PANDUAN & KUMPULAN ABSTRAK

SEMINAR NASIONAL

PERCEPATAN DESA BERDIKARI MELALUI PEMBERDAYAAN MASYARAKAT DAN INOVASI TEKNOLOGI

PURWOKERTO 20 - 21 NOPEMBER 2014

Penyelenggara:

Lembaga Penelitian dan Pengabdian kepada Masyarakat

Universitas Jenderal Soedirman

Kerjasama dengan

PERHEPI Komda Purwokerto

SUSUNAN EDITOR

PENYELARAS TIAP BIDANG

Bidang 1. Biodiversitas Tropis dan Bioprospeksi
1. Dr. rer.nat. W. Lestari, M.Sc.
2. Dr. Agus Nuryanto, S.Si., M.Si.
3. Dra. P Maria Hendrati, M.Si.

Bidang 2. Pengelolaan Wilayah Kelautan, Pesisir dan Pedalaman
1. Dr. Tjahjo Winanto, S.P, M.Si.
2. Dr. Hamdan Syakuri, S.Pi., M.Si.
3. Dr. Endang Hilmi, S.Hut., M.Si.
4. Krissandi Wijaya, Ph.D.
5. Hartoyo, S.Pi., M.Si.

Bidang 3. Pangan, Gizi dan Kesehatan
1. Prof. Dr. Rifda Naufalin, SP., M.Si.
2. Karseno, SP., M.P., Ph.D.
3. Dr. Agr.sc. Condro Wibowo, S.TP., M.Sc.
4. Agnes Fitria Widiyanto, S.KM., M.Sc.
5. Friska Citra Agustia, S.TP., M.Sc.

Bidang 4. Energi Baru dan Terbarukan
1. Nastain, S.T., M.Si.
2. Dr. Ir. Wiludjeng Trisasiwi, M.P.
3. Ari Asnani, S.Si., M.Sc., Ph.D.
4. Dr. Suroso, S.T., M.Eng.
5. Ropiudin, S.TP., M.Si.

Bidang 5. Kewirausahaan, Koperasi dan UMKM
1. Ir. Purnama Sukardi, Ph.D.
2. Ir. Endro Yuwono, M.S.
3. Istiqomah, S.E., M.Sc., Ph.D.
4. Dwiyanto Indiahono, S.Sos., M.Si.
5. Ratna Satriani, S.P., M.Sc.

Bidang 6. Rekayasa Sosial dan Pengembangan Pedesaan

1. Dr. Drs. Rawuh Edy Proyono, M.Si.
2. Dr. Ir. Sc.Agr. Yusuf Subagyo, M.P.
3. Dr. Hariyadi, M.Sc.
4. Dr. Dra. Rili Windiasih, M.Si.
5. Hikmah Nuarini, S.Sos., M.PA.
6. Altri Mulyani, S.P., M.Sc.

Bidang 7. Bidang Penunjang (Ilmu Murni)

1. Dr. ing. R. Wahyu Widanarto, S.Si., M.Si.
2. Drs. Budi Pratikno, M.Stat.Sci., Ph.D.
3. Dr. Dra. Idha Sihwaningrum, M.Sc. St.
4. Dr Dadan Hermawan, S.Si., M.Si.

Susunan Acara Rangkaian Kegiatan Seminar Nasional Percepatan Desa Berdikari Melalui Pemberdayaan Masyarakat dan Inovasi Teknologi Tahun 2014

Kamis, 20 November 2014	
08.00-08.30	Registrasi
08.30-09.00	1. Laporan Ketua Panitia
	2. Sambutan Pembukaan oleh Rektor
09.00-10.00	Kebijakan Pemberdayaan Masyarakat Pedesaan melalui Inovasi Teknologi. Oleh : Tavip Supriyanto, dan Dr. Sunaryo (Pemerintah Provinsi Jawa Tengah)
10.00-10.15	Break
10.15-12.15	1. Teknologi Tepat Guna Berbasis Masyarakat untuk Pembangunan Desa Berdikari. Oleh : Prof. Dr. Erizal Jamal (PERHEPI/ Litbang Kementan) 2. Strategi Percepatan Kedaulatan Kedelai Jawa Tengah Oleh : Prof. Ir. Totok Agung DH,. M.P., Ph.D. Ketua LPPM Unsoed Purwokerto
12.15-13.30	ISHOMA
13.30-17.00	Sesi Paralel
Jumat, 21 November 2014	
08.00-08.30	Registrasi
08.30-12.00	Sesi Paralel
12.00-13.00	ISHOMA
13.00-17.15	Sesi Paralel (lanjutan)
17.15-17.30	Penutupan

JADWAL PRESENTASI
SEMINAR NASIONAL
"PERCEPATAN DESA BERDIKARI MELALUI COMMUNITY DEVELOPMENT DAN INOVASI TEKNOLOGI"
UNIVERSITAS JENDERAL SOEDIRMAN
PURWOKERTO, 20 - 21 NOVEMBER 2014

BIDANG I
Biodiversitas Tropis dan Bioprospeksi
Hari 1, Kamis 20 November 2014

Hari, Tanggal	Waktu	Judul Makalah	Tim
Kamis, 20 Nov 2014	13.30 – 15.30	Karakteristik Struktur Polenanggota Familia Cucurbitaceae	Sukarsa, Muachiroh Abbas, dan Eddy Tri Sucianto
Kamis, 20 Nov 2014	13.30 – 15.30	Konsentrasi Efektif Beberapa Isolat Lokal Nematoda Entomopatogen Pada Hama Ulat Grayak Spodoptera litura F. (Lepidoptera: Noctuidae) Pada Tanaman Kubis	Agus Suyanto dan Rostaman
Kamis, 20 Nov 2014	13.30 – 15.30	Fusarium spp. pada Rizosfer Tanaman Cabai Merah di Pertanaman Rakyat Kecamatan Sumbang Kab. Banyumas	Juni Safitri Muljowati,, dan Uki Dwiputranto.
Kamis, 20 Nov 2014	13.30 – 15.30	Efek Pemupukan Kombinasi Npk Dan Pupuk Kandang Terhadap Penampilan Morfologis Fisiologis Dan Hasil Enam Varietas Bawang Merah (Allium ascalonicum L.)	Okti Herliana,, Totok Agung D.H, dan Sakhidin.
Kamis, 20 Nov 2014	13.30 – 15.30	Analisis Proksimat Kepiting Yutuk (*Emerita emeritus Linnaeus* 1767)	Slamet Priyanto,, D. Bhagawati, dan M.N. Abulias
Kamis, 20 Nov 2014	13.30 – 15.30	Daya Serap Tumbuhan Penyusun Hutan Rakyat Terhadap Karbondioksida	Eming Sudiana, Imam Widhiono MZ. dan Ani Widyastuti
Kamis, 20 Nov 2014	13.30 – 15.30	Daya Hasil Benih Kentang Varietas Atlantic Dan Granola (G1) Dari G0 Sistem Aeroponik Dengan Aplikasi Root Zone Cooling Di Dataran Rendah	Eni Sumarni dan Noor Farid
Kamis, 20 Nov 2014	13.30 – 15.30	Korelasi Fenotipik Dan Geno-Tipik Antara Komponen Hasil Dengan Hasil Pada Bawang Merah Serta Penampilan Agronomik Genotipe Hasil Persilangan Setengah Dialel	Noor Farid, Agus Sarjito, dan Eni Sumarni

Jum'at 21 Nov 2014	15.00 – 17.00	Pengaruh Flushing Berbasis Pakan Lokal Terhadap Kinerja Produksi Dan Reproduksi Kambing Dan Domba	Dadang Mulyadi Saleh Mochammad Soeb

BIDANG II

Pengelolaan Wilayah Kelautan, Pesisir dan Pedalaman

Hari 1, Kamis 20 November 2014

Hari, Tanggal	Waktu	Judul Makalah	Tim
Kamis, 20 Nov 2014	13.30 – 15.30	Analisis Tipologi Dan Ketimpangan Pembangunan Antar Kecamatan Di Kabupaten Banyumas	Agustin Susyatna Dewi, Sukiman dan Rakhmat Priyono
Kamis, 20 Nov 2014	13.30 – 15.30	Konservasi Sumberdaya Hayati Di Waduk Penjalin Kabupaten Brebes Dengan Budidaya Ikan Nila Menggunakanan Pakan Fermentasi Dan Suplementasi Daun Caisim	Endang Widyastuti, Dwi Nugroho Wibowo, Carmudi
Kamis, 20 Nov 2014	13.30 – 15.30	Perbandingan Implementasi Algoritma Deteksi Radar Os, Osgo, Dan Osso Cfar Pada Fpga	Imron Rosyadi, Agung Mubyarto, dan Unggun Dwi Cahyaditiyan
Kamis, 20 Nov 2014	13.30 – 15.30	Implementasi FPGA Algoritma Deteksi Radar Keluarga CA-CFAR :Perbandingan Dan Analisis	Imron Rosyadi, Agung Mubyarto, dan Unggun Dwi Cahyaditiyan
Kamis, 20 Nov 2014	13.30 – 15.30	Dinamika Air Dan Nutrisi Dalam Media Tanah Tanaman Kentang Di Dataran Tinggi Tropis Dengan Aplikasi Pupuk Dan Bio-Arang Yang Berbeda	Krissandi Wijaya, Condro Wibowo, Ahadiyat Yugi Rahayu, Ardiansyah, and Taku Nishimura
Kamis, 20 Nov 2014	13.30 – 15.30	Sumberdaya Hayati Di Sungai Pelus : Upaya Menuju Laboratorium Biologi Akuatik Sebagai Pusat Informasi Keragaman Dan Kelimpahan Ikan Dan Udang	Carmudi Kusbiyanto
Kamis, 20 Nov 2014	13.30 – 15.30	Kajian Perubahan Bioekologi Pada Restorasi Ekosistem Mangrove Di Segara Anakan Cilacap	Erwin Riyanto Ardli.
Kamis, 20 Nov 2014	13.30 – 15.30	Kriteria Nutrien Penentu Eutrofikasi Dan Total Maksimum Daily Load (TMDL) Sebagai Dasar Dalam Upaya Pengendalian Eutrofikasi Danau Rawapening, Jawa Tengah	Agatha Sih Piranti, Diana Retna Utarini S R.
Kamis, 20 Nov 2014	13.30 – 15.30	Penapisan Senyawa Antibiotik Alami Dari Aktinomisetes Yang Diisolasi Dari Laguna Segara Anakan Cilacap	Riyanti, dan Nuning Vita Hidayati.

