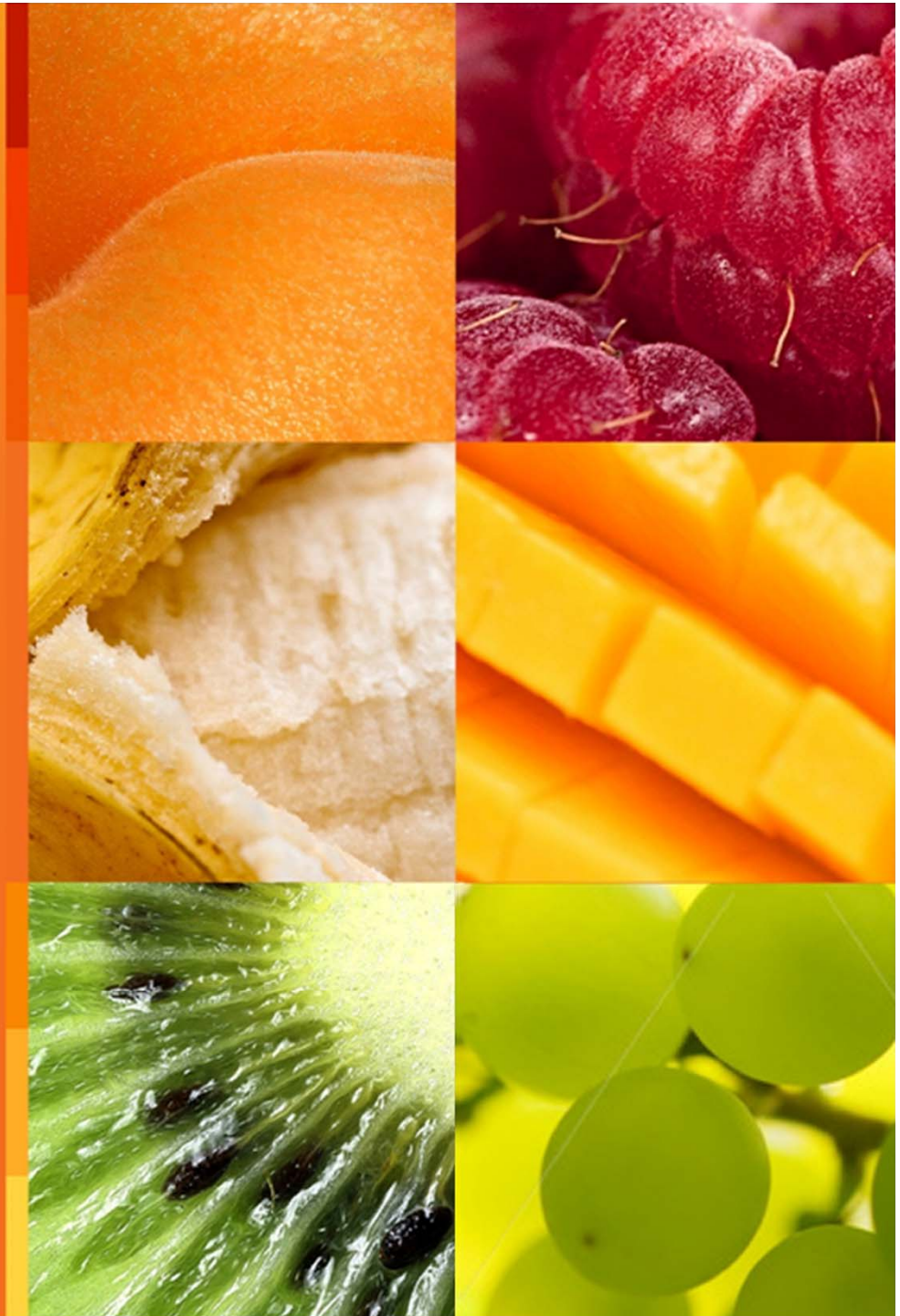


# New Generation of Broad Spectrum Plant Extract Fungicides

**Prof. Moshe Reuveni**  
University of Haifa, Israel  
Scientific director – Stockton Group

ABIM – October, 2010

**stk** The  
smart  
way  
to grow.  
Stockton Group



## Our Mission

**Our mission is to develop, support and distribute a new generation of integrated eco-friendly practices for the challenges of modern agriculture.**

**We provide our diverse group of customers worldwide with smart, innovative, high quality crop protection products and services, creating a profitable and sustainable business for them.**



# Global Presence in over 35 Countries





## Over 325 Registered Products & Counting



Today's presentation will be focused on:



- **New Generation of natural fungicide based on *Melaleuca alternifolia* developed for the control of fungal diseases in edible crops**
- **Timorex Gold™ for the control of Black sigatoka in banana**



