

## Comparison of Growth and Yield of 5 Sweet Corn Varieties in Lampang Province

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**Abstract:** A comparison of growth and yield of 5 sweet corn varieties in Lampang province was conducted during February –May 2012 at the Vegetable Section, Agricultural Technology Research Institute (ATRI). The experimental design used was a Randomized Complete Block Design (RCBD) consisted of 5 treatments (sweet corn varieties) with 4 replications each. The sweet corn varieties employed for this study were Wan55 (T1), SK2583 (T2), Hi-brix53(T3), MJ5102F1 (T4) and MJ4058F1 (T5). The cultural practices and fertilizer application during the experimental period were made according to recommendations from the Department of Agricultural Extension. Results revealed that the MJ4058F1 (T5) variety gave the significantly greatest sweetness with average soluble solids of 15.83 °brix as compared to the others. The Wan55(T1) tended to have greater number of leaves, whole ear weight, de-husked ear weight, ear length, yield per sub-plot (average of 81.62kg/sub-plot) and yield per rai (average of 4,837 kg/rai), while the MJ51028F1 (T4) tended to be taller, with an average of 226.32 cm, than the others.

**Keywords:** Sweet corn, comparison Yield, Yield components

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## 1. Introduction

The advantages of growing sweet corn over the other crops are that it is simple to grow, comparatively brief growing time, less economical and environmental risks, high return and less chemicals use. Furthermore, it can be utilized either as fresh produce or for processing purposes.

Thailand ranked 3rd in the world export processed product of sweet corn, following France and Hungary, to the EU. The total export values for the year 2009, 2010 and 2011 were 912, 928 and 837 million Bahts, respectively. The United Kingdom and Germany were the important importers for canned sweet corn from Thailand, in that the total of 9.278 metric tons with the value of 362 million Bahts and 6.342 metric tons with 201 million Bahts were imported in 2012, respectively.

Currently, sweet corn production has tended to increase dramatically (Parinyawadee et al., 2008), due to its short-growing period with high return, and it has become an alternative economic crop after rice in the southern part of Thailand. The highest price received for fresh ear sweet corn was up to 20 Bahts per kilogram (Sunisa, 2007). Furthermore, the sweet corn has also been appointed to be a customary crop of several communities in the South (Rak-Trang Newspaper, 2009). In recent years, the production cost for sweet corn in the South has tended to gradually increase, especially the price for the F1 hybrid seed. The market price of sweet corn seed from Kasetsart University was comparatively cheaper than that from seed companies, it was about 500 Bahts. (Sunisa, 2007) The Department of Agriculture has recognized the need for reducing the cost of production, especially the cost for seed. Thus, the Department has appointed the Song Khla Agricultural Research and Development Center to develop the sweet corn F1 hybrid seed for growers in the southern part of Thailand with the purpose of reducing the cost of production and increasing return for corn production.

Therefore; the objective of this study was to compare growth and yield of 5 sweet corn varieties in Lampang province.

## 2. Methodology

The experimental design employed was a randomized complete block design (RCBD) consisted of 5 treatments and each with 4 replications. Treatments (sweet corn varieties) comprised of  $T_1$  = WAN55,  $T_2$  = SK2583,  $T_3$  = Hi-brix53,  $T_4$  = MJ 5102F1 and  $T_5$  = MJ 4058F1. Plant spacing used were 25x75 centimeters on the 27 meters<sup>2</sup> sub-plot. The same cultural practices were applied to all treatments under trial. Data were collected from 10 plants from each sub-plot. The collected data were plant growth, yield and yield components, including whole ear fresh weight, de-husked ear fresh weight, ear width, ear length, total soluble solids, fresh weight per ear, time of male flower emergence, time of 50% silk emergence and cost of production, as well as, return. Data were analyzed by the analysis of variance method.

### 3. Results and Discussion

The results from a comparison on growth and yield of 5 sweet corn varieties in Lampang province indicated that plant growth, in terms of plant height, the varieties WAN55(F1) and MJ5102F1 (T4) tended to be taller than the others with the average height at harvest of 226.32 cm. The averages time for 50% male flower emergence and 50% silk emergence for all varieties ranged 40 -45.50 and 47-48 days after planting, respectively. (Table 1).

The variety WAN55 (T<sub>1</sub>) tended to give the greatest ear fresh weight, de-husked ear fresh weight, ear width, ear length and fresh weight yield per rai with the averages of 390 g, 280 g, 4.94 cm, 20.05 cm and 4,837 kg. per rai, respectively. However, the yield and yield components of these varieties were not statistically different (Table 1). A significant difference was found with the total soluble solids (TSS) content where the variety MJ 4058 F1 (T5) had the highest total soluble solids of 15.83 Brix, which followed by the SK2583 (T2) and MJ 5102F1 (T4) with the averages of 15.41 and 14.67 degrees Brix, respectively (Table1).

**Table 1** Yield components and yield of 5 sweet corn varieties.

Variety	Yield Components				Yield		
	whole ear f..wt (g)	de-husked ear f..wt. (g)	ear width (cm)	ear length (cm)	TSS Degree (Brix)	sub-plot yield (kg)	yield per per rai(kg)
WAN 55 T <sub>1</sub>	390	280	4.94	20.05	14.65 <sup>bc</sup>	81.62	4,837
SK 2583 T <sub>2</sub>	310	230	4.71	18.74	15.41 <sup>ab</sup>	70.30	4,166
Hi-brix53 T <sub>3</sub>	340	240	5.02	19.12	14.24 <sup>c</sup>	71.25	4,222
MJ5102F1 T <sub>4</sub>	355	270	4.96	19.71	14.67 <sup>bc</sup>	71.85	4,258
MJ4058F1 T <sub>5</sub>	345	250	4.90	19.51	15.83 <sup>a</sup>	64.80	3,840
F-test	ns	ns	ns	ns	ns	ns	ns
C.V .( %)	26.37	26.36	51.3	3.85	3.85	12.47	12.84

ns = not significant

TSS = total soluble solids

\* = significant at p<0.05

f..wt. = fresh weight

\*\* = significant at p<0.01

Sweetness is probably the priority for consumers in selecting sweet corn for fresh consumption. As suggested by the results, varieties MJ4058F1 and SK2583 seems to be quite promising because they are sweeter than the others under this study. Although yield of these varieties were not statistically different, the 2 varieties above tended to yield lower than of the others. However, apart from the varietal (genetic) factor, growth, yield and sweetness of sweet corn may also influence by the quantity and type of fertilizer used (Parinyawadee et al, 1996). Therefore, further studies should focus on the fertilizer application rates and type (or grade) of fertilizer used for the MJ4058F1 and SK2583. This is because they can be potentially produced for fresh consumption sweet corn market in Lampang province.

#### 4. Conclusion

The comparison on growth and yield of 5 sweet corn varieties in Lampang province suggested that the variety WAN 55 tended to produce better plant growth and yield than the others. The average yield for WAN 55 was 4,837 kg. per rai, and followed by the MJ 5102F1 and SK 2583 with the averages of 4,258 and 4,222 kg. per rai, respectively. The variety MJ5102F1 tended to have a greater plant growth rate than the others in terms of plant height. The variety MJ4058F1 significantly ( $p < 0.01$ ) produced the highest total soluble solids with the average value of 15.83 Degrees Brix.

#### 5. Acknowledgements

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## APPENDIX



Plate 1. The whole ear of sweet corn.<sup>3</sup>



Plate 2. The de-husked ear of sweet corn.