WATER AND NUTRIENT DYNAMICS IN POTATO-GROWING SOIL IN TROPICAL HIGHLAND AGRICULTURE UNDER DIFFERENT FERTILIZERS AND BIO-CHARS APPLICATION

Dinamika Air dan Nutrisi dalam Media Tanah Tanaman Kentang di Dataran Tinggi Tropis dengan Aplikasi Pupuk dan Bio-Arang yang Berbeda

Krissandi Wijaya[*1)], Condro Wibowo[1)], Ahadiyat Yugi Rahayu[1)], Ardiansyah[1)], and Taku Nishimura[2)]

[1)] Faculty of Agriculture, Jenderal Soedirman University, Indonesia
[2)] Graduate School of Agriculture and Life Science, The University of Tokyo, Japan

* *Corresponding author*: krissandi.wijaya@unsoed.ac.id

ABSTRACT

The research was aimed to characterize water and nutrient dynamics in potato-growing soil in tropical highland agriculture under different fertilizers and bio-chars application. Totally 60 potato-growing pots (3 replications of the combined treatments: 2 fertilizer types, i.e., inorganic and organic fertilizer with similar NPK composition; and 3 bio-char types, i.e., wood, rice-husk, and activated charcoal with dosage of 5, 10, and 15 ton/ha each), located at Serang village, was used for screen house-scale monitoring of soil water (water content) and nutrient (N, P, and K) balance during a cultivation period. The results showed that the combination of inorganic fertilizer and bio-chars lowered soil water content and evapotranspiration, but increased soil nutrients, especially in the middle growth stage. In contrast, the combination of organic fertilizer and bio-chars enhanced soil water holding capacity. Although the increase of soil nutrients by the latter combination wasn't as higher as the former combination, it was better in maintaining soil nutrients until the late growth stage. Regarding the materials balance, it was quantified that from the total water and nutrients applied, about 50 and 20% of them were respectively lost due to runoff and percolation, and up-taken by the crop, while the remaining were settled in the soil.

Keywords: Water and nutrient dynamics, potato, tropical highland agriculture, organic fertilizer, bio-char

ABSTRAK

Penelitian ini bertujuan untuk mengetahui dinamika air dan nutrisi dalam media tanah tanaman kentang di Dataran Tinggi Tropis dengan aplikasi pupuk and bio-arang yang berbeda. Sebanyak 60 pot tanaman kentang (3 replikasi kombinasi perlakuan: 2 jenis pupuk, yaitu pupuk anorganik and organik dengan kandungan NPK yang sama; dan 3 jenis bio-arang, yaitu arang kayu, arang sekam, dan arang aktif dengan dosis 5, 10, dan 15 ton/ha) yang berlokasi di Desa Serang telah digunakan untuk memonitor keseimbangan air (kadar air) dan nutrisi (N, P, dan K) selama satu musim tanam. Hasil penelitian menunjukkan bahwa kombinasi pupuk anorganik dan bio-arang berdampak pada penurunan kadar air tanah dan evapotranspirasi, tetapi dapat meningkatkan nutrisi tanah, terutama pada pertengahan periode tanam. Sebaliknya, kombinasi pupuk organik dan bio-arang dapat meningkatkan daya serap tanah terhadap air. Meskipun peningkatan nutrisi tanah pada kombinasi terakhir tidak setinggi pada kombinasi sebelumnya, tetapi kombinasi tersebut lebih baik dalam mempertahankan nutrisi tanah sampai akhir periode tanam. Terkait dengan keseimbangan materi, dapat dihitung bahwa sekitar 50 dan 20% dari total air dan nutrisi yang diberikan terdistribusi masing-masing melalui aliran permukaan/perkolasi dan diserap oleh tanaman kentang, sedangkan sisanya diserap oleh media tanah.

Kata kunci: Dinamika air dan nutrisi, kentang, dataran tinggi tropis, pupuk organik, bio-arang

INTRODUCTION

Potato (*Solanum tuberosum L.*) is a horticultural commodity having promising worldwide market sells. In Indonesia, demand of the product is enormously increasing up to about 8.9 million ton/year, but the productivity is still low, namely 16.5 ton/ha or totally 1,176,304 ton (BPS, 2009). The total production only cover about 20% of the total requirement for potato-based processing industry such as potato chips, and the remaining is still imported.

The high requirement on potato has encouraged an extensive cultivation of the crop to highland areas involving deforestation and conventional farming system with long-term utilization of chemical fertilizer and pesticide, and also application of vertical/sloping ridge system regardless conservation mechanisms (Mastur et al., 1996; Soleh et al., 2002). The methods may in turn accelerate land and environmental degradation process in surrounding watershed area. For instance, the application of the system in upstream areas of Serayu watershed, such as Dieng plateu (Wonosobo and Purbalingga regency) and Serang village (Karangreja, Purbalingga regency) has caused severe runoff and soil erosion ranged from 1,358 – 1,435 m3/ha/year and 56.24 –145.75 ton/ha/year, respectively (Wijaya et al., 2010; Umedi et al., 2010;) and sedimentation mainly in Mrica Dam of 4,298,245.10 m^3/year as well as contaminated water up to 100 mg/L COD and 16.50 mg/L BOD (KLH Banjarnegara, 2012). The system also has reduced the dam capacity of 2.5% per year that causes decreasing irrigated water supply to paddy field in middle-stream (Banjarnegara, Purbalingga, and Banyumas regency) and coastal areas (Cilacap regency). In addition, local communities in middle stream and near coastal area mine the sand from Serayu river resulting in critical erosion on its river embankment, hence reducing surrounding farming areas.

The above reflects some critical environmental problems of Serayu watershed, which should be comprehensively solved by corresponded stakeholders including local government and community, and also university, since the watershed has very important roles in supporting surrounding ecology and human life (Munir, 2009), and also has a significant impact on regional hydrology as well as global climate change. The solution on such problems should be performed based on an accurate data, which can be achieved through comprehensive studies on the watershed including upstream (highland agriculture and deforestation, etc.), downstream (rice cultivation, land conversion, etc.), and coastal areas (e.g., mangrove deforestation, aquaculture, etc.).

For the initial step, recognizing the problems in the upstream of Serayu watershed is important to be carried out at first, since some activities related to deforestation and extensive cultivation in highland areas has been occurred for long-time contributing to serious environment deterioration within watershed. In this research, we focused on identification of sustainable farming system for potato crop in the upper stream of watershed mainly Serang Highland Agriculture. More

specifically, the study was aimed to characterize the water and nutrient dynamics in potato-growing soil under different fertilizers and bio-chars application.

RESEARCH METODOLGY

Time Period and Location

The research work was conducted in Serang Highland Agriculture, Purbalingga regency, Central Java province, Indonesia (Fig. 1), where potato is one of the primary commodities, started from May until August 2013.

Fig. 1. Serayu watershed covering various land use areas: highland agriculture (Dieng plateau, Wonosobo regency and Serang village, Purbalingga regency), rice field (Banjarnegara, Purbalingga, Banyumas, and Cilacap regency) and coastal environment (Cilacap regency)

Materials and Equipment

A number of materials were used to support the research including: 1) about 60 treatment pots for potato cultivation; 2) inorganic fertilizer, such as NPK; 3) certified organic fertilizer or compost; 4) bio-chars materials (e.g. rice-husk, wood, or activated charcoal); 5) certified potato seeds (e.g., *Atlantik* variety, the most popular variety for industry scale); and 6) software for modeling water and nutrient balance. Several tools/equipment to implement the research were as follows: 1) screen-house for laboratory monitoring; 2) digital potentiometer and its data logger for monitoring matric potential of soil; 3) soil moisture sensors and its data logger for monitoring soil water content; 4) mini weather/climate station supporting tools including: rain gauge, solar

radiation sensors and its data logger, temperature and RH sensor, and wind speed sensor; 5) core samplers and its auger for collecting soil samples; 6) oven drier for laboratory analysis of gravimetric water content; 7) a set of biochemical analyzer/tool for analyzing nutrients (e.g., NPK) in each compartment such as soil, water, and crop; and 8) digital balance.

Methodology

Experimental design

The effect of certain inorganic and organic fertilizer dosages on water and nutrient balance within potato-growing soils (pots) was identified and characterized. Three replicated screen house scale monitoring will be carried out using certain inorganic fertilizer such as NPK (control) and organic fertilizer (the dosage was equalized to the inorganic one) with various types and rates of bio-chars (low, standard/medium, and high content) (Fig. 2).

