



# A Study of the Circumstances of *Melientha suavis* in Order To Develop an Artificial protecting and Feding System That Promotes Productivity Improvement

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## Abstract

*Melientha suavis* is a herbal plant with high nutritional values. Nowadays, the want to eat is getting higher and higher. When it is in natural conditions, *Melientha suavis* can grow well, but when being planted its growth is very slow. This reseach was aimed to develop an artificial tree-like protecting and feeding system that promotes the increase of *Melientha suavis* produce by randomly ckecking and measuring the soil around the completely grown *Melientha suavis* trees and incompletely grown ones with the same planting date in 10 areas at the same farm. The soil was measured in the teperature, moisure, nutrients: nitrogen, phosphorus, and potassium; and pH of the soil. It was found that the mean was nearly the same. But, when the light intensity and the temperature of soil-surface at the area with *Melientha suavis* having a protecting and feeding tree were compared, it was found that the light intensity was  $11890 \pm 2390.93$  LUX and the temperature of soil-surface was  $31.425 \pm 0.32^\circ\text{C}$ . And at the area without a protecting and feeding tree, it was found that the light intensity was  $38580 \pm 2527.10$  LUX and the temperature of soil-surface was  $32.18 \pm 1.16^\circ\text{C}$ . It showed the differences. Then, the root size of *Melientha suavis* was analyzed in the unit of squre meter by using the program ImageJ. It was found that *Melientha suavis* with a protecting and feeding tree had the average root size of  $0.017 \pm 0.001$  squre meter, whereas *Melientha suavis* without a protecting and feeding tree had the average root size of  $0.023 \pm 0.001$  squre meter. The mean of the root size had the statistically significant difference at the level of .05. The collected data were used to design an artificial tree-like protecting and feeding system for a *Melientha suavis* tree, and the system was tested simultaneously. It was found that *Melientha suavis* with a artificial tree-like protecting and feeding tree had the average root size of  $0.013 \pm 0.003$  squre meter; *Melientha suavis* with a protecting and feeding tree had the average root size of  $0.012 \pm 0.004$  squre meter; and *Melientha suavis* without a protecting and feeding tree had the average root size of  $0.017 \pm 0.001$  squre meter. The mean of the root size had the statistically significant difference at the level of .05. When comparing the growth of the *Melientha suavis* with an artificial tree-like protecting and feeding system by considering the germinating, hight, and 10cm-up-from-the-ground girth, it was found that the *Melientha suavis* with an artificial tree-like protecting and feeding system grew better than the *Melientha suavis* having a natural protecting and feeding tree and the *Melientha suavis* without a protecting and feeding tree respectively. The experiment results showed that the development of an artificial tree-like protecting and feeding system helped promote the the increase of *Melientha suavis* produce.

## Key words:

Artificial protecting and Feding System

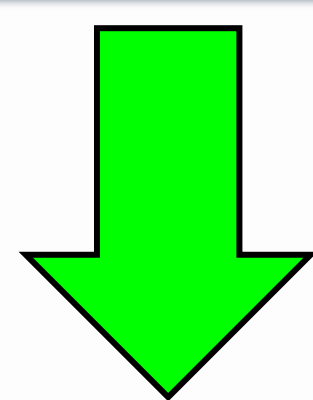
## The importance and background



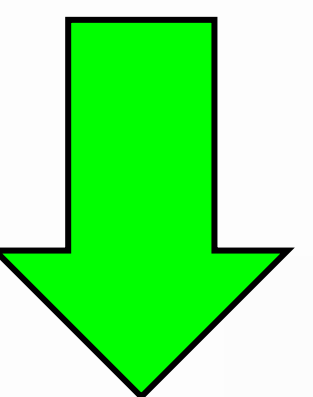
## Materials and Methodology

### Methodology

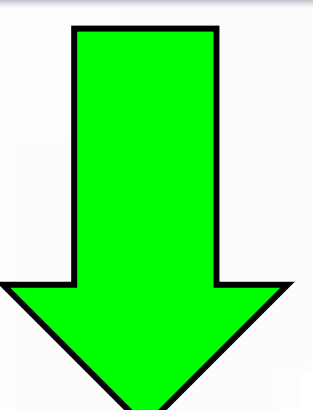
Study the surrounding factors in planting *Melientha suavis*



