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- Northeast Agricultural University (China)
- Bogor Agricultural University (Indonesia)
- Niigata University (Japan)



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Contents

Preface	1
Time Table	2
Introduction to Faculty of Agriculture Niigata University	7
Session	
Crop Science and Horticultural Science	
O-1 Heilongjiang 50 billion Kg yield project. Yankun Sun	16
O-2 <i>In vitro</i> seed germination, corm enlargement and corm acclimatization in <i>Zephyra elegans</i> D. Don. A. K. Vidal T., Y. Niimi, M. Nakano and D-S Han	16
O-3 Changes of food reserves during rhizome formation of <i>Curcuma alismatifolia</i> gapnep. A. Chidburee, T. Ohyama and S. Ruamrungsri	16
O-4 Assimilation and translocation of nitrogen and carbon in <i>Curcuma alismatifolia</i> gapnep. T. Khuankaew, S. Ruamrungsri, S. Ito, T. Sato, N. Ohtake, K. Sueyoshi and T. Ohyama	17
O-5 Comparative analysis of clubroot resistance genes <i>between Brassica rapa</i> and <i>B. oleracea</i> . K. Okazaki, T. Nagaoka, M. A. U. Doullah, S. Matsumoto, T. Ishikawa, H. Hori	18
O-6 Interaction between gibberellin and ethylene in growth of rice. Y. Adachi and H. Watanabe	18
O-7 A novel elicitor (PiPE) from <i>Phytophthora infestans</i> induces active oxygen species and the hypersensitive response in potato. N. Furuichi, and K. Yokokawa	19
Poster Session	
P-1 Effect of low-temperature treatment after harvest on fruit characteristics of 'Le Lectier' pears during ripening. S. Chino, M. Tokuda, T. Ohishi, K. Koshikizawa, Y. Ohta, Y. Saito, S. Kurosaka, Y. Sakai, T. Matsumoto and K. Kojima	19
P-2 Effect of modified atmosphere packaging using OPP film on elasticity index of Japanese pear 'Niitaka' and 'Shinko' fruit after harvest. S. Kurosaka, S. Chino, Y. Ohta, Y. Saito, Y. Sakai and K. Kojima	20
P-3 Visualization of multiple phytohormones within cucumber (<i>Cucumis</i>	20

	<i>sativus</i> L.) ovary using immunohistochemical localization. Y. Ohta, Y. Saito, S. Chino and K. Kojima	
P-4	Changes in abscisic acid, ethylene and indole-3-acetic acid of 'Le Lectier' pears during low-temperature treatment. K. Kojima, Y. Ohta, Y. Sakai, C. Araki, K. Koshikizawa, Y. Saito, S. Kurosaka, T. Matsumoto and S. Chino	21
P-5	Improvement of Yielding Ability of Japonica Rice Cultivar by the Selection of Transporting Capacity in Vascular Bundle System. H. Sasahara, A. Shigemune, A. Goto, K. Miura and T. Fukuyama	22
P-6	Production of interspecific hybrids in <i>Tricyrtis</i> (Liliaceae) via ovule culture. H. Otsubo, H. Takagi, Y. Saito, E. Oka, J. Amano, H. Tasaki, D-S. Han and M. Nakano	22
P-7	Intergeneric hybridization among colchicaceous ornamentals, <i>Gloriosa</i> spp., <i>Littonia modesta</i> and <i>Sandersonia aurantiaca</i> via ovule culture. D. Nakazawa, J. Amano, S. Kuwayama, Y. Mizuta, T. Godo, T. Saito, D-S. Han and M. Nakano	23
P-8	Flower color modification in the liliaceous ornamental <i>Tricyrtis hirta</i> by RNAi suppression of the chalcone synthase (CHS) gene. Y. Kamiishi, H. Takagi, S. Mori, H. Kobayashi, D-S. Han and M. Nakano	23
P-9	Characterization of <i>Tricyrtis hirta</i> plants transformed with the gibberellin 2-oxidase gene from <i>Torenia fournieri</i> . S. Meguro, H. Gondaira, M. Hayashi, T. Niki, T. Nishijima, M. Koshioka, D-S. Han and M. Nakano	24
P-10	Chromosome doubling of <i>Lychnis</i> spp. by <i>in vitro</i> spindle toxin treatments of node segments. T. Nonaka, E. Oka, M. Asano, T. Godo, D-S. Han and M. Nakano	24
P-11	Advances in vegetative propagation via callus induction in <i>Zephyra elegans</i> D. Don.. A. K. Vidal T., Y. Niimi, M. Nakano and D-S. Han	25
P-12	Effect of brown rice vinegar lees compost on growth in Tomato. T. Abe, Y. Niimi, M. Nakano and D-S. Han	26
P-13	Effect of low temperature on developmental phase changes in seedlings of <i>Lilium rubellum</i> . T. Kakuda, S. Otsuka, Y. Niimi, M. Nakano, and D-S. Han	26
P-14	Synteny analysis of <i>Brassica</i> genomes based on genetic linkage map	27

