



**UVI  
AES  
Biotechnology  
& Agroforestry  
Program**

# **COMPARISON OF COMMERCIAL VARIETIES WITH Bt LINES OF SWEET CORN ON ST. CROIX, U.S. VIRGIN ISLANDS**

**by  
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# Introduction



Sweet Corn is one of the most widely grown vegetable crop in the USA. Genetically enhanced sweet corn has been around for ten years and has become very popular in corn ear worm prone areas. This enhanced sweet corn has a gene that codes for a protein produced by *bacillus thuringensis* that controls worms.

Fresh corn grown in the US Virgin Islands is mainly used for roasting. Some sweet corn is grown but consumers have a low tolerance for worm damage on ears of corn in the market.



**Pesticide application can be applied but with Dipel up to three applications/week for worm control during the crop cycle.**



**Other pesticides that are not organically labeled can be used with less applications but are more costly to farmers.**

**As a contact spray, these pesticides have no effect once the worm is inside the silk and ear.**



**The objectives of this study were:**

- 1. To evaluate the effectiveness of the Bt sweet corn in suppressing worm damage as compared non-Bt varieties**
- 2. Compare marketable yield**
- 3. Assess consumer acceptance of the sweet corn**

# Materials and Methods

**Sweet Corn planted in St. Croix  
in November 2007  
Followed by 2008-2009**

## Varieties

- Jubilee
- Hawaiian Super Sweet
- Mayorbella
- Errol
- Roasting Corn

## Bt Genetically Enhanced

- Golden Super Sweet
- White Super Sweet
- Bicolor Super Sweet





- ✘ **Plants established in the field at 2 week intervals, from March 2008 through March 2009**
- ✘ **Three groups of plants:**
  - ✘ **Bt WSS, BSS, GSS (White Super Sweet, Bicolor Super Sweet, Gold Super Sweet)**
  - ✘ **Non Bt**
    - **JH (Jubilee, Hawaiian Super Sweet)**
    - **Roasting (Mayorbella, Errol)**



**Each variety was planted in three rows 25 ft long with 4 ft between rows and seeded at 8 inch intervals. Six varieties were planted in each plot.**

**Data was collected from the middle row.**





**Drip irrigated**

**Fertilized with 15-15-15 granulate and 20-20-20 water soluble w/ iron**

**No pesticide was applied to the varieties.**

**Days to harvest, insect damage, Cob diameter, cob length, sugar content (brix) and plant height were taken over time for the varieties.**



