IBI Launches the Online *IBI Biochar Classification Tool*

In order to better understand how a specific biochar may function when incorporated as a soil amendment, [IBI has developed an online tool](#) that allows producers and other stakeholders to classify their biochar materials based on a set of [physicochemical properties](#). The [IBI Biochar Classification Tool](#)—derived from the paper *A Biochar Classification System and Associated Test Methods*<sup>1</sup>—classifies four biochar properties: 1) carbon storage value, 2) fertilizer value (Phosphorous, Potassium, Sulfur, and Magnesium only), 3) liming value, and 4) particle size distribution. In addition, the tool provides the fertilizer grade for six plant nutrients (Nitrogen (N), Phosphorous (P), Potassium (K), Sulfur (S), Calcium (Ca), and Magnesium (Mg)). The tool is useful for anyone who is interested in classifying their biochar to a fertilizer grade system.

To classify a biochar with the tool, users must have laboratory-measured values of: hydrogen to organic carbon ratio ( $H/C_{org}$ ) and organic carbon concentrations ( $C_{org}$ ); plant-available levels of P, K, S, and Mg; calcium carbonate equivalent (% Calcium carbonate ( $CaCO_3$ )-eq); and particle size distribution.

To develop a fertilizer grade using the tool, users must have laboratory-measured values of total and plant-available levels of N, P, K, S, Ca, and Mg.

<sup>1</sup>Camps Arbestain M, J.E. Amonette, B. Singh, T. Wang, H-P. Schmidt. 2015. *A Biochar Classification System and Associated Test Methods*. In: [Biochar for Environmental Management - Science and Technology, 2nd edition](#) J. Lehmann and S. Joseph (eds.). Routledge, New York.

### *July IBI Webinar Series: Dr. Annette Cowie presents [Bringing biochar to the carbon market: the role of science](#)*

Our July 2015 *IBI Webinar Series* event will feature Dr. Annette Cowie of NSW Department of Primary Industries, Australia. In a webinar titled *Bringing biochar to the carbon market: the role of science*, Dr. Cowie will discuss the hurdles that must be overcome for biochar projects to enter carbon markets, and the role that science plays in supporting the development of methodologies for calculating credits. She will describe the generic requirements of carbon markets, and the challenges and prospects for biochar projects in meeting these requirements. Dr. Cowie is currently working on the development of a methodology for quantifying the climate change benefits of biochar from poultry litter, for application in emissions reduction projects under Australia's Emissions Reduction Fund. [Please click here to register](#) now for the webinar, scheduled for Wednesday, July 15, 2015 7:00 PM - 8:00 PM EDT (United States).



The June *IBI Webinar Series* event featured Josh Kearns, Director of Science for Aqueous Solutions, presenting *Low-cost water treatment using biochar*. Mr. Kearns highlighted that although microbial pathogens typically represent the most immediate threat to human health, a wide variety of toxic organic chemicals—such as pesticides, pharmaceutical residues, industrial wastes, manufacturing additives, fuel compounds, and disinfection by-products—impact drinking water sources worldwide. In many rural, remote, and developing community circumstances, treatment using biochar adsorbent is an affordable and locally available option for the control of organic chemical contaminants. Mr. Kearns discussed "low-tech" adsorbent biochar production from various feedstocks using small-scale devices such as gasifier cookstoves and drum ovens. He also reviewed guidelines for integrating biochar adsorption in small, multi-barrier treatment systems that address biological and chemical concerns for water quality.

IBI members can view this and all prior IBI Webinar Series presentations by logging into the IBI member's site at <https://ibi.memberclicks.net/login>. If you are not an IBI member and would like to join in order to view presentations, [please click here](#).

For more information on IBI's Webinar Series, please see: [http://www.biochar-international.org/webinar\\_series](http://www.biochar-international.org/webinar_series).

### **Biochar Briefs: News Roundup for June**

We update the website weekly with new articles on biochar. For more information, please see: <http://www.biochar-international.org/newsbriefs>.

#### **Australia**

[Temple Bruer Winery at Langhorne Creek in South Australia hopes to become Australia's first organic and carbon neutral winery](#) by using biochar made from *Arundo Donax*, a plant that has long been considered a weed. Winery manager Barrie Williams said "One hectare can produce 45 tonnes of dry matter in a single growing season". They are mixing the biochar with compost prior to incorporation into soils and are hoping that the biochar addition not only improves crop yield, but also decreases irrigation.

## Senegal

[Farmer Alioune Diatta has been growing onions in the sandy dry soils of northern Senegal](#) for the last 20 years. His soils are nutrient poor and have water holding constraints, and to be able to produce his crops, Mr. Diatta uses biochar as a supplement. He initially heard about biochar in 2011 and then began spreading it on the worst parts of his land. "After I put on the biochar, I had a good harvest," he said.

## Opportunities in Biochar

- Propose a special session for the upcoming Asia Pacific Biochar Conference 2016; for more information, see <http://www.biochar.co.kr/>
- Take advantage of a free subscription to Biomass Magazine. More information is available at <http://www.biochar-international.org/node/5537>.
- Download the open access biochar book: *Biochar Culture*, by Dr Sai Bhaskar Reddy Nakka. The text highlights the use of biochar in communities and its potential for increased sustainable agriculture in smaller scale farmsteads and homes, focusing on work in India. The book can be accessed at <http://www.biocharculture.com>.
- Job postings in biochar (as well as research/educational opportunities) can be accessed at <http://www.biochar-international.org/network/jobs>.
- Looking for potential grant funding? Check out the Terra Viva Grants Directory which develops and manages information about grants for agriculture, energy, environment, and natural resources in the world's developing countries at <http://www.terravivagrants.org/Home>.

## Upcoming Calendar Events

- June 24 – 27: Biochar: a sustainable solution for agriculture and environment at BiocharEXPO 2015. Location: Milan, Italy. For more information: <http://www.biochar-international.org/node/5950>
- July 5 – 10: Soil interfaces for sustainable development (with colloquium on Biochar in Agriculture and Environment). Location: McGill University, Montreal, Quebec, Canada. For more information: <http://www.biochar-international.org/node/6250>
- July 16 - 17: The Gasifier and Biochar Workshop. Location: Maysville, MO, USA. For more information: <http://www.biochar-international.org/node/6897>
- July 17: Livestock and Poultry Environmental (LPE) Learning Center: Educational Webcast Series. For more information: <http://www.biochar-international.org/node/6945>
- July 27 – 31: Stove Camp 2015. Location: Aprovecho Campus, OR, US. For more information: <http://www.biochar-international.org/node/6745>
- Aug 18 – 20: The 4th China International Biomass Energy Exhibition 2015. Location: Guangzhou, China. For more information: <http://www.biochar-international.org/node/6654>
- September 20 – 24: 5th International Symposium on Soil Organic Matter (SOM) 2015. Location: Göttingen, Germany. For more information: <http://www.biochar-international.org/node/5246>
- September 28 – 30: Joint International Biochar Symposium 2015. Location: Geisenheim, Germany. For more information: <http://www.biochar-international.org/node/6886>
- November 15 – 18: 2015 American Society of Agronomy meeting (includes 5 biochar sessions). Location: Minneapolis, MN, USA. For more information: <http://www.biochar-international.org/node/6553>

See the [IBI Calendar page](#) for more events. To add an event to the calendar, send the information to [info@biochar-international.org](mailto:info@biochar-international.org).