## Timorex Gold™ has proven efficacy in wide range of crops and diseases

### *Effective control of:*

- Powdery mildews
- Downy mildews
- Early blight
- Late blight
- Black sigatoka

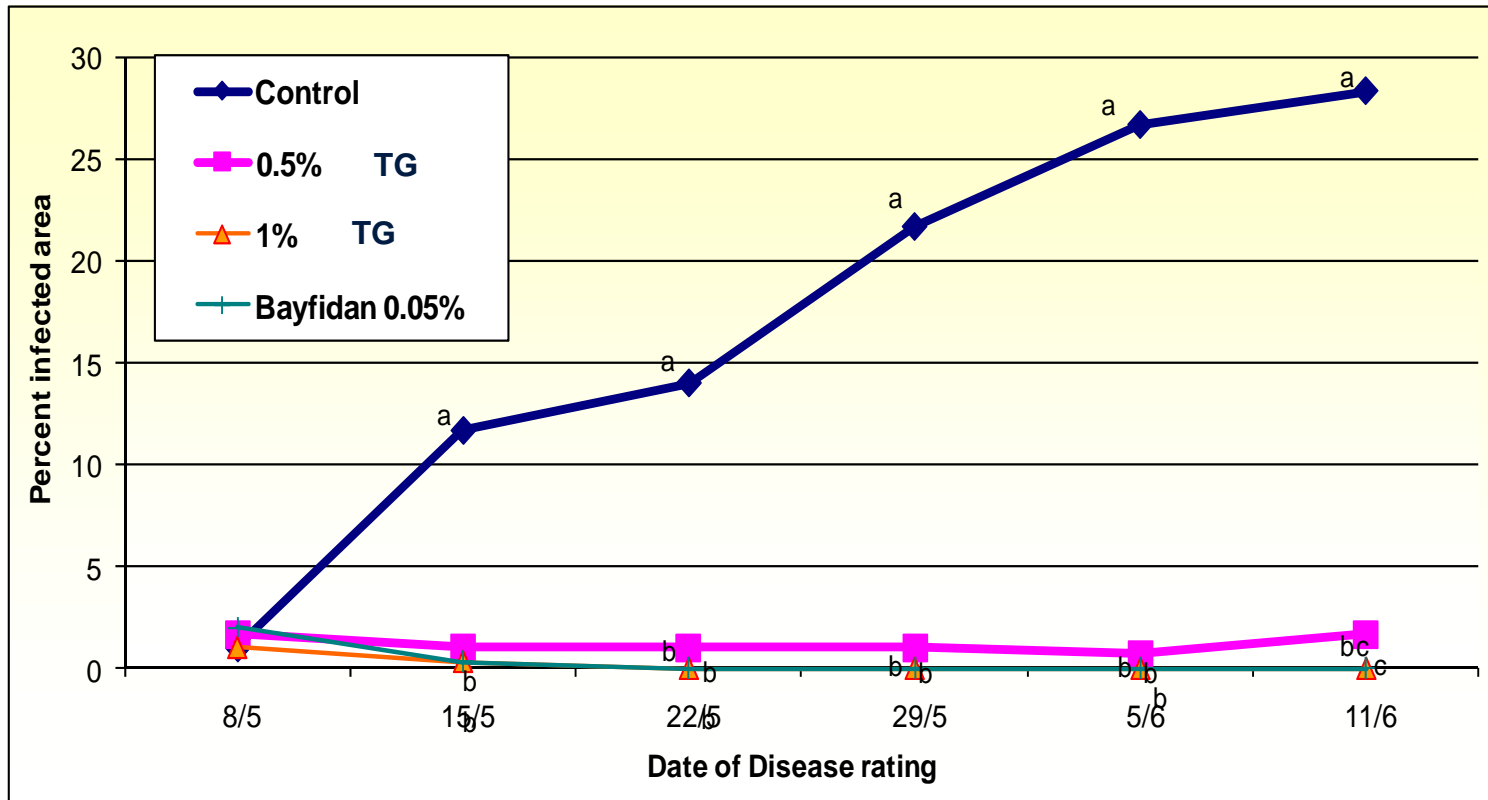
### *Crops tested:*

- grapevines
- tomatoes
- cucurbits
- potatoes
- lettuce
- herbs
- **banana**



# Control of Powdery Mildew in Cucumber by Timorex Gold™

5 Foliar sprays at 7 day intervals

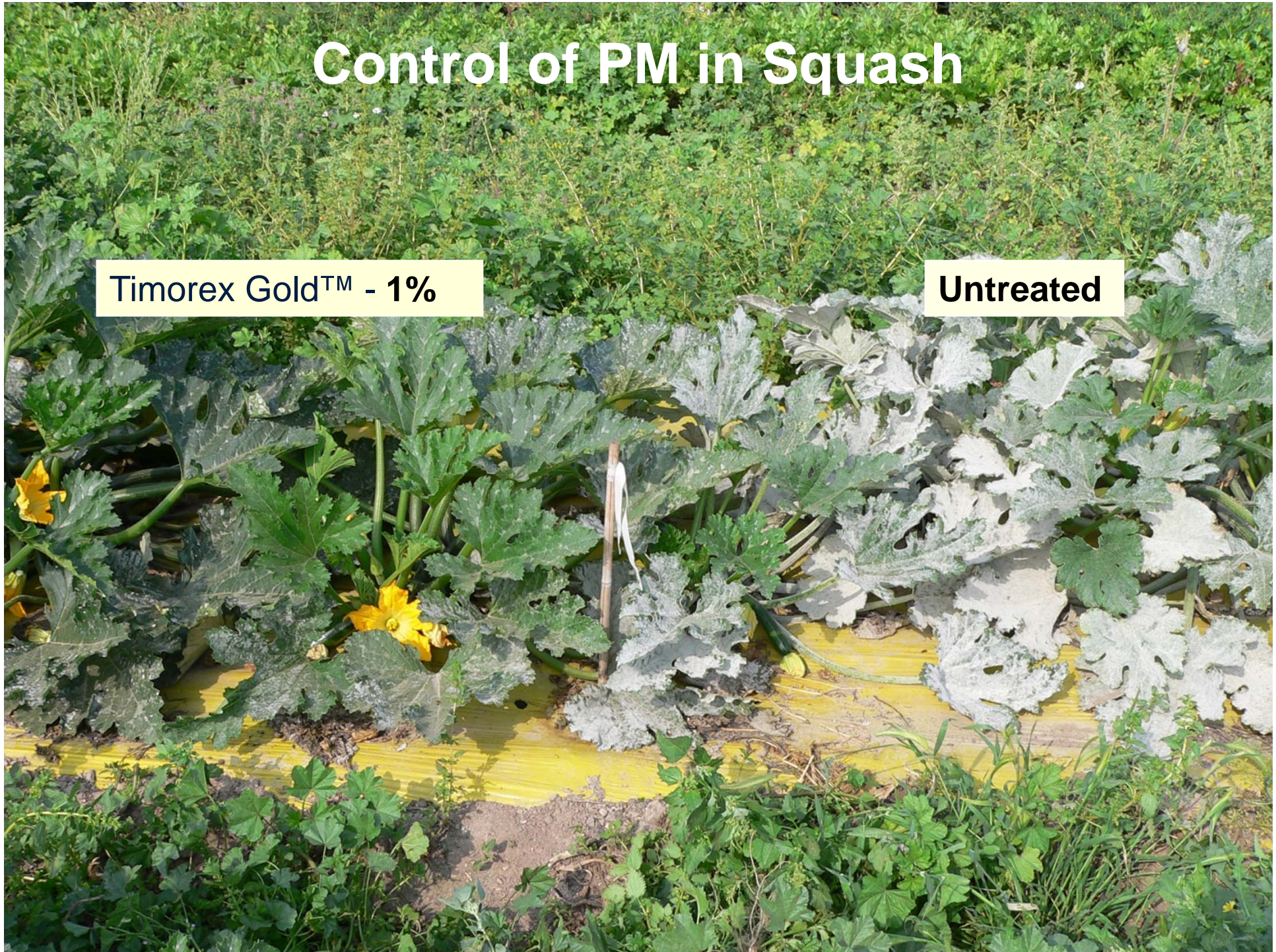




# Control of PM in Squash

Timorex Gold™ - 1%

Untreated

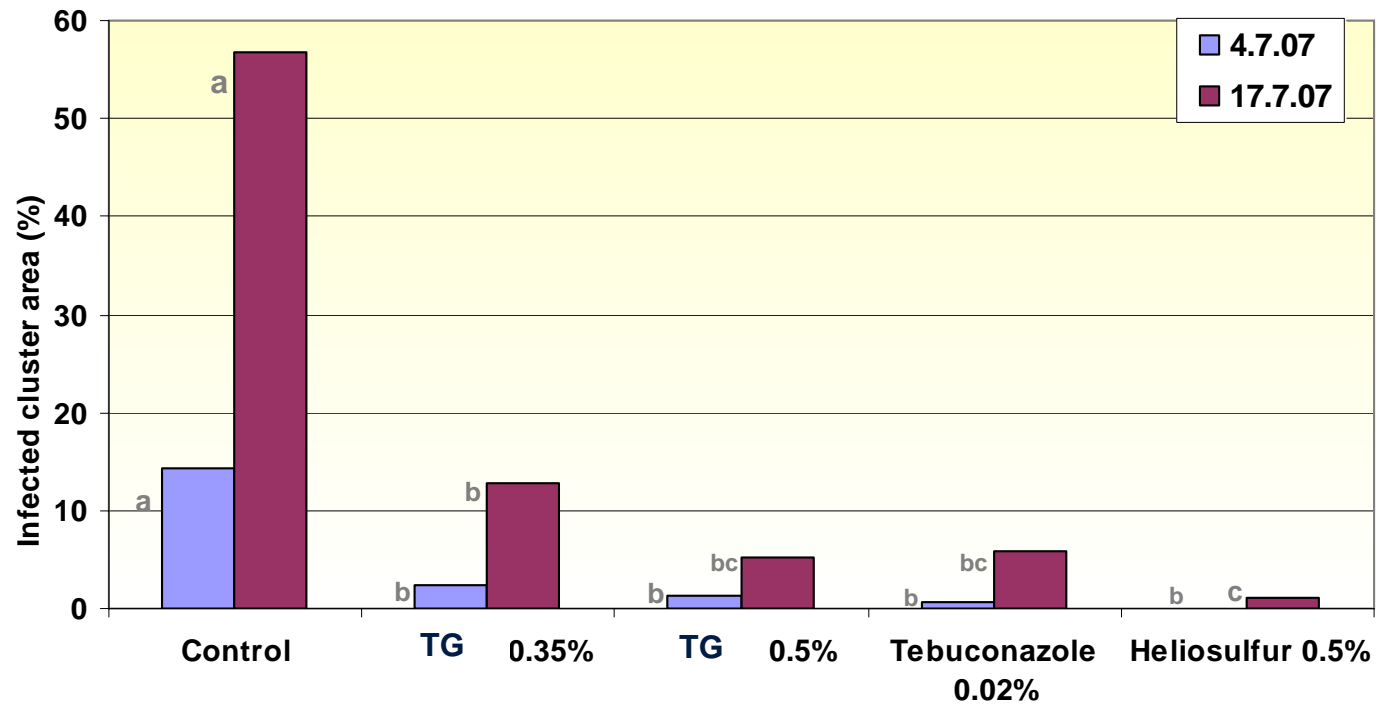




# Control of PM in Grapevines (Cabernet sauvignon) by Timorex Gold™

Fichman, Israel 2007

