## *Technomyrmex vitiensis –* a Challenge for Tropical Greenhouses

#### **Conclusion:**

The White footed ant (genus *Technomymex vitiensis*, Formicidae, Dolichoderinae) is native to the Pacific and Indo-Australian region and was introduced by global trade to European tropical greenhouses at the end of last century. It is now the most common ant species in buildings with tropical climate. The species has decentralized colonies over large territories and the workers tend aphids. Large colonies may interfere with the biological control programs to control aphids in tropical greenhouses.

(Lecture at the Conference of the DGaaE 2015 in Frankfurt)

## *Technomyrmex vitiensis –* a Challenge for Tropical Greenhouses



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## **Introduction of Ants Into Tropical Greenhouses**



## **Distribution of** *Technomyrmex vitiensis* in Central Europe

CH

T

B

PL

CZ

A

Further ref.: Bolton 2006, Vierbergen 2003

F

GB

## Ants Found in Buildings With Tropical Climate in NL (Boer & Vierbergen 2008)

Counts from 9 botanical and zoological gardens

before 1945 1946 - 1999 2000 - 2006

Formicinae	30			
Plagiolepis sp. (alluaudi)		(4)	2	
Dolichoderinae	Ć	$\langle \bigcirc$		
Linepithema humile	x		-	
Tapinoma melanocephalum				
Technomyrmex albipes (vitiensis ?)				
Myrmicinae	ç (O	3		
Monomorium pharaonis	SX		-	
Pheidole megacephala	<u> </u>	1	1	
Pheidole fervens	1	1	-	
Pheidole anastasii	2	2	1	
Tetramorium bicarinatum	5	3	2	
Tetramorium insolens		1	2	
Pseudomyrmecinae				
Pseudomyrmex gracilis	-	1	1	
Ponerinae				
Hypoponera schauinslandi	1	2	5	





## **Occurrence and Identification**

	Technomyrmex vitiensis	Technomyrmex albipes	Technomyrmex difficilis
Origin	Continental and Insular southeast Asia <sup>2</sup>	Continental and Insular southeast Asia <sup>2</sup>	Madagascar <sup>1,2</sup>
Introduction	Europe <sup>1,2</sup> ← San Francisco CA French Guiana SA	-Netherlands, Belgium <sup>3</sup>	Florida, Georgia, Lousiana, South Carolina, Seattle Australia?
Identification	1 pair of pronotal hairs, 1 pair of propodeal hairs	2 pairs of pronotal hairs, 2 pairs of propodeal hairs	<ol> <li>pair of pronotal hairs,</li> <li>pair of mesonotal hairs,</li> <li>pair of propodeal hairs</li> </ol>
		Bolton 2007 2Wattoror 2	2008 <sup>3</sup> Boor & Vierborgen
and the second		Bolton 2007, <sup>2</sup> wetterer 2	2006, Duer & vierdergen

## Technomyrmex vitiensis – Factors for its success as tramp ant

Decentralized colonies over large territories with regular exchange of workers; Inseminated queens only in new colonies and later replaced by intercastes; Transfer of nutrients through trophic eggs; (Yamauchi et al 1991) Interference with the biological control programs to control aphids.



## **Nutrition sources**

### Plant juice



Honey dew

Honey





Transfer of nutrients through trophic eggs



## T. vitiensis as hygiene pest in a cafeteria



## T. vitiensis – an Ant – Plant Community



Myrmecodia platyrea (Myrmecodia)

*Myrmecodia sp.* are epiphytic plants with origin in South Asia and Australia. They develop bulbs with cavities which have small exits and are colonized by different ant species (*Technomyrmex, Tapinoma, Tetramorium, Plagiolepis* and others).

## Nests below dead leaves on palmes











## **Components of an Effective Ant Management Programm in Buildings With Tropical Climate**

- 1. Identification;
- 2. Detection of the nesting sites and the trails;
- 4. Selection of a suitable control strategy;
- 5. To close cracks and crevices in the foundation;
- 6. Documentation

**Preventive measures** in buildings with tropical climate (zoological and botanical gardens, tropical bathes, restaurants, hotels, shoping moles etc.

**Quarantaine of new plants** but also trunks, branches and roots (to be placed on the ground as underground or fixing for plants), in a special room which is not connected to the green house or the plantation;

Nocturnal inspection of the greenhouse or plantation;

Removal of dead vegetation (leaves, trunks, bark etc.) and fallen down fruits.

## Conclusion

Small decentralised nests

Delivery of nutritient through trophic eggs

The primary queen is replaced by workers

Workers (+brood) leave their nest immediately when disturbed

Outnumber native ant species

They tend aphids and protect them effektively against predators and control measures;

Buildings with tropical climate provide excellent conditions for the establishment of *Technomyrmex vitiensis*.

Distribution of small Technomyrmex colonies with potted plants, flowers, branches and roots

Transmission of plant diseases may also be possible.

## References

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# Thank you very much for your attention

Questions please ???