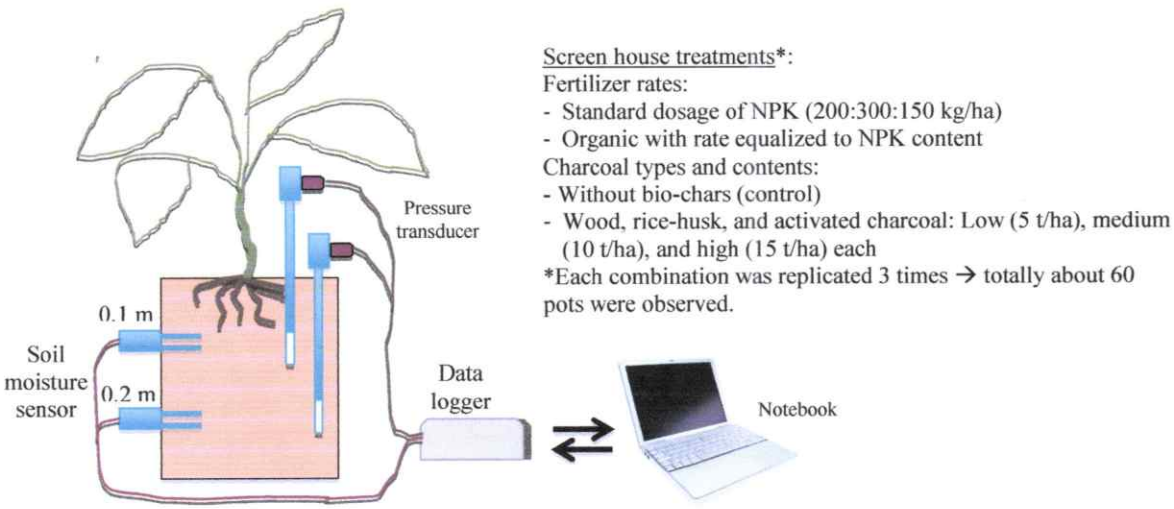


Fig. 2. Schematic diagram of screen house monitoring for water and nutrient balance in potato pots

Data collection

A series of experimental data were collected through several steps as follows:

1. Undisturbed soil samples within the depth of 0.1 and 0.2 m were taken at 0 days after sowing and then every month throughout cultivation period of potato crop (3-4 month). The samples were analyzed in laboratory to determine their soil physical (water content, bulk density, and hydraulic conductivity) and biochemical properties (mainly NPK content).
2. Real-time water content and matric potential were monitored using EC10 moisture sensors-EM50 data logger and P1600 pressure transducer-XR-5SE data logger, respectively, and were compiled (downloaded from data logger) every week.
3. Biochemical properties such as total carbon and NPK content of the dry biomass collected were analyzed using nutrient analyzer.

4. Micro-climate parameters such as precipitation, temperature and RH, solar radiation, and wind speed were daily monitored.

Data analysis

The collected data were analyzed and modeled to provide basic parameters as follows:

1. Soil water content and bulk density were determined gravimetrically.
2. Evapotranspiration was estimated from micro-climate data using Penman-Monteith method
3. Water and nutrient balance calculation using Eqn. (1) and (2):

$$\Delta S_w = P_w + I_w - R_w - Pc_w - ET_w \quad (1)$$

$$\Delta S_n = P_n + I_n + F_n - R_n - Pc_n - Up_n \quad (2)$$

where, P_w, I_w, R_w, Pc_w, and ET_w is the added or depleted water respectively by the rainfall, irrigation, runoff, percolation, and evapotranspiration, while P_n, I_n, F_n, R_n, Pc_n, and Up_n is the loaded nutrient respectively by the rainfall, irrigation, fertilizer, runoff, percolation, and crop.

RESULTS AND DISCUSSIONS

The screen-house scale monitoring on water and nutrients dynamics in potato-growing pots under different types of fertilizers with various types and rates of bio-chars (Fig. 3) showed several results as follows:

P1A0	P2A2D1	P1A1D1	P2A0
P1A2D2	P2A3D3	P2A3D2	P2A2D1
P2A2D3	P2A3D1	P1A3D3	P1A3D2
P1A3D2	P2A0	P2A3D1	P1A2D1
P1A2D3	P2A1D2	P1A0	P1A1D1
P1A1D3	P2A2D2	P2A2D3	P2A1D1
P2A1D3	P1A1D2	P1A2D2	P1A2D3
P1A2D1	P1A3D1	P2A1D2	P1A1D2
P1A1D3	P1A0	P1A2D1	P2A1D2
P1A3D3	P2A3D3	P1A3D1	P2A1D3
P2A2D1	P1A1D2	P2A2D2	P1A2D2
P2A3D1	P2A3D3	P2A1D1	P1A3D2
P2A1D1	P2A2D3	P2A3D2	P2A0
P1A3D1	P2A3D2	P1A2D3	P2A2D2
P1A1D1	P1A3D3	P1A1D3	P2A1D3

Note:
P1: Inorganic fertilizer
P2: Organic fertilizer
A1: Wood charcoal
A2: Rice-husk charcoal
A3: Activated charcoal
D1: Charcoal dosage/rate of 5 ton/ha
D2: Charcoal dosage/rate of 10 ton/ha
D3: Charcoal dosage/rate of 15 ton/ha

Fig. 3 Schematic diagram of the screen-house/laboratory experiment

Soil Physical Properties

Water dynamics

Distribution pattern of soil water in potato-growing pots under inorganic and organic fertilizers application combined with various types and rates of bio-chars is presented in Fig. 4. The organic fertilizer with three types and rates of bio-chars had in general about 15% higher water content than the inorganic ones. Among the formers combination, wood charcoal of 5 ton/ha was the most effective amendment in maintaining water (Ogutunde et al., 2004; Gundale et al., 2007)

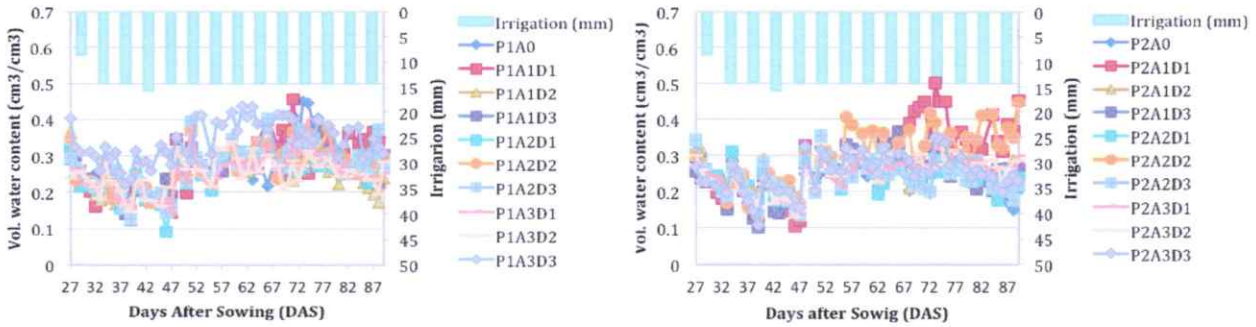


Fig. 4. Distribution pattern of soil water in potato-growing pots under inorganic (left) and organic fertilizer (right) combined with various types and rates of bio-chars

Evapotranspiration

Fig. 5 shows the water requirement by potato crop through evapotranspiration process in its growing pots under inorganic and organic fertilizers application combined with various types and rates of bio-chars, in response to irrigation. With about 297 mm in total irrigation throughout a cultivation period for both types of fertilizer, the water consumption by potato crop in organic-pots was relatively higher than that in inorganic pots.

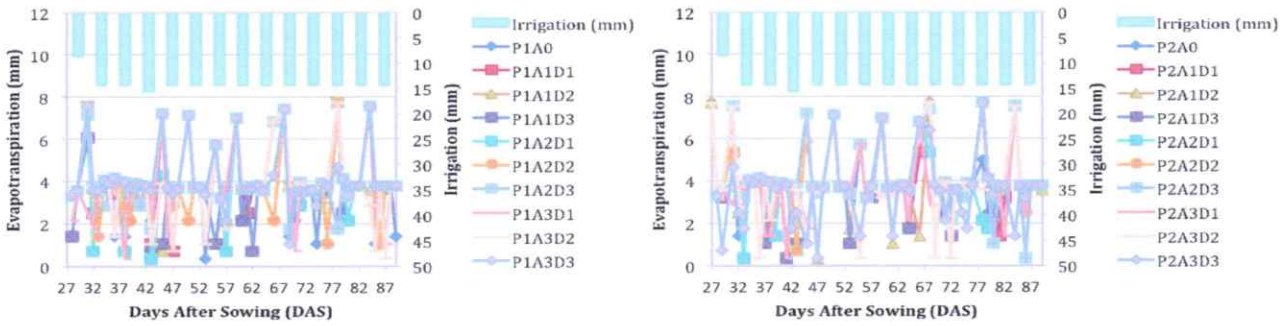


Fig. 5. Evapotranspiration rate in potato-growing pots under inorganic and organic fertilizers application combined with various types and rates of bio-chars

Water balance

Water balance in potato-growing pots under inorganic and organic fertilizers application combined with various types and rates of bio-chars (Fig. 6) illustrated that the water storage capacity in potato-growing soil with organic fertilizer was higher than that with inorganic one

(Steiner et al., 2009; Makoto et al., 2011; Gao et al., 2012). In contrast, the percolation rate in the former was lower than the latter.