- between *Brassica oleracea*, *B. rapa* and *B. napus*. T. Nagaoka, S. Matsumoto, K. Hatakeyama, M. Shimizu and K. Okazaki
- P-15 Polyploidy of *Fallopia* species in Japan. H. Ohsawa, T. Morita and K. Okazaki 27
- P-16 Potential use of plant growth regulators for improving the recovery rate of fertilizer in rice - effect of L- β -phenyllactic acid on growth of rice seedlings -. Y. Adachi, Y. Saruhashi, K. Kimura, M. Saigusa and H. Watanabe 28
- P-17 No-tillage direct seeding culture in rice with single basal application of controlled released fertilizer in heavy clayey paddy field. Y. Saruhashi, Y. Adachi, M. Saigusa and H. Watanabe 28
- P-18 Effect of deep-flood irrigation on grain quality and yield in rice. M. Chiba, O. Matsumura, T. Terao, Y. Takahashi and H. Watanabe 29
- P-19 Morphological study of arbuscular mycorrhiza fungi infected *Curcuma alismatifolia* gagnep. A. Thepsukhon, S. Choonluchanon, S. Tajima and S. Ruamrungsri 29
- P-20 Functional analysis of low-affinity nitrate transporter in barley. K. Kobayashi, D. Ono, S. Ishikawa, M. Maeno, M. Kikuyama, N. Ohtake, T. Ohyama and K. Sueyoshi 30
- P-21 The effect of nitrate on nodule and root growth of soybean under light and dark conditions. A. Saito, S. Ito, T. Tanabata, S. Tajima, N. Ohtake, K. Sueyoshi, T. Ohyama 31
- P-22 Regulation of nodulation and nodule growth by N and C compounds in soybean. T. Kato, T. Sasaki, N. Ohtake, K. Sueyoshi and T. Ohyama 31
- P-23 Two-component high-affinity nitrate transport system in barley: Membrane localization and a direct protein-protein interaction. M. Ohishi, S. Naganuma, S. Ishikawa, N. Ohtake, T. Ohyama, K. Sueyoshi 32
- P-24 Estimation of nitrogen fixation activity and diagnosis of mineral nutrition by xylem sap of soybean. D. Sakazume, Y. Nagumo, N. Ohtake, K. Sueyoshi, T. Ohyama, Y. Takahashi and T. Ohyama 32
- P-25 The effects of the deep placement of fertilizer lime nitrogen on the yield and quality of the soybean. K. Tanaka, T. Kaushal, Y. Nagumo, Y. Takahashi, N. Ohtake, K. Sueyoshi, T. Ohyama 33
- P-26 Genetic variability of *Milk vetch dwarf virus* isolates. K. Nomizu and 34

Environment -land use and water system-

- O-8 Distribution of Indonesian forestry recent condition as based for future utilization: Scenario and Multi criteria Analysis. M. Buce Saleh 36
- O-9 Extracting appropriate sites for the swans visiting in winter of Niigata City using GIS and satellite data. N. Abe 36
- O-10 Can paddy fields mitigate flood disaster? Study on the flood mitigation measure by a Paddy Field Dam project. N. Yoshikawa 36
- O-11 Influence of Climate Change on the Hydrological Regime in a Headwater Basin, Niigata, Japan. Whitaker, A.C., A. Yoshimura and T. Sekiguchi 37
- O-12 Organic rice farming its various effect on preservation of environment and on food safety. T. Aoda, K. Inaba and A. Kojima 37
- O-13 Evaluation on natural ventilation performance of a group of single-span greenhouses. D. Yang, K. Nakano, S. Ohashi, H. Hasegawa, D. Terano, H. Yan, Q. Chen 38
- O-14 Will global warming change the reproduction traits of forest trees? ---Seed production by /Fraxinus platypoda/ in a riparian forest, central Japan---. H. Sakio 39
- O-15 Rice Grain Damages Caused under Higher Temperature Stress during Ripening: A Cell Biological Aspect. T. Mitsui, A. Kitajima, A. Awang, K. Kaneko, A. Yanagida, H Okada, K. Takayama, Y. Hamada, T. Mori, R. Mizutani, T. Koshu, Y. Nakayama, E. Ohkubo, S. Kimura, and T. Shiaraya 39
- Poster session
- P-27 Effects of difference in canopy tree species on understory plant species composition in a temperate broadleaved deciduous forest, central Japan. T. Ohyama, T. Saito, T. Kamitani 40
- P-28 Plant species hotspot created by flood disturbance in the Hayade River, central Japan. E. Saito, S. Ishida, Y. Takanose, T. Kamitani 40
- P-29 Ecological connectivity between rivers and farmlands demonstrated by vegetation similarity in the largest Japanese alluvial plain. S. Ishida, Y. Takanose and T. Kamitani 41

