ISBN 978-602-7577-70-1

2016
"Small and Medium-sized Enterprises Competitiveness"

Agribusiness Development for Human Welfare

PROCEEDING

INTERNATIONAL CONFERENCE

Agribusiness Development for Human Welfare

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Department of Agribusiness, Faculty of Agriculture
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PROCEEDING INTERNATIONAL CONFERENCE

AGRIBUSINESS DEVELOPMENT FOR HUMAN WELFARE

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EDITOR FOREWORD

The economic integrations by ASEAN certainly have given a major influence on Small and Medium-sized Enterprises (SMEs). Beside economic integration in the form of free trade area (FTA) that has been going on since the early 2000s, economic integration in the form of ASEAN Economic Community (AEC) has been ongoing since the beginning of 2016. Through this integration, SMEs have opportunity to expand access to markets, technology, and capital. But at the same time SMEs are required to improve their competitiveness in order to survive in the market.

In order to explore ideas, concept, and innovations related to the competitiveness of SMEs, International Conference on Agribusiness Development for Human Welfare (ADHW 2016) was held in Yogyakarta on May 14, 2016. The conference organized by Department of Agribusiness Universitas Muhammadiyah Yogyakarta, in collaboration with Department of Agribusiness and Information System Universiti Putra Malaysia, Department of Agro-Industrial Technology Kasetsart University, Department of Agriculture Socio-Economics Universitas Gadjah Mada, Department of Agriculture Socio-Economics of Universitas Brawijaya, Indonesian Society of Agriculture Economics, Agribusiness Association of Indonesia. Hopefully proceedings of ADHW 2016 provide stimulus for increasing competitiveness of SMEs in ASEAN, especially in Indonesia.

Furthermore, we are grateful to Allah, the Sustainer of all word, who always makes it easy for our affairs. We would like to acknowledge with thanks to all the institution and individual who joined with resources and efforts in organizing the conference that resulted in the papers which are published in this proceeding. Special thanks to all authors and discussants who contributed with their intellectual capital and responded to our call papers. Thanks and acknowledgment are also due to all reviewers of the conference who helped in evaluating submitted papers; and to the members of the Organization Committee, who ensured smooth execution of the event.

May 30, 2016

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PREFACE

Assalaamualaikum, Warahmatullaahi., Wabarakaatuh.
Dear Honorable Governor of Yogyakarta Special Province
Dear respectable Prof. Dr. Zainal Abidin Mohamed
Dear respectable Asist. Prof. Pornthipa Ongkunaruk
Dear respectable Rector of UMY Prof. Dr. Bambang Cipto, MA.
Dear all invited Guests, Speakers, and Participants of International seminar of ADHW 2016.

Alhamdulillah, all praise be to the Almighty God, so that we can be gathering here today at Muhammadiyah University of Yogyakarta in order to attend the Conference on Agribusiness Development for Human Welfare (ADHW) 2016.

Ladies and Gentlemen,

On behalf of the committee, I would like to say welcome to this International Conference on ADHW 2016 and thank you for attending our invitation.

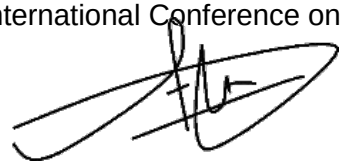
Especially, we are grateful to invited speakers, Prof. Zainal Abidin Mohamed and Asist. Prof. Pornthipa Ongkunaruk, for their willingness to share information and thoughts in this conference. As a bit report, that this conference has been attended by 85 speakers coming from five countries.

This conference entitled “Small and Medium-sized Enterprise Competitiveness”. ASEAN Economic Community is the largest economic integration that is going to be implemented at the beginning of 2016 (December 31, 2015). Through this integration, SMEs will have opportunity to expand access to markets, technology, and capital. But at the same time SMEs are required to improve their competitiveness in order to survive in the market. We expect that this seminar is capable of producing thoughts building SMEs within ASEAN, especially Indonesia, to face the free trade.

This event can be done by support and efforts from all sides. Therefore, I would like to say thank you to all committee members having worked hard to conduct this event. We, as the organizer commitee, do apologize when there is a shortage in conducting this event.

Wassalamualaikum, Warahmatullaahi., Wabarakaatuh.

Chairman
International Conference on ADHW 2016



Dr. Aris Slamet Widodo, SP., MSc.