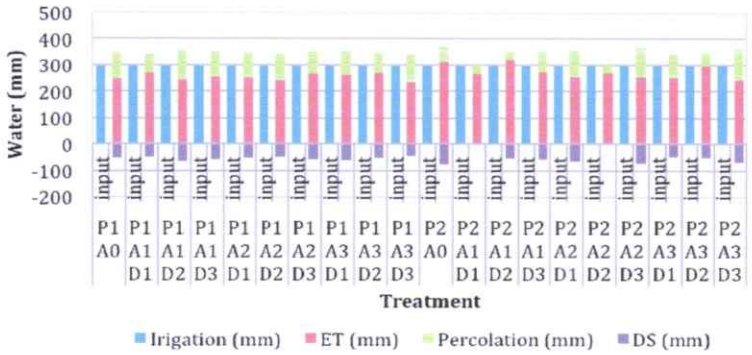


Fig. 6. Water balance in potato-growing pots under inorganic and organic fertilizers application combined with various types and rates of bio-chars

Soil Chemical Properties

Nutrient dynamics

Dynamics of nitrogen in potato-growing pots under inorganic fertilizer combined with various types and rates of bio-chars is shown in Fig. 7. For most bio-chars applied, total and available nitrogen (N) in potato-growing pots increased up to 20 days after sowing (DAS), and then decreased until the end of cultivation period due to uptake by the crop. More specifically, the application of bio-chars of 5 ton/ha enhanced total N, but had no significant effect on the improvement of available N in the growing soil.

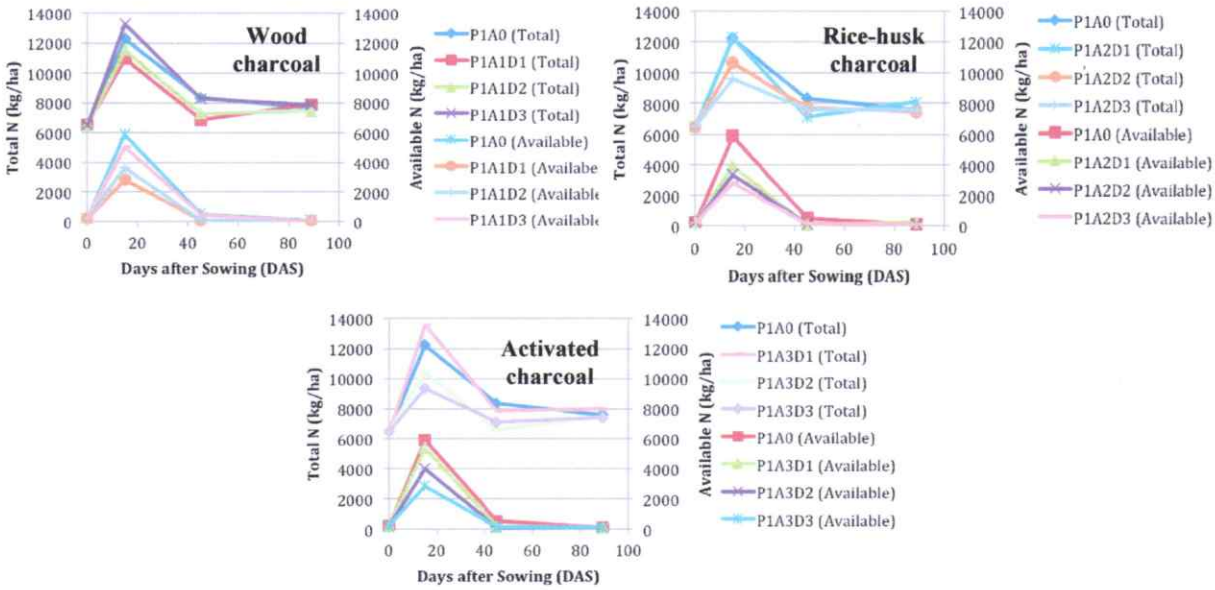


Fig. 7. Dynamics of nitrogen in potato-growing pots under inorganic fertilizer combined with various types and rates of bio-chars

Fig. 8 presents the dynamics of nitrogen in potato-growing pots under organic fertilizer combined with various types and rates of bio-chars. In case of organic fertilizer, the application of bio-chars has no different impact on increasing total N in potato-growing soil during a cultivation period, indicated that the organic fertilizer with bio-chars was capable to maintain the nutrient in the growing soil (Ogutunde et al., 2004). Although the available N increased up to 20 DAS, and then decreased at the end, the decrease was slower than the inorganic fertilizer with bio-chars, and in fact there was certain amount of available N remained at the soil until the end of cultivation period.

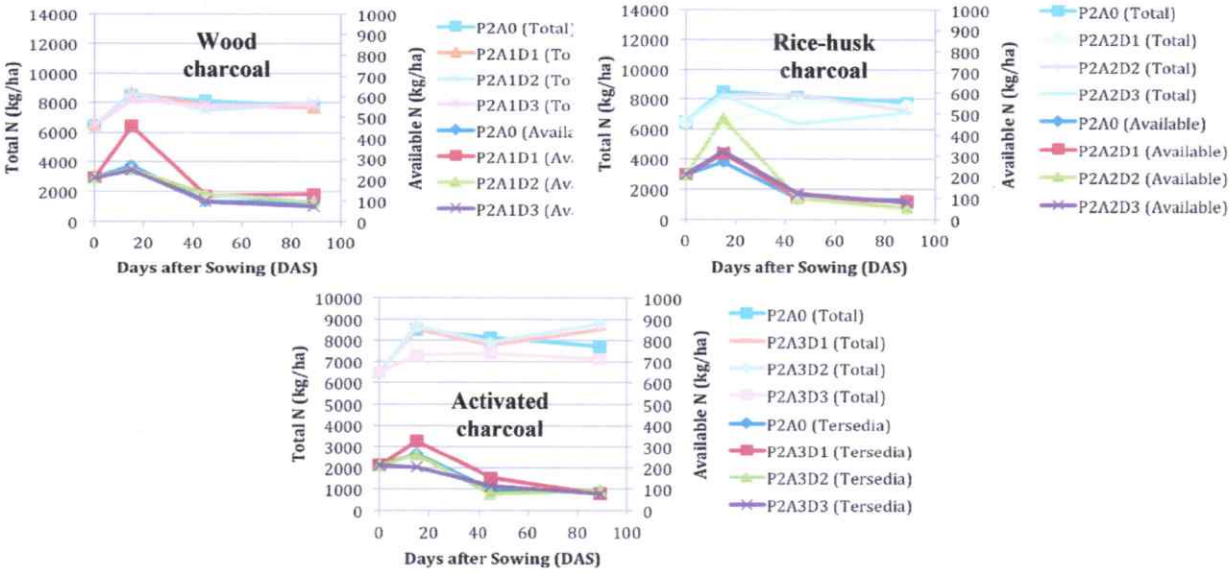


Fig. 8. Dynamics of nitrogen in potato-growing pots under organic fertilizer combined with various types and rates of bio-chars

Dynamics of phosphorus in in potato-growing pots under inorganic and organic fertilizer combined with various types and rates of bio-chars is respectively presented in Fig. 9 and 10.

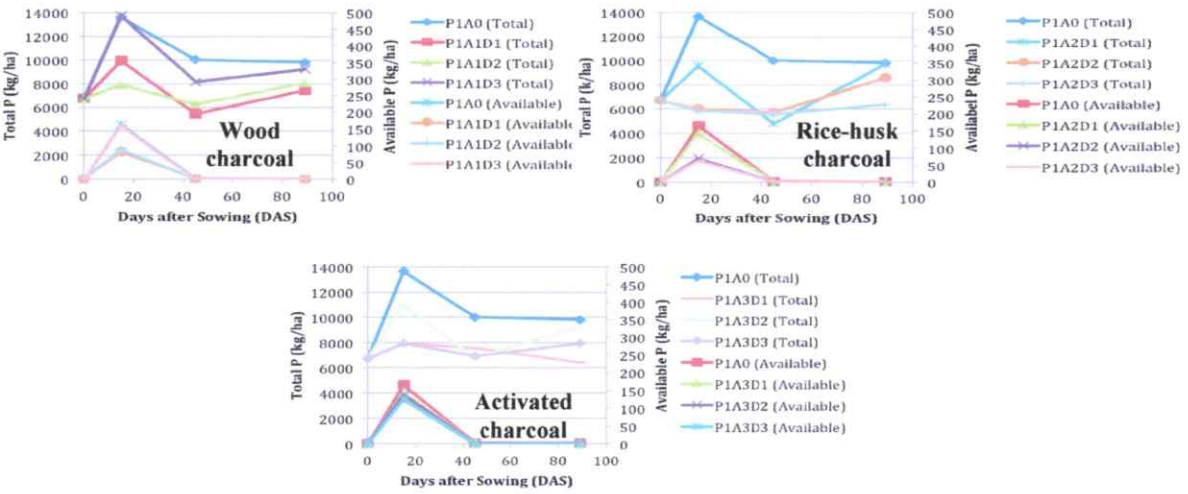


Fig. 9. Dynamics of phosphorus in potato-growing pots under inorganic fertilizer combined with various types and rates of bio-chars

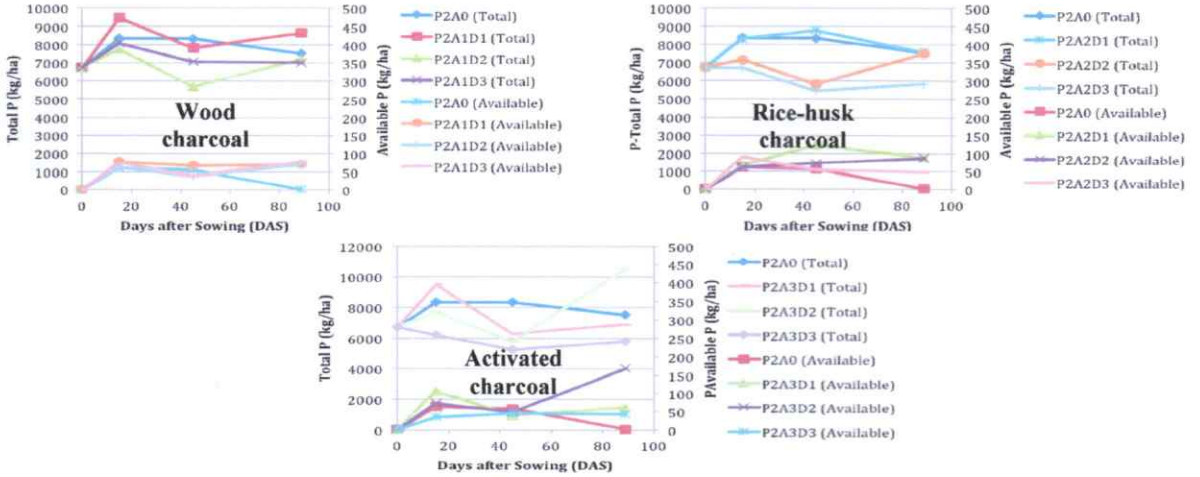


Fig. 10. Dynamics of phosphorus in potato-growing pots under organic fertilizer combined with various types and rates of bio-chars

Similar to the case of N, the ithe combination of inorganic fertilizer with bio-chars resulted in higher total and available phosporus (P) in potato-growing soil compared to that of organic fertilizer with bio-chars. However, the former had lower capability in maintaining the nutrients until the end of cultivation period than the latter (Steinet et al., 2009; Makoto et al., 2011).