- P-30 Comparison of vegetation succession and regeneration between oak dieback and artificial canopy gaps in a secondary broad-leaved forest, central Japan. T. Saito, T. Ohyama, T. K. Kamitani 42
- P-31 Effects of tillage and irrigation practice on the establishment of wetland native plants at fallow paddy fields. Y. Takanose, S. Ishida and T. Kamitani 42
- P-32 Factors affecting seasonal changes in ozone vertical distribution over mountains of Sado Island and inland Niigata prefecture, Japan. S. Nihira, M. Nakata, N. Take, T. Ohara and T. Ohizumi 43
- P-33 The structure and species composition of natural *Cryptomeria japonica* forest on Sado Island. M. Ohno, Y. Nakano, Y. Kaneko, K. Honma, H. Sakio 43
- P-34 Laboratory introduction. Niigata University Agricultural System Engineering Researchers, Faculty of agriculture, Niigata University, Japan 44

Sustainability, Social and Economic analysis

- O-16 Rural development problem and strategy in Heilong Province. Ying Nie 46
- O-17 Sustainable agriculture in the highlands of northern Thailand: food safety. Danai Boonyakiat 46
- O-18 Sustainability in horticultural production and postharvest management in Thailand. Sirichai Kanlayanarat 46
- O-19 Food Balance of Mongolia. N.Nyamaa 47
- O-20 Residents' Participation in Common-pool Resources and Accumulation of Social Capital. Shinichi Furusawa, Lily Kiminami 47
- Poster session
- P-35 Food security of urban poor in China: Case study from Yinchuan City. T. Ichikawa and L. Kiminami 48
- P-36 Regeneration of shallow landslide slope by seed bank soil and indigenous *arbuscular mycorrhizal*(AM) fungi in Niigata forest area. T. Buto, N. Harada and M. Nonaka 48
- P-37 Comparative nitrogen dynamics in organic and conventional tomato cultivation in Niigata prefecture. Y. Fujino, N. Harada and M. Nonaka 49
- P-38 Arbuscular mycorrhizal fungi(AMF) colonizing with coastal pants in 50

- Niigata. T. Kaidzu, N. Harada and M. Nonaka
- P-39 Changes in chemical properties and bacterial communities in soil 50
amended with food waste. S. Iio, N. Harada and M. Nonaka

Food Science and Biotechnology

- O-21 Effect of time defoliation and vegetative part of fodder Indigofera on 54
growth, herbage production and its quality at first harvesting time. Luki
Abdulah
- O-22 Immunological functions of fermented rice bran extract: Anti-allergic 54
activity of fermented rice bran extract. Kyoung Min Choi, Da Hye Choi,
Bo-Young Jeong, Dong Yeop Kim, Jiang Ping Fan, Hyun Sil Park,
Hyun Chae Chung, Han-Sup Kim, You Hyuk Ko, Gyoung Woo Kim,
and Gi Dong Han
- O-23 Anti-oxidative effects of fermented rice bran extract on oxidative stress 54
in adipocytes and podocytes. Mr. Dongyeop Kim, Bo Young Jeong,
Jiang Ping Fan, Hyun Sil Park, Hyun Chae Chung, Han-Sup Kim, You
Hyuk Ko, Gyoung Woo Kim, and Gi Dong Han
- O-24 Rapid determination of ppm-order concentration of organophosphorus 55
pesticide based on near-infrared spectroscopy. Chen Jingjing, Peng
Yankun, Li Yongyu
- O-25 Differences in fungicidal efficiency against *Aspergillus flavus* for 56
subacidic and strongly acidic electrolyzed. Ke Xiong
- O-26 Effects of vacuum cooling on chemical properties during storage of red 56
cabbage. P. Maniwaru, D. Boonyakiat, U. Chanasut
- O-27 Effects of a high-pressure treatment on the physical properties and 56
palatability of pork loin. Y.J. Kim, T. Nishiumi and A. Suzuki
- O-28 Perspective of postharvest handling consideration for leafy green 57
vegetables in Thailand. Somsak Kramchote, Varit Srilaong and Sirichai
Kanlayarat
- O-29 Basic mechanism and nutritional regulation of autophagy. Md. Razaul 57
Karim, Kenji Kaneshiro, Hisay Kawanago and Motoni Kadowaki
- O-30 Nondestructive quality evaluation of jujube by visible and near-infrared 58
spectroscopy. J.Wang, K.Nakano, S.Ohashi, K.Takizawa
- O-31 PROTEOME analysis of *Theobroma cacao* using *de novo* sequence 59