WORDS OF WELCOME

Assalamu'alaikum warahmatullahi wabarakatuh

Alhamdulillah, all praise be to Allah SWT, who has given us His blessings so that this International Seminar of Agribusiness Development for Human Welfare (ADHW) 2016 entitled "Small and Medium-sized Enterprises Competitiveness" can be conducted. This International Conference is held in cooperation among Agribusiness Study Program of Muhammadiyah University of Yogyakarta with Putra University of Malaysia (UPM), Kasetsart University (KU), Association of Indonesian Agricultural Economy (PERHEPI), and Agribusiness Association of Indonesia (AAI), Universitas Gadjah Mada (UGM) and Universitas Brawijaya (UB).

Countries of ASEAN members like Indonesia, Malaysia, and Thailand have more than 90% Small and Medium-sized Enterprises (SMEs). In general, SMEs play important role in economic developments such as in terms of employment, added value, improve foreign exchange, and economic growth. For Indonesia, the role of SMEs is limited to employment and added value, while the foreign exchange from SMEs is still low. According to the General Director of SMEs of Industrial Ministry, in 2013 the total SMEs being able to pass through export market is just under 5 percent. For that required many breakthrough and innovation so that the role of SMEs becomes real economic development, especially in Indonesia, and generally in ASEAN countries.

On behalf of Agribusiness Department of Universitas Muhammadiyah Yogyakarta, we would like to express our gratitude Putra University of Malaysia (UPM), Kasetsart University (KU), Association of Indonesian Agricultural Economy (PERHEPI), Agribusiness Association of Indonesia (AAI), Universitas Gadjah Mada (UGM) and Universitas Brawijaya (UB) for all supports, sponsors, and all committee members having worked so hard that this International Conference can be conducted.

Hopefully, these sinergies coming from various parties can provide contribution for developing SMEs in Indonesia and other ASEAN countries as well.

Wassalamu'alaikum warhmatullahi wabarakatuh

Head of Agribusiness Department
Universitas Muhammadiyah Yogyakarta

Ir. Eni Istiyanti, MP.

Gubernur

Daerah Istimewa Yogyakarta

Sambutan
KONFERENSI INTERNASIONAL
"*AGRIBUSINESS DEVELOPMENT FOR HUMAN WELFARE*"
Yogyakarta, 14 Mei 2016

Assalamu'alaikum Wr. Wb.

Salam sejahtera untuk kita semua.

Yang Saya hormati :

- Rektor Universitas Muhammadiyah Yogyakarta;
- Para Narasumber;
- Hadirin dan Para Peserta yang berbahagia,

Puji dan syukur marilah kita panjatkan kehadirat Allah SWT karena hanya atas limpahan rahmat serta karunia-Nya, kita dapat hadir pada kesempatan acara **Konferensi Internasional "*Agribusiness Development For Human Welfare*"** ini dalam keadaan sehat wal'afiat.

Pada kesempatan kali ini, secara ringkas Saya akan menyampaikan mengenai industri kecil menengah nasional yang menjadi tema pada pembukaan Seminar Internasional "Agribusiness Development For Human Welfare" ini.

Hadirin dan Saudara-saudara sekalian yang Saya hormati,

Berdasarkan data BPS, pertumbuhan industri pengolahan nonmigas pada tahun 2015 secara kumulatif sebesar 5,04%; lebih tinggi dari pertumbuhan ekonomi (PDB) pada periode yang sama sebesar 4,79%. Pada periode Januari-Desember 2015, nilai ekspor produk industri pengolahan nonmigas mencapai USD 106,63 Milyar, dan nilai impor mencapai USD 108,95 milyar, sehingga neraca perdagangan insdustri pengolahan nonmigas pada periode yang sama sebesar USD 2,32 milyar (nerasa defisit).

Usaha pemerintah untuk memperkecil defisit di atas, salah satunya dengan cara memberdayakan Industri Kecil dan Menengah (IKM) yang merupakan bagian penting dalam perkembangan industri nasional. Sampai saat ini, Insutri Kecil dan Menengah

telah berkontribusi sebesar 34,82% terhadap pertumbuhan industri pengolahan nonmigas secara keseluruhan.