Nutrient Balance

Fig. 11 and 12 shows the nitrogen and phosphorus balance in potato-growing pots under organic fertilizer combined with various types and rates of bio-chars, respectively. Loss of N and P by percolation was dominantly occurred in both inorganic and organic fertilizer pots (Holscher et al., 1996; Sommer et al., 2002). The loss of N was not significantly different between these two pots, while the loss of P was higher in the former than the latter.

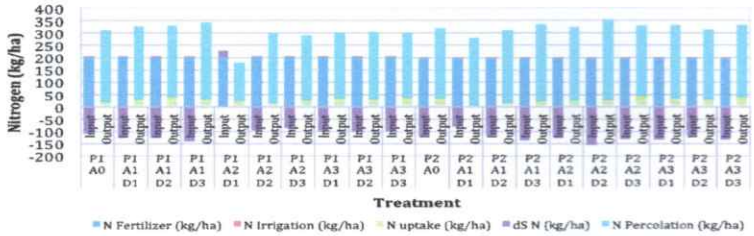


Fig. 11. Nitrogen balance in potato-growing pots under inorganic fertilizer combined with various types and rates of bio-chars

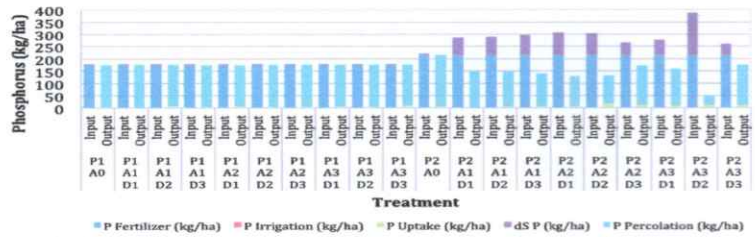


Fig. 12. Phosphorus balance in potato-growing pots under organic fertilizer combined with various types and rates of bio-chars

CONCLUSION

1. Water dynamics and balance in potato-growing soil under inorganic and organic fertilizer with various types and rates of bio-chars has been successfully clarified, in which the combination of organic fertilizer and bio-chars was better than that of inorganic fertilizer and bio-chars.
2. Nutrients dynamics and balance in potato-growing soil under inorganic and organic fertilizer with various types and rates of bio-chars has been successfully clarified, in which the combination of inorganic fertilizer and bio-chars was better than that of organic fertilizer and bio-chars, except nutrients uptake.

ACKNOWLEDGEMENT

This research was supported b the International Research Collaboration Grant, Research and Public Service Institute, Jenderal Soedirman University, Indonesia. The authors also would like to thank to Miss. Bayyin, an alumni of Agricultural Engineering Study Program, for her help in conducting screen house monitoring.

REFERENCES

Badan Pusat Statistik (BPS). 2009. *Horticulture Statistics: Harvest Area, Production and Yield of Potato* (On-line). http://www.bps.go.id/

Gao, H., Z. Zhang, and X. Wan. 2012. Influence of charcoal and bamboo charcoal amandement on soil-fluoride fraction and bioaccumulation of fluoride in tea plants. *Environ. Geochemistry and Health* 34(5): 551-562.

Gundale, M.J. and T.H. Deluca. 2007. Charcoal effect on soil solution chemistry and growth of Koeleria machanta in the pedrosa pine/Douglas-fir ecosystem. *Virology and Fertility of Soils* 43(3):303-311.

Holscher, D., R.F. Moller, M. Denich, and H. Foster. 1996. Nutrient input-output budget of shifting agriculture in Eastern Amazonia. Nutrient Cycl. in Agroecosystem, 47(1): 49-57.

KLH Banjarnegara. 2012. *DAS Serayu dan Permasalahannya*. Diakses pada http://klhbanjarnegara.blogspot.com/.

Makoto K., H. Shibata., Y.S. Kim, T. Satomura, K. Takagi, M. Nomura, F. Sath and T. Koike. 2011. Contribution of charcoal to short-term nutrient dynamics after surface fire in humus layer of a dwarf bamboo-dominated forest. *Biologi and Fertility of Soils*. 48(5): 569-577.

Mastur, H. Narioka, M. Anase, T. Mandang, and F. Ai. 1996. *The Role of Ridges in Environmental Management in Rehabilitation and Development of Upland and Highland Ecosystem* (Ed. M. Anase, T. Mandang, and R. Lasco). Tokyo University of Agriculture Press, Japan. p. 40-62.

Munir, A. 2009. Karakteristik Daerah Aliran Sungai (DAS) Serayu Provinsi Jawa Tengah Berdasarkan Kondisi Fisik, Sosial serta Ekonomi. *Laporan Survey* pada Mata Kuliah Pengelolaan DAS. Department Geografi, Fakultas MIPA, Universitas Indonesia.

Oguntunde, P.G., M. Fosu, A.E., Ajayi, N. V. de-Geisen. 2004. Effect of charcoal production on maize yield, chemical properties and texture of soil. *Biology and Fertility of Soils* 39(4): 295-299.

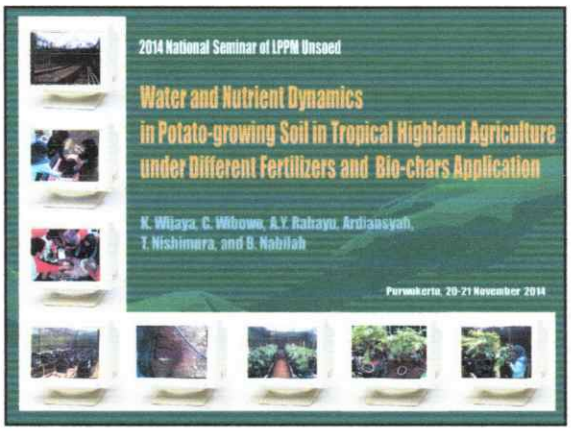
Soleh, M., Z. Arifin, G. Pratomo, P. Santoso dan I.G. Nitiawirawan. 2002. *Sistem Usahatani Tanaman Sayuran untuk Konservasi di Lahan Kering Dataran Tinggi Berlereng*. BPPT Jatim. Pp. 1-13.

Sommer, R., T.D.A de Sa, K. Vielhauer, P.L.G. Viek, and H. Foster. 2002. Water and nutrient balance under slash-and – burn agriculture in the Eastern Amazone, Brazil-The role of a deep rooting fallow vegetation. *Plant Nutrition* 92: 1014-1015.

Steiner, C., M. Gracia, and W. Zech. 2009. Effect of charcoal as slow release nutrient carrier on N-P-K dynamics and soil microbial population: pot experiment with ferralsol substrate. *Amazonian Dark Earths*: Wim Sombroek's Vission, pp. 325-338.

Umedi, K. Wijaya, dan Masrukhi. 2010. Kajian Erosi Tanah pada Lahan Kentang dengan Variasi Tipe Guludan, Kemiringan Lahan, dan Varietas Tanaman. *Prosiding Seminar Nasional PERTETA 2010 "Revitalisasi Mekanisasi Pertanian dalam Mendukung Ketahanan Pangan dan Energi"*. Purwokerto, 10 Juli 2010, pp. 650-660Warnita. 2007. Pertumbuhan dan Hasil Delapan Genotif Kentang di Sumatera Barat. *Jurnal Akta Agrosia* 10(1): 94-99.

Wijaya, K., B.I. Setiawan, and T. Kato. 2010. Spatio-temporal Variability of Soil Physical Properties in Different Potato Ridges Designs in Relation to Soil Erositon and Crop Production. *Proceeding of 2010 INWEPF-PAWEES Intl. Joint Symposium, Jeju-South Korea,* 27-29 October 2010.