analysis of derivatized peptides. Azwan Awang, Rafiah Karim, and Toshiaki Mitsui

Poster session

- P-40 Effects of a high-pressure treatment on the enzyme digestion of β -lactoglobulin. T. Baba, S. Yamamoto, T. Hara, S. Odani, A. Suzuki and T. Nishiumi 59
- P-41 Dietary protein level changes the glutamate related enzyme mRNA expression in muscle. H. Kobayashi, W. Takano, M. Shibata, M. Kadowaki, and S. Fujimura 60
- P-42 Regulation of meat quality by dietary lysine and arginine levels. Y. Ito, T. Matsumoto, Y. Watanabe, M. Imanari, M. Kadowaki, S. Fujimura 60
- P-43 Biosynthesis pathway of eight-carbon volatiles in *Pleurotus ostreatus*. T. Kudo, R. Shimizu, T. Hara, T. Joh 61
- P-44 The relationship between the conversion activity of soybean isoflavone glucosides to aglycones and the substrate specificity of β -glucosidase in lactic acid bacteria from plants. Y. Ueno, R. Mizutani, X. Li, T. Kudo, T. Hara, T. Joh 62
- P-45 *Lactobacillus paracasei* K71 isolated from Sake lees (Sakekasu) suppresses serum IgE levels in ovalbumin-immunized Balb/c Mice. Naoya Shigeyama, T. Hara, T. Kumagai, M. Saito, S. Okada, T. Watanabe and T. Joh 62
- P-46 Ingestion of *Lactobacillus paracasei* K71 ameliorates the development of atopic dermatitis-like skin lesions in NC/Nga mice. H. Yamazaki, T. Hara, T. Kumagai, M. Saito, N. Shigeyama, T. Watanabe and T. Joh 63
- P-47 Suppressive effect of g-aminobutyric acid (GABA) on histamine release in rat basophilic RBL-2H3 cells and rat peritoneal mast cells. A. Hori, T. Hara and T. Joh 63
- P-48 Oral administration of inositol hexaphosphate (IP6) induces mRNA expression of b-defensins (mBD-1 and mBD-14) in the mouse colon. K. Saida, T. Hara, Y. Shinohara and T. Joh 64
- P-49 Effect of high pressure on the extraction of antiallergic substance from mushrooms. Y. Nozawa, A. Igarashi, K. Sato, T. Hara, T. Joh 64
- P-50 Role of three aromatic residues in the chitin binding domain of Chi18aC from *Streptomyces coelicolor* A3(2). M. Uemura, N. Yamada, K. Akagi, 65

- S. Yoshio, T. Ikegami, K. Suzuki, and T. Watanabe
- P-51 Functional analysis of loop structures in the catalytic domain of rice class I chitinase. S. Okada, S. Sugiyama, R. Mizuno, T. Fukamizo, Y. Nishizawa, Y. Kezuka, T. Nonaka, K. Suzuki and T. Watanabe 65
- P-52 Partial sequence of gene responsible for biosynthesis of peptide phytotoxin, cichorin, and structure of a novel peptide from *Pseudomonas cichorii*, a plant pathogenic bacteria. T. Sato, N. Go, S. Takeuchi, H. Wakabayashi and T. Hoshino 66
- P-53 Biosynthesis of a novel cyclic C35-terpene by the cyclization of a Z-type C35-polyprenyl diphosphate obtained from a nonpathogenic Mycobacterium species. T. Sato, Y. Orito, A. Kigawa, R. Takagi, T. Adachi and T. Hoshino 66
- P-54 Squalene synthase from *Methylococcus capsulatus*: Inhibitory activity and mode action of FPMP, which is an analog of FPP substrate. R. Amano, T. Sato and T. Hoshino 67
- P-55 Development of Nondestructive Detector for Internal Defects of Japanese Radish. K. Takizawa, K. Nakano, H. Hasegawa, S. Ohashi, J. Wang, I. Kondoh 68
- P-56 Effect of Cooking on Rice Prolamin Digestibility. M. Kubota, Y. Saito, T. Masumura, C. Ohno, T. Kumagai, R. Watanabe, S. Fujimura and M. Kadowaki 68
- P-57 Molecular analysis of ammonium transporter gene isolated from barley. H. Yamagishi, N. Ohtake, T. Ohyama, K. Sueyoshi 69

