MODELS OF AGROTOURISM DEVELOPMENT APPROACH CONSUMER BEHAVIOR ON CAMPUS UPN "VETERAN" EAST JAVA

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Abstract

The use of planting media in a nursery, is crucial to the growing rate of seedlings. Planting vegetable crops, becoming faster growing with its loose planting media, adequate nutrition and moisture are assured. Physically organic material in the form of compost straw, cocopeat, and corn leaves with indigenous technology capable of crumb soil medium so that the growth of seedling become assured. One factor study was the composition of growth media prepared in Completely Randomized Design (RAL) with 8 treatments and repeated 3 (three) times. Type of treatment as follows: P0 = Soil; P1 = Soil and Urea; P2 = Soil and Compost (2: 1); P3 = Soil, Compost and Cocopeat (2: 1: 1); P4 = Soil, Compost and Straw (2: 1: 1); P5 = Soil, Compost and Corn Leaves (2: 1: 1); P6 = Soil, Compost, Corn and Straw Leaves (2: 1: 1: 1); P7 = Soil, Compost, Corn Leaf, Straw and Cocopeat (2: 1: 1: 1: 1). The results showed that the percentage of seed germination at 5-7 days had reached 88% - 95%, germination rate of 4.53 - 4,63 days by using composting medium of straw, cocopeat and maize leaf. The reduction of soil media is not significantly different from the use of soil alone or the use of urea + soil. In the length parameter of the plant, the number of leaves, leaf area and wet weight of the plants did not differ significantly between treatments, tended to be high at P4. P4 medium was able to increase wet weight of seeds of mustard 53% and 38% compared to medium P0 (soil) and P1 (soil + urea)

Keywords: Percentage of germination, rate of germination, organic planting medium, *Brassica juncea*, Indigenous Technology

BACKGROUND

Vegetable production in Indonesia is increasing every year and its consumption is recorded at 40.35 kg year-1 capita-1 in 2011. Among the various types of vegetables that can be cultivated are mustard plants (*Brassica juncea* L.) which is a vegetable commodity that has value Commercial and high prospects. According to the Directorate General of Horticulture Ministry of Agriculture (2013), production of mustard greens from 2008 to 2011 has increased. However, in 2012 decreased. In 2008 the production reached 65,636 tons, in 2009 amounted to 562,838 tons, in 2010 amounted to 583,770 tons, in 2011 amounted to 580,969 tons and in 2012 decreased by 529,518 tons.

In general, mustard plants 40-60 days of seeds or 25-30 days after planting from new seeds of mustard can be harvested. Margianto (2007), 3-5 days seeds will grow after 3-4 weeks since planted crops to the beds. But the public demand for the need for mustard greens is increasing so must increase the production of mustard with a relatively short harvest period. Production depends on the growth of the mustard plants, the more fertile the growing media, the faster the plant can be harvested so that required various ways to increase production. The purpose of the nursery is to prepare seeds in the form of seeds to become seeds that are ready to be planted in the field. Efforts to suppress the time of harvesting is done by accelerating the growth of seeds into seeds with a short time of

increasing soil fertility through the provision of organic material is also very necessary as a media planting. Organic materials also have macro and micro nutrients are almost balanced so that the resulting air circulation is good enough and has a high water absorption. This is in the opinion of Sutejo (2002) that the highest content of compost with the highest levels is organic material that can improve soil conditions. Other elements in compost that variation is quite a lot of nitrogen, phosphorus, potassium, calcium, and magnesium. In addition to compost there are other organic materials such as cocopeat, rice straw, and corn leaves. Cocopeat is also able to support root growth rapidly so it is good for breeding. Rice straw as a source of K nutrient, about 80% K is absorbed by plants. Therefore, straw has the potential as a substitute for inorganic K fertilizer (Odjak, 1992). Leaves, skins and corncobs are also pretty good organic ingredients (Rahmat, 2013). The use of sustainable home food waste as an organic fertilizer is a solution to overcome the problem of nutrient needs on soil and plants, as well as growing substances. The results of previous research have obtained the content of nutrients in organic liquid organic fertilizer of vegetable waste in the form of potassium (K +) of ± 2.98%, Cu, Fe and Zn and organic materials (BO) ± 2.87%, auxin at 615 ppm, Dominance of *Azotobacter* sp antibiotic producer and is a Nitrogen binding microorganism (Augustien, 2009). Indigenous Technology is a technology that is easily adapted widely, locally charged, low input and berkelajutan. Sustainable Food House (Rumah Pangan Lestari) with packaged indigenous technology based on organic waste is one of the strategic steps to overcome the food shortage, and able to increase the self sufficiency of society to fulfill food requirement continuously.

