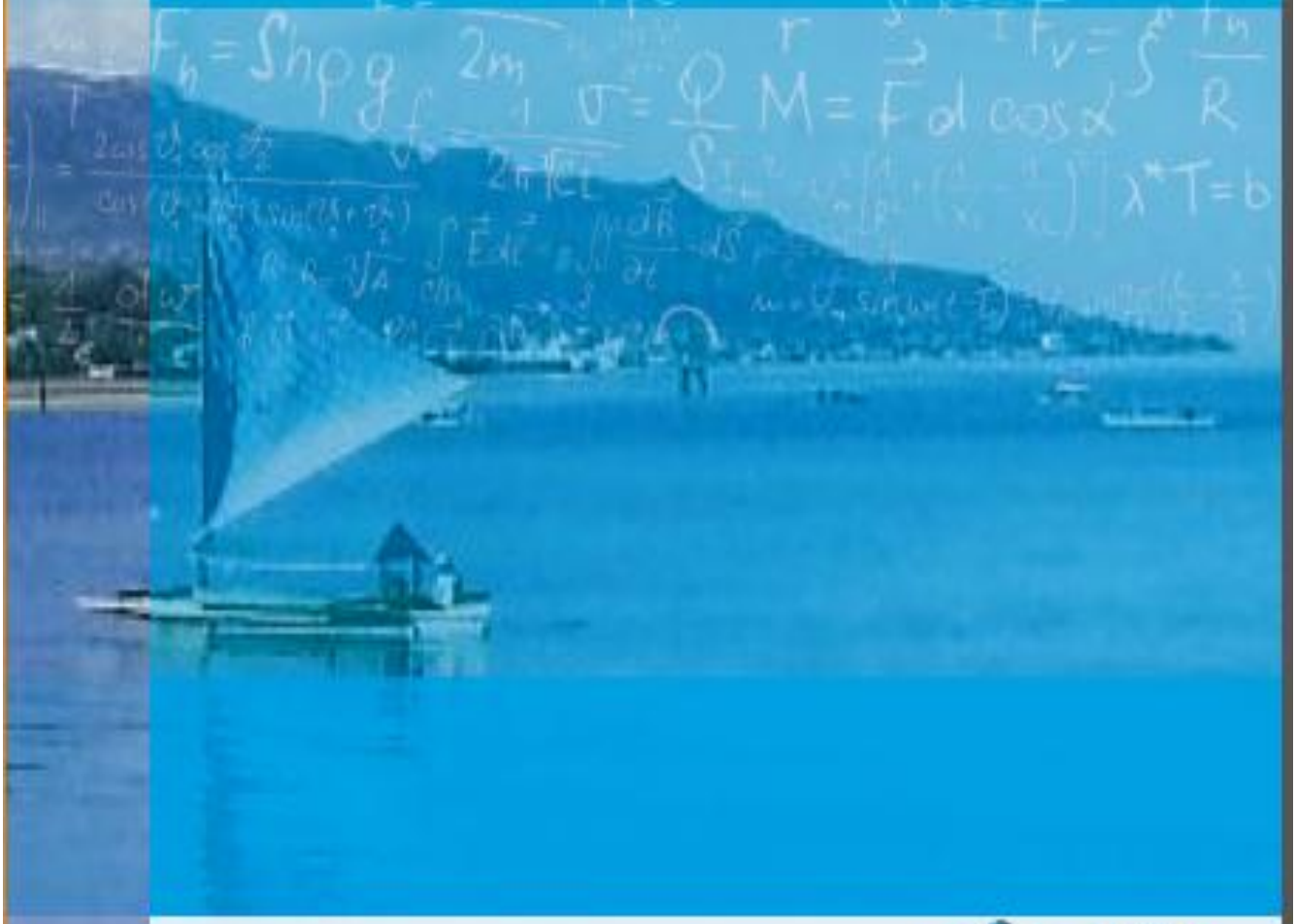
Basic Science
for Sustainable Marine Development

PROCEEDING
INTERNATIONAL SEMINAR 2015

Ambon, 3-4 June 2015



Organized by
Faculty of Mathematics and Natural Sciences
Pattimura University

PROCEEDINGS

1st International Seminar of Basic Science, FMIPA Unpatti - Ambon
June, 3rd – 4th 2015

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Welcoming Address by The Organizing Committee

The honorable, the rector of Pattimura University

The honorable, the vice rector of academic affair, Pattimura University

The honorable, the vice rector of administration and financial affair, Pattimura University

The honorable, the vice rector of planning, cooperation and information affair, Pattimura University

The honorable, all the deans in Pattimura University

The honorable, the key note speakers and other guests.