Angka ini dapat tercapai karena dukungan lebih kurang 3,6 juta unit usaha, yang merupakan 90 persen dari total unit usaha insutri nasional. Jumlah unit usaha tersebut telah mampu menyerap tenaga kerja sebesar 8,7 juta orang, yang tentunya berdampak pada meningkatnya ekonomi nasional serta mengurangi kemiskinan.

Industri Kecil dan Menengah (IKM) memiliki peran yang strategis dalam perekonomian nasional. Hal ini sejalan dengan Visi Pemerintah dalam Rencana Pembangunan Nasional Jangka Menengah (RPJMN) 2015-2019 yaitu *"Terwujudnya Indonesia yang berdaulat, mandiri, dan berkepribadian berlandaskan gotong royong".*

Untuk lebih meningkatkan peran tersebut, Penumbuhan dan Pengembangan Industri Kecil dan Menengah diarahkan untuk memiliki tujuan jangka menengah guna mewujudkan industri kecil dan industri menengah yang berdaya saing, berperan signifikan dalam penguatan struktur industri nasional, pengentasan kemiskinan dan perluasan kesempatan kerja, serta menghasilkan barang dan/atau jasa Industri untuk keperluan ekspor.

Hadirin dan Saudara-saudara sekalian,

Awal tahun ini, kita telah memasuki era Masyarakat Ekonomi ASEAN (MEA). Dengan demikan, perekonomian nasional akan langsung bersaing dengan para pelaku pasar di kawasan ASEAN. Produk dan jasa termasuk investasi negara-negara anggota telas bebas memasuki pasar di kawasan ASEAN.

Dalam rangka menghadapi hal tersebut, Pemerintah mengambil langkah-langkah strategis berupa peningkatan daya saing industri dan mendorong investasi di sektor industri; di mana peningkatan daya saing industri itu sendiri dilakukan melalui penguatan struktur industri dengan melengkapi struktur industri yang masih kosong serta menyiapkan strategi ofensif dan defensif dalam akses pasar.

Pemerintah telah melakukan Penguatan Sektor IKM dengan strategi ofensif dan defensifnya melalui beberapa program pelaksanaan, diantaranya antara lain: Penumbuhan Wirausaha Baru; Pengembangan IKM melalui Pengembangan Produk IKM serta Peningkatan Kemampuan Sentra dan UPT; Pemberian Bantuan Mesin dan Peralatan Produksi; Perluasan Akses Pasar melalui Promosi dan Pameran; Fasilitasi Pendaftaran Hak Kekayaan Intelektual; Fasilitasi Sertifikasi Mutu Produk dan Kemasan; serta Fasilitasi Pembiayaan melalui Skema Kredit Usaha Rakyat (KUR).

Saya berharap agar berbagai program-program pemerintah tersebut dapat didukung secara sinergis oleh seluruh komponen masyarakat. Untuk itu, Saya berpesan kepada Saudara-saudara sekalian agar semua program pemerintah dalam bidang

Industri, khususnya dalam program pemberdayaan Industri Kecil dan Menengah, didukung dengan sepenuh hati, agar dapat lebih bermanfaat bagi masyarakat dalam rangka pengembangan industri kecil menengah.

Hadirin dan Saudara-saudara sekalian yang Saya hormati,

Demikian beberapa hal yang dapat Saya sampaikan. Akhirnya dengan memohon ridho Allah Subhanahu Wata'ala, seraya mengucap "*Bismilahirrahmanirrahim*", **Konferensi Internasional "*Agribusiness Development For Human Welfare*"** dengan ini secara resmi Saya nyatakan dibuka. Semoga Allah SWT memberikan petunjuk, bimbingan, perlindungan dan kemudahan dalam setiap langkah dan upaya kita. Amien.