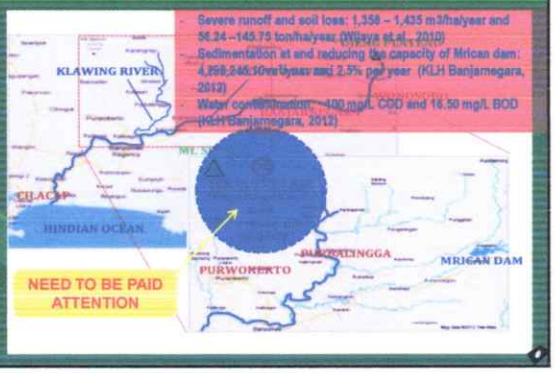
Potato farming vs. land degradation

- Potato is an important commodity and has a prospective market sells
- Conventional cultivation with vertical (or sloping) ridge system, which has been applied by farmers in many highland agriculture areas in Indonesia, causes severe land degradation, water pollution, and sedimentation (e.g., Serayu watershed)
- Conservation-based ridges systems, i.e., horizontal (or contour) and diagonal ridges, are effective to reduce soil erosion, but lowers potato production due to water-logged condition as well as increasing soil pathogen (e.g., Fig. 3)

Developing an appropriate farming system for potato cultivation based on some basic parameters/information related to effective soil water distribution and erosion reduction, also optimum growth of the crop is essential

Serayu watershed, Banyumas

- Severe runoff and soil loss: 1,358 – 1,435 m3/ha/year and 56.24 –145.75 ton/ha/year (Wijaya et al., 2010)
- Sedimentation at and reducing the capacity of Mrican dam: 4,268,246.10m3/year and 2.5% per year (KLH Banjarnegara, 2012)
- Water contamination: ~400 mg/L COD and 16.50 mg/L BOD (KLH Banjarnegara, 2012)



Growth of potato crop in: Well-aerated vs. Waterlogged soil

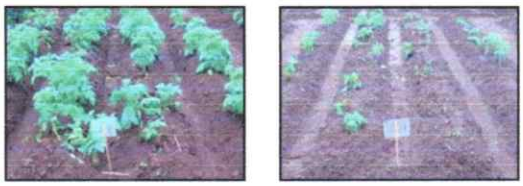


Fig. 3. Growth of *Altantik* potato during 28 days after sowing at good aerated (*left*) and waterlogged soil (*right*) (Wijaya et al., 2009).

Bio-charcoal technology as a part of organic farming system

- Powerful agent for long-term bio-remediating soil from pollutants inside, since charcoal can neutralize acid soils (Steiner et al., 2009; Yao et al., 2011)
- Improving soil quality like as aeration, water holding capacity, and CEC (Oguntunde et al., 2004; Gundale et al., 2007; Steiner et al., 2009; Makoto et al., 2011; Gao et al, 2012)
- The vinegar of its making process can be also used as botanical control for crop pests and diseases (Mu et al., 2006)
- The rice husk-originated charcoal combined with compost is potential to be used for improving soil physical and biochemical properties (Wukir and Wijaya, 2010), as well as reducing soil erosion and downstream water contamination

Objective

Laboratory/screen-house scale monitoring to characterize water and nutrient dynamics in potato-growing soil under different fertilizers and bio-chars applications

Significance

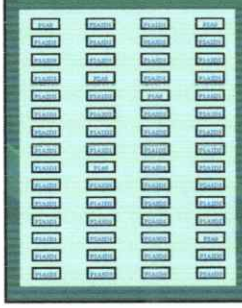
What is the suitable rate for the combination of organic fertilizer-charcoal to be applied in potato cultivation?

Methodology

- Time and location:
  About 4 months, started from May to August 2013, located at Sekang highland agriculture, Pakisaniigga regency, Central Java
- Materials:
  1) About 60 treatment pots for potato cultivation, 2) inorganic fertilizer, such as NPK, 3) certified organic fertilizer or compost, 4) bio-chars materials (e.g. rice husk, wood or activated charcoal), 5) certified potato seeds (e.g.: Atlantik variety, the most popular variety for industry scale), and 6) software for modeling water and nutrient balance
- Tools:
  1) oven, mortar for laboratory analyzing, 2) digital potentiometer and its data logger for monitoring matric potential of soil, 3) soil moisture sensors and its data logger for monitoring soil water content, 4) mini weather-climate station supporting tools including: rain gauge, solar radiation sensors and its data logger (temperature and RH sensor, and wind speed sensor), 5) core samplers and its auger for collecting soil samples, 6) soil sieve for laboratory analyses of gravimetric water content, 7) a set of biochemical analyze tool for analyzing nutrients (e.g. NPK) in each compartment such as soil, water, and crop, and 8) digital balance.

Methodology (Research design)

- Screen-house/pot scale monitoring of water and nutrient dynamics with different fertilizers types and various bio-chars rates



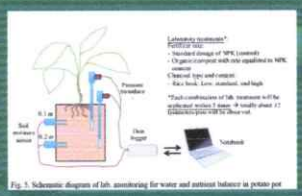
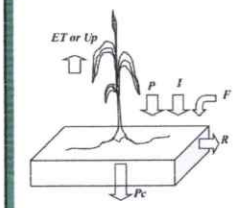


Fig. 5. Schematic diagram of lab. monitoring for water and nutrient balance in potato pot

P1: Inorganic fertilizer, P2: Organic fertilizer, A1: Wood charcoal, A2: Rice-husk charcoal, A3: Activated charcoal, D1: Charcoal dosage/rate of 5 ton/ha, D2: Charcoal dosage/rate of 10 ton/ha, D3: Charcoal dosage/rate of 15 ton/ha

Methodology (Data analysis)



Agriculture-hydrological concept:

Incoming water and nutrient:
- Precipitation (P)
- Irrigation (I)
- Fertilizer (F) - *spec. for nutrient balance
-

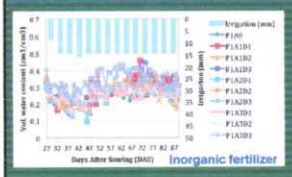
Outgoing water and nutrient:
- Surface runoff (R)
- Infiltration/percolation (Prc)
- Evapotranspiration (ET)
- Plant uptake (Up) - *spec. for nutrient balance

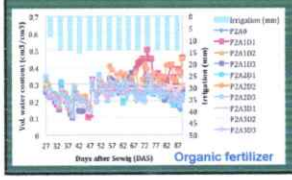
Fig. 4. Schematic diagram of water and nutrient dynamics in hydrological environment

$$\Delta S_w = P_w + I_w - R_w - Pc_w - ET_w \quad (1)$$

$$\Delta S_n = P_n + I_n + F_n - R_n - Pc_n - Up_n \quad (2)$$

Results

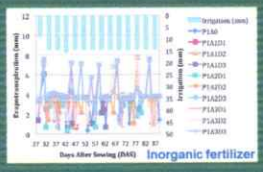


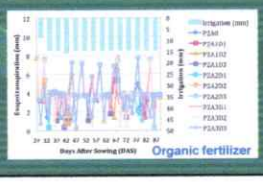


Water dynamics

- The organic fertilizer with three types and rates of bio-chars had in general about 15% higher water content than the inorganic ones
- Among the formers combination, wood charcoal of 5 ton/ha was the most effective amendment in maintaining water (Ogutunde et al., 2004; Gundale et al., 2007)

Results (continue…)



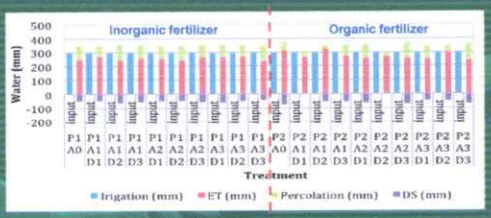


Evapotranspiration

- With about 297 mm in total irrigation throughout a cultivation period for both types of fertilizer, the water consumption by potato crop in organic pots was relatively higher than that in inorganic pots

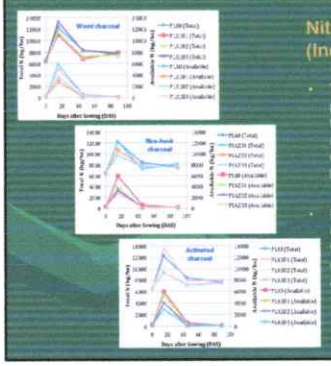
Results (continue…)

Water balance



- Water storage capacity in potato-growing soil with organic fertilizer was higher than that with inorganic one (Steiner et al., 2009; Makoto et al., 2011; Gao et al., 2012)
- In contrast, the percolation rate in the former was lower than the latter

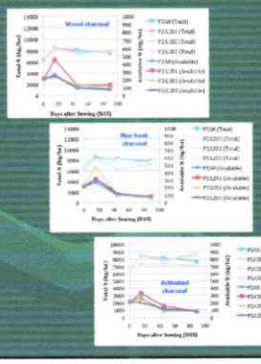
Results (continue…)



Nitrogen (N) dynamics (Inorganic fertilizers)

- Total and available nitrogen (N) in potato-growing pots increased up to 20 days after sowing (DAS), and then decreased until the end of cultivation period due to uptake by the crop
- More specifically, the application of bio-chars of 5 ton/ha enhanced total N, but had no significant effect on the improvement of available N in the growing soil

Results (continue…)



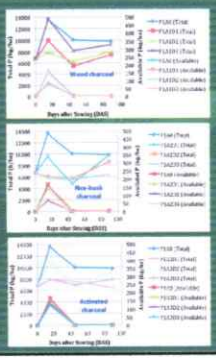
Nitrogen (N) dynamics (Organic fertilizers)

- The application of bio-chars has no different impact on increasing total N in potato-growing soil during a cultivation period, indicated that the organic fertilizer with bio-chars was capable to maintain the nutrient in the growing soil (Ogutunde et al., 2004)
- Although the available N increased up to 20 DAS, and then decreased at the end, the decrease was slower than the inorganic fertilizer with bio-chars, and in fact there was certain amount of available N remained at the soil until the end of cultivation period

Results (continue…)

Phosphorus (P) dynamics (Inorganic fertilizers)

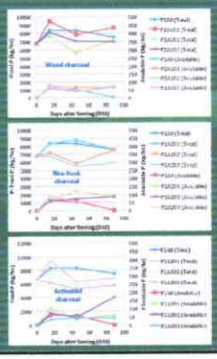
- Similar to the case of N, the combination of inorganic fertilizer with bio-chars resulted in higher total and available phosphorus (P) in potato-growing soil compared to that of organic fertilizer with bio-chars
- However, the former had lower capability in maintaining the nutrients until the end of cultivation period than the latter (Steinet et al., 2009; Makoto et al., 2011)