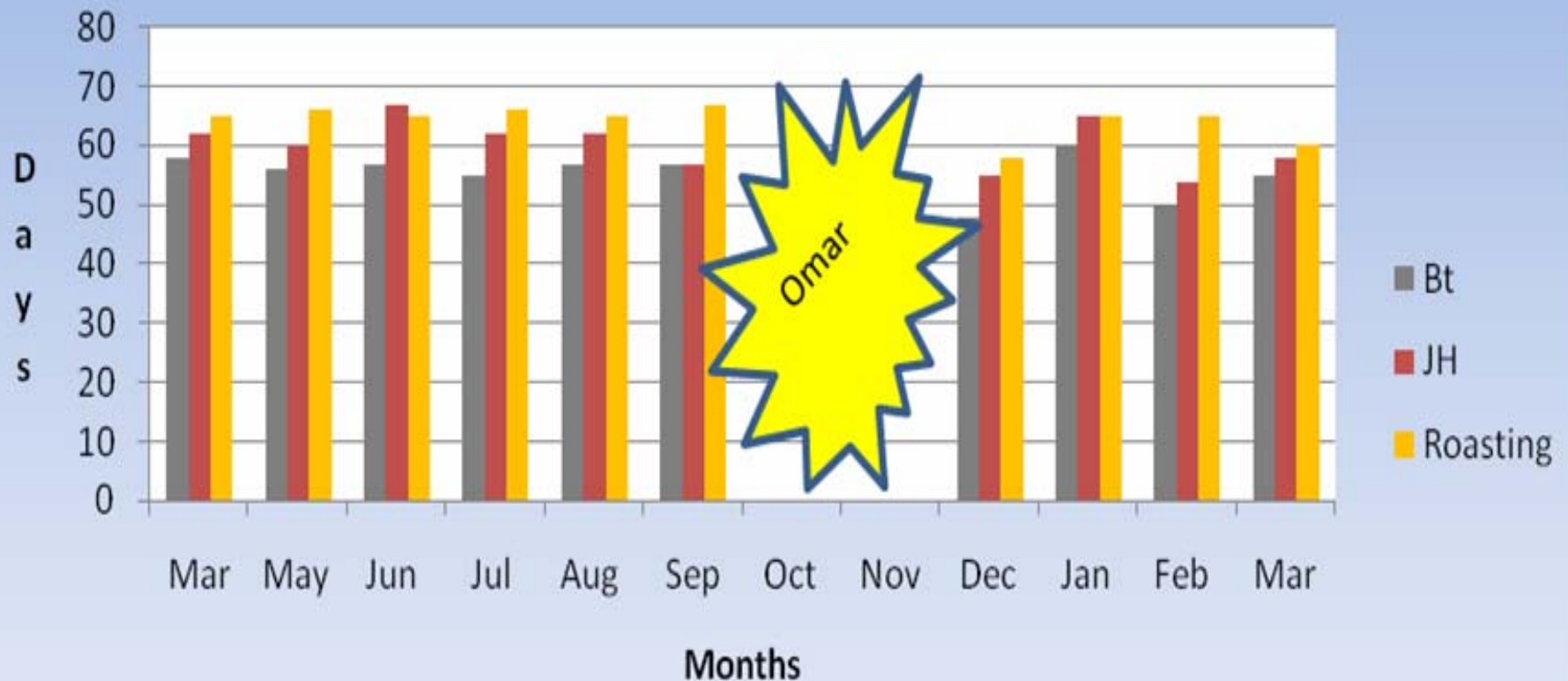
# Results and Discussions



**The trial was disrupted by hurricane Omar in October 2008.**

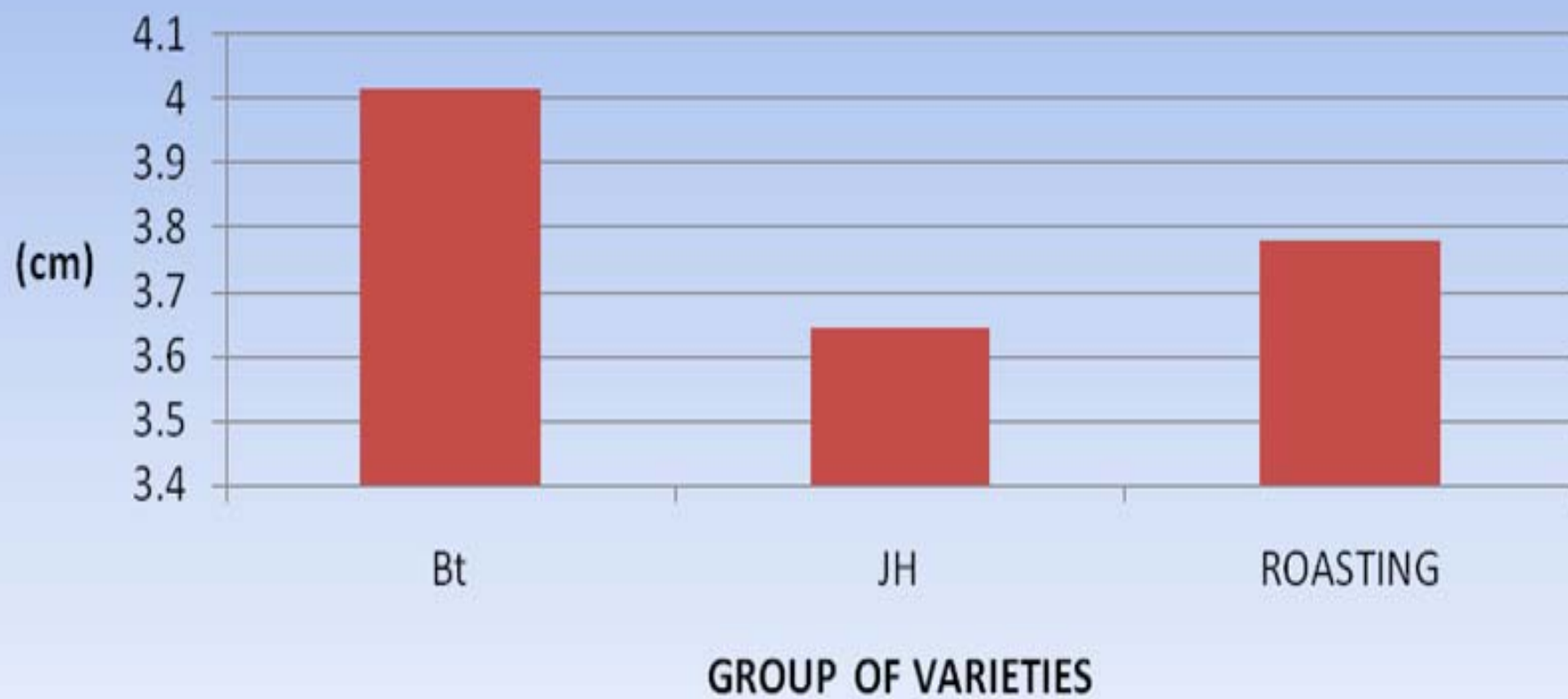


## DAYS TO HARVEST



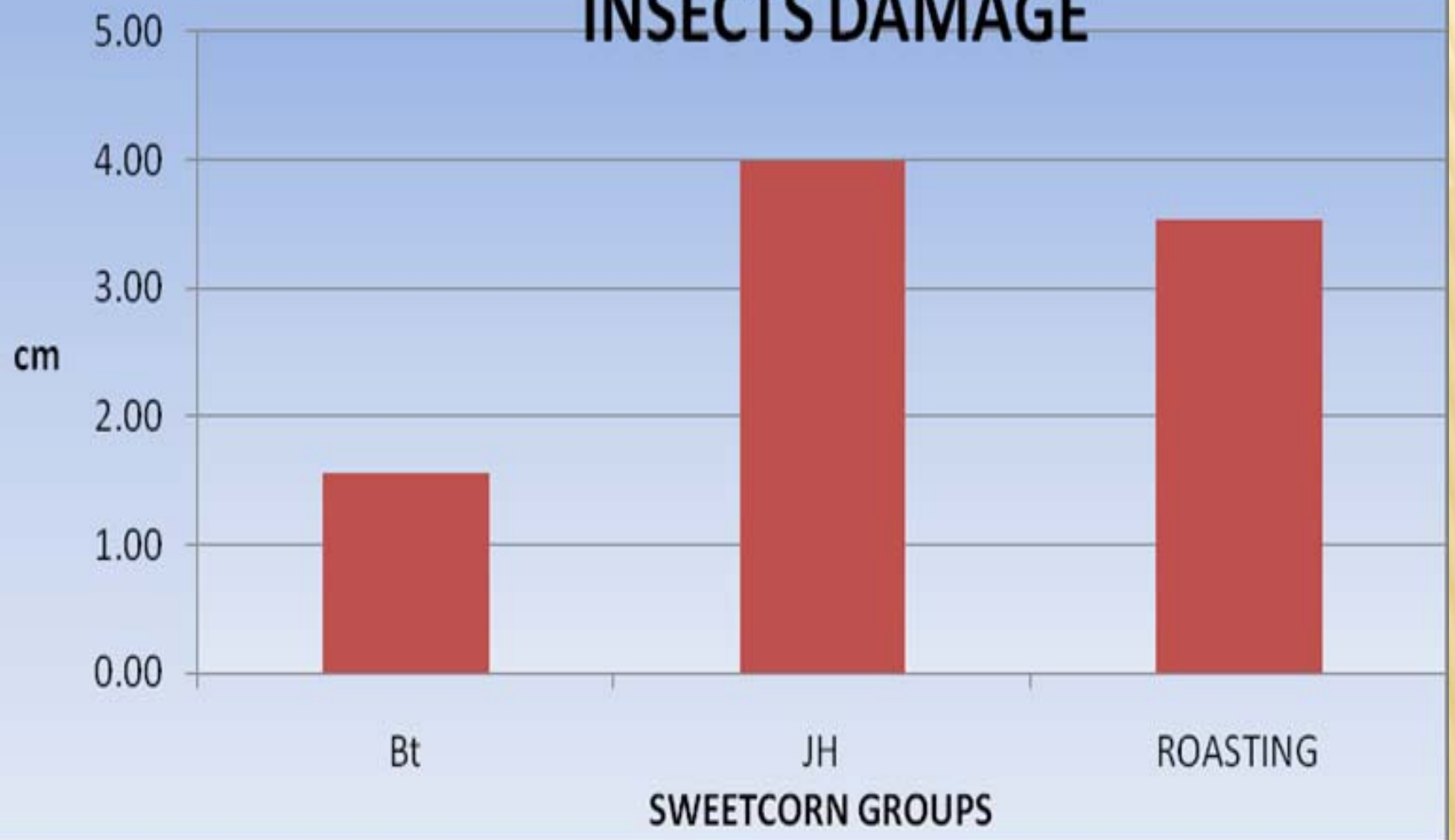
**Bt sweet corn average of 55 days to harvest. The others two groups presented in the trial kept an average of 60 to 65 days to harvest.**

## COB DIAMETER





# INSECTS DAMAGE



## Average cob length and damage by corn ear worm

<b>Variety</b>	<b>Cobs lengths (cm)</b>	<b>Insect Damage* (cm)</b>	<b>% Cobs Damaged</b>
<b>Bt</b>	<b>18.7</b>	<b>1.5 a</b>	<b>9.5</b>
<b>JH</b>	<b>19.5</b>	<b>4.0 b</b>	<b>85.5</b>
<b>Roasting</b>	<b>21.2</b>	<b>3.5 b</b>	<b>81.7</b>

\*Mean separation using LSD  $P=0.05$



# Bt Sweet Corn without Worm Damage



**GSS**



**BSS**



**WSS**

# Worm Damage on Hawaiian Super Sweet



# Worm Damage on Bt Sweet Corn



**GSS**



**WSS**

# Conclusion

- **Bt Sweet Corn increases marketable yield**
- **Bt Sweet Corn had minimal leaf damage from worms**
- **Bt Sweet Corn had the least amount of cob Worm damage**
- **Worm damages increases on Bt Sweet Corn with continuous succession planting**

# **Acknowledgment**

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# Questions?