Sekian dan terima kasih.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, 14 Mei 2016
GUBERNUR
DAERAH ISTIMEWA YOGYAKARTA

HAMENGKU BUWONO X

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INCREASE RICE PRODUCTIVITY TROUGH MODELS OF CROPPING SYSTEMS AND THE USE OF HYBRID VARIETIES

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ABSTRACT

This search aims to determine the increase of rice productivity through different models of cropping systems and the use of hybrid seeds. The search was conducted in Sumberharjo Village, Prambanan Subdistrict Sleman Yogyakarta. Specification of field research were irrigated fields, regosol soil type, altitude of 109 m above sea level. The research was conducted on planting season II (March-July 2015). The Reseach methods used completes randomized block design factorial, three kinds of models of cropping system (Tajarwo, Tegel and Telapak Macan) and two kinds of hybrid rice seeds (Super Jumbo Sanita;V1 and Mapan P-05:V2) That was six Treatment combined. Each of combine treatment repeated four times. Statistical Analysis of Variance with DRMT 5% was used to determinate the effect of treatment to know the real difference between treatments. Observation parameters were plant height, number of productive tiller, wet/dry straw weight of 1000 grains and productivity. The result showed that he treatment of two hybrid rice varieties Mapan P-05 and Super Jumbo, didn't show significant effect on rice productivity. The treatment of croping systems Tajarwo, Tegel and Telapak Macan had significant effect on productivity. Six palnting systems combinations have significant impact on productivity. The average productivity of dry grain harvested per hectare was 8,7 tons and 8,6 tons for Super jumbo sanita and Mapan P-05. The milled rice per hectar for hybrid varieties was Super Jumbo Sanita 6,8 tons and Mapan P-05 6,65 tons. The average productivity of dry harvested and miled rice per hectare for planting systems treatment were Tajarwo (8,36 tons and 6,95 tons), Tegel (8,5 tons and 6,18 tons) and Telapak Macan (9,07 tons and 7,06 tons) The highest average productivity of dry grain harvested was 9,65 tons per hectare for combination Telapak Macan and Super Jumbo and the lowest was 8,17 tons per hectare for combination Tajarwo dan Super Jumbo. The highest milled rice production per hectare was combination Telapak Macan and Super Jumbo (7,48 tons) and the lowest was Tegel and super jumbo (6,1 tons).

Keywords: cropping systems, hybrid seeds, productivitity

INTRODUCTION

Rice (*Oryza sativa L.*) is a strategic key crops in Indonesia, in the context of rice supply as a national food. Based on RI Permentan No.: 134/Permentan/OT.140/12/2014, In 2012 Indonesia's raw land of rice field area is 8.132.346 hectares, with the national average index of planting is 140% and average national productivity 5,16 tons/hectare. The food supply area approximately 237,6 million population in Indonesia. (BPS, 2010 in Pusat Penyuluhan Pertanian 2014)

In RI Permentan No. 03/ Permentan/OT.140/ 2/ 2015, Indonesia established increasing productivity through a special effort. This increased productivity conducted by : (1) Use of new varieties. (2) Systems cropping improvement. (3) Ground restructure, by optimizing the use of balanced fertilizer, organic matter and biological agents (Simarmata, T. 2008). The improved rice cropping systems are called: direct sow seeds (seeded), tiles of squares (Tegel), legowo row planting (Tajarwo), and the

palm of the tiger (Telapak Macan). Hazton and SRI.

New varieties of rice needed to balanced the assembly of hybrid rice technology. The non-hybrid varieties that usually used rivers and lakes, now it using inpari, inpara and inpago (Sembiring, 2007). Special efforts (upsus) increased productivity, RI Permentan No.: 03/Permentan/OT.140/ 2/2015 control the use of the seed that provided as follows: (1) Superior variety disposed by minister of agriculture; (2). The seed certified as minimum class of extension seed; (3). Specification of the seed quality (water level 13%, grow power > 80%, dirt seed < 2%); (4) Material packaged together with water and air, plyethylene (PE) 8-10 micrometers; (5) The weight of packaged seed up to 10 kilograms.

F-1 Mapan P-05 hybrid rice seed : Minister of Agriculture Decree No. 132/kpts/SR.120/3/2006. Primasid Brings You Better Seeds with benefits as: serving urea, high production, super rice, resulting rice that fluffer and sweet-scented, disease resistance, yield potential 17 tons/hectares. Its characteristics, i.e. : harvest between 115-120 days after the seeds sowed, 20-30 saplings, height 110-115 cm, relatively resistant to fall, long and strong roots, the flag leaf straight and long, the grains have 180-250 item, yield potential 8-18 tons/hectare, long grains, yield 65%-85%, translucent white ice, broad adaptation (can be planted at an altitude of 0-700 meters above sea level).