METHODS

Research arraged in a completely randomized design (CRD) with 3 replications. The treatments studied were plant medium compositions comprising: P0 = Soil; P1 = Soil+ Urea ; P2 = soil: compost (2: 1); P3 = soil: compost: cocopeat (2: 1: 1); P4 = soil: compost: straw; P5 = soil: compost: corn leaf (2: 1: 1); P6 = soil: compost: corn leaf: straw (2: 1: 1: 1); P7 = soil: compost: straw: : cocopeat (2: 1: 1: 1).

Implementation of the study include: (a) preparation of the growing medium, (b) preparation equipment (c) planting, (d) maintenance and (e) harvesting. Observations and data collection covers percentage seedling; rate of growth ; the length of the plant, number of leaves, number, fresh weight of plants. MOL (Micro Organisme Local) material consists of cow dung, rotten papaya, leguminoceae leaf, molasses, yeast, and water. Straw, corn leaves,cocopeat are each soaked in MOL solution for 2 weeks.Observations of seedling and early growth were done at the age of 28 days.

Analysis of data to determine the best planting media composition on the seedling and early growth of mustard, the data obtained from the observations were analyzed using Anova table and if there is a continued effect of using LSD 5%.

RESULT AND DISCUSSION

The percentage of seed germination as the effect of different planting medium, shows the same value. The addition of compost, corn leaf, cocopeat that has been fermented with MOL, showed the same germination percentage value that is between 88% - 95% compared with only soil use (P0) reach 96% and soil + urea (P1) reach 91%. This means the use of soil composition: compost: straw / corn leaves / cocopeat capable as a germination of seeds of mustard greens. Table 1.shows the percentage of seed germination percentage on the 3rd to 7th day after sowing.

Table 1. Average precetage of germination (%)

Perlakuan	Average precetage of germination (%)		
	3 das	5 das	7 das
P0	94.67	95.67	96.00
P1	88.00	90.33	91.00
P2	89.67	93.67	95.00
P3	92.00	95.00	95.00
P4	88.33	89.67	91.33
P5	88.67	91.33	92.00
P6	84.00	85.00	88.00
P7	87.00	88.67	89.67
BNJ 5%	ns	Ns	Ns

Note : ns = non significant by LSD 5%. das= day after seedling

The following shows the results of observations on the average yield of the leaves of mustard plant in the form of histogram in figure 1:

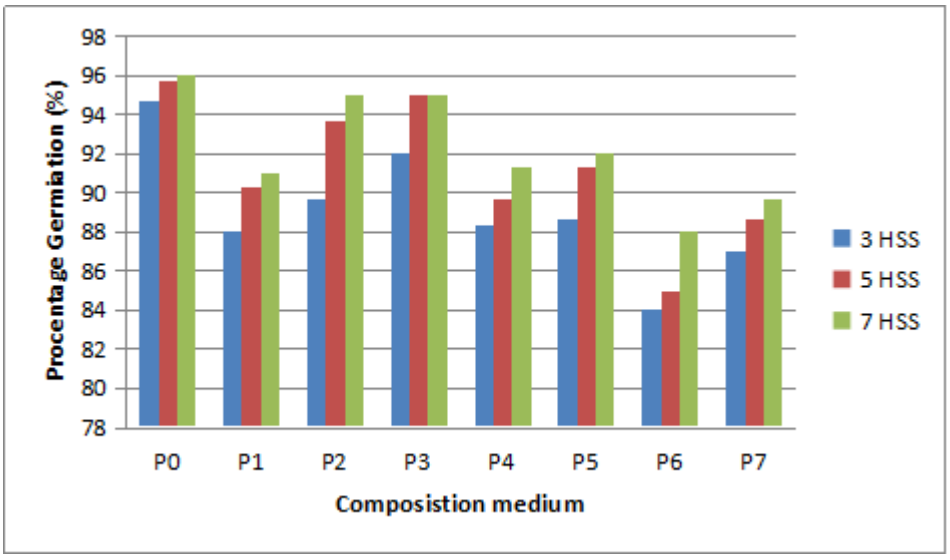

Figure 1. Histogram of Average Percentage Germination (%)

The average of germination with P0 = soil media, yields the highest values of 94%, 95% and 96% at 3, 5 and 7 days after seedling. Percentage of lowest germination on composition P6 = Soil, Compost, Corn Leaf and Straw (2: 1: 1: 1). The composition of P2 and P3 can reach 95% germination percentage at 7 HSS. The use of straw compost and cocopeat, capable of being a medium that supports the process of seed germination of mustard greens.