5 Sprays were applied at 14-d intervals from 15 May 07



# Control of Grape Powdery Mildew

Timorex Gold™ - 0.5%



**Control**





## Timorex Gold™ ensures Juice Quality

Treatment	BRIX	pH	TA
Timorex Gold™ 0.5%	23.9	3.45	5.37
Heliosulfur 0.5%	24.0	3.44	5.30
Trifloxystrobin 0.015%	23.1	3.44	-

Data was obtained at harvest day.

**No differences were obtained between Timorex Gold™ and commercial treatment in ALC (11 days) and MEL (14 days) fermentations**



# Control of PM (Oidium) in Tomato

21 days after the last spray)



**Timorex Gold™1%**



**Untreated control**





## Mode of Action

**Timorex Gold™** has as preventative and curative activity and acts on:

- Spore germination (In vitro)
- Mycelial and fungal development
- Sporulation on infected tissue
- Suppression the fungus on infected and mildew tissue





## Timorex Gold™

A novel approach for  
controlling  
Black sigatoka disease  
(*Mycosphaerella fijiensis* -  
Morelet) in Banana







Banana leaves exhibiting Black sigatoka lesions





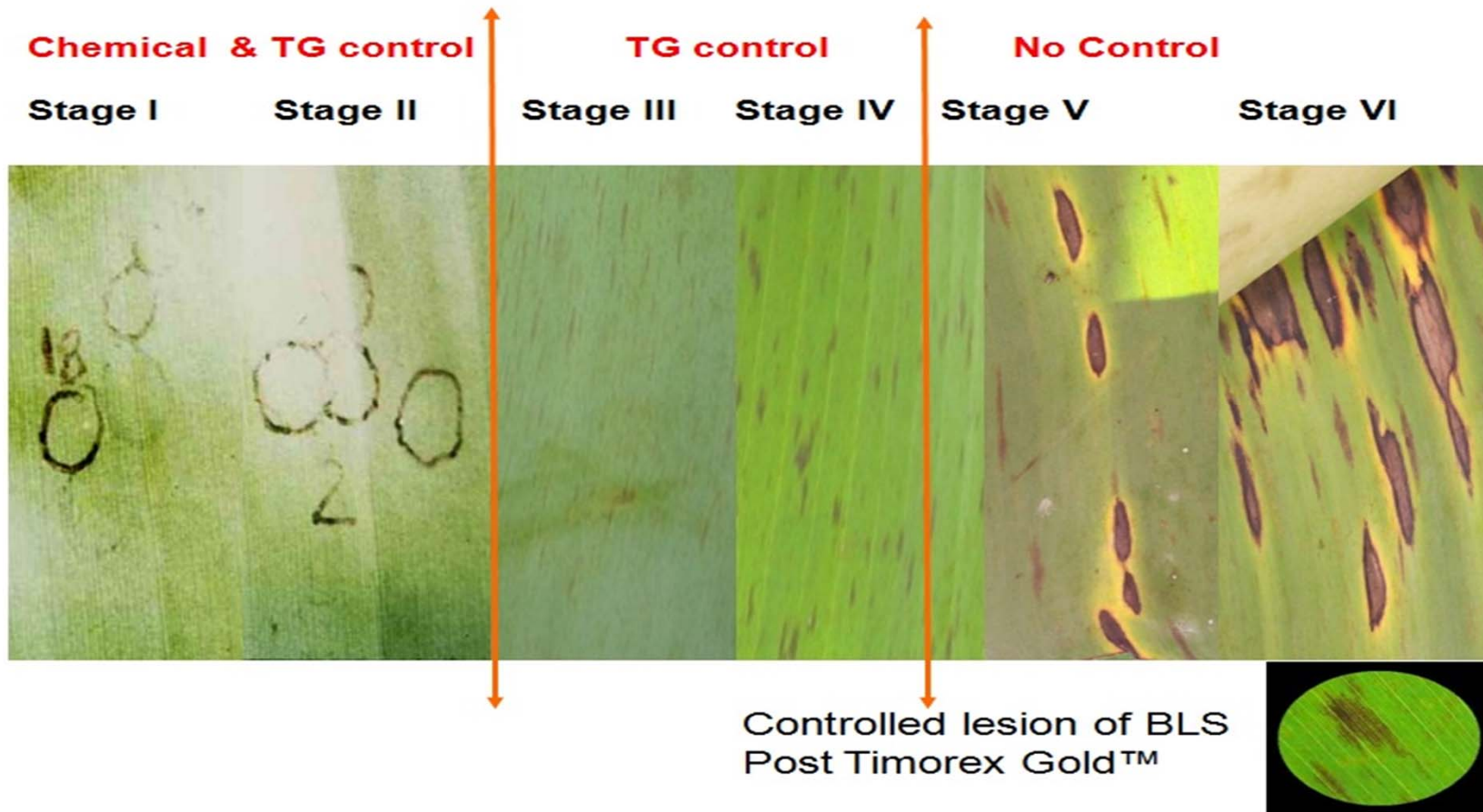
- Black sigatoka (BLS) is considered the most damaging disease of in banana plantations
- The control of the disease accounts for about 30% of the total production costs and about 40% yield losses
- **The standard chemical products for the control of BLS are losing efficacy due to serious problems of resistance**