Undergraduate Students Session

- O-32 Contemplation of acceleration program to reach self-sufficiency of beef in 2010 in Indonesia. Muhammad Sarwar Khan, Yuni Wijayanti, Henny Nuraini 72
- O-33 Fermented coconut milk (Cocogurt) as the potential of functional probiotic product that rich in mediam Chain Triglycerides. Ayupry Diptasari, Tomi Ertanto, R.H. Fitri Faradilla, Riyanti Ekafitri, Mujiono, Tetuko Dito W, and Ratih Dewanti-Hariyadi 72
- O-34 Potential of Sweet Potato (*Ipomoea batatas*) and Its Secondary Product as the Alternative for Healthy Street Food Production in Middle Class 73

Preface

	Industry in Cikarawang, Bogor, West Java, Indonesia. Saskia Piscesa, Rizal Damanik	
O-35	Laserpuncture Application for Synchronization Estrous of Garut's Ewes. Wulan Widi Ifafah	74
O-36	Organic farming in Malaysia. Chin Weng Fei	74
O-37	Sustainable oil palm cultivation in malaysia. Syed Muhammad Adam bin Syd Abdul Rahman	75
	List of participants	77
	Organizing committee	80
	University map	81

In this symposium, we have invited one professor and one student from each university within the agreement. In addition, we are inviting Wageningen University (The Netherlands) with which Niigata University has an agreement, the School of Bio-resources and Technology, King Mongkut's University of Technology (nonburi) (Thailand), China Agricultural University (China), and the Siberian Federal University (Russia) with which it is expected to have an agreement at the University or Faculty level. Additionally we invited three students from the Faculty of Agriculture, Negeri University were invited to the 1st International Agricultural Students Symposium held on 13 January 2009, and they had a great experience there. We also greatly appreciate the invitation of 4 undergraduate students from Bogor Agricultural University who attended only by their own financial support.

We hope the 3rd Symposium will give an excellent opportunity to discuss on global problems in agriculture in Asia and the world, as well as introducing local topics among participants.

Takuji Ohshima, PhD (Dean, Faculty of Agriculture, Niigata University, Japan)
Kazuhiko Nakano, PhD (Vice Dean, Director of International Exchange, Graduate School of Faculty of Agriculture, Niigata University, Japan)

produces 3.3 million tons equal as dry coconut. Coconut milk, as one of traditional processing products of coconut potentially becomes main ingredient for probiotics yoghurt making. As a source of medium chain triglycerides, mainly composed by lauric acid (C₁₂), coconut milk has great potential as functional food. This research was conducted to have the right Lactic Acid Bacteria (LAB) combination to make cocogurt. Viscosity, pH, and titrable acidity were measured. Increasing of skim milk addition was increasing pH of cocogurt and decreasing of titrable acidity. Cocogurt viscosity was affected by lactic acid bacteria strain, final product acidity, and skim milk addition. Cocogurt with *Lactobacillus casei* subspecies *Rhamnosus* as a starter individually had a lower pH than cocogurt prepared with *L. casei* combined with *Lactobacillus bulgaricus*, *L. casei* with *Streptococcus thermophilus*, or the combination of three of them. Cocogurt viability ranged from 7 to 9 Log CFU/ml. In terms of color, odor, and rancidity, *L. casei* with 5% skim milk statistically was not different ($\alpha=0.005$); however, for taste, texture, and viscosity, it was significantly different ($\alpha=0.005$) from control. Proximate analysis shows that fat content of cocogurt was 9.09% which 46% composed by lauric acid. During storage, cocogurt show decrease of LAB viability and pH, however for viscosity and titrable acidity were increased.

Keywords: Cocogurt, Coconut milk, fermentation, Lactic Acid bacteria, Medium Chain Triglyceride

O-34 Potential of Sweet Potato (*Ipomoea batatas*) and Its Secondary Product as the Alternative for Healthy Street Food Production in Middle Class Industry in Cikarawang, Bogor, West Java, Indonesia

Saskia Piscesa¹⁾, Rizal Damanik²⁾

¹⁾ Students; Department of Community Nutrition; Faculty of Human Ecology; Bogor Agricultural University

²⁾ Lecturer; Department of Community Nutrition; Faculty of Human Ecology; Bogor Agricultural University
saskia.piscesa@gmail.com

Nutrition plays an important role in our daily lives. Food choice affects individual's nutritional status, and food choice influenced by eating behavior that formed by hunger feeling, physiological, and psychological needs. People prefer consuming street food due to economic reason; cheap and sold in flexible quantities.

Sweet potato has high productivity, high economic values, and the flour containing high nutritional values but less popular than any other carbohydrate source. On the one hand, street food stimulates the demand for traditional ingredients and produce, best provided by local enterprises and agriculture. Challenge to applied sweet potatoes as an alternative street food ingredient is to develop creative idea because sweet potato is less popular to consume than any other carbohydrate source.