## Recently Published Biochar Research

IBI tracks all published research on biochar and includes it in our [online bibliography](#). The following articles were added in the last month. Please visit the website bibliography for more information on any of these articles. Due to copyright infringement laws, we cannot provide full copies of articles unless we have permission from the publisher. If you have published work that is not included, [please email us](#).

Abiven, Samuel; Andreas Hund, Vegard Martinsen, Gerard Cornelissen (2015). Biochar amendment increases maize root surface areas and branching: a shovelomics study in Zambia. *Plant and Soil*. DOI 10.1007/s11104-015-2533-2

Ahmed, Mohammad Boshir; John L. Zhou, Huu Hao Ngo, Wenshan Guo (2015). Adsorptive removal of antibiotics from water and wastewater: Progress and challenges. *Science of the Total Environment*. DOI 10.1016/j.scitotenv.2015.05.130

Ali, Muhammad Aslam; P.J. Kim, K. Inubushi (2015). Mitigating yield-scaled greenhouse gas emissions through combined application of soil amendments: A comparative study between temperate and subtropical rice paddy soils. *Science of the Total Environment*. DOI 10.1016/j.scitotenv.2015.04.090

Allaire, Suzanne E.; Benjamin Baril, Anne Vanasse, Sébastien F. Lange, John MacKay, Donald L. Smith (2015). Carbon dynamics in a biochar-amended loamy soil under switchgrass. *Canadian Journal of Soil Science*. DOI 10.4141/cjss-2014-042

Ashworth, Amanda Joy (2015). Enhancing the Sustainability of Integrated Biofuel Feedstock Production Systems. Tennessee Research and Creative Exchange; [http://trace.tennessee.edu/utk\\_graddiss/3320/](http://trace.tennessee.edu/utk_graddiss/3320/)

Baek, Ye-Seul; Lee, Jai-Young; Park, Seong-Kyu; Bae, Sunyoung (2015). The Characteristics of the Biochar with the Synthetic Food Waste and Wood Waste for Soil Contaminated with Heavy Metals. *Journal of Soil and Groundwater Environment*. DOI 10.7857/JSGE.2014.19.1.001

Bamminger, Chris; Poll, Christian; Högy, Petra; Kandeler, Ellen; and Marhan, Sven (2015). The role of biochar and elevated soil temperature in affecting microbial abundance and growth of *Brassica napus* in an agroecosystem

Bandara, Tharanga; Bhagya Hewage, Indika Herath, Prasanna Kumarathilaka, Priyantha Yapa, Chandima Wekumbura, Prasanna Rajakaruna, Shiromi Dissanayake, Meththika Vithanage (2014). Role of Woody Biochar on Soil Microbial Activities, Organic Fraction and Heavy Metal Immobilization in Serpentine Soil Driving Research Towards Economy: Opportunities And Challenges; [http://www.researchgate.net/profile/Tharanga\\_Bandara2/publication/276954702\\_ROLE\\_OF\\_WOODY\\_BIOCHAR\\_ON\\_SOIL\\_MICROBIAL\\_ACTIVITIES\\_ORGANIC\\_FRACTION\\_AND\\_HEAVY\\_METAL\\_IMMobilIZATION\\_IN\\_SERPENTINE\\_SOIL/links/555c8ee408ae86c06b5d3913.pdf](http://www.researchgate.net/profile/Tharanga_Bandara2/publication/276954702_ROLE_OF_WOODY_BIOCHAR_ON_SOIL_MICROBIAL_ACTIVITIES_ORGANIC_FRACTION_AND_HEAVY_METAL_IMMobilIZATION_IN_SERPENTINE_SOIL/links/555c8ee408ae86c06b5d3913.pdf)

Bettendorf, Torsten, Claudia Wendland, and Thorsten Schuetze (2015). Chapter III: Terra Preta Sanitation systems and technologies." *Terra Preta Sanitation*: 62.

Brendová, Katerina; Pavel Tlustoš, Jirina Száková (2015). Can Biochar From Contaminated Biomass Be Applied Into Soil for Remediation Purposes? *Water, Air, & Soil Pollution*. DOI 10.1007/s11270-015-2456-9

Brennan, Raymond B.; Mark G. Healy, Owen Fenton, Gary J. Lanigan (2015). The Effect of Chemical Amendments Used for Phosphorus Abatement on Greenhouse Gas and Ammonia Emissions from Dairy Cattle Slurry: Synergies and Pollution Swapping. *Plos One*. DOI 10.1371/journal.pone.0111965

Butphu, Sucharat; Banyong Toomsan, Georg Cadisch, Frank Rasche, Wanwipa Kaewpradit (2015). Impact of biochar application on upland rice production, N use efficiency and greenhouse gas emissions in a rotation system with sugarcane. Food Security Center; [https://fsc.uni-hohenheim.de/fileadmin/einrichtungen/fsc/FSC\\_Brief\\_No.27.pdf](https://fsc.uni-hohenheim.de/fileadmin/einrichtungen/fsc/FSC_Brief_No.27.pdf)

Carnaje, N. P.; Amparado, R. F., Jr.; Malaluan, R. M. (2015). Amending acidic soil with bamboo (*Bambusa blumeana*) biochar: effect on mung bean (*Vigna radiata*) growth rate and yield. AES Bioflux

Chaganti, Vijayasatya N.; David M. Crohn (2015). Evaluating the relative contribution of physiochemical and biological factors in ameliorating a saline–sodic soil amended with composts and biochar and leached with reclaimed water. Geoderma. DOI 10.1016/j.geoderma.2015.05.005

Chaganti, Vijayasatya N.; David M. Crohn, Jirka Šimunek (2015). Leaching and reclamation of a biochar and compost amended saline–sodic soil with moderate SAR reclaimed water. Agricultural Water Management. DOI 10.1016/j.agwat.2015.05.016

Chen, Gui-jie; Chuan-yi Peng, Jiang-yu Fang, Yang-yang Dong, Xiao-hui Zhu & Hui-mei Cai (2015). Biosorption of fluoride from drinking water using spent mushroom compost biochar coated with aluminum hydroxide. Desalination and Water Treatment. DOI 10.1080/19443994.2015.1049959

