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## Effect of local planting materials on yield of Chinese kale

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### ABSTRACT

Effect of local planting materials on yield of Chinese kale was try to find out new local planting materials in the rural area at the seashore of Thailand by set the objective for can we find new local planting material?and how about effectiveness of the said was good as other planting materials or not?By investigate on yield of Chinese kale under 5 planting materials as soil+rice husk, soil+coconut coir, soil+ Chanthaburi Floating Sediment of Higher Plant (CFSHP=KHEE-YOR), soil+agri- gelatin,and soil+ CFSHP+agri- gelatin.The experiment was done by completely randomized design with 5 replications at Chanthaburi province of Thailand in 2013.The collected data were gather on high and fresh weight of Chinese kale at 7,14,21,28and32 days after cultivation. The result conveyed that 1. The high and fresh weight of Chinese kale under 5 planting materials was better than control with 0.01 statistical significance.2.The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as both of high and weight of Chinese kale were better than control by statistical significance.3.The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to rice husk and coconut coir (local planting materials) by statistical significance.4.The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to gelatin or agri-gelatin (Scientific product planting material) by statistical significance.

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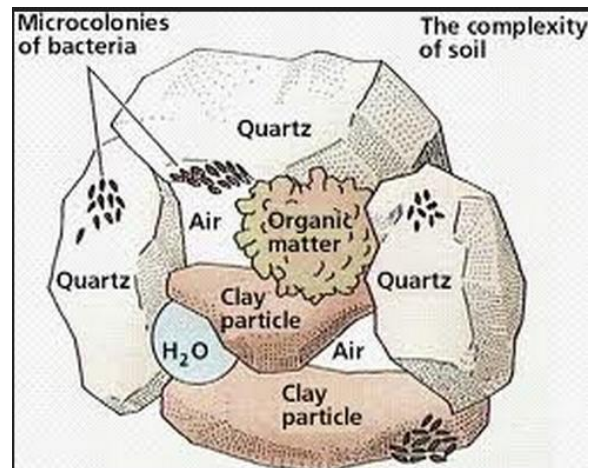
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## INTRODUCTION

Chinese kale is so common for main vegetable in Thailand, Asia and worldwide. The process of growing plant mainly concerned about variety,fertilizer,irrigation etc,and cultivation management, especially soil management. (Muang Thong, T. 1989) The management of soil condition should be first starting for plant growing which make the soil structure for most optimum for plant growing. The optimum soil structure should be following, the ratio of inorganic:air:water: organic should be 45:25:25:5 percent respectively. (Department of soil science 1998)

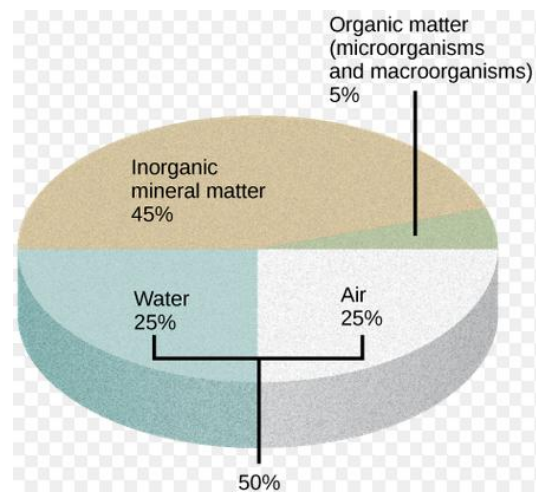
Normally, the planting material for the gardener or the farmer always accustomed to rice husk and coconut coir for improve soil condition, which made the prices of them higher up. The gardener or the farmer in the rural area try to search for the rural material for replace them. The development of factory or scientific product also develop the scientific substance for hold the water for itself up to 300 times called as gelatin or agri-gelatin. The researcher found Chanthaburi Floating Sediment of Higher Plant (CFSHP=KHEE-YOR) at the sea beach of chanthaburi province Thailand with free of charge between May to September in each year. The Thai gardener and farmer afraid to sodicity of the seashore absorbed to CFSHP. The researcher start to conduct the research for improvement of soil condition from 2005 up to presently for importance plant. Helping the Thai gardener and farmer to run their activities for low cost of investment and reduce chemical substance, not only the Thai gardener and farmer but also concerned to the lunch program in the rural school which large amount of Thai young student growing vegetable for their food program. The planting material will help them to use local material with local technology and low cost not only in Thailand but should be Asian countries and worldwide (Pichai Saranrom,2011.)