“Super Jumbo Sanita” hybrid rice seeds as in Minister of Agriculture Decree No. : 2421/Kpts/SR/120/7/2012, has the nature of exellence which are mature early (harvested 104 days after the seeds sowed), the yield potential 12,7 tons/hectare (20-30% higher than basic rice), more resistant to disease that causing the neck breaks (blast) or because of the plastic bag, strudy stems and not easy to collapse, high result (76,8%) and head rice result (94,9%). Hybrid vigor is a vigor that exceed the parent vigor shown by hybrids. This striking increased in vigor of F1 and decreased when F1 cultured further (Sjamsoe’oed Sadjad. 1993)

In November 2013, cropping systems was studied with a cropping systems tiles until February, 2014. Inpari 24 was sowed d the productivity reached 7,6 tons/hectare of dry milled grain (Suharno, 2015). Width and spacing of nutrient supply was well supported by water management and air system. The rice could take advantege from optimum sunlight and able to produce about 80-100 seedlings per hill. The more number of seedlings planted, the fewer number of productive tillers. More seedlings planted will lead to competition among other seedlings to obtain nutrients and other growth factors.

Legowo row cropping system, according to the Javanese language comes from the word “lego” which means extensive or wide and “dowo” which means long. For tajarwo, 2:1 increase in population : 100% x 1 (1 + 2) = 30%. For tajarwo 3:1 increase in population: 100% x 1 (1 + 3) = 25%. %. For tajarwo 4:1 increase in population: 100% x 1 (1 + 4) = 20%. %. For tajarwo 5:1 increase in population: 100% x 1 (1 + 5) = 16,6%.

Telapak Macan of cropping systems that should have some seedlings into one lump, splitted the seeds into three clumps and planted with the pattern of equilateral triangle with distance from sides was 5 cm and the disctance between clumps of raw plant was 30 cm. The amount of seedlings at Telapak Macan of cropping could achieve 45 rods, as its productivity 15,7 tons/hectare with hollow stem varieties, the varieties of stems that strong and resistant to collapse (Arif Budiman, technology practitioner). It fertilized with manure worms (kascing). This information from Kedaulatan Rakyat paper, at X February 14, 2015 about Muhammad Fadillah Imsa student from Faculty of Agriculture UGM recommend planting method Telapak /Tapak Macan)

The purpose of research is to determine the effect on the application of three sytems using hybrid seed varieties for rice productivity.

The benefit of reasearch are cropping systems that show high productivity, can be developed and disseminated to rice plant farmers

Cropping systems reasearch hypothesis allegedly Telapak Macan system will produce productive tillers or panicles more than the tiles and tajarwo cropping systems, amount of the clump numbers of rice panicle would contribute to high productivity.

METHOD

Research conducted in Sumberharjo Village, Prambanan Subdistrict, Sleman Regency, Special region of Yogyakarta. Specification of research field : irrigated fields, soil type was regosol, altitude 109 m above sea level.

Materials research used two types of hybrid rice Super Jumbo Sanita and Mapan P-05. The Reseach methods used completes randomized block design factorial, three kinds of models of cropping system (Tajarwo:T1, Tegel:T2 and Telapak Macan:T3) and two kinds hybrid rice seeds (Super Jumbo Sanita;V1 and Mapan P-05:V2) Combined treatment was T1V1; T1V2; T2V1; T2V2; T3V1 and T3V2. Each of combine treatment repeated four times. To determinate the effect of treatment used Statistical Analysis of Variance with DRMT 5% to know the real difference between treatments.

The conduct of research in accordance with the treatment, legowo row planting system on: the spacing of standard 30x30 cm, the number of seeds per planting hole 2 seeds, system legowo row 4:1 , every 4 rows interspersed 1 row aisle, row crop the edges of the distance planting 15 cm, row crops the center of the 30 cm, 40 cm wide hallways. The tiles or Tegel cropping systems used spacing of 30x30 cm, the number of seeds per planting hole 2 seeds, squares sytem 4 side each 30 cm.Telapak Macan cropping systems used the raw plant spacing of 30x30 cm, used 2 seeds per planting hole, form an equilateral triangle pattern distance of 5 cm, in one clump, there are 3 hole. Observation parameters was plant height, number of productive tiller, wet straw weight/dry weight of 1000 grains and productivity.

RESULT AND DISCUSSION

The result showed that the treatment of two hybrid rice varieties Mapan P-05 and Super jumbo sanita, with treatment of crooping systems Tajarwo, Tegel and Telapak Macan as present in table 1, table 2 and table 3.