Chen, Yanhua; Liàoshàngqiáng, Liyànméi, Zhang Qian, Guo Ning, Zhang Lin, Yang Jungang, Sun Yan Xin (2015). Impacts of Biochar and Garden Waste Compost on Greenhouse Vegetables: I. Soil Physicochemical Properties and Vegetable Yields. Journal of Agro-Environment Science; [http://www.aes.org.cn/nyhjkxxb/ch/reader/view\\_abstract.aspx?file\\_no=20150514](http://www.aes.org.cn/nyhjkxxb/ch/reader/view_abstract.aspx?file_no=20150514)

Chen, Zaiming; Xin Xiao, Baoliang Chen, and Lizhong Zhu (2015). Quantification of Chemical States, Dissociation Constants and Contents of Oxygen-containing Groups on the Surface of Biochars Produced at Different Temperatures. Environmental Science & Technology

Chényùzhen; Wang Feng, You Zhiming, Wu Zhidan, Jiangfu Ying, Zhang Lei, WENG Bo-qi (2015). Effects of Biochar on CO<sub>2</sub> and N<sub>2</sub>O Emissions from Tea Garden Soils. Journal of Agro-Environment Science. DOI 10.11654/jaes.2015.05.026

Ch'ng, H. Y.; Osumanu Haruna Ahmed; Nik Muhamad, A. M. (2014). Biochar and compost influence the phosphorus availability, nutrients uptake, and growth of maize (*Zea mays* L.) in tropical acid soil. Pakistan Journal of Agricultural Sciences 2014

Chunfei Wu, Vitaliy L. Budarin, Meihong Wang, Vida Sharifi, Mark J. Gronnow, Yajue Wu, Jim Swithenbank, James H. Clark, Paul T. Williams (2015). CO<sub>2</sub> gasification of bio-char derived from conventional and microwave pyrolysis. Applied Energy. DOI 10.1016/j.apenergy.2015.04.075

Conversa, Giulia; Anna Bonasia, Corrado Lazzizzera and Antonio Elia (2015). Influence of biochar, mycorrhizal inoculation and fertilizer rate on growth and flowering of pelargonium (*Pelargonium zonale* L.) plants. Frontiers in Plant Science; <http://journal.frontiersin.org/article/10.3389/fpls.2015.00429/pdf>

Conz, Rafaela Feola (2015). Characterization of feedstocks and biochars for agricultural use. Thesis: Escola Superior de Agricultura Luiz de Queiroz; <http://www.teses.usp.br/teses/disponiveis/11/11140/tde-13052015-142608/en.php>

Day, Ryan M. (2015). Effects of Biochar on Soil Water Retention, pH and Radish (*Raphanus sativus*) Plant Growth; [http://digitalcommons.georgiasouthern.edu/research\\_symposium/2015/2015/104](http://digitalcommons.georgiasouthern.edu/research_symposium/2015/2015/104)

de Andrade, Cristiano Alberto; Maria Paula Silveira Bibar, Aline René Coscione, Adriana Marlene Moreno Pires, Álvaro Guedes Soares (2015). Mineralização e efeitos de biocarvão de cama de frango sobre a capacidade de troca catiônica do solo. Pesquisa Agropecuária Brasileira; <http://seer.sct.embrapa.br/index.php/pab/article/view/20488>

del-Campo, B.G.; M.D. Morris, D.A. Laird, M.M. Kieffer, R.C. Brown (2015). Optimizing the production of activated carbon from fast pyrolysis char. Technology; <http://www.worldscientific.com/doi/abs/10.1142/S2339547815400026>

DeVallance, David B; Gloria S Oporto; Patrick Quigley (2015). Investigation of hardwood biochar as a replacement for wood flour in wood–polypropylene composites. Journal of Elastomers and Plastics. DOI 10.1177/0095244315589655

Devi, Parmila; Anil K. Saroha (2015). Effect of pyrolysis temperature on polycyclic aromatic hydrocarbons toxicity and sorption behaviour of biochars prepared by pyrolysis of paper mill effluent treatment plant sludge. Bioresource Technology. DOI 10.1016/j.biortech.2015.05.084

Dote, Y.; T. Sekito, K. Ueda, R. Sakamoto, T. Suzukic and S. Sano (2015). Removal of ammonia from aqueous solution for swine wastewater with swine manure compost-based char. Water Practice & Technology; <http://www.iwaponline.com/wpt/010/wpt0100409.htm>

Ekebafé, Marian Osazoduwa; Ekebafé, Lawrence Olu; Ugbesia, Stella Omozee (2015). Biochar composts and composites. Science Progress. DOI 10.3184/003685015X14301544319061

El-Naggar, Ahmed H.; Adel R.A. Usman, Abdulrasoul Al-Omran, Yong Sik Ok, Mahtab Ahmad, Mohammad I. Al-Wabel (2015). Carbon mineralization and nutrient availability in calcareous sandy soils amended with woody waste biochar. Chemosphere. DOI 10.1016/j.chemosphere.2015.05.052

Elbana, Tamer A.; Somaia G. Mohammad, and Sahar M. Ahmed (2015). Chromium removal from industrial wastewater using biochar materials: kinetic batch experiments. CONFERENCE PAPER · MAY 2015; [http://www.researchgate.net/profile/Tamer\\_Elbana/publication/277624444\\_Chromium\\_removal\\_from\\_industrial\\_wastewater\\_using\\_biochar\\_materials\\_kinetic\\_batch\\_experiments/links/556ffaea08aec226830abac9.pdf](http://www.researchgate.net/profile/Tamer_Elbana/publication/277624444_Chromium_removal_from_industrial_wastewater_using_biochar_materials_kinetic_batch_experiments/links/556ffaea08aec226830abac9.pdf)

Fei Lian, Binbin Sun, Xi Chen, Lingyan Zhu, Zhongqi Liu, Baoshan Xing (2015). Effect of humic acid (HA) on sulfonamide sorption by biochars. Environmental Pollution. DOI 10.1016/j.envpol.2015.05.030

Fengsa Zhou, Hong Wang, Sheng'en Fang, Weihua Zhang, Rongliang Qiu (2015). Pb(II), Cr(VI) and atrazine sorption behavior on sludge-derived biochar: role of humic acids. Environmental Science and Pollution Research. DOI 10.1007/s11356-015-4818-7

Gebhardt, Martha Mary (2015). Soil Amendment Effects on Degraded Soils and Consequences for Plant Growth and Soil Microbial Communities Thesis: The University of Arizona; <http://arizona.openrepository.com/arizona/handle/10150/556614>

Gerlach, Achim; Hans-Peter Schmidt (2015). The use of biochar in cattle farming. the Biochar Journal; <http://www.biochar-journal.org/en/ct/9>

Gimhyeoksu; Gimgwonrae, Yiyeongyu, Og-yongsig, Kim Won-il, Gimgyehun (2015). Immobilization of Lead by Biochar Bead in Agricultural Soil. Society of Soil Science and Fertilizer soil of the Republic of Korea enacted Day celebrations and Conference Papers; <http://www.dbpia.co.kr/Journal/ArticleDetail/3673619>