Table 2. Average Rate of Germination Mustard seeds

Treatment	Rate of Germination
P0 (Tanah)	4.63
P1 (Tanah + Urea)	4.60
P2 (soil +compost)	4.60
P3 (asoil+compost+Cocopeat)	4.50
P4 (soil+ compost+straw)	4.53
P5 (Soil+compost+ leaf corn)	4.60
P6 (Soil+compost+ leaf corn +straw)	4.57
P7 (Soil+compost+ leaf corn +straw +Cocopeat)	4.53
LSD 5 %	ns

The average value of seeding seed germination rate between 4.53 - 4.60 days on all treatments means that germination medium with soil medium alone has the same germination rate using mixed soil media: compost: straw / maize / cocopeat (2: 1: 1: 1). Organic materials such as straw / daunjagung / cocopeat with MOL fermentation treatment, able to function as a profitable medium. The following shows the results of observation of the average results of the germination rate of mustard plants in the form of histogram in Figure 2:

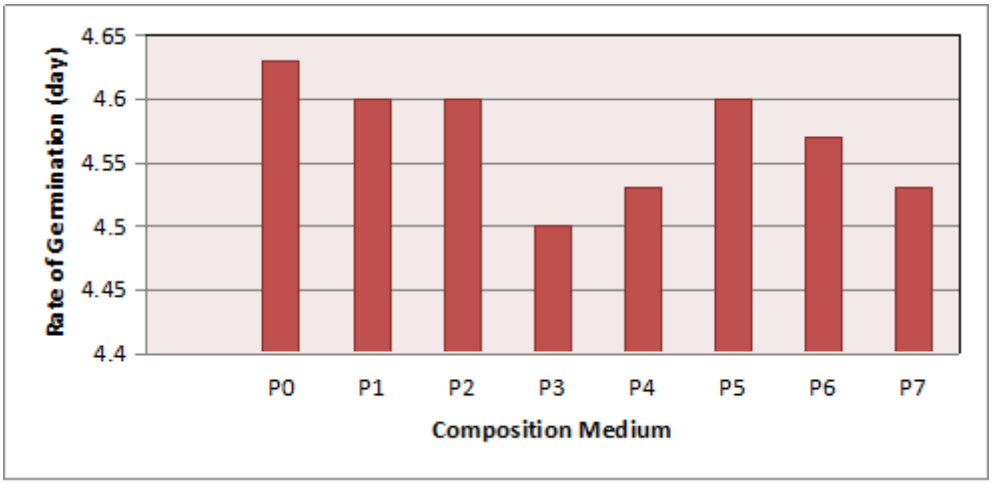

Figure 2.Histogram of Rate Germination Mustard Seeds.

Figure 2 shows that the germination rate at P0, P1, P2, P5 and P6 yields the same value between 4.57 - 4.63 days, followed by P7, P4 and P3 between 4.50- 4.53 days. Internally, seed germination process is determined by the balance between promoter and germination inhibitor, especially gibberellin acid (GA) and abscisic acid (ABA). External factors that constitute ecology of germination include water, temperature, humidity, light and the presence of certain chemical compounds that behave as germination inhibitors (Dwidjoseputro 1983). In addition the other internal factor is the maturity of the seeds. If the seeds are ripe then the contents of the feeding feed on the seeds already exist, so the time the seeds are planted then germination will be easy because in the seed germination activities with the reserve food (Suwandi, 2009). The effect of the use of compost organic material, straw on planting medium (P4) in mustard seedlings, reach 36 cm of plant length, leaf area

60.80 cm2, leaf number 9.33 and fresh weight 166.19 g highest than P0 treatment (soil medium). The treatment of P4 is not different from that of other treatments except P0.