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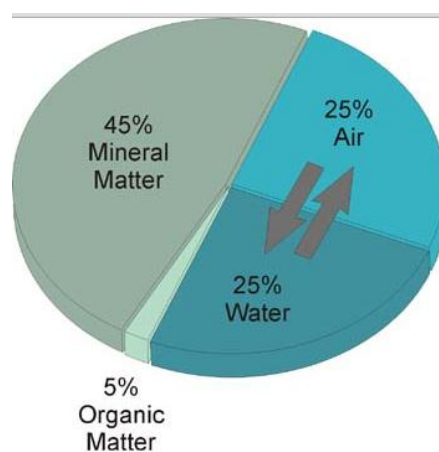
**Picture 1:** Showing the optimum soil component for good growth of plant.

Source: <http://www2.estrellamountain.edu/faculty/farabee/biobk/biobookplanthorm.html>



**Picture 2:** The ratio of soil components for good growth of plant

Source: <https://www.boundless.com/readings/3200/the-soil-reading/>



**Picture 3.** The ratio of water and air fluctuate up and down depend on each situation

Source: <http://www.landfood.ubc.ca/soil200/images/01images/1.0PieChart.jpg>

*Objective:*

1. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material

2. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to rice husk and coconut coir (local planting materials)
3. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to gelatin or agri- gelatin (Scientific product planting material)

### MATERIALS AND METHODS

The project used the chanthaburi local variety of Chinese kale, cultivated it on September 2013 at chanthaburi province which connecting to the seashore and available for Chanthaburi Floating Sediment of Higher Plant (CFSHP=KHEE-YOR).The experiment was planned by completely randomized design with 5 replications, The treatments were composed as following control, soil+rice husk, soil+coconut coir, soil+ Chanthaburi Floating Sediment of Higher Plant (CFSHP=KHEE-YOR), soil+agri gelatin,and soil+ CFSHP+agri gelatin.The collected data were gather on high and fresh weight of the Chinese kale every 7,14,21,28 and 32 days after cultivation.



**Picture 4:** The phenomena and procedure of Chanthaburi Floating Sediment of Higher Plant (CFSHP=KHEE-YOR) new local planting material of Chanthaburi province, Thailand.



**Picture 5:** The photo of rice husk and coconut coir.



**Picture 5:** The characteristics of gelatin or agri-gelatin which scientific product suitable for moisture preservation for root zone of plant .some person add it for colorful ,But not the same to edible gelatin.

#### Results:

The experiment was collected data on high and weight of Chinese kale under 5 planting materials (cm.)at 7,14,21,28and32days after cultivation, which the said data were as following.

**Table 1:** Showing data on high of Chinese kale under 5 planting materials (cm.) at 7,14,21,28 and 32 days after cultivation.

Cultivation (days)	Planting Materials						F-test
	control	Soil + Rice husk	Soil + Coconut coir	Soil + CFSHP	Soil + Gelatin	Soil + CFSHP + Gel	
7	5.140 <sup>a</sup>	5.480 <sup>b</sup>	5.500 <sup>b</sup>	5.540 <sup>b</sup>	5.640 <sup>b</sup>	6.040 <sup>c</sup>	**
14	5.400 <sup>a</sup>	5.760 <sup>b</sup>	6.200 <sup>c</sup>	6.260 <sup>c</sup>	6.280 <sup>c</sup>	6.740 <sup>d</sup>	**
21	5.600 <sup>a</sup>	6.400 <sup>b</sup>	7.140 <sup>c</sup>	7.420 <sup>cd</sup>	7.700 <sup>d</sup>	9.720 <sup>e</sup>	**
28	6.200 <sup>a</sup>	8.280 <sup>b</sup>	8.340 <sup>b</sup>	9.060 <sup>b</sup>	11.880 <sup>c</sup>	14.320 <sup>d</sup>	**
32	7.940 <sup>a</sup>	14.240 <sup>b</sup>	17.220 <sup>c</sup>	17.580 <sup>c</sup>	17.940 <sup>c</sup>	21.780 <sup>d</sup>	**

Note: 1. The F-test was analyzed under ducance new multiple range test for mean comparison

2. The numerical data exposed with each alphabet as the same each alphabet was not statistical significance for each row

All of the 5 planting materials were effect on high of Chinese kale better than control by statistical significance.