Glaser, Bruno, and Friedemann Klimek (2015). Chapter I: Historical and scientific re-discovery of Terra Preta do Indio. Terra Preta Sanitation: 16; <https://www.dbu.de/phpTemplates/publikationen/pdf/180615110354odmi.pdf#page=16>

Graber, E. R.; L. Tsechansky, E. Mayzlish-Gati, R. Shema, H. Koltai (2015). A humic substances product extracted from biochar reduces Arabidopsis root hair density and length under P-sufficient and P-starvation conditions. Plant and Soil. DOI 10.1007/s11104-015-2524-3

Gul, Shazia; Alia Naz, Iftikhar Fareed, Muhammad Irshad (2015). Reducing Heavy Metals Extraction from Contaminated Soils Using Organic and Inorganic Amendments - a Review. *Pol. J. Environ. Stud.*; <http://www.pjoes.com/pdf/24.3/Pol.J.Environ.Stud.Vol.24.No.3.1423-1426.pdf>

Gunasekara, W. A. K. M.; Ganehenege, M. Y. U. (2015). Utilization of Treated Sugarcane Bagasse for Heavy Metal Trapping. *Proceedings Peradeniya University International Research Sessions*; <http://www.dlib.pdn.ac.lk/archive/handle/1/5020>

Hall, Kathleen E.; Chittaranjan Ray, Seo Jin Ki, Kurt A. Spokas, William C. Koskinen (2015). Pesticide sorption and leaching potential on three Hawaiian soils. *Journal of Environmental Management*. DOI 10.1016/j.jenvman.2015.04.046

Han Qiao Liu, Xian Xu, Zhen Hua Wu, Guo Xia Wei, Lei Sun (2015). Removal of Heavy Metals from Aqueous Solution Using Biochar Derived from Biomass and Sewage Sludge. *Applied Mechanics and Materials*. DOI 10.4028/www.scientific.net/AMM.768.89

Hilbers, Tim J.; Zhouhong Wang, Brennan Pecha, Roel J.M. Westerhof, Sascha R.A. Kersten, Manuel Raul Pelaez-Samaniego, Manuel Garcia-Perez (2015). Cellulose-Lignin interactions during slow and fast pyrolysis. *Journal of Analytical and Applied Pyrolysis*. DOI 10.1016/j.jaap.2015.05.020

Hoffman, Thomas C. (2015). Pyrolysis for Estrogens Removal from Wastewater Solids. Thesis: Marquette University, Department of Civil Engineering; [http://epublications.marquette.edu/theses\\_open/294](http://epublications.marquette.edu/theses_open/294)

Hossain, Mustafa K.; Vladimir Strezov, Lester McCormick, Peter F. Nelson (2015). Wastewater sludge and sludge biochar addition to soils for biomass production from *Hyparrhenia hirta*. *Ecological Engineering*. DOI 10.1016/j.ecoleng.2015.05.014

Huggins, Tyler M.; Jeremy J. Pietron, Heming Wang, Zhiyong Jason Ren, Justin C. Biffinger (2015). Graphitic Biochar as a cathode electrocatalyst support for microbial fuel cells. *Bioresource Technology*. DOI 10.1016/j.biortech.2015.06.012

Idris, Juferi Bin (2015). Study on Biochar Production from Empty Fruit Bunch Biomass Under Self-Sustained Carbonization for the Development of Yamasen Carbonization Oven. Thesis: Kyushu Institute of Technology Academic Repository

Ippolito, J.A.; T.F. Ducey, K.B. Cantrell, J.M. Novak, R.D. Lentz (2015). Designer, acidic biochar influences calcareous soil characteristics. *Chemosphere*. DOI 10.1016/j.chemosphere.2015.05.092

Ippolito, J.A.; M.E. Stromberger, R.D. Lentz, R.S. Dungan (2015). Hardwood biochar and manure co-application to a calcareous soil. *Chemosphere*. DOI 10.1016/j.chemosphere.2015.05.039

Jeong, Chang Yoon; Syam K. Dodla, Jim J. Wang (2015). Fundamental and molecular composition characteristics of biochars produced from sugarcane and rice crop residues and by-products. *Chemosphere*. DOI 10.1016/j.chemosphere.2015.05.084

Jiang, Yu Feng; Hang Sun, Uwamungu J. Yves, Hong Li, Xue Fei Hu (2015). Impact of biochar produced from post-harvest residue on the adsorption behavior of diesel oil on loess soil. *Environmental Geochemistry and Health*. DOI 10.1007/s10653-015-9712-1

Jingjing Chen, Hyunjin Kim, Gayoung Yoo (2015). Effects of Biochar Addition on CO<sub>2</sub> and N<sub>2</sub>O Emissions following Fertilizer Application to a Cultivated Grassland Soil. *Plos One*. DOI 10.1371/journal.pone.0126841

Jung, Kyung-Won; Min-Jin Hwang, Tae-Un Jeong, Kyu-Hong Ahn (2015). A novel approach for preparation of modified-biochar derived from marine macroalgae: Dual purpose electro-modification for improvement of surface area and metal impregnation. *Bioresource Technology*. DOI 10.1016/j.biortech.2015.05.052

Kammann, Claudia I.; Hans-Peter Schmidt, Nicole Messerschmidt, Sebastian Linsel, Christoph Müller, Hans-Werner Koyro, Pellegrino Conte & Joseph Stephen (2014). Plant growth improvement mediated by nitrate capture in co-composted biochar. Scientific Reports 2014; [http://www.researchgate.net/profile/Pellegrino\\_Conte/publication/276992968\\_Plant\\_growth\\_improvement\\_mediated\\_by\\_nitrate\\_capture\\_in\\_co-composted\\_biochar/links/555cc1a408ae8c0cab2a666f.pdf](http://www.researchgate.net/profile/Pellegrino_Conte/publication/276992968_Plant_growth_improvement_mediated_by_nitrate_capture_in_co-composted_biochar/links/555cc1a408ae8c0cab2a666f.pdf)

Kammann, Claudia I.; Hans-Peter Schmidt, Nicole Messerschmidt, Sebastian Linsel, Diedrich Steffens, Christoph Müller, Hans-Werner Koyro, Pellegrino Conte & Stephen Joseph (2015). Plant growth improvement mediated by nitrate capture in co-composted biochar. Supplementary information to MS; <http://www.nature.com/srep/2015/150609/srep11080/extref/srep11080-s1.doc>