As displayed in Table 1, the treatment has no significant effect to the hybrid varieties (Anova:5%;1%) of the average number of productive tillers, weight of wet and dry straw, and rice productivity. The average productivity of hybrid varieties better at Super Jumbo.

In the second test, hybrid varieties tested in the same nature, It was according to the description Primasid Brings You Better Seeds and PT. SANITAS, that the potential results of mapan P-05 reached 8-11 tons/ha, and the Super jumbo sanita yield potential was 12,7 tons/ha of dry grain harvest. The Mapan P-05 was relatively resistant for fall and Super jumbo sanita resistant for fall , these properties effect the production.

The Three treatments of cropping systems (table 2), showed no significant effect on plant height, weight of wet and dry straw, productivity at 5 clumps, dry grain harvest per hectare, and the weight of 1000 grains. Significant effect showed at the number of productive tillers, dry grain per paner many square meters, as well as milled rice per hectare. High productivity of rice plants were genetically influenced by the nature of the seed, while cropping system has less influence. Telapak Macan of cropping system showed the highest productivity (table 2), it was related to the number of panicles per hill on average 27 per clumps panicles and the highet productivity from the two other systems. Simarmata, T. 2008, expressed that the more number of seeds would lead to competition among the seedlings themselves to get the nutrients and other factors. Telapak Macan cropping systems has distinctive triangular pattern in three clumps, so that the pattern Table 1. The mean observation 11 parameters of growth and yield of rice in the treatment of two hybrids.

No.	Parameter of observation	The two hybrid varieties treatment	
		Super Jumbo	Mapan P-05
1	Plant height (cm)	106,10 a	119,36 b
2	The number of productive tiller (panicle/hill).	23,50 a	22,91 a
3	Heavy wet hay clump 5 (g).	947,66 a	1045,00 a
4	Heavy clump of hay 5 (g).	336,6 a	370,4 a
5	The productivity of dry grain harvested every 5 grove (g).	385,0 a	370,8 a
6	Milled rice productivity every 5 grove (g).	321,6 a	300,8 a
7	Dry grain crop productivity per many square meters (kg).	0,885 a	0,845 a
8	Milled rice productivity per many square meters (kg).	0,686 a	0,657 a
9	Dry grain crop productivity per hectare (t/ha).	8,72 a	8,57 a
10	Milled rice productivity per hectare (t/ha).	6,88 a	6,58 a
11	Weight of 1000 grains (g).	28,76 a	20,39 b

Source: primary data processed in 2015.
Description: the average number of lanes on the line followed by the same letter are not significantly different DMRT 5 %.

Table 2. The 11 Observation Parameters of Growth and Yield of Rice at Three Cropping Systems Treatment

No	Observation Parameter	Three Treatment Cropping Systems		
		Tajarwo (T1)	Tegel (T2)	Telapak Macan(T3)
1	Plant height (cm)	113,3 a	111,2 a	113,7 a
2	The number of productive tiller (panicle/hill).	21,00 a	21,50 a	27,12 b
3	Heavy wet hay clump 5 (g).	931,25 a	976,25 a	1080,00 a
4	Heavy clump of hay 5 (g).	357,5 a	351,8 a	351,2 a
5	The productivity of dry grain harvested every 5 grove (g).	377,5 a	357,5 a	398,7 a
6	Milled rice productivity every 5 grove (g).	328,7 a	290,0 a	315,0 a
7	Dry grain crop productivity per many square meters (kg).	0,91 a	0,79 b	0,89 a
8	Milled rice productivity per many square meters (kg).	0,693 a	0,617 b	0,700 a
9	Dry grain crop productivity per hectare (t/ha).	8,36 a	8,50 a	9,07 b
10	Milled rice productivity per hectare (t/ha).	6,95 a	6,18 b	7,06 a
11	Weight of 1000 grains (g).	24,47 a	24,55 a	24,71 a

Source: primary data processed in 2015.
Description: the average number of lanes on the line followed by the same letter are not significantly different DMRT 5 %.

models could reduce the level of competition. Productivity at the 5 clumps, as a sample, effect was not real. It was suspected that sampling was less ables to represent the existing population, data of production obtained by the census would be more accurate.