Study the roots of *Melientha suavis*

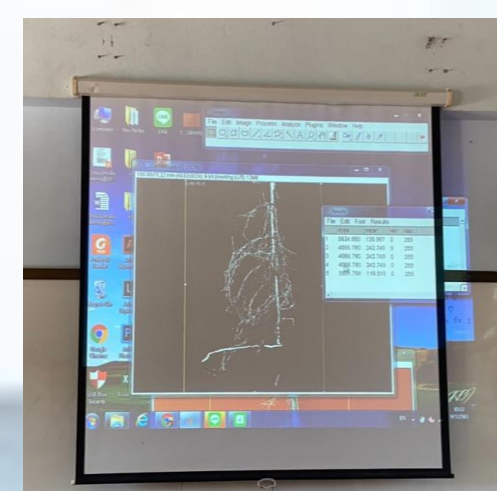


Develop an artificial tree-like protecting and feeding system



Analyze the results

### Materials and Equipment



## Objective

1. To study the surrounding factors in planting *Melientha suavis*
2. To compare the amount of the roots of *Melientha suavis* with and without a protecting and feeding tree
3. To develop an artificial tree-like protecting and feeding system affecting the increase of *Melientha suavis* produce

## Results

**Table 1. Comparison results of soil properties in the *Melientha suavis* .**

soil treasure	temperature (°C)	soil nutrients			pH	moisture value(%)
		N	P	K		
feeding tree	$31.14 \pm 2.10$	$113.75 \pm 18.11$	$8.25 \pm 1.21$	$78.35 \pm 16.13$	$7.30 \pm 0.48$	$30.40 \pm 2.80$
without a protecting	$29.98 \pm 1.28$	$110.00 \pm 19.36$	$8.00 \pm 1.29$	$76.30 \pm 17.16$	$7.40 \pm 0.52$	$29.90 \pm 2.28$

**Table 2. Comparison of the light intensity and temperature above the soil in the *Melientha suavis*.**

Measured factors	light intensity(LUX)	temperature (°C)
feeding tree	$11890 \pm 2390.93$	$31.425 \pm 0.32$
without a protecting	$38580 \pm 2527.10$	$32.18 \pm 1.16$

**Table 3. Measurement of the area of wild broccoli roots with and without a nanny plant system.**

plant	พื้นที่ราก (mm2)
feeding tree	$0.023 \pm 0.001$
without a protecting	$0.017 \pm 0.001$

**Table 4. Comparison of growth of *Melientha suavis*.**

plant	Artificial protecting and Feding System	feeding tree	without a protecting
Germinating	$4.00 \pm 0.00$	$3.67 \pm 0.58$	$1.67 \pm 0.58$
Hight (Cm)	$18.67 \pm 0.58$	$18.50 \pm 1.80$	$18.00 \pm 0.00$
10cm-up-from-the-ground Girth (Cm)	$10.00 \pm 3.00$	$6.33 \pm 1.15$	$6.67 \pm 0.58$

## Conclusion

Comparing the growth of the *Melientha suavis* with an artificial tree-like protecting and feeding system by considering the germinating, hight, and 10cm-up-from-the-ground girth, it was found that the *Melientha suavis* with an artificial tree-like protecting and feeding system grew better than the *Melientha suavis* having a natural protecting and feeding tree and the *Melientha suavis* without a protecting and feeding tree respectively. The experiment results showed that the development of an artificial tree-like protecting and feeding system helped promote the the increase of *Melientha suavis* produce.