Kanig, Maximilian (2015). Evaluierung statistischer Methoden zum Vergleich von Biokohlekomposten mit kleinen Stichproben am Beispiel des Wachstums von Nutzpflanzen unter Gewächshausbedingungen; [http://www.researchgate.net/profile/Maximilian\\_Kanig/publication/277954808\\_Evaluierung\\_statistischer\\_Methoden\\_zum\\_Vergleich\\_von\\_Biokohlekomposten\\_mit\\_kleinen\\_Stichproben\\_am\\_Beiispiel\\_des\\_Wachstums\\_von\\_Nutzpflanzen\\_unter\\_Gewchshausbedingungen/links/5577308f08aeacff20004803.pdf](http://www.researchgate.net/profile/Maximilian_Kanig/publication/277954808_Evaluierung_statistischer_Methoden_zum_Vergleich_von_Biokohlekomposten_mit_kleinen_Stichproben_am_Beiispiel_des_Wachstums_von_Nutzpflanzen_unter_Gewchshausbedingungen/links/5577308f08aeacff20004803.pdf)

Kargar, Maryam; O. Grant Clark, William H. Hendershot, Pierre Jutras, Shiv O. Prasher (2015). Immobilization of Trace Metals in Contaminated Urban Soil Amended with Compost and Biochar. Water, Air, & Soil Pollution. DOI 10.1007/s11270-015-2450-2

Khairnar, Kaushal (2015). Effect of different organic amendments on soil quality, vines growth, grape production and wine quality of mechanically pruned vineyards. Thesis: Technical University of Lisbon; <https://www.repository.utl.pt/handle/10400.5/8632>

Khan, Naser; Ian Clark, Miguel A. Sánchez-Monedero, Syd Shea, Sebastian Meier, Fangjie Qi, Rai S. Kookana, Nanthi Bolan (2015). Physical and chemical properties of biochars co-composted with biowastes and incubated with a chicken litter compost. Chemosphere. DOI 10.1016/j.chemosphere.2015.05.065

Krishnakumar S.; Rajalakshmi, G.; Balaganesh, B. (2015). Effect of black carbon in germination of maize seeds. Environment and Ecology.

Larson, Richard A.; Sharma, B.K. (2015). Antioxidants from Wood-derived Pyrolyzates (Bio-oils) Report: RR Series (Illinois Sustainable Technology Center); <https://www.ideals.illinois.edu/handle/2142/77812>

Lei Luo, Chuang Xu, Zien Chen, Shuzhen Zhang (2015). Properties of biomass-derived biochars: Combined effects of operating conditions and biomass types. Bioresource Technology. DOI 10.1016/j.biortech.2015.05.054

Li, Jianfa; Saijun Li, Huaping Dong, Shengshuang Yang, Yimin Li, and Jiaying Zhong (2015). Role of Alumina and Montmorillonite in Changing the Sorption of Herbicides to Biochars. Journal of Agricultural and Food Chemistry. DOI 10.1021/acs.jafc.5b01654

Li Jiang Zhou; Zhang Qing Zhong; Lou Yi Lai; Zhang Li Meng; Du Zhang Liu; Liu Xing Ren; Wang Yi Ding (2015). Effects of biochar addition on nutrient leaching loss of typical tobacco-planting soils in Yunnan Province, China. Journal of Agricultural Resources and Environment

Liang Hei, Hui Wang, Qi Tang Wu, Wei Peng Yu (2015). Safe Utilization of Municipal Sewage Sludge in Agriculture and Forestry Applied Mechanics and Materials. DOI 10.4028/www.scientific.net/AMM.768.542

Liruiyuè; Chén Dé, Li Lian Qing, Genxing, Chen Jianqing, Guo Hu (2015). Adsorption of Pb<sup>2+</sup> and Cd<sup>2+</sup> in Aqueous Solution by Biochars Derived from Different Crop Residues. Journal of Agro-Environment Science; [http://www.aes.org.cn/nyhjxxb/ch/reader/view\\_abstract.aspx?file\\_no=20150525](http://www.aes.org.cn/nyhjxxb/ch/reader/view_abstract.aspx?file_no=20150525)



Liu Chao, Wei Yong-xia (2015). Effects of Straw Biochar on Growth and Development and Water Consumption Rule of Maize in Cold Black Soil Region. China Rural Water and Hydropower; [http://d.wanfangdata.com.cn/periodical\\_zqncslsd201504002.aspx](http://d.wanfangdata.com.cn/periodical_zqncslsd201504002.aspx)

Liu YX, Lyu HH, Shi Y, Wang YF, Zhong ZK, Yang SM (2015). Effects of biochar on soil nutrients leaching and potential mechanisms: A review. The Journal of Applied Ecology; <http://europemc.org/abstract/med/25985683>

Liu, Zhengang; Guanghua Han (2015). Production of solid fuel biochar from waste biomass by low temperature pyrolysis. Fuel. DOI 10.1016/j.fuel.2015.05.032

Liyi Ye, Jingmiao Zhang, Jie Zhao, Zhiming Luo, Song Tu, Yingwu Yin (2015). Properties of biochar obtained from pyrolysis of bamboo shoot shell. Journal of Analytical and Applied Pyrolysis. DOI 10.1016/j.jaap.2015.05.016

Lizhi He, Shiliang Fan, Karin Müller, Guotao Hu, Huagang Huang, Xiaokai Zhang, Xiaoming Lin, Lei Che, Hailong Wang (2015). Biochar reduces the bioavailability of di-(2-ethylhexyl) phthalate in soil. Chemosphere. DOI 10.1016/j.chemosphere.2015.05.064

Luo Yuan, Xiong De-zhong (2015). The Research Advance in Application Effect of Soil Conditioners. Journal of Anhui Agricultural Sciences; [http://d.wanfangdata.com.cn/periodical\\_ahnykx201513030.aspx](http://d.wanfangdata.com.cn/periodical_ahnykx201513030.aspx)

Ma Feng Feng; Zhao BaoWei; Zhong JinKui; Diao JingRu; Zhang Yi (2015). Characteristics phosphate adsorption onto biochars derived from dairy manure and its influencing factors. China Environmental Science

Ma Tie Zheng; Ma YouHua; Fu HuanHuan; Wang Qiang; Xu LuLu; Nie JingRu; Yu QianQian (2015). Remediation of biological organic fertilizer and biochar in paddy soil contaminated by Cd and Pb. Journal of Agricultural Resources and Environment

Maftu'ah, Eni; Dedi Nursyamsi (2015). Potensi berbagai bahan organik rawa sebagai sumber biochar. Pros Sem Nas Masy Biodiv Indon; <http://biodiversitas.mipa.uns.ac.id/M/M0104/M010417.pdf>

Mahar, A.; Wang Ping, Li Rong-Hua and Zhang Zeng-Qiang (2015). Immobilization of lead and cadmium in contaminated soil using amendments: A review. Pedosphere

Manna, Suman & Neera Singh (2015). Effect of wheat and rice straw biochars on pyrazosulfuron-ethyl sorption and persistence in a sandy loam soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes. DOI 10.1080/03601234.2015.1018757

