

Role of Healthy-Looking Banana and Alternate Hosts in the Spread of Banana Bunchy Top Disease (BBTD)

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INTRODUCTION

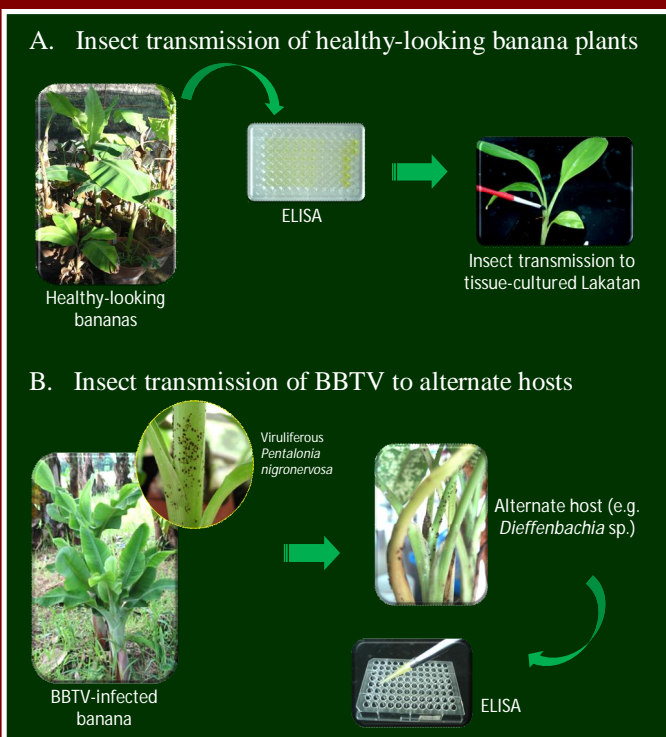
Banana bunchy top nanovirus (BBTV), the cause of banana bunchy top disease (BBTD), is the most important virus affecting banana agriculture. BBTV can persist naturally in banana plants causing no apparent symptoms of the disease or the plants remain healthy-looking and asymptomatic. Furthermore, alternate hosts of BBTV outside *Musaceae* family can occur experimentally.

These healthy-looking banana plants and alternate hosts can have an important role on the spread of BBTD by acting and serving as a reservoir of BBTV.

OBJECTIVE

- To determine the important role of healthy-looking banana and alternate hosts in the spread of banana bunchy top disease (BBTD).

METHODOLOGY



RESULTS

A. Insect transmission of healthy-looking banana plants



Figure 1. BBTV infection 3-4 weeks after insect transmission.

Characteristic symptoms of BBTV infection are marginal chlorosis, leaf narrowing & reduction in surface area, rosetting & bunchy top.

Table 1. Result of insect transmission of healthy-looking banana to tissue-cultured Lakatan.

ISOLATES/CULTIVAR	BBTV		% infection
	ELISA	Insect Transmission	
Batangas			
Bungulan	+	+	10
Saba	+	-	0
Cavite			
Bungulan	+	+	60
Dwarf Cavendish	-	-	0
Latundan	-	-	0
Saba	+	-	0
Laguna			
Bungulan	+	-	0
Lak-Min (Saba)	+	+	20
Lakatan	+	+	100
Quezon			
Saba	-	+	50
Saba	+	-	0

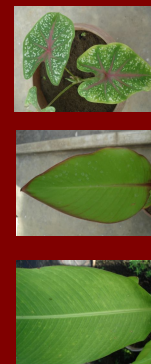
- ELISA & insect transmission results indicate the presence of BBTV from healthy-looking plants and that the virus can be transferred to other plants, respectively.
- Negative to ELISA and insect transmission could be due to low titer of the virus and efficiency of transmission.

B. Insect transmission of BBTV to alternate hosts

Initial studies, based on insect transmission and ELISA, show three possible and potential plant reservoir of BBTV outside *Musaceae* family.

Assay Hosts	% infection	ELISA *
<i>Colocasia bicolor</i>	10	1/10 (0.390)
<i>Costus</i> sp	0	0/4
<i>Dieffenbachia</i> sp	0	0/4
<i>Colocasia</i> sp 1	0	0/4
<i>Colocasia</i> sp 2	0	0/5
<i>Canna</i> sp	0	2/9 (0.403; 0.442)
<i>Heliconia</i> sp	25	3/4 (0.371; 0.398; 0.362)
Camia	0	0/1
Banana cv Lak-Dav	86.71	2/2 (0.363; 0.371)

* Number of plants detected (+) / total number of plants assayed; absorbance at 405 nm: H = 0.181; (+) = 0.724.



Symptoms on alternate hosts started to appear 4 weeks post-insect transmission only on variegated gabi and *Heliconia* sp as marginal chlorosis and mosaic, respectively. Bandera Espanola remained asymptomatic.

CONCLUSION

- Asymptomatic & apparently healthy-looking banana plants & other alternate hosts outside *Musaceae* family can act as reservoir to BBTV and can serve as foci of infection on the spread of BBTD.

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