Results (continue…)

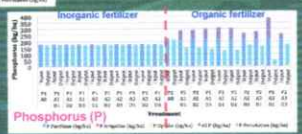
Phosphorus (P) dynamics (Organic fertilizers)

- Similar to the case of N, the combination of inorganic fertilizer with bio-chars resulted in higher total and available phosphorus (P) in potato-growing soil compared to that of organic fertilizer with bio-chars
- However, the former had lower capability in maintaining the nutrients until the end of cultivation period than the latter (Steinet et al., 2009; Makoto et al., 2011)



Results (continue…)

Nutrients balance



- Loss of N and P by percolation was dominantly occurred in both inorganic and organic fertilizer pots (Holecher et al., 1996; Sommer et al., 2002)
- The loss of N was not significantly different between these two pots, while the loss of P was higher in the former than the latter

CONCLUSIONS

- Water dynamics and balance in potato-growing soil under inorganic and organic fertilizer with various types and rates of bio-chars has been successfully clarified, in which the combination of organic fertilizer and bio-chars was better than that of inorganic fertilizer and bio-chars
- Nutrients dynamics and balance in potato-growing soil under inorganic and organic fertilizer with various types and rates of bio-chars has been successfully clarified, in which the combination of inorganic fertilizer and bio-chars was better than that of organic fertilizer and bio-chars, except nutrients uptake

ACKNOWLEDGEMENT

- This research was supported by the International Research Collaboration Grant, Research and Public Service Institute, Jenderal Soedirman University, Indonesia
- The authors also would like to thank to Miss. Bayyin, an alumni of Agricultural Engineering Study Program, for her help in conducting screen house monitoring

THANK YOU FOR YOUR ATTENTION

LEMBAGA PENELITIAN DAN PENGABDIAN KEPADA MASYARAKAT
Kampus Grendeng II Jl. Dr. Suparno Karangwangkal Purwokerto 53122 Telpon/Fax (0281) 625739
Website: lppm.unsoed.ac.id dan email : lppm_unsoed@yahoo.co.id

Nomor : 7029/UN23.10/PN/2014
Lampiran : 1 (satu) lembar
Perihal : Seminar Nasional dan Call Paper

Yth. Krissandi Wijaya, STP, M.Agr.Sc, Ph.D
Fakultas Pertanian
Universitas Jenderal Soedirman
Purwokerto

Kami sampaikan dengan hormat bahwa dalam rangkaian peringatan Dies Natalis Unsoed ke-51, Lembaga Penelitian dan Pengabdian Kepada Masyarakat Universitas Jenderal Soedirman kerjasama dengan PERHEPI Komda Purwokerto akan menyelenggarakan **Seminar Nasional "Percepatan Desa Berdikari Melalui *Community Development* dan Inovasi Teknologi"** pada :

Hari, Tanggal : Kamis- Jumat, 20-21 November 2014
Waktu : Pukul 08.00 s/d 21.00 WIB
Tempat : Gedung Graha Widyatama Unsoed
Jln. HR. Bunyamin – Purwokerto 53122

Kami informasikan bahwa berdasarkan Surat Perjanjian Kerja (SPK) Penelitian, seminar ini wajib diikuti oleh semua Ketua Tim Peneliti yang memperoleh dana penelitian sumber dana DIPA Unsoed Tahun Anggaran 2014 (sebagai pemakalah) dengan dikenai kontribusi per pemakalah sebesar Rp 250.000,- dan pengganti prosiding (*hard copy*) per tema Rp 200.000,-. Selanjutnya bagi anggota peneliti bisa mendaftar sebagai pemakalah dengan kontribusi sebesar Rp. 150.000,-. **Pembayaran dapat dilakukan dengan mentransfer ke Rekening BNI Cabang Purwokerto Nomor Rekening 0072964915 atas nama Rektor Unsoed (Biaya Pendidikan). Bukti transfer berlaku sebagai alat tukar seminar kit (wajib dibawa pada saat registrasi).**

Demi menunjang kelancaran kegiatan tersebut, kami mengharapkan makalah yang akan disajikan dapat dikirimkan melalui email : **semnaslppm.unsoed@yahoo.com, paling lambat tanggal 1 November 2014.** Informasi selengkapnya terkait seminar ini dapat dilihat dalam leaflet (terlampir).

Atas perhatian dan kerjasamanya disampaikan terima kasih.

Purwokerto, 17 September 2014
Ketua,

Prof. Ir. Totok Agung DH., MP., Ph.D
NIP. 19630923 198803 1 001

-op-

UNIVERSITAS JENDERAL SOEDIRMAN
LEMBAGA PENELITIAN DAN PENGABDIAN KEPADA MASYARAKAT
Jl. Dr. Soeparno Karangwangkal , Purwokerto 53122
Telp (0281) 625739, 634519 Fax (0281)6257739;
Website: http//www.lppmunsoed.ac.id; email: semnaslppm.unsoed@yahoo.com

No. : 7856/UN23.10/DL04/2014 Purwokerto, 05 Nopember 2014
Hal : UndanganPemakalah
Lamp : 1 berkas

Yth. Krissandi Wijaya, Condro Wibowo, Ahadiyat Yugi Rahayu, Ardiansyah, and Taku Nishimura
Faculty of Agriculture, Jenderal Soedirman University, Indonesia
2) Graduate School of Agriculture and Life Science, The University of Tokyo, Japan

Purwokerto

Dengan Hormat,

Bersama surat ini diberitahukan bahwa abstrak/ makalah Bapak/Ibu/Sdr/i. yang berjudul " Dinamika Air dan Nutrisi dalam Media Tanah Tanaman Kentang di Dataran Tinggi Tropis dengan Aplikasi Pupuk dan Bio-Arang yang Berbeda " **DITERIMA** untuk **DIPRESENTASIKAN** dalam Seminar Nasional Percepatan Desa Berdikari Melalui Pemberdayaan Masyarakat dan Inovasi Teknologi 2014 yang diselenggarakan oleh Lembaga Penelitiandan Pengabdian kepada Masyarakat, pada tanggal 20 – 21 November 2014 di Gedung Graha Widyatama (Auditorium) Universitas Jenderal Soedirman, Purwokerto.

Para Pemakalah yang diterima dan dipresentasikan, diwajibkan:
1. Membayar biaya keikutsertaan sebagai pemakalah sebesar Rp. 250.000,00 sampai dengan tanggal 1 November 2014 melalui rekening a.n. REKTOR UNSOED (BIAYA PENDIDIKAN), BNI 46 Cab. Purwokerto, No Rek.0072964915
   Catatan: Pemakalah bukan penulis utama dikenakan biaya pendaftaran sama dengan peserta seminar sebesar Rp 150.000,00; dan memperoleh sertifikat sebagai pemakalah
2. Biaya Prosiding (*hard copy*) : Rp 200.000,00
3. Mengirimkan makalah lengkap paling lambat 1 November 2014 ke alamat email : semnaslppm.unsoed@yahoo.com.

Demikian surat pemberitahuan ini, atas perhatian dan kerjasamanya disampaikan terimakasih.

Mengetahui,
Ketua LPPM UNSOED,

Prof. Ir. Totok Agung DH., MP., Ph.D
NIP. 19630923 198803 1 001

Ketua Panitia,

Dr. Drs. Dwi Nugroho Wibowo, M.S
NIP. 19611125198601 1 001

KEMENTERIAN PENDIDIKAN DAN KE
UNIVERSITAS JENDERAL SOEDI
FAKULTAS PERTANIAN
Jl. Dr. Soeparno 61 Karangwangkal - Purwokerto Kode Pos 53123
Telp/Fax. (0281) 638791, Website: http://.unsoed.ac.id

SURAT TUGAS

Nomor : 5858/UN23.01/DL.07/2014

DEKAN FAKULTAS PERTANIAN UNIVERSITAS JENDERAL SOEDIRMAN

Dasar : Surat dari Lembaga Penelitian dan Pengabdian Kepada Masyarakat Universitas Jenderal Soedirman Nomor : 7856/UN23.10/DL.04/2014 tanggal 5 November 2014 tentang Undangan Pemakalah.

MENUGASKAN

Kepada :
Nama : Krissandi Wijaya, S.TP., M.Agr.Sc., Ph.D
NIP : 19771009 200604 1 001
Pangkat/Gol. : Penata Tk.I(Gol.III/d)
Jabatan : Dosen Fak. Pertanian Unsoed

Untuk : Melakukan Presentasi Proposal pada acara Seminar Nasional Percepatan Desa Berdikari Melalui Pemberdayaan Masyarakat dan Inovasi Teknologi 2014 dengan judul **"Dinamika Air dan Nutrisi Dalam Media Tanah Tanaman Kentang di Dataran Tinggi Tropis Dengan Aplikasi Pupuk dan Bio-Arang yang Berbeda"** yang dilaksanakan tanggal 20 s.d 21 November 2014 di Gedung Auditorium Graha Widyatama Universitas Jenderal Soedirman.

Demikian Surat Tugas ini dibuat untuk dilaksanakan dengan sebaik-baiknya dengan penuh tanggung jawab.