The street food produced by "Kelompok Tani Hurip" in Cikarawang, Bogor, West Java,

Indonesia is mainly various kinds of Indonesian traditional cakes made of sweet potato. Related to the street food production from sweet potato and the nutritional value analysis of sweet potato, it is true if sweet potato and its flour can be as the alternative for healthy street food.

Keywords: *Ipomoea batatas*, street food, middle class industry, Cikarawang, Bogor, West Java.

O-35 Laserpuncture Application for Synchronization Estrous of Garut's Ewes

Wulan Widi Ifafah

e-mail : wulanwidiifafah@gmail.com

Mobile phone : + 6285691801307

Animal Production and Technology, Bogor Agriculture University

Jl. Agatis Kampus IPB Darmaga Bogor, 16680, Indonesia

Phone : +251 622841, 624133 Fax : +251 622842

Garut's sheep is one of the sheep in Indonesia that are really potential to be developed. But there are some problems in developing Garut's sheep. One of the problem is low reproductive of ewes. Estrous synchronization is the technique to control estrous cycle so that estrous period can be happened at the same time for all ewes simultaneously. Laserpuncture methods had been used to synchronize estrous of Garut's sheep ewes (*ovis aries*). This device gives low power electricity which could increase hormone and enzyme tissues. This technique showed that laserpuncture which is treated at 17 reproduction's accu-points during the luteal phase yielded 100% estrous. While the laser puncture treated at anytime yielded 95% estrous. Using artificial insemination (AI) with liquid semen, estrous was 64% and with frozen semen was 57%. The results of this experiments showed that laserpuncture technique can be used as an alternative technique for estrous synchronization besides hormone treatments. This technique has higher success and low cost.

Keyword: estrous synchronization, laserpuncture, Garut's ewes, reproductive efficiency, hormone and enzim.

O-36 Organic Farming in Malaysia

Chin Weng Fei

Undergraduate Student, Faculty of Agriculture, Universiti Putra Malaysia, Serdang, Selangor, Malaysia.

Malaysia, situated in the tropical region, has a population of approximately 20 million with diverse culture and heritage. Blessed with various natural resources, Malaysia has been rapidly developing since 1970s. Since the formation of Malaysia on 16th September 1963, Malaysia's economy which initially depended on mining and agriculture had been slowly shifted to manufacturing sectors. However, in 2002, the 5th Prime Minister of Malaysia, Tun Abdullah Ahmad Badawi realized the decreasing of agricultural activities and also the issues of food security, he has allocated a huge budget to revitalize and modernize the agriculture sector of

Potential of Sweet Potato (*Ipomoea batatas*) and Its Secondary Product as the Alternative for Healthy Street Food Production in Middle Class Industry in Cikarawang, Bogor, West Java, Indonesia

Saskia Pisceca¹⁾, Rizal Damanik²⁾

¹⁾ Students; Department of Community Nutrition; Faculty of Human Ecology; Bogor Agricultural University

²⁾ Lecturer; Department of Community Nutrition; Faculty of Human Ecology; Bogor Agricultural University

saskia.pisceca@gmail.com

ABSTRACT

Nutrition plays an important role in our daily lives. Food choice affects individual's nutritional status, and food choice influenced by eating behavior that formed by hunger feeling, physiological, and psychological needs. People prefer consuming street food due to economic reason; cheap and sold in flexible quantities.

Sweet potato has high productivity, high economic values, and the flour containing high nutritional values but less popular than any other carbohydrate source. On the one hand, street food stimulates the demand for traditional ingredients and produce, best provided by local enterprises and agriculture. Challenge to applied sweet potatoes as an alternative street food ingredient is to develop creative idea because sweet potato is less popular to consume than any other carbohydrate source.

The street food produced by "Kelompok Tani Hurip" in Cikarawang, Bogor, West Java, Indonesia is mainly various kinds of Indonesian traditional cakes made of sweet potato. Related to the street food production from sweet potato and the nutritional value analysis of sweet potato, it is true if sweet potato and its flour can be as the alternative for healthy street food.

Keywords: *Ipomoea batatas*, street food, middle class industry, Cikarawang, Bogor, West Java.

I. INTRODUCTION

1. Background

Nutrition has played a significant role in human life. It affects the whole biological process include metabolism, ingestion, digestion, absorption, transport and excretion (Rolfes 2008).

Every day, in several times a day, we make food choices that influence our body's health for better or worse. Each day's the choices we made may benefit or harm our health. At the beginning the effect may be

only a little but when these choices are repeated over months and or years the results may become major. Therefore, pay more attention to a good eating habit can bring you health benefits in your future life. Conversely, carelessness about food choices can contribute many diseases. In short, a good food choice supports better nutrition.

