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COMPARATIVENESS COST OF PRODUCTION FOR SUGAR'S SUBSTITUTE THROUGH DIFFERENT AMENDED PLANTING MEDIA

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ABSTRACT

Aim of this study is to estimate the cost of planting stevia on different amended planting media. The use of inorganic fertilizer were reduced and replaced with some organic matter collected from waste of oil palm. The result shows that, the cost of planting stevia that amended with organic material is cheaper compared to stevia planted with inorganic fertilizer. The estimated profit from enterprise budget constructed for planting stevia which amended with organic matter is higher compared to using inorganic fertilizer, RM135,500 and RM46,000 respectively. Based on breakeven price analysis also shows that stevia with organic matter will give higher profit compared to using inorganic fertilizer where profit of RM5.42/kg and RM1.84/kg respectively.

INTRODUCTION

Stevia rebaudiana Berta herbs that currently considered as a potential sugar substitute herbs in Malaysia. Interest in this plant has arisen in Malaysia as a result of the sugar shortage not too long ago. Except in the extreme northern part of the peninsula, the generally wet climate of Malaysia does not favour sugarcane cultivation, and the country has been largely dependent on sugar imports to satisfy local demand. Malaysians are known for their "sweet tooth", consuming a lot of sugar not only in their drinks and beverages but also in their snack, such as traditional cakes. This unhealthy habit may be partially responsible for the alarming rise in diabetic cases – from 0.65% of the population in 1960 to 16 – 18% in 1998 (Mustaffa,1998). Apart from a doctoral thesis in 1990, very little research has been carried out on stevia in the country. With the resurgence of interest, in 2014, several introductions were made from various sources which were subsequently evaluated under local condition.

Inorganic fertilizer also known as chemical fertilizers are common used fertilizer for stevia cultivation. However, the cost this fertilizers are very high. Apart from that, the use of chemical fertilizer in farming may also give bad effects to the environment, such as water pollution, soil pollution and air pollution.

Nowadays, use of chemical fertilizer has been reduced in order to save the environment. Therefore, to maintain the vigorous of plant, some alternative has been found which is the used of organic fertilizer. Palm oil mill effluent (POME) and empty fruit bunch (EFB) are some of known amendment material that may act as organic fertilizer since it contain nutrient needed by plant. Beside that the cost of production of stevia may be reduced since the fertilizers are cheaper than inorganic fertilizer. Therefore, this study was done to compute the estimated cost of production of cultivate stevia with inorganic fertilizer and cultivate stevia amended with organic material.

METHODOLOGY

Study Area

Stevia rebaudiana Bert. Seedling was used in this research as main material. This study was done under rain shelter at UiTM Melaka, Jasin Campus.

RESULT*Table 1: Enterprise budget for stevia cultivated with Inorganic fertilizer*

Item	Value per acre	
	RM	RM
25 tonnes @ RM 5 per kg		125,000
Variable cost		
Land preparation	2,000	
Seed	25,000	
Fertilizer	30,000	
Input	20,000	
Harvesting	500	
Labour	1,500	
Total Variable Cost		79,000
Fixed Cost	0	0
Total Cost		79,000
Estimated Profit		46,000

Based on the enterprise budget above, the estimated profit accounted RM 46,000 for stevia cultivated with inorganic fertilizer

Table 2: Enterprise budget for stevia cultivated with organic amendment

Item	Value per acre	
	RM	RM
25 tonnes @ RM 8 per kg		200,000
Variable cost		
Land preparation	2,000	
Seed	25,000	
Fertilizer	15,000	
Input	20,000	
Harvesting	500	
Labour	2,000	
Total Variable Cost		64,500
Fixed Cost	0	0
Total Cost		64,500
Estimated Profit		135,500

Based on the enterprise budget above, the estimated profit accounted RM 135,500 for stevia cultivated with organic amendment

Table 3: Partial budget to change from inorganic to organic farming of stevia

PARTIAL BUDGET			
Problem: Change from inorganic to organic farming of stevia			
Additional Cost		Additional Revenue	
	RM		RM
Labour	2,000	25 tonnes @ RM8	200,000
Reduced Revenue		Reduced Cost	
25 tonnes @ RM 5 per kg	125,000	Fertilizer	15,000
A. Total additional cost and reduced revenue		B. Total additional revenue and reduced cost	
	<u>RM</u>		<u>RM</u>
	127,000		215,000
Net change in profit (B – A)			<u>RM</u>
			88,000

As shown in the table 3, to change from cultivating stevia from inorganic to organic farming, the net change in profit is RM 88,000

Cost of production of organic and inorganic cultivation of stevia

1.Inorganic

$$\frac{\text{Total cost}}{\text{yield}} = \frac{\text{RM } 79,000}{25,000}$$

$$= \text{RM } 3.16/\text{kg}$$

2.Organic

$$\frac{\text{Total cost}}{\text{yield}} = \frac{\text{RM } 64,500}{25,000}$$

$$= \text{RM } 2.58/\text{kg}$$

Break-even yield analysis

1.Inorganic

$$\frac{\text{Total cost}}{\text{Output price}} = \frac{\text{RM } 79,000}{\text{RM } 5}$$



$$= 15,800 \text{ kg}$$

2. Organic

$$\frac{\text{Total cost}}{\text{Output price}} = \frac{\text{RM } 64,500}{\text{RM } 8}$$

$$= 8,062.5\text{kg}$$

Break-even price analysis

1.Organic

$$\frac{\text{Total cost}}{\text{Expected yield}} = \frac{\text{RM } 79,000}{25,000\text{kg}}$$

$$= \text{RM } 3.16/\text{kg}$$

2.Inorganic

$$\frac{\text{Total cost}}{\text{Expected yield}} = \frac{\text{RM } 64,500}{25,000\text{kg}}$$

$$= \text{RM } 2.58/\text{kg}$$

CONCLUSION

In a nut shell, from the analysis of cost and price of stevia amended in different planting medium, it was very clear that the profit of both media was comparable to each other and was technically feasible and economically viable. Cultivating stevia amended with organic matter would give higher profit and lower the cost as compared to cultivating with inorganic fertilizer.

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