Maroušek, Josef; Simona Hašková, Robert Zeman, Radka Vanícková (2015). Managerial Preferences in Relation to Financial Indicators Regarding the Mitigation of Global Change. Science and Engineering Ethics; [http://www.researchgate.net/publication/260950787\\_Managerial\\_Preferences\\_in\\_Relation\\_to\\_Financial\\_Indicators\\_Regarding\\_the\\_Mitigation\\_of\\_Global\\_Change](http://www.researchgate.net/publication/260950787_Managerial_Preferences_in_Relation_to_Financial_Indicators_Regarding_the_Mitigation_of_Global_Change)

Mohamed H. Mohamed, Lee D. Wilson, Jaimin R. Shah, Jon Bailey, Kerry M. Peru, John V. Headley (2015). A novel solid-state fractionation of naphthenic acid fraction components from oil sands process-affected water. Chemosphere. DOI 10.1016/j.chemosphere.2015.05.029

Mosley, Luke M.; Philip Willson, Benjamin Hamilton, Greg Butler, Russell Seaman (2015). The capacity of biochar made from common reeds to neutralise pH and remove dissolved metals in acid drainage. Environmental Science and Pollution Research. DOI 10.1007/s11356-015-4735-9

Moyo, Mambo; Sikwila Thokozani Lindiwe, Edith Sebata, Benias Chomunorwa Nyamunda, Upenyu Guyo (2015). Equilibrium, kinetic, and thermodynamic studies on biosorption of Cd(II) from aqueous solution by biochar. *Research on Chemical Intermediates*. DOI 10.1007/s11164-015-2089-z

Nan Nan; David B DeVallance, Xinfeng Xie, Jingxin Wang (2015). The effect of bio-carbon addition on the electrical, mechanical, and thermal properties of polyvinyl alcohol/biochar composites. *Journal of Composite Materials*; <http://jcm.sagepub.com/content/early/2015/06/04/0021998315589770.abstract>

Nansubuga, Irene; Noble Banadda, Frederik Ronsse, Willy Verstraete, Korneel Rabaey (2015). Digestion of high rate activated sludge coupled to biochar formation for soil improvement in the tropics. *Water Research*. DOI 10.1016/j.watres.2015.05.047

Naqvi, Salman Raza; Yoshimitsu Uemura, Noridah Osman, Suzana Yusup (2015). Production and Evaluation of Physicochemical Characteristics of Paddy Husk Bio-char for its C Sequestration Applications. *BioEnergy Research*. DOI 10.1007/s12155-015-9634-x

Nayak, Dali; Eli Saetnan, Kun Cheng, Wen Wang, Frank Koslowski, Yan-Fen Cheng, Wei Yun Zhu, Jia-Kun Wang, Jian-Xin Liu, Dominic Moran, Xiaoyuan Yan, Laura Cardenas, Jamie Newbold, Genxing Pan, Yuelai Lu, Pete Smith (2015). Management opportunities to mitigate greenhouse gas emissions from Chinese agriculture. *Agriculture, Ecosystems & Environment*. DOI 10.1016/j.agee.2015.04.035

Ningbo, Gao; Liu Baoling, Li Aimin, Li Juanjuan (2015). Continuous pyrolysis of pine sawdust at different pyrolysis temperatures and solid residence times. *Journal of Analytical and Applied Pyrolysis*. DOI 10.1016/j.jaap.2015.05.011

Novotny, Etelvino Henrique; Claudia Maria Branco de Freitas Maia, Márcia Thaís de Melo Carvalho and Beáta Emöke Madari (2015). Biochar: Pyrogenic Carbon for Agricultural Use – A Critical Review. *R. Bras. Ci. Solo*; <http://ainfo.cnptia.embrapa.br/digital/bitstream/item/125065/1/2015-API-ClaudiaM-RBCS-Biochar.pdf>

Panda, Achyut Kumar; Narayan Gouda, R. K. Singh, R. K. Patel (2015). Fast pyrolysis of Kaner (*Thevetia peruviana*) Seed to Fuel and Chemicals. *International Journal of Analytical and Applied Chemistry*; <http://chemical.journalspub.info/index.php/JAAC/article/view/32>

Park, J. H.; Y. S. Ok, S. H. Kim, J. S. Cho, J. S. Heo, R. D. Delaune, D. C. Seo (2015). Evaluation of phosphorus adsorption capacity of sesame straw biochar on aqueous solution: influence of activation methods and pyrolysis temperatures. *Environmental Geochemistry and Health*. DOI 10.1007/s10653-015-9709-9

Ping Chen, Mingxing Sun, Zhixiu Zhu, Jidong Zhang, Guoqing Shen (2015). Optimization of ultrasonic-assisted extraction for determination of polycyclic aromatic hydrocarbons in biochar-based fertilizer by gas chromatography–mass spectrometry. *Analytical and Bioanalytical Chemistry*. DOI 10.1007/s00216-015-8790-3

Plaza, César; Beatrice Giannetta, José M. Fernández, Esther G. López-de-Sá, Gabriel Gascó, Ana Méndez, and Claudio Zaccone (2015). Effects of biochar on organic matter dynamics in unamended soils and soils amended with municipal solid waste compost and sewage sludge. *Geophysical Research Abstracts*; [http://www.researchgate.net/profile/Claudio\\_Zaccone/publication/275037092\\_Effects\\_of\\_biochar\\_on\\_organic\\_matter\\_dynamics\\_in\\_unamended\\_soils\\_and\\_soils\\_amended\\_with\\_municipal\\_solid\\_waste\\_compost\\_and\\_sewage\\_sludge/links/5530a22d0cf2f2a588ab25ad.pdf](http://www.researchgate.net/profile/Claudio_Zaccone/publication/275037092_Effects_of_biochar_on_organic_matter_dynamics_in_unamended_soils_and_soils_amended_with_municipal_solid_waste_compost_and_sewage_sludge/links/5530a22d0cf2f2a588ab25ad.pdf)

Powlson, David S.; Clare M. Stirling, M. L. Jat, Bruno G. Gerard, Cheryl A. Palm, Pedro A. Sanchez & Kenneth G. Cassman (2015). Reply to 'No-till agriculture and climate change mitigation'. *Nature Climate Change*; <http://www.nature.com/nclimate/journal/v5/n6/full/nclimate2654.html>

Prithvi, S. (2015). Use of urea adsorbed KOH-activated Napier grass biochar for soil conditioning—A step towards biochar tailoring. Spanish Journal of Rural Development;  
[http://www.researchgate.net/profile/Prithvi\\_Simha2/publication/276377527\\_Use\\_of\\_urea\\_adsorbed\\_KOH\\_-\\_activated\\_Napier\\_grass\\_biochar\\_for\\_soil\\_conditioningA\\_step\\_towards\\_biochar\\_tailoring/links/555c22e708ae6aea08173228.pdf](http://www.researchgate.net/profile/Prithvi_Simha2/publication/276377527_Use_of_urea_adsorbed_KOH_-_activated_Napier_grass_biochar_for_soil_conditioningA_step_towards_biochar_tailoring/links/555c22e708ae6aea08173228.pdf)