Dikeluarkan di : Purwokerto
Pada tanggal : 19 November 2014

Dekan,

Dr. Ir. Anisur Rosyad, MS.
NIP. 19581027 198511 1 001

LEMBAGA PENELITIAN DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS JENDERAL SOEDIRMAN
DAN PERHIMPUNAN EKONOMI PERTANIAN INDONESIA

Sertifikat

Diberikan kepada

Krissandi Wijaya

Sebagai

PEMAKALAH

SEMINAR NASIONAL

PERCEPATAN DESA BERDIKARI MELALUI
PEMBERDAYAAN MASYARAKAT DAN INOVASI TEKNOLOGI

Purwokerto, 20 - 21 Nopember 2014

Rektor,
UNIVERSITAS JENDERAL SOEDIRMAN

Dr. Ir. Achmad Iqbal, M.Si.
NIP. 19580331 198702 1 001

Ketua,
LPPM UNSOED

Prof. Ir. Totok Agung D. H., M.P., Ph.D
NIP. 19630923 198803 1 001

Ketua Panitia

Dr. Dwi Nugroho Wibowo, M.S.
NIP. 19611125 198601 1 001

SEMINAR
NASIONAL dan CALL PAPERS

Gedung Sumardjito /
Gedung Graha Widyatama
Universitas Jenderal Soedirman
Purwokerto, 20-21 Nopember 2014

PERCEPATAN DESA BERDIKARI MELALUI PEMBERDAYAAN MASYARAKAT DAN INOVASI TEKNOLOGI

Penyelenggara:
Lembaga Penelitian dan Pengabdian kepada Masyarakat
Universitas Jenderal Soedirman
Kerjasama dengan
PERHEPI Komda Purwokerto

LATAR BELAKANG

Pembangunan pedesaan pada saat ini secara umum dihadapkan pada berbagai tantangan yang semakin kompleks, baik dari sisi makro maupun mikro. Pada aspek makro, pembangunan pedesaan berhadapan dengan globalisasi, termasuk di dalamnya liberalisasi perdagangan maupun perubahan kebijakan pemerintah yang dapat berdampak positif maupun negatif pada kesejahteraan masyarakat desa. Pada sisi mikro, proses transformasi struktur ekonomi, ketahanan pangan, migrasi internasional, spesial dan urbanisasi merubah tata guna lahan, fungsi ekologi dan lingkungan, perubahan pola pikir masyarakat desa mupun beragam aspek kelembagaan. Kondisi tersebut pada akhirnya mewarnai arah dan hasil proses pembangunan pedesaan.

Paradigma pembangunan pedesaan juga telah berubah semenjak bergulirnya era reformasi politik, sosial dan ekonomi pada akhir tahun 90an. Pada masa lalu, pembangunan masyarakat desa didasarkan pada aspek pemerataan dan penerapannya diarahkan secara sektoral. Meskipun paradigma pemerataan masih penting pada saat ini, namun paradigma yang baru menuntut aspek partisipasi masyarakat setempat serta tuntutan pada perencanaan berwawasan.

Oleh karena itu, upaya pembangunan pedesaan yang berkelanjutan akan menuntut pengelolaan pembangunan yang memperhatikan kearifan lokal, partisipasi, bersifat lintas sektoral dan lintas disiplin ilmu, serta berwawasan global. Kesemuanya itu pada akhirnya bertujuan untuk meningkatkan kesejahteraan masyarakat pedesaan

TUJUAN

1. Mendesiminasikan karya nyata produk unggulan Unsoed dalam pengembangan sumberdaya lokal berbasis kearifan lokal,
2. Memfasilitasi pencipta / penemu / peneliti berbagai hasil penelitian dan pengabdian masyarakat guna mensosialisasikan hasil temuannya pada masyarakat pengguna maupun para investor di tingkat daerah dan nasional,
3. Memfasilitasi stakeholder di bidang ekonomi pertanian untuk menyalurkan gagasan dan pemikiran tentang pembangunan ekonomi pertanian berbasis kearifan lokal.

WAKTU DAN TEMPAT

Kegiatan Seminar ini akan di laksanakan pada :

Hari / Tanggal : Kamis - Jumat, 20 - 21 Nopember 2014
Waktu : Pukul 08.00 WIB - Selesai
Tempat : Gd. Sumardjito / Graha Widyatama Unsoed

Batas akhir Pendaftaran dan Pembayaran : 01 Nopember 2014

KEYNOTE SPEAKER

1. Dr. Bayu Krisnamurthi (Wakil Menteri Perdagangan RI /Ketua PERHEPI) Kebijakan Pemberdayaan Masyarakat Pedesaan melalui Inovasi Teknologi
2. H. Ganjar Pranowo, S.H (Gubernur Jawa Tengah) Teknologi Tepat Guna Berbasis Masyarakat untuk Pembangunan Desa Berdikari
3. Prof. Ir. Totok Agung DH,. MP., Ph.D. (Ketua LPPM Unsoed Purwokerto) Strategi Percepatan Kedaulatan Kedelai Jawa Tengah

PESERTA

Seminar Nasional terbuka untuk dosen, peneliti, praktisi, pemerhati, mahasiswa, dan masyarakat umum yang memiliki perhatian terhadap pembangunan pedesaan berkelanjutan.

FORMULIR PENDAFTARAN

Pendaftaran dapat dilakukan melalui online di alamat (http://lppm.unsoed.ac.id), telephone / fax 0281-625739, atau menyerahkan form berikut ini ke LPPM Unsoed.

Yang bertandatangan di bawah ini saya,

Nama : .....
Instansi : .....
Alamat : .....
Telp/Hp : .....

Mendaftarkan diri untuk mengikuti seminar dan call papers tentang "Percepatan Desa Berdikari melalui Pemberdayaan Masyarakat dan Inovasi Teknologi" yang diselenggarakan oleh LPPM Unsoed Sebagai *) :

- ☐ A. Peserta seminar
- ☐ B. Pemakalah call papers untuk tema*):
  - ☐ Biodiversitas tropis dan bioprospeksi
  - ☐ Pengelolaan wilayah kelautan, pesisir dan pedalaman
  - ☐ Pangan, gizi dan kesehatan
  - ☐ Energi baru dan terbarukan
  - ☐ Kewirausahaan, koperasi dan UMKM
  - ☐ Rekayasa sosial dan pengembangan pedesaan
  - ☐ Bidang Penunjang (Ilmu Murni)

dan memesan prosiding (untuk tema tersebut di atas)*):

- ☐ A. Ya, memesan prosiding
- ☐ B. Tidak memesan prosiding

....., ...2014

.....

Keterangan : *) beri isian untuk opsi yang dipilih

CALL FOR PAPERS

Panitia menerima makalah yang ditujukan bagi presentasi oral untuk tema berikut :

1. Biodiversitas tropis dan bioprospeksi
2. Pengelolaan wilayah kelautan, pesisir dan pedalaman
3. Pangan, gizi dan kesehatan
4. Energi baru dan terbarukan
5. Kewirausahaan, koperasi, dan UMKM
6. Rekayasa sosial dan pengembangan pedesaan
7. Bidang Penunjang (Ilmu Murni)

Panduan penulisan Full Paper untuk call papers

Full paper dalam bentuk soft copy ditulis dengan ketentuan sebagai berikut :

1. Artikel berisikan, judul makalah, nama penulis, alamat institusi, alamat email, Abstract dan Abstraks, Pendahuluan, Metode Penelitian, Hasil dan Pembahasan, Kesimpulan, Ucapan Terima Kasih (jika ada), serta Daftar Pustaka.
2. Tulisan minimum 8 halaman, maksimum 10 halaman ukuran kertas A4.
3. Menggunakan font Times New Roman 12, spasi 1.5 (kecuali abstrak dan daftar pustaka menggunakan 1 spasi).
4. Abstraks ditulis dalam bahasa Inggris dan Indonesia.
5. Marjin tulisan : kiri dan atas 3 cm, kanan dan bawah 2.5 cm.
6. Soft copy full paper (compatible dengan Microsoft Office Word 2003/2007) dapat dikirim langsung atau melalui e-mail :semnaslppm.unsoed@yahoo.com (attachment) dengan subject : Abstrak seminar LPPM2014-(nama penulis).
7. Template MS Word untuk makalah dapat diunduh di website LPPM Unsoed : lppm.unsoed.ac.id.
8. Full paper diterima paling lambat 01 November 2014. Untuk peserta dari luar Unsoed tanggal 20 Oktober 2014

Paper yang dikumpulkan setelah tanggal tersebut di atas, tidak akan dimasukkan dalam Prosiding.

Tata Tertib Presentase Oral dan dalam call papers

Pemakalah harap memperhatikan tata tertib sebagai berikut :

1. Setiap presentasi disediakan waktu 10 menit, dilanjutkan diskusi.
2. Presentasi menggunakan komputer dengan operating system Windows dan LCD projector yang telah disediakan panitia.
3. Materi presentasi dibuat menggunakan Microsoft Power Point.
4. Pemakalah yang tidak mempresentasikan makalahnya, tidak berhak mendapat sertifikat keikutsertaan seminar sebagai pemakalah.

INFORMASI

Informasi mengenai kegiatan ini dapat ditanyakan kepada :

Panitia Pelaksana Seminar Nasional dan *Call Papers*

" Percepatan Desa Berdikari melalui Pemberdayaan Masyarakat dan Inovasi Teknologi "

Gedung LPPM Unsoed Lt. 2
Jl. Dr. Suparno, Karangwangkal, Purwokerto 53123
Telp/Fax : 0281 - 625739
Email : semnaslppm.unsoed@yahoo.com

BIAYA

Kontribusi Peserta sebesar :

A. Peserta Seminar : Rp. 150.000,00
B. Pemakalah : Rp. 250.000,00

Catatan : Pemakalah bukan Penulis Utama kontribusinya sama dengan Peserta Seminar dengan Sertifikat sebagai Pemakalah

C. Biaya Prosiding (*Hardcopy*) : Rp. 200.000,00

Pembayaran dilakukan dengan mentransfer ke BNI Cab. Purwokerto No. Rek. 0072964915 a.n. REKTOR UNSOED (BIAYA PENDIDIKAN)

CONTACT PERSON

Oky Sri Linangkung (081327044738)
Onneng Purwati (081327999089)