Banana leaves exhibiting Black sigatoka lesions



# TG – Protective, Curative and Suppressive

Curative activity on development stages of Black sigatoka







**Commercial program with chemicals did not inhibit re-development of Black sigatoka**



**0.4 L Timorex Gold<sup>®</sup> achieved excellent Curative Activity 57 DAA\* (Stage “2”)**



\* DAA = Days After Application



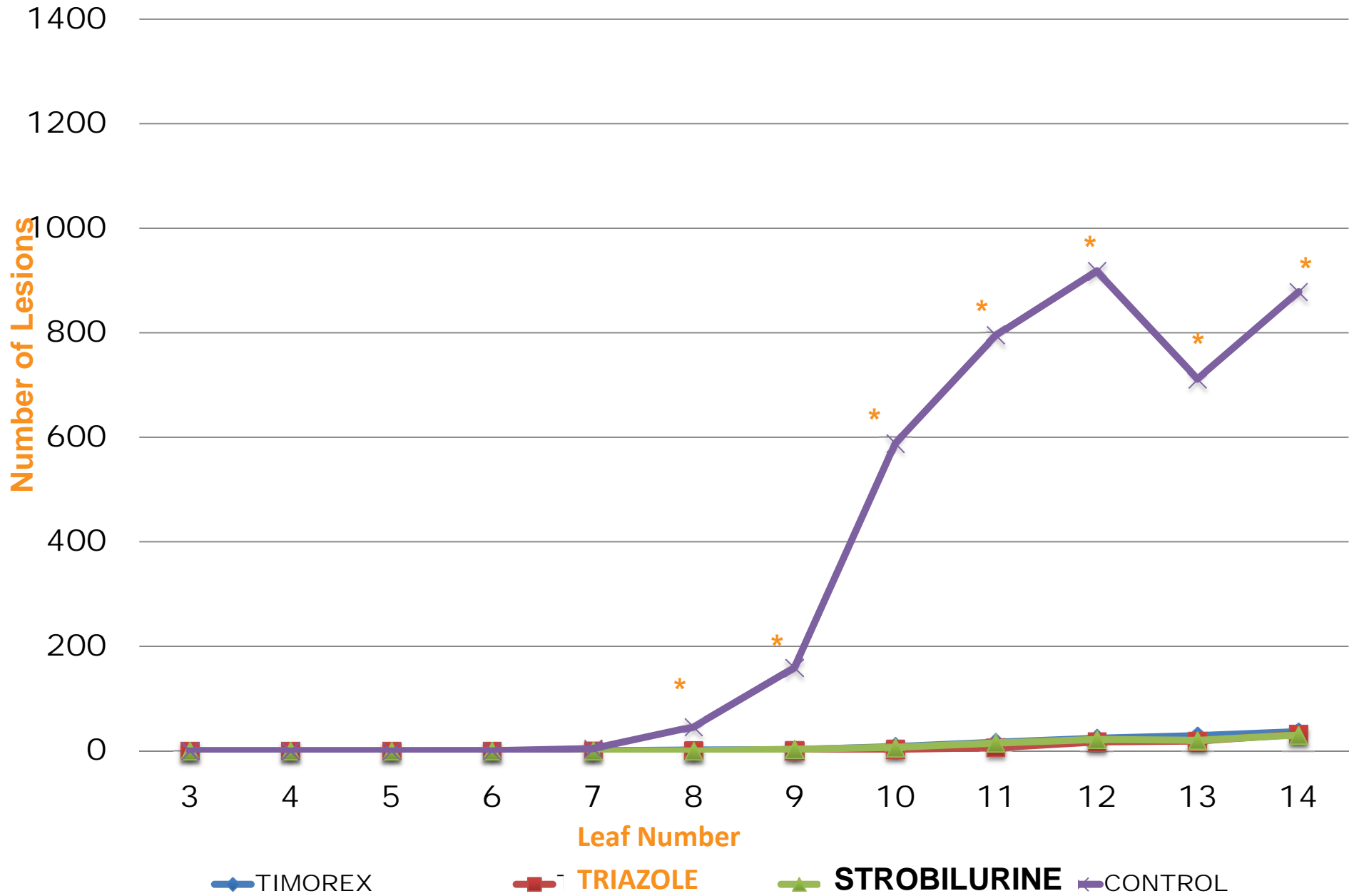
## Timorex Gold<sup>®</sup> - Field Trials