Puga, A.P.; C.A. Abreu, L.C.A. Melo, L. Beesley (2015). Biochar application to a contaminated soil reduces the availability and plant uptake of zinc, lead and cadmium. Journal of Environmental Management. DOI 10.1016/j.jenvman.2015.05.036

Quartacci, Mike Frank; Cristina Sgherri; Anna Maria Ranieri (2015). Biochar amendement improves lettuce quality in metal contaminated soils. Book: XIII FISV Congress Book of Abstracts;  
[https://arpi.unipi.it/handle/11568/652668?mode=full.23#.VYPGc\\_mqgkp](https://arpi.unipi.it/handle/11568/652668?mode=full.23#.VYPGc_mqgkp)

Qiang Hu, Jingai Shao, Haiping Yang, Dingding Yao, Xianhua Wang, Hanping Chen (2015). Effects of binders on the properties of bio-char pellets. Applied Energy. DOI 10.1016/j.apenergy.2015.05.019

Quinche, Melissa; Suzanne Allaire, Ph.D. (2015). Efficacité environnementale des bandes riveraines aménagées avec Salix et amendées au biochar. Rapport Final;  
[http://www.researchgate.net/profile/Melissa\\_Quinche/publication/276848038\\_Efficacit\\_environmentale\\_de\\_bandes\\_riveraines\\_amnages\\_avec\\_du\\_saule\\_et\\_du\\_biochar\\_au\\_kamouraska-Rapport\\_Final/links/555a5e0d08aeaff3bfabdf5.pdf](http://www.researchgate.net/profile/Melissa_Quinche/publication/276848038_Efficacit_environmentale_de_bandes_riveraines_amnages_avec_du_saule_et_du_biochar_au_kamouraska-Rapport_Final/links/555a5e0d08aeaff3bfabdf5.pdf)

Riedel, T.; P. Hennessy, S. C. Iden and A. Koschinsky (2015). Leaching of soil-derived major and trace elements in an arable topsoil after the addition of biochar. European Journal of Soil Science. DOI 10.1111/ejss.12256

Rostamian, R.; M. Heidarpour, S.F. Mousavi, M. Afyuni (2015). Application of Rice Husk Biochar to Desalinate Irrigation Water. Journal of Science and Technology of Agriculture and Natural Resources, Water and Soil Science; [http://jstnar.iut.ac.ir/browse.php?a\\_id=2994&sid=1&slc\\_lang=en](http://jstnar.iut.ac.ir/browse.php?a_id=2994&sid=1&slc_lang=en)

Ruysschaert, G.; Vandecasteele, B.; Willekens, K.; Waes, J. van; Laecke, K. van (2014). Soil, nutrients, compost: research for sustainable agriculture. Mededeling ILVO 2014

Sadasivam, Bala Yamini; Krishna R. Reddy (2015). Adsorption and transport of methane in biochars derived from waste wood. Waste Management. DOI 10.1016/j.wasman.2015.04.025

Saffari, Mahboub; Najafali Karimian, Abdolmajid Ronaghi, Jafar Yasrebi, Reza Ghasemi, Reza Ghasemi-Fasaei (2015). Reduction of chromium toxicity by applying various soil amendments in artificially contaminated soil. Journal Advances in Environmental Health Research;  
[http://www.researchgate.net/profile/Mahboub\\_Saffari/publication/277248121\\_Reduction\\_of\\_chromium\\_toxicity\\_by\\_applying\\_various\\_soil\\_amendments\\_in\\_artificially\\_contaminated\\_soil/links/5564bbef08ae94e9572050cd.pdf](http://www.researchgate.net/profile/Mahboub_Saffari/publication/277248121_Reduction_of_chromium_toxicity_by_applying_various_soil_amendments_in_artificially_contaminated_soil/links/5564bbef08ae94e9572050cd.pdf)

Santín, Cristina; Stefan H. Doerr, Evan S. Kane, Caroline A. Masiello, Mikael Ohlson, Jose Maria de la Rosa, Caroline M. Preston and Thorsten Dittmar (2015). Towards a global assessment of pyrogenic carbon from vegetation fires. Global Change Biology. DOI 10.1111/gcb.12985

Santos, Lidya B.; Maria V. Striebeck, Marisa S. Crespi, Clovis A. Ribeiro, Marcelo De Julio (2015). Characterization of biochar of pine pellet. Journal of Thermal Analysis and Calorimetry. DOI 10.1007/s10973-015-4740-8

Shahkarami, Sepideh; Ramin Azargohar, Ajay K. Dalai, Jafar Soltan (2015). Breakthrough CO<sub>2</sub> adsorption in bio-based activated carbons. *Journal of Environmental Sciences*. DOI 10.1016/j.jes.2015.03.008

Sharma, Abhishek; Vishnu Pareek, Dongke Zhang (2015). Biomass pyrolysis—A review of modelling, process parameters and catalytic studies. *Renewable and Sustainable Energy Reviews*. DOI 10.1016/j.rser.2015.04.193

Sieber, Stefan; Srijna Jha, Amjath-Babu Tharayil Shereef, Franziska Bringe, Wibke Crewett, Goetz Uckert, Severin Polreich, Tim Hycenth Ndah, Frieder Graef, Klaus Mueller (2015). Integrated assessment of sustainable agricultural practices to enhance climate resilience in Morogoro, Tanzania. *Regional Environmental Change*. DOI 10.1007/s10113-015-0810-5

Smith, Jo U.; Anke Fischer, Paul D. Hallett, Hilary Y. Homans, Pete Smith, Yakubu Abdul-Salam, Hanna H. Emmerling, Euan Phimister (2015). Sustainable use of organic resources for bioenergy, food and water provision in rural Sub-Saharan Africa. *Renewable and Sustainable Energy Reviews*. DOI 10.1016/j.rser.2015.04.071

Syairah, Nur; Mohamad Aziz (2015). Biochar From Oil Palm Empty Fruit Bunches And Oil Palm Shells Via Slow Pyrolysis. Thesis: Universiti Sains Malaysia; <http://eprints.usm.my/28968>

Thomas, Sean C.; Nigel Gale (2015). Biochar and forest restoration: a review and meta-analysis of tree growth responses. *New Forests*. DOI 10.1007/s11056-015-9491-7

Thornley, Patricia; Paul Gilbert, Simon Shackley, Jim Hammond (2015). Maximizing the greenhouse gas reductions from biomass: The role of life cycle assessment. *Biomass and Bioenergy*. DOI 10.1016/j.biombioe.2015.05.002