We have to thank The Almighty God for the blessings that allow this International seminar can be held today. This is the first seminar about MIPA Science in which the Faculty of MIPA Pattimura University becomes the host. The seminar under the title Basic Science for Sustainable Marine Development will be carried out on 3 June 2015 at Rectorate Building, the second floor. There are 250 participants from lecturers, research institute, students, and also there are 34 papers will be presented.

This International seminar is supported by the amazing people who always give financial as well as moral supports. My special thanks refer to the rector of Pattimura University, Prof. Dr. Thomas Pentury, M.Si, and the Dean of MIPA Faculty, Prof. Dr. Pieter Kakissina, M. Si. I also would like to express my deepest gratitude to Dr. Kotaro Ichikawa, the director of CSEAS Kyoto University, Prof. Bohari M. Yamin, University of Kebangsaan Malaysia, Prof. Dr. Budi Nurani Ruchjana (Prisident of Indonesian Mathematical Society/Indo-MS), Dr. Ir. A. Syailatua, M.Sc (Director of LIPI Ambon), and Hendry Ishak Elim, PhD as the key note speakers. We expect that this international seminar can give valuable information and contribution especially in developing basic science for sustainable marine development in the future.

Last but not least, we realize that as human we have weaknesses in holding this seminar, but personally I believe that there are pearls behind this seminar. Thank you very much.

Chairman

Dr. Netty Siahaya, M.Si.

Opening Remarks
By Dean of Mathematic and Natural Science Faculty

I express my deepest gratitude to The Almighty God for every single blessing He provides us especially in the process of holding the seminar until publishing the proceeding of International Seminar in celebrating the 17th anniversary of MIPA Faculty, Pattimura University. The theme of the anniversary is under the title Basic Science for Sustainable Marine Development. The reason of choosing this theme is that Maluku is one of five areas in Techno Park Marine in Indonesia. Furthermore, it is expected that this development can be means where the process of innovation, it is the conversion of science and technology into economic value can be worthwhile for public welfare especially coastal communities.

Having the second big variety of biological resources in the world, Indonesia is rich of its marine flora and fauna. These potential resources can be treated as high value products that demand by international market. Basic science of MIPA plays important role in developing the management of sustainable marine biological resources.

The scientific articles in this proceeding are the results of research and they are analyzed scientifically. It is expected that this proceeding can be valuable information in terms of developing science and technology for public welfare, especially people in Maluku.

My special thanks refer to all researchers and reviewers for your brilliant ideas in completing and publishing this proceeding. I also would like to express my gratefulness to the dies committee-anniversary of MIPA Faculty for your creativity and hard working in finishing this proceeding, God Bless you all.

Dean of Mathematic and Natural Science Faculty

Prof. Dr. Pieter Kakisina, M.Si.

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Effect to used consentartion dose fertilizer Bokshi leaf of lamtoro to growth of *Solanum melongena* L

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ABSTRACT

Bokashi is fertilizer compous to result for fermentation process with to used EM4. To used fertilizer Bokashi to eable solution in application reduction fertilizer anorganik to repaired factor , kimia, and earth Biology. Fertilizer bokashi function is factor kimia to availability nutrient and to produce weathering process, minerals. This Research to purpose for to know: (1) effect to used consentration fertilizer bokashi leaf of lamtoro to growth *Solanum melonggena* L and (2) great effect to used consentration fertilizer bokashi leaf of lamtoro to growth *Solanum melonggena* L.
Research sample take with dose 00 g, 100 g, 200 g dan 300 g from there is population. There is kuantittif research to make random design group to four treatment and three replay to make analys with test f signify 5 %. This research to shows (10 to used fertilizer bokashi leaf of lamtoro to real effect to grow *Solanum melonggena* L, (2) to best result to give dose fertilizer bokashi lammtoro leaf to growth plant *Solanum melongena* is R_3(300 g). R_3 (300 g). high result to plant high 40 cm, strand leaf 12,67, extensive leaf 96,503 cm^2/g. wet weight 84,13667 g.

Key word**:** fertilizer bokashi leaf of lamtoro , growth of *Solanum melonggena* L

INTRODUCTION

Indonesian of degradation which fram productivity and plant productivity . plant productivity don't shows although to use good varietas that need conservancy and weel balanced nutrient to way of intensive.

Fertilizer is materials and food nutrient which given or enhancing to plant for the purpose in the materials nutrient for increasing earth. Two kinds fertilizer consist is minerals fertilizer (an organic) and nature ferlilizer (organic). Minerals fertilizer (an organic) is minerals fertilizer to made in company fertilizer, while nature ferlilizer (organic) is to naturally happened and easy in recycle by worm, bacterium, mushroom, mould, and etc. Nature ferlilizer (organic) to become materials nutrient earth becoming food plant.