- In young banana plants under conventional management
- Commercial comparison of Timorex Gold<sup>™</sup> vs. a standard conventional spray program

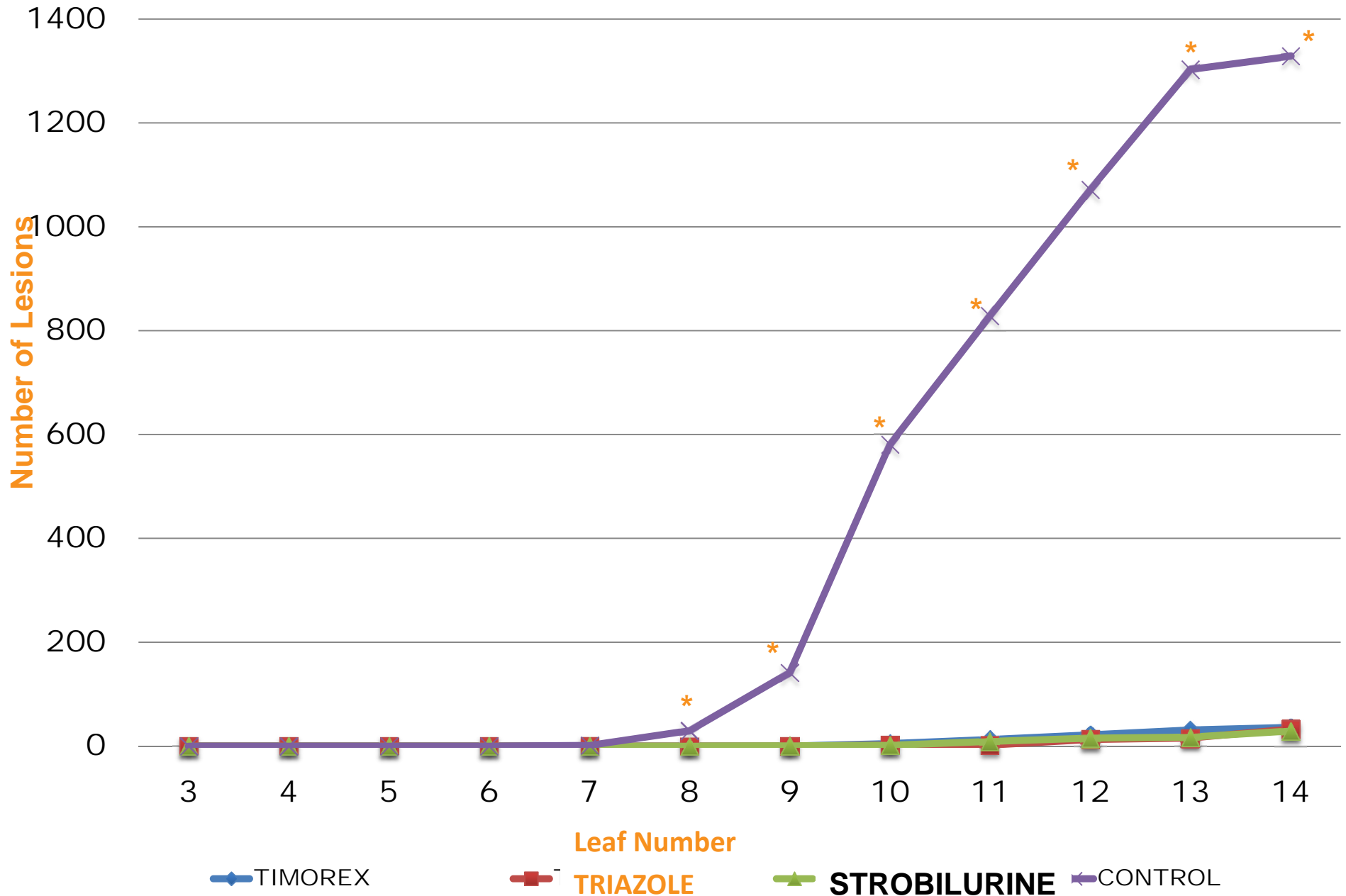




# Stage V (week 19)



# Stage VI (week 19)







**CONTROL**



**TIMOREX GOLD™**



## A Full Scale Commercial Trial on 134 ha Belize 2008-9

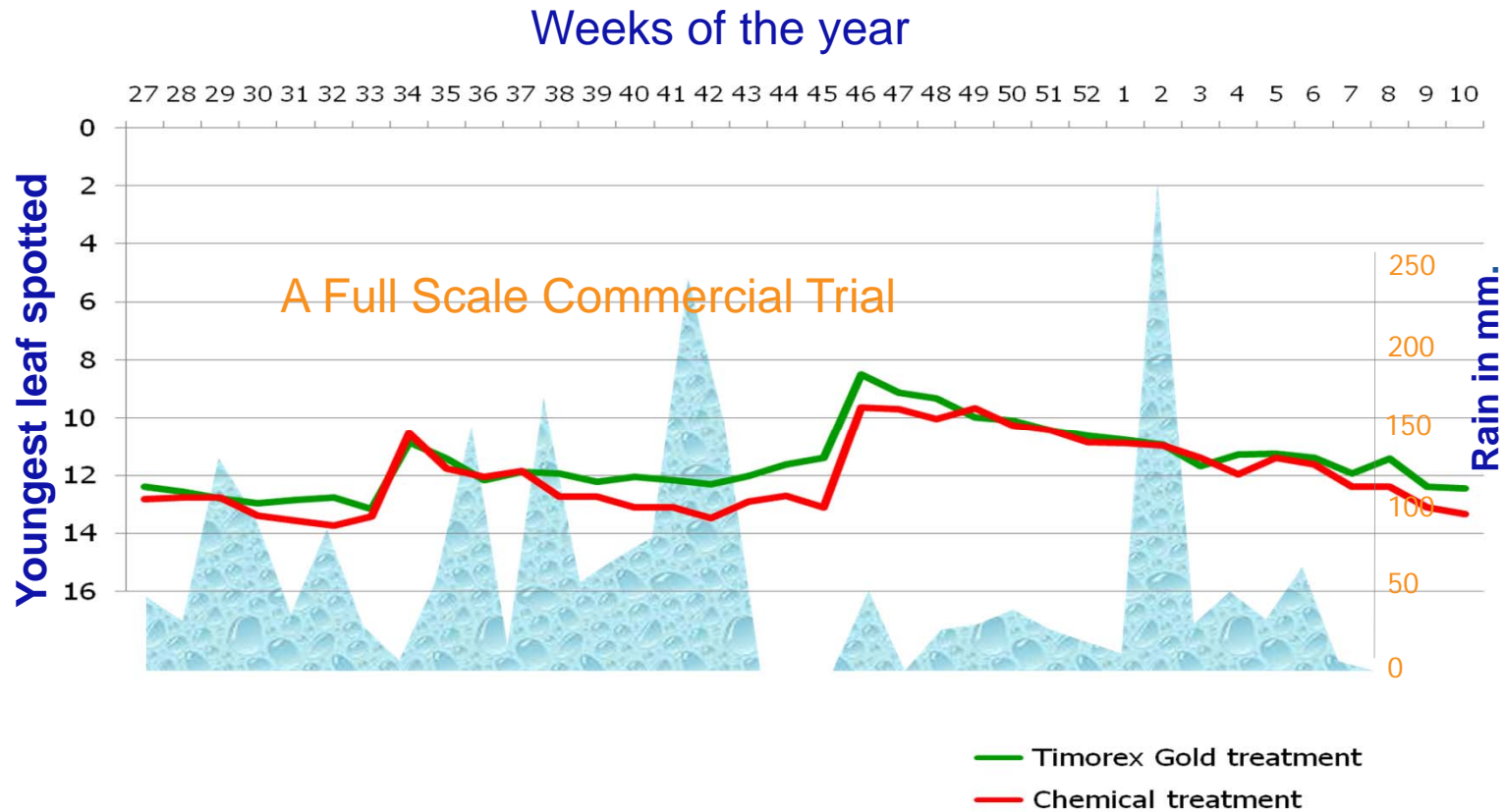
- Starting from week 27 of 2008 to week 8 of 2009
- 32 commercial consecutive foliar sprays of Timorex Gold
- In comparison to the commercial program including various protectants and systemic fungicides applied at similar dates





# Identical disease control to the standard commercial program

27 (2008) to week 10 (2009)