Eating behavior is the way people fulfilling their meals needs, including belief and food choice (Khumaidi 1989). Eating behavior not only formed by hunger feeling, but also influenced by physiological and

psychological needs. Every group has its own pattern in getting, utilizing, and assessing food as their culture uniqueness. This culture influenced people in choosing and consuming food (Suhardjo 1989). Some factors that influence food choice and dietary quality are food preferences (taste, smell, color, texture, temperature, and similarity), nutrition knowledge and beliefs (health concerns, nutritional value, attitudes and values, education, and experience), culture (acceptable, customs, symbolism, and religious beliefs), and practical considerations (cost, convenience, level of hunger, availability, and health status) (Brown 2008).

Cikarawang is a village located in Bogor, West Java, Indonesia, near the campus of Bogor Agricultural University. People of Cikarawang mostly consist of middle to low economic class and has various kinds of occupation, from farmers to seller. This situation has opened a great opportunity for people to develop their own economic life, for example dormitory service, housekeeping service, and food industry. Food industry is one of the most promising sectors, especially street food production.

Street food is the product of crowded cities and means different things to different people, be it the schoolchildren on their way to school or the holidaymaker visiting a big city or the vendor selling the food. It has become a staple food for the commuters, workers, students and schoolchildren, migrants and tourists who find themselves far from home when hunger hits at mealtimes, because it is cheap and sold in flexible quantities.

The popularity of tasty meals like *vadai* (fried savoury lentil cakes) in India, beef broth in Kenya, *nasi lemak* (rice with eggs and savoury sambal sauce) in Malaysia, and *kerupuk* (Indonesian's famous chips made of flour) prove that people prefer traditional street foods over equally

accessible fast food options. Challenge to apply sweet potatoes as an alternative and or substitution for street food ingredient is to develop creative idea because sweet potato is less popular to consume than any other carbohydrate source.

2. Objectives

The objectives of the present study are to study the potential of sweet potato (*Ipomoea batatas*) and its secondary product as the alternative for healthy street food production in middle class industry in Cikarawang, Bogor, West Java, Indonesia.

II. METHODOLOGY

The methodologies of the present study are the following:

II.1. Analytic-constructive

Analyzing the problems related to Indonesian street food and then the study about sweet potato that has great productivity, economic, and health benefits. The next step is the study of processing sweet potatoes in producing healthy street food.

II.2. Using secondary data from literature study

Various sources such as journals, textbooks, newspaper, internet, and articles will be used for literature study.

II.3. Discussion

Based on the two methods above, the paper about mechanism of sweet potato in producing healthy street food is written.

III. DISSCUSION

1. About Street Food

Street food is ready-to-eat foods or beverages, which includes many types of foods ranging from cereal and fruits to cook meats and drinks. It is usually sold in busy public areas, such as: pavements, roadways,

back alleys of markets, school premises, bus and railway stations, beaches, parks and other public spaces (Unknown 2007).

Street food is served with the minimum amount of fuss in individual portions dished into take-away containers. These containers come in a variety of materials such as disposable plastic, paper and Styrofoam plates, bowls, cups and utensils. Street food has to be convenient (quickly available for people on the go), cheap (important for poor consumers who may not be able to afford a nutritious meal somewhere else), and tasty (authentic and culturally enriching - as opposed to eating the same fast food from food chains with outlets around the world) (Unknown 2007).

2. Potential of Sweet Potato

According to Food and Agriculture Organization (FAO) (2000), Indonesia has so many potential carbohydrate sources that come from plant and roots. There are more than 30 types of roots that commonly cultivated and consumed by the Indonesian. Culturing the roots is easier and cheaper than culturing the rice, for example, culturing the roots only costs one third from the rice. In other hand, the carbohydrate contain in roots is equal with rice.

Sweet potato is chosen from any kinds of roots, as the answer to fulfilling flour's demand in Indonesia. The taxonomy of sweet potato according to School of Life Sciences and Technology, Bandung Technological Institute, Indonesia (2009); is as follows:

Kingdom : Plantae
Division : Spermatophyta
Subdivision : Angiospermae
Class : Dicotyledonae
Ordo : Convolvulales
Family : Convolvulaceae
Genus : *Ipomoea*
Species : *Ipomoea batatas*

Antarlina & Sutomo (1999) stated that sweet potato has many varieties that

include local types and some excellent variety. Every kind of it has differences in shape, size, color of the roots, color of the skin, self-life, chemical composition, processing type, and harvest age. But in general, sweet potato has round or oval shaped with rough skin that colored white, yellow, purple, or reddish purple depends on its variety (Rukmana 1997).