Table 3. Average of Plant Length (cm), Leaf Area (cm^2), Number Leaf, Fresh Weight (g) Effect from composition medium

Treatment	Plant Length (cm)	Leaf Area (cm^2)	Number of Leaf	Fresh Weight (g)
P0	26.97 a	39.12	7.33	77.64 a
P1	27.63 ab	42.85	7.67	102.75 ab
P2	32.87 ab	52.76	8.00	139.86b
P3	32.60 ab	50.01	8.00	132.12 ab
P4	36.90 b	60.80	9.33	166.1933 b
P5	33.63 ab	46.86	8.33	119.1367 ab
P6	28.80 ab	41.61	8.33	113.7333 ab
P7	30.07 ab	58.46	8.33	115.04 ab
BNJ 5%	8.33	ns	Ns	60.50

Mature compost contains approximately 1.69% N, 0.34% P2O5, and 2.81% K. In 100 kg of compost equivalent to 1.69 kg Urea, 0.34 kg SP 36, and 2.18 kg of KCl. The ability of medium in binding nutrient solution will affect the availability of nutrients in the medium. Low nutrient availability will inhibit plant physiology (Sumarni, Rosliani, Basuki and Hilman, 2012). In Figure 3. Composition of P4 (soil: compost: straw = 2: 1: 1) and P7 (soil: compost; Straw: cocopeat: Corn leaf = 2: 1: 1: 1) indicates plant length and leaf area higher than P0 (ground) and P1 (soil + urea). The use of straw organic material, corn leaf, cocopeat with MOL fermentation treatment able to increase the length of plant and leaf area. In the process of photosynthesis generated photosynthesis, the material of the photositat transplanted throughout the body of the plant. Cell elongation is directed to stem cells and leaf cells for leaf expansion. The mustard plant in the vegetative phase is dominant, utilizing photosynthate to be directed to stem and leaf organs. Straw, corn and cocopeat have decomposed during the fermentation process, so the growing media becomes more crumb.

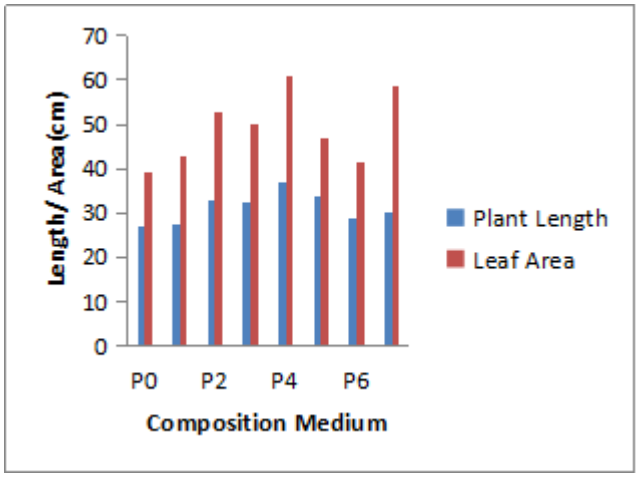

Figure 3.Average plant length, leaf area mustard

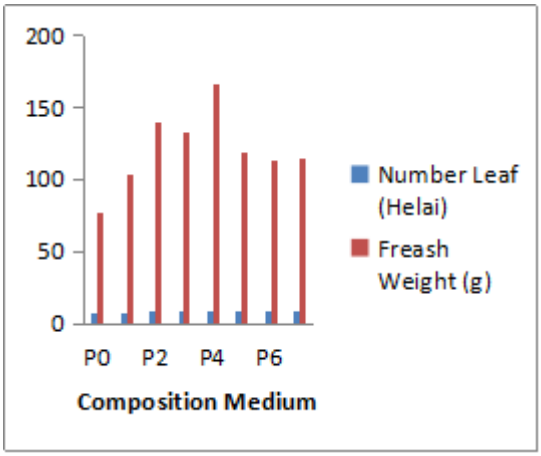

Figure 4. Number of Leaf, fresh weight Mustard

Figure 4. Composition of P4 media ie soil: compost: straw (2: 1: 1), reach plant length and leaf area higher than P0 (soil) and P1 (soil + urea). This shows that enter the organic material in the form of compost and straw, change the physical of planting media become more loose and moist, so it support growth process of plant. An increase in the number of leaves followed by increased wet weight of the plant. Gardner, Pearce and Mithcel (1991), states that the results of dominant photosynthate are transransferred to leaf organs, when environmental conditions of planting media are advantageous such as moisture, crumbs, and adequate nutrients. Increased plant wet weight is a manifestation of the photosynt translocation from plant metabolism to leaf number, leaf area, plant length and wet weight of the plant.

CONCLUSION

1. Composition of soil media: compost: straw / maize / cocopeat able to become seedling seedling medium, yielding germination percentage of 88% - 95% with germination rate for 4.53 - 4.63 days
2. The composition of media (P4) ie soil: compost: straw = 2: 1: 1, capable of producing plant length, leaf number, leaf area and wet weight higher than soil medium alone (P0) or P1 (soil + urea)
3. Media P4 is able to increase the weight of wet seeds of sawiby 53% and 38% compared to medium P0 (soil) and P1 (soil + urea)

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