Uchimiya, Minori; Syuntaro Hiradate, and Michael Jerry Antal (2015). Dissolved Phosphorus Speciation of Flash Carbonization, Slow Pyrolysis, and Fast Pyrolysis Biochars. *ACS Sustainable Chemistry and Engineering*. DOI 10.1021/acssuschemeng.5b00336

Wang, Daoyuan; Fungai N. D. Mukome, Denghua Yan, Hao Wang, Kate M. Scow & Sanjai J. Parikh (2015). Phenylurea herbicide sorption to biochars and agricultural soil. *Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes*. DOI 10.1080/03601234.2015.102883

Wang RuiFeng; Zhao LiXin; Shen YuJun; Meng HaiBo; Yang HongZhi (2015). Research progress on preparing biochar and its effect on soil physio-chemical properties. *Journal of Agricultural Science and Technology (Beijing)*

Wenjia Jin, Kaushlendra Singh, John Zondlo (2015). Co-processing of pyrolysis vapors with bio-chars for ex-situ upgrading. *Renewable Energy*. DOI 10.1016/j.renene.2015.04.067

Xu, Cheng-Yuan; Shahla Hosseini Bai, Zhihong Xu, Timothy J Blumfield, Haitao Zhao, Hailong Wang, Helen Wallace, Lukas Van Zwieten (2015). Biochar application increases soil available nitrogen and plant-to-soil carbon input; [http://www.researchgate.net/profile/Shahla\\_Hosseini\\_Bai/publication/277078026\\_Biochar\\_application\\_increases\\_soil\\_available\\_nitrogen\\_and\\_plant-to-soil\\_carbon\\_input/links/5562aa7708ae9963a11b4d18.pdf](http://www.researchgate.net/profile/Shahla_Hosseini_Bai/publication/277078026_Biochar_application_increases_soil_available_nitrogen_and_plant-to-soil_carbon_input/links/5562aa7708ae9963a11b4d18.pdf)

Yakout, Sobhy M. (2015). Monitoring the Changes of Chemical Properties of Rice Straw–Derived Biochars Modified by Different Oxidizing Agents and Their Adsorptive Performance for Organics. *Bioremediation Journal*. DOI 10.1080/10889868.2015.1029115

- Yanardag, Ibrahim Halil; R. Zornoza, A. Faz Cano, A. Büyükkiliç Yanardag & A. R. Mermut (2015). Evaluation of carbon and nitrogen dynamics in different soil types amended with pig slurry, pig manure and its biochar by chemical and thermogravimetric analysis. *Biology and Fertility of Soils*; [http://www.researchgate.net/profile/Raul\\_Zornoza/publication/273278911\\_Evaluation\\_of\\_carbon\\_and\\_nitrogen\\_dynamics\\_in\\_different\\_soil\\_types\\_amended\\_with\\_pig\\_slurry\\_pig\\_manure\\_and\\_its\\_biochar\\_by\\_chemical\\_and\\_thermogravimetric\\_analysis/links/554bd60a0cf29752ee7ebbe4.pdf](http://www.researchgate.net/profile/Raul_Zornoza/publication/273278911_Evaluation_of_carbon_and_nitrogen_dynamics_in_different_soil_types_amended_with_pig_slurry_pig_manure_and_its_biochar_by_chemical_and_thermogravimetric_analysis/links/554bd60a0cf29752ee7ebbe4.pdf)
- Yang Le; Deng Hui, Li Guoxue, Wang Qi (2015). Pollutant Releases from Crop Residue Burning and Carbon Emission Mitigation Potential by Biochar in Xinjiang Oasis. *Journal of Agro-Environment Science*; [http://www.aes.org.cn/nyhjkxxb/ch/reader/view\\_abstract.aspx?file\\_no=20150523](http://www.aes.org.cn/nyhjkxxb/ch/reader/view_abstract.aspx?file_no=20150523)
- Yao Lingdan, Cheng Guanghuan, Wang Lixiao, Chen Huanyu, Lou Liping (2015). Effects of biochar application to microorganisms in soil. *Environmental Chemistry*; [http://d.wanfangdata.com.cn/periodical\\_hjhx201504012.aspx](http://d.wanfangdata.com.cn/periodical_hjhx201504012.aspx)
- Younis, U.; M. Athar; S.A. Malik; M.H. Raza Shah; S. Mahmood (2015). Biochar impact on physiological and biochemical attributes of Spinach (*Spinacia oleracea* L.) in nickel contaminated soil. *Global Journal of Environmental Science and Management*; [http://www.gjesm.net/article\\_12307\\_1612.html](http://www.gjesm.net/article_12307_1612.html)
- Yusof, M. R. M.; Ahmed, O. H.; King, W. S.; Zakry, F. A. A. (2015). Effects of biochar and chicken litter ash on selected soil chemical properties and nutrients uptake by *Oryza sativa* L. var. MR 219. *International Journal of Biosciences*
- Zhang, Ming-ming; Yun-guo Liu, Ting-ting Li, Wei-hua Xu, Bo-hong Zheng, Xiao-fei Tan, Hui Wang, Yi-ming Guo, Fang-ying Guo and Shu-fan Wang (2015). Chitosan modification of magnetic biochar produced from *Eichhornia crassipes* for enhanced sorption of Cr(VI) from aqueous solution. *RCS Advances*. DOI 10.1039/C5RA02388B
- Zhang, Weihua; Juan Zheng, Pingping Zheng, Rongliang Qiu (2015). Atrazine immobilization on sludge derived biochar and the interactive influence of coexisting Pb(II) or Cr(VI) ions. *Chemosphere*. DOI 10.1016/j.chemosphere.2015.05.011
- Zhang, Xiaokai; Ajit K. Sarmah, Nanthi S. Bolan, Lizhi He, Xiaoming Lin, Lei Che, Caixian Tang, Hailong Wang (2015). Effect of aging process on adsorption of diethyl phthalate in soils amended with bamboo biochar. *Chemosphere*. DOI 10.1016/j.chemosphere.2015.05.037
- Zheng Ruilun; Wang Ningning, Sun Guoxin, Xièzubin, Pang Zhuo, Wang Qinghai, Wu Juying (2015). Effects of Biochar on Soil Properties and Alfalfa Growth and Nutrient Uptake in Desertified Land in Beijing Suburb. *Journal of Agro-Environment Science*; [http://www.aes.org.cn/nyhjkxxb/ch/reader/view\\_abstract.aspx?file\\_no=20150513](http://www.aes.org.cn/nyhjkxxb/ch/reader/view_abstract.aspx?file_no=20150513)
- Zielinska, Anna; Patryk Oleszczuk (2015). Evaluation of sewage sludge and slow pyrolyzed sewage sludge-derived biochar for adsorption of phenanthrene and pyrene. *Bioresource Technology*. DOI 10.1016/j.biortech.2015.06.032