The number of productive tillers influenced by population in the unit area and the number of clumps in ; cropping system tiles population 11 clumps, cropping system Tajarwo 4:1 population of 13 clumps and Telapak Macan cropping systems population of 33 clumps. The number of tilers of rice was also influenced by genetic factors. The second hybrid varieties has no significant effect on the productive tillers (table 1), a strong presumption that the number of productive tillers influenced by seed's genetic factors. The tile cropping system advantage was uniform panicles

produced because of the competition was low. Telapak Macan of system had overload number of panicles per hill at most. Besides, Tajarwo cropping system disadvantages was the line at the edge of clumps that made competition was stronger, so the panicles produced was not uniform. Telapak Macan systems had a low level competition among clumps of tiles because Telapak Macan system created a triangle pattern, tile system to the four sides of tenuous 30 cm. Telapak Macan of system weakness was required number of seeds tripled tile system.

Table 3. The mean observation 11 parameters of growth and yield of rice in the six combinations, two hybrid varieties treatment with three treatmens cropping systems.

No	Parameter of Observation	Six Combination for Two Hybrid Varieties Treatment with Three Treatment Cropping Systems					
		T1 V1	T1 V2	T2 V1	T2 V2	T3 V1	T3 V2
1	Plant height (cm)	106,9a	119,6b	103,8a	118,6b	107,5a	119,8b
2	The number of productive tiller (panicle/hill).	21,5a	20,5a	21,0a	22,0a	28,0b	26,2b
3	Heavy wet hay clump 5 (g).	925,0a	937,5a	892,5a	1060,0a	1022,5a	1137,5a
4	Heavy clump of hay 5 (g).	365,0a	350,0a	320,0a	383,7a	325,0a	377,5a
5	The productivity of dry grain harvested every 5 grove (g).	415,0a	340,0a	350,0a	365,0a	390,0a	407,5a
6	Milled rice productivity every 5 grove (g).	365,0a	292,5a	272,5a	307,5a	327,5a	302,5a
7	Dry grain crop productivity per many square meters (kg).	0,925a	0,89a	0,77b	0,80b	0,95a	0,83b
8	Milled rice productivity per many square meters (kg).	0,705a	0,68a	0,60b	0,62b	0,74a	0,66a
9	Dry grain crop productivity per hectare (t/ha).	8,17a	8,5a	8,32a	8,6a	9,65a	8,5a
10	Milled rice productivity per hectare (t/ha).	7,0a	6,8a	6,1b	6,2b	7,48a	6,6a
11	Weight of 1000 grains (g).	28,4a	20,4b	28,7a	20,4b	29,1a	20,3b

Source: primary data processed in 2015.
Description: the average number of lanes on the line followed by the same letter are not significantly different DMRT 5 %.

Table 3. the combined treatment cropping systems with hybrid varieties differ clearly and significant on plant height, the number of productive tiller, productivity, and weight of 1000 grains. This combination was no real effects on plant height. This is as table 1, that the hybrid varieties Mapan P-05 has higher genetic traits than Super jumbo sanita varieties. Combined treatment (table 3) showed the significant effect and clearly different at weight of a 1000 grains. It is a combination of a variety of factors that effect and significantly defferent, because Mapan P-05 formed a slender and smaller size grain. While the Super jumbo sanita shape was slimmer, but the size was larger. So the weight of 1000 grains was lower in Mapan P-05 (table 1)

Combined treatment (table 3), the significant effect and clearly different at the number of productive tillers. The number of productive tillers per hill was affected by the treatment of cropping systems. Telapak Macan cropping system shows that it has the most productive tillers (table 2). This model of a triangular pattern causes most amount of clumps compared with two other cropping systems. Combined treatment (table 3) resulting the significant effect and clearly different at the weight of wet and dry hay, grain weight per 5 clumps and dry grain harvest per hectare.

Combined treatment (table 3) resulting the significant effect and clearly different against the grain weight per many swuare meters, the productivity of milled rice per hectare.Table 3, a

combined treatment with a Super jumbo sanita variety and Telapak Macan cropping system (T3V1) productivity was the highest (7,43 t/ha) of dry milled grain. Productivity was influenced by Telapak Macan cropping systems, which it produced more amount of clumps per unit breadth (table 2), while the hybrid varieties did not affect productivity (table 1). Table 3, the productivity of dry grain yield average reached 9,65 tons/ha in the combination (T3V1) Wet and dry straw weight (table 3) was not positively correlated to rice productivity, it differed by Dermawan.J. and Justika. S.B. (1983), that the high dry plant weight will give high yields as well, or dry plant weight positively correlated to productivity, or a high dry straw weight will produce high amount of rice.