Problem of this article is (1) what is to used fertilizer bokashi leaf of lamtoro effect to growth *Solanum melonggena* L and (2) great effect to used consentration fertilizer bokashi leaf of lamtoro to growth *Solanum melonggena* L.

Bokashi of leaf Lamtoro (*Leucaena leucocephala*)

Bokashi intake from japan language that mean organic material to fermentation. Bokashi in compous fertilizer `that result toward fermentation process to give EM4. (Anonim , Jurnal Agrisistem).

Buffer *Effective Microorganisme* 4 (EM4) to find first by prof. Dr. Teruo Higa from Universitas Ryukyus japan with important microorganism with 80 genus; fermentation material microorganism organic to select effective fermentation materials organic. To fermentation procees material organic . condition anaerob, low Ph (3-4), high glucose , water temperature 30-40 % and temperature 40-50^{o}C .

To use fertilizer bokashi can solution in lessening application full an organic fertilizer cause that material organic to repaired character fisik, kimia, and earth biology . To repaired character fisik is scarifiing earth,aerasion and drainasion, to increace ion partikel , to increace water solution, to preventing element unsure and to increase decay material of minerals process.

Organic fertilizer bokashi can suplay materials of NPK, also can provide material of mineral unsure so that can prevent micro unsure in marginal earth or earth to used intensive with to fertilizer that less well balanced. To deficiency unsure and to can provide material except.

Leaf of Lamtoro used to becoming green fertilizer or oganic fertilizer that function is hightening organic material content in earth to solution that premated during empty period among two agronomy object, to give nitrogen if taken as green fertilizer is legumes, to lessening vertical erosion and lessening desease crop cotton. (dalam Tasikjawa 2013).

Leaf of Lamtoro (petai of chines) to containing active that form alkaloid, saponin, flavonoid, mimosin, leukanin, protein, fat, calsium, phosfor, ferrum, vitamin A and vitamin B.

Table 1. Content leaf of lamtoro (*Leucaena leucocephlala* L.) (Hendrawati 2014)

Parameter	Composition
Abu (%)	11,00
Nitrogen (%)	4,20
Protein (%)	25,90
Harsh Fiber (%)	20,40
Calcium (%)	2,36
Potassium (%)	1,3-4,0
Phosfor (%)	0,23
Beta Carotene (mg/kg)	536,00
Dirt Energy (KJ/g)	20,10
Tannin (mg/g)	10,15

The content of chemical element that is leaf of lamtoro to useful as a green fertilizer that by other kinds plant. Leaf of lamtoro to have kimia unsure after fall to becoming humus or earth flower. Lamtoro to benefit as green fertilizer is to fertilizer earth as parts lamellar, leaf steam and steam.

Solanum melongena Plant

Solanum melongena L to from plant season one year or annual included in family solanaceae. High plant solanum is 60-240 cm. Steam having water, thorny and that furry. Plant solanum to from clump or bush with cortex leaf so that growth of pants straight.

Plants solanum can be palnted in low until high earth. Plants solanum can to earth fertility do not be suffesed water and PH 5-6 and fluent drainase. Kind of Earth sand or clay sand that is best for of plants solanum. If root of plant solanum attact low growth, and easy

diseases bacterium (*Ralstonia solanacearum)* and diseases fungi *Verticillium spp.* (Alexs. 2003 Hlm. 168-16).

Fruit solanum plant is vegetable kinds which good healthy. Content of gizi complete if consumed gizi to need for body. Other can plant fruit solanum to used for teraphy desease type and kontrasepsion (Firmanto Herdy Bagus.2011).

METHODS

This research is kuantittif research method to make random design group consist of four treatment and three group. This research during 29 agustus until 14 november 2014. Place research in Rumah Tiga village RT03/RW05 on the city ambon, to give sample is to give dose 0 g, 100 g, 200 g dan 300 g. this research variable free variable (X) 0:4 kg compous , 100 g :4 kg compous, 200 g :4 kg compous dan 300 g :4 kg. tied variable (Y) is to growth plant *Solanum melongena* and indicator to high plant strand leaf extensive leaf and wet weight plant.

RESULTS

High Plant

Data abaout Presented in tables of enclosure Ia and Ib. high plant in 4 week for more details can be seen in table 2.