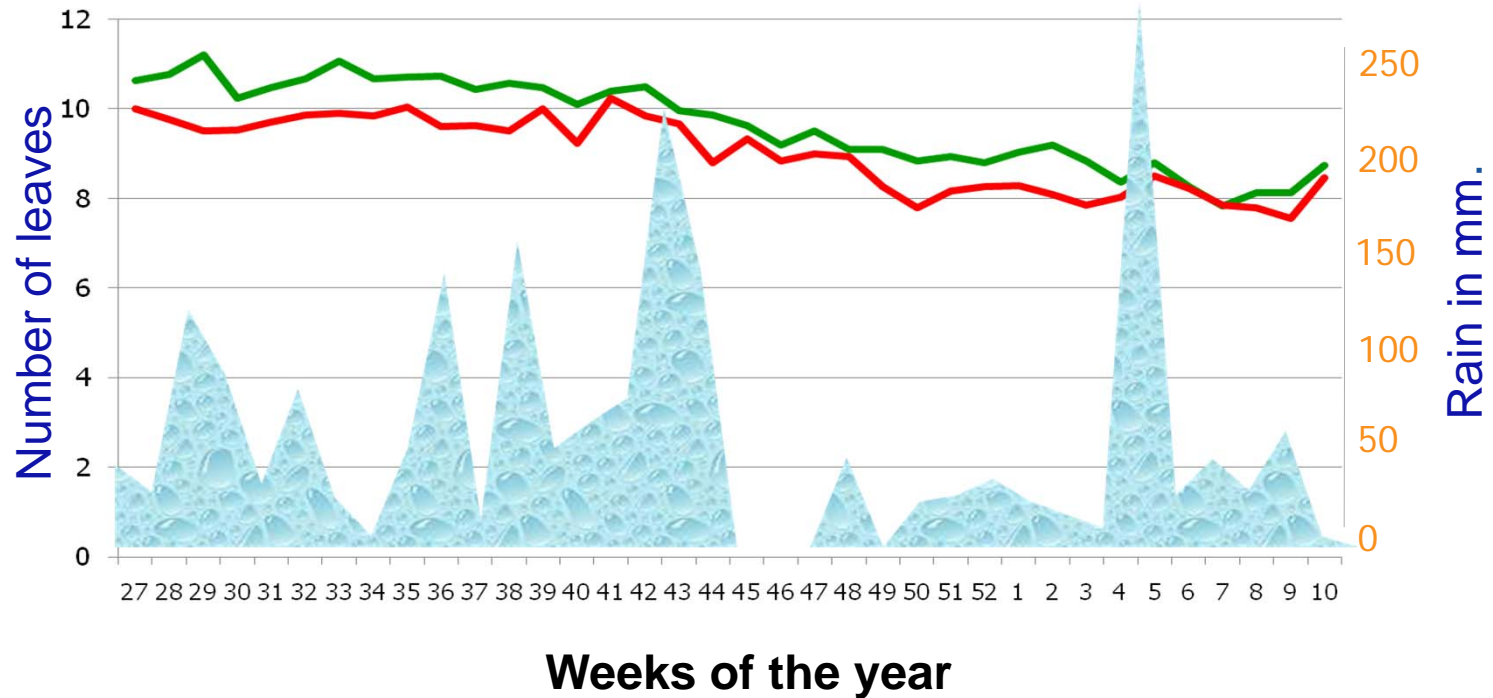


# Provided higher number of leaves at harvesting

week 27-2008 to 10-2009

— Timorex Gold treatment      — Chemical treatment

**An additional of one functional leaf increases the yield by 1700 kg/ha/year**





## Increased average Bunch Characteristics Out of 100 Bunches in Each Program Harvest Week 11-09

Program	Average weight (Kg.)	Number of hands	Basal Grade	Apical Grade
Timorex Gold <sup>®</sup>	22.6	6.7	11.2	8.5
Chemical	21.0	6.3	9.6	7.7



## Summary

- High prophylactic and excellent curative efficacy against BLS
- Excellent efficacy comparable to leading systemic strobilurine and triazole groups fungicides
- Adopted for commercial use in the key banana growing countries
- A reliable eco-friendly fungicide, with significant added value to growers (leaves, yield).
- Organic certified
- Best tool for anti-resistance management
- No residues, no MRL and PHI limitation

**Timorex Gold™ substantially reduces chemical load in banana plantations, yet maintains an exceptional level of control**





### Stockton Group Head Office

16 Menachem Begin street, Gama House,  
Ramat Gan 52700, ISRAEL

Tel: 972.3.5769600 | Fax. 972.3.5769601

[Info@stockton-ag.com](mailto:Info@stockton-ag.com)

# Thank you!



## Timorex Gold™

The new generation control of Black sigatoka disease in Banana

- Timorex Gold™ exhibits superb prophylactic and excellent curative efficacy against BLS, also in the most intense disease pressure conditions
- Timorex Gold™ guarantees increased Yield production by demonstrating higher number of leaves
- Timorex Gold™ offer multiple modes of action on fungal and bacterial cells – best tool for resistant management program
- Timorex Gold™ is a non residue, eco-friendly natural biofungicide, offering human and environment safety
- Timorex Gold™ is adopted for commercial use in the key banana growing countries for conventional and organic plantations