Coefficient of variance (CV) showed that all the parameters of observation below20%, meaning that the data presented is valid (Gaspersz,V. 1995).

CONCLUSION

The treatment of two hybrid rice varieties Mapan P-05 and Super jumbo sanita, showed no significant effect on the productivity of rice. The three different treatment; Tajarwo cropping systems, Tegel, and Telapak Macan, showed significant effect on productivity. Six hybrid seeds treatment combinated with different cropping smlystem affect productivity significantly. The average productivity of dry grain harvested and milled rice per hectare at each hybrid varieties : Super jumbo sanita 8.7 tons; 6.8 tons and Mapan P-05 8.6 ton; 6.5 tons. The average productivity of dry grain harvested and milled rice per hectare at each cropping systems; Tajarwo (8.36 tons, 6.95 tons), Tegel (8.5 tons, 6.18 tons) and Telapak Macan (9.07 tons, 7.06 tons). The average productivity of dry grain harvested and milled rice per hectare in combination with the hybrid varieties and cropping systems, the highest (9.65 tons: Telapak Macan and Super Jumbo (T3V1); 7.48 tons : Telapak Macan and Super Jumbo (T3V1)) and the lowest (8.17 tons: Tajarwo and Super Jumbo(T1V1); 6.1 tons: Tegel and Super Jumbo (T2V1)).

ACKNOWLEDGEMENT

Telapak Macan Cropping systems is recommended to increase rice productivity for the farmer more than Tegel and Tajarwo.

REFERENCES

Darmawan, J., and Justika S.B. 1983. *Dasar-dasar Fisiologi Tanaman*. Semarang: PT. Suryandaru Utama.

Gaspersz, V. 1995. *Teknik Analisis dalam Penelitian Percobaan*. Bandung: Penerbit Transito.

Sembiring,H. 2007. *Deskripsi varietas padi*. Balai Besar Penelitian Tanaman Padi. Subang Jawa Barat.

Simarmata, T. 2008. Teknologi Intensifikasi Padi Aerob Terkendali Berbasis Organik (IPAT-BO) untuk melipatgandakan produksi padi dan mempercepat pencapaian kedaulatan pangan di Indonesia. Unpad Bandung.

Sjamsoe'oed, Sadjad. 1993. *Kamus Pertanian*. Jakarta: PT Gramedia.

Suharno. 2015. Uji kedalaman tanam pada dua VUB dengan sistem tanam gogo rancah terhadap daya hasil. *Prosiding Semnas Hasil penelitian*. Dies Natalis ke-69 Fakultas Pertanian UGM.

Permentan No. : 134/Permentan/OT.140/ 12/2014. *Pedoman optimasi lahan*.

Permentan 2015. Permentan RI No. 03/permentan/OT.140/2/2015. *Upaya khusus (upsus) padi jagung kedelai (pajale).*

Pusat Penyuluhan Pertanian, 2014. *Pedoman Teknis Pendampingan Penyuluhan Program OPLA*. Pusat Penyuluhan Pertanian, BPPSDMP. Kementerian Pertanian. Jakarta

DISCUSSION FROM PARALLEL SESSION

PAPER TITTLE	INCREASE RICE PRODUCTIVITY TROUGH MODELS OF CROPPING SYSTEMS AND THE USE OF HYBRID VARIETIES
AUTHOR	Suharno, Rika Nalinda
DISCUSSION	
QUESTION	1. Have you survey, what the main crop system that farmer prefer to use? 2. From the whole parameters (II) how many parameters that really represent the rice producting? 3. From the result what is your suggestion to the farmer regarding their different of crop system?
ANSWER	1. Tegal system that regulary conduct in Sleman 2. The suggestion is to using combination telapak macan and mapan
SUGGESTION	1. Delete the quantitative number in the abstract section, and change these into qualitative information 2. And consequences of the study example for policy making and etc

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2016

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ISBN 978-602-7577-70-1

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