Table 2 High solanum plant (cm) of 4 (MST)

Treatment	Group			Amount	Average
	1	2	3		
R_0(0g)	27,5	28	27,2	82,7	27,56
R_1(100g)	31,5	30	30,5	92	30,67
R_2(200g)	36	40	37	113	37,67
R_3(300g)	40	39	41	120	40
Total	135	137	135,7	407,7	33,975

(Soure: Processed data 2014)

Table 2 to show is R_3 (300g) to have high value avarage 40 cm if R_0 to have low value with average 27,56 cm. this show that dose excelsior that to need plant to solanum for after planting four week.

Count of leaf

Count of leaf plant solanum in after planting four week Presented in tables of enclosure 2a and 2b. amount of leaf after planting four week for more details can be seen in table 3.

Table 3. Avarage count of leaf solanum plant (piece) at the four (MST)

Treatment	Group			Amount	Average
	1	2	3		
R0 0g	8	8	9	25	8.33
R1 100g	9	10	9	28	9.33
R2 200g	10	11	12	33	11
R3 300g	12	13	13	38	12.67
Total	39	42	43	124	10,3325

(Source: Processed data 2014)

Table 3 to show is amount of leaf R_3 (300 g)to have high value average 12,67 piece while R_0 (0 g) to have low value with average 8,33 piece. This to show required dose to need more and more also leaf of plant solanum after planting four week.

Wide of leaf

Wide of leaf after planting four week Presented in tables of enclosure 3a and 3b. wide of leaf after planting four week can be seen in table 4.

Table 4 Average wide of leaf solanum plant (cm^2/g) of 4 (MST)

Treatment	Group			Amount	Average
	1	2	3		
R_0(0g)	29,77	39,95	41,60	111,32	37,1067
R_1(100g)	44,06	52,62	56,63	153,31	51,103
R_2(200g)	60,16	60,984	64,13	185,274	61,758
R_3(300g)	90,86	116,62	82,03	289,51	96,503
Total	224,85	270,174	244,39	739,414	61,62

(Source: Processed data 2014)

Table 4 to show is wide of leaf R_3 (300 g) This high value average 96,503 cm^2/g, R_0 (0 g) to have low with average 37,1067cm^2/g this to show required dose to need will wide of leaf of plant solanum after planting four week.

Wet weight plant

Wet weight solanum plant after planting four week Presented in tables of enclosure 4a and 4b. will wet weight plant after planting four week can be seen in t table 5.

Tabel 5. Average wet weight solanum plant (gr) will 4(MST)

Treatment	Group			Amount	Average
	1	2	3		
R_0(0g)	18,80	21,35	11,31	51,46	17,1533333
R_1(100g)	25,47	31,74	47,23	104,44	34,8133333
R_2(200g)	48,26	26,25	59,07	133,58	44,5266667
R_3(300g)	95,55	74,84	82,02	252,41	84,1366667
Total	188,08	154,18	199,63	541,89	45,16

(Source: Processed Data 2014)

Table 5 to show is wet wight at R_3 (300 g) to have high value with average 84,1367 g while R_0 (0 g) to have low value with average 17,253 g. this to show required dose to need will progressively wight of plant solanum after planting four week.

DISCUSSION

Result of research to show to give dose bokashi fertilizer leaf of lamtoro increase to growth solanum plant. Parameter perceived is high plant, amount of leaf, extensive of leaf and wet weight of solanum plant. High solanum plant with result average at dose R_3 yakni 40 cm, amount of leaf with result average at dose R_3 is 12,67 piece, extensive of leaf solanum plant with result average at dose is 96,503 cm^2/g and wet weight solanum of plantwith high average at dose R_3 is 84,1366667 g.

This mater cause that is to give fertilizer bokashi leaf of lamtoro that function is fertilizer organic for fertilizing earth and than to increase to growth solanum plant. Advantage fertilizer bokashi is to repaired earth structure, to increase earth to water solution , maintaining condition life mikroorganism in earth as unsure material to plant.

To used fertilizer bokashi leaf of lamtoroto give good influence toward earth as plate grow will to form an to growth solanum plant because in availability mineral unsure enought and well balanced. Good responsive at treatment R_3 toward high of plant, amount of leaf, extensive of leaf and wet weight of solanum plant. In this case caused by kinds and amount unsure that consist in fertilizer bokashi leaf of lamtoro.

CONCLUSIONS

Result this research and solution, can conclusion that:

1. Effect to used consentration fertilizer bokashi leaf of lamtoro to growth *Solanum melonggena* L (high plant, count leaf, extensive leaf and wet wight plant)
2. Effect to used consentration dose 300 g (R_3)to best result fertilizerl to growth *Solanum melonggena* L plant.

SUGGESTIONS

Suggestion that is:

1. This research at different plant and fertilizer bokashi leaf of lamtoro with other dose.
2. researcher benefit leaf of lamtoro as fertilizer bokashi if to best growth solanum plant

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