Three of the planting materials as for Soil + Rice husk, Soil + Coconut coir and Soil + CFSHP were the same level for 7 and 28 days after cultivation but at 14,21and32days, Soil + Coconut coir and Soil + CFSHP were the same level which better than Soil + Rice husk by statistical significance.

The Soil + Gelatin was effect on high of Chinese kale better than Soil + Rice husk for 14,21,28 and 32days except 7 days

The Soil + Gelatin was effect on high of Chinese kale for same level to Soil + Coconut coir and Soil + CFSHP at 7,14,and 32 days

The Soil + CFSHP + Gel was effect on high of Chinese kale for better than Soil + Rice husk, Soil + Coconut coir and Soil + CFSHP at 7,14,21and 32days by statistical significance.

**Table 2:** Showing data on weight of Chinese Kale under 5 planting materials at 7,14,21,28 and 32days after cultivation (gm).

Cultivation (days)	Planting Materials						F-test
	control	Soil + Rice husk	Soil + Coconut coir	Soil + CFSHP	Soil + Gelatin	Soil + CFSHP + Gelatin	
7	0.818 <sup>a</sup>	1.100 <sup>b</sup>	1.160 <sup>b</sup>	1.300 <sup>b</sup>	1.640 <sup>c</sup>	1.740 <sup>c</sup>	**
14	0.994 <sup>a</sup>	1.548 <sup>b</sup>	1.6520 <sup>b</sup>	1.796 <sup>b</sup>	1.826 <sup>b</sup>	3.920 <sup>c</sup>	**
21	1.198 <sup>a</sup>	2.214 <sup>b</sup>	2.310 <sup>bc</sup>	2.650 <sup>bc</sup>	2.806 <sup>c</sup>	5.580 <sup>d</sup>	**
28	1.598 <sup>a</sup>	3.520 <sup>b</sup>	3.800 <sup>bc</sup>	3.900 <sup>c</sup>	3.960 <sup>c</sup>	7.900 <sup>d</sup>	**
32	1.996 <sup>a</sup>	4.234 <sup>b</sup>	4.422 <sup>b</sup>	4.580 <sup>b</sup>	4.770 <sup>b</sup>	12.820 <sup>c</sup>	**

Note: 1. The F-test was analyzed under ducance new multiple range test for mean comparison

2. The numerical data exposed with each alphabet as the same each alphabet was not statistical significance for each row

All of the 5 planting materials were effect on weight of Chinese kale better than control by statistical significance.

Three of the planting materials as for Soil + Rice husk, Soil + Coconut coir and Soil + CFSHP were the same level for 7 and 28 days after cultivation but at 7,14,21 and 32 days,except 28 days.

Soil + Gelatin was the same level to Soil + Coconut coir and Soil + CFSHP at 14, 21, 28 and 32 days,except 7 days.

The Soil + CFSHP + Gel was effect on weight of Chinese kale for better than Soil + Rice husk, Soil + Coconut coir and Soil + CFSHP at 7,14,21,28 and 32 days by statistical significance, except Soil + Gelatin at 7 days.

#### Discussion:

1. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as both of high and weight of Chinese kale were better than control by statistical significance, Due to CFSHP can play the role of capillary pore in the soil structure for suitable ratio of Air and Water should be in the range of 25:25 percent respectively.

2. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to rice husk and coconut coir (local planting materials) by statistical significance,positive correspondence to the other Chinese kale experiment (Chalermwut Noisopa, et.al 2010).

3. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to gelatin or agri- gelatin (Scientific product planting material) by statistical significance. At least the farmer or the gardener can have alternative choice for new local planting materials which cheap,abundant, local technology,simple, not complicated,easily to follow up and etc.Should be transfer to the public for world,espeacially the farmer or gardener in Asian countries.(Pichai Saranrom,2011.)

4. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to gelatin or agri- gelatin (Scientific product planting material) by statistical significance.

5. The more investigated for new local planting materials should be further up

6. The use of Chanthaburi Floating Sediment of Higher Plant should be more advance not only to the other crop but the technique of application and usage of its should be more develop

*Conclusion:*

1. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as both of high and weight of Chinese kale were better than control by statistical significance.
2. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to rice husk and coconut coir (local planting materials) by statistical significance.
3. The Chanthaburi Floating Sediment of Higher Plant can be use for local planting material as the same level to gelatin or agri- gelatin (Scientific product planting material) by statistical significance.

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