Woolfe (1992) explained that sweet potato's skin contains pigment called carotenoid and anthocyanin that determines the color of the roots. The difference of combination and intensity from both pigments result white, yellow, orange, or purple color for the skin and the roots.

As any other kinds of roots, sweet potato can be found easily in Indonesia. Sweet potato has high productivity, high economic values, and the flour containing high nutritional values. On the one hand, street food stimulates the demand for traditional ingredients and produce, best provided by local enterprises and agriculture.

3. Nutritional Value Analysis

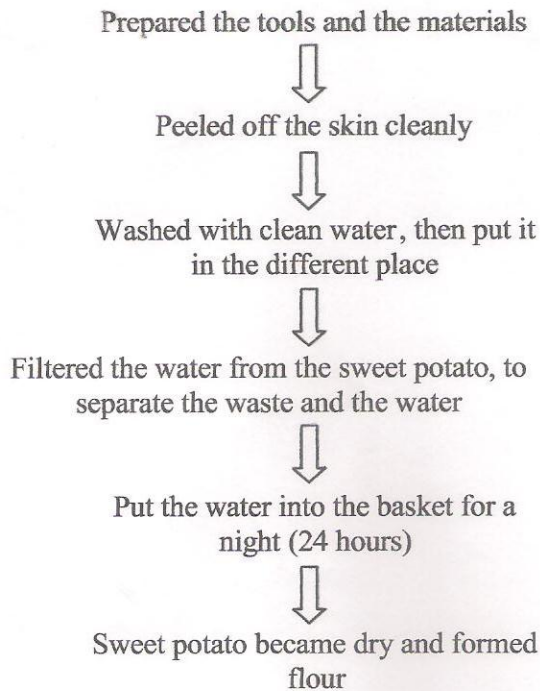
Table 1 Nutritional values of sweet potato (per 100 grams)

(included)

4. Sweet Potato Powder Processing (Flour Making)

Based on SNI 01-4493-1998, roots, especially sweet potato; can be preceded into the powder form. It also can be fortified with any kind nutrient needed to increase the nutritional value. The flour also can be keep longer than roots and it makes the cooking process become easier. The technology to process the roots to become the flour is simple and cheap. It can be produced by the middle class industry, and the result is as good as the one produced by bigger industrial company.

The making of sweet potato flour according to Rukmana (1997):



5. Street Food Production from Sweet Potato and Its Secondary Product in Cikarawang, Bogor, West Java, Indonesia

Sweet potato as an alternative for ingredient in food is to develop creative idea for food production. Cikarawang Village has its own formal group named “*Kelompok Tani Hurip*”. This group consists of people who work as a farmer and a seller, and also their housewives. This group acts as the leader for people in Cikarawang who interest to develop sweet potato for street food production.

Firstly, they created the kinds of food by themselves. Due to the lack of idea, tools, and material, they only produce sweet potato flour in the low class industry. But as the industry grows, today, this group already forms middle class industry that produced street food.

The street food produced by “*Kelompok Tani Hurip*” is mainly cakes and such as brownies and various kinds of Indonesian traditional cakes named *putu ayu*, *kue cucur*, and *nagasari*. They also produce

cookies and chips from sweet potato. Related to the street food production from sweet potato and the nutritional value analysis of sweet potato, it is true if sweet potato and its flour can be as the alternative for healthy street food.

This activity has problems related to safety and marketing of the food produced by “*Kelompok Tani Hurip*”. These problems are still in progress to be solved, helped by the experts from outside Cikarawang where Bogor Agricultural University’s role involved.

Marketing problems can be solved by solving the food safety problems first. Most people bear the consequence of consuming unhealthy food, especially street food. According to streetfood.org that project of the non-profit sector called Consumer International, things people concerned about street food are:

1. Vending area - is it clean, well ventilated and far from garbage and sewage?
2. Appearance of food handlers - do they have good personal hygiene, including clean clothes, shoes, hairnet and clean, trimmed fingernails?
3. Facilities - are there covers for food bins, utensils, clean water for washing and other amenities such as chairs, tables and toilet facilities?
4. Food - How does it smell and taste? If it smells or tastes unpleasant, it is probably not safe.

Further research about its application and commercial production begin with consumer preference test through sensory evaluation. Sensory evaluation is known as information that directly related with sensory quality of the product to meet consumer needs (Lawless and Heymann, 1999).

IV. CONCLUSION

Sweet potato (*Ipomoea batatas*) and its secondary product can be the alternative for healthy street food production as people do in middle class industry in Cikarawang, Bogor, West Java, Indonesia. The secondary products can be in form of flour that has high productivity. It can be processed into many kinds of foods such as cake, cookies, and chips that have more high economic values and containing high nutritional values.

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