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Bee diseases new to subsaharan Africa found in Benin

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Introduction

In the last decade much attention has been given to honey bee health, yet information on the health status of Subsaharan African honey bees is scant to say the least (Dietemann *et al.*, 2009). In recent years beekeepers in Benin have noted a decrease in honey production and in some cases reported colony collapse (pers. comm. A. Paraïso, 2010). A possible explanation might arise from the spread of previously unidentified parasites and pathogens new to the region.

Beekeepers in Benin

Varroa destructor has been established in Benin for at least 5 years (Paraïso *et al.*, in press). However, negative effects of varroa on honey bees south of the Sahara are hardly found in previous studies (Dietemann *et al.*, 2009). This might not be true for viruses it vectors. As varroa was introduced, so could related viruses (ABPV and DWV) have been. Similarly *Nosema ceranae* has been found north of the Sahara (Higes *et al.*, 2009) and might well spread further south.

Research Question

What is the current status of *Nosema ceranae* and Deformed Wing Virus (DWV) and Acute Bee Paralysis Virus (ABPV) in Benin?

Material & Method

In 2009 honey bee and varroa samples were collected from Ganou in North East Benin and stored in 70% ethanol. This region is host to two honey bee subspecies: *Apis mellifera adansoni* and *A. m. jemenitica*, which are known to hybridize.

DNA and RNA was isolated from the collected samples using a purification kit (MC85200 Epicentre, BoizymTC). A simplex real-time PCR was performed on the samples (details can be obtained through author) on *N. apis, N. ceranae*, DWV and ABPV.

Results

All samples tested positive for DWV. The first batch of 6 bees (B1) was also tested individually for *N. apis* and *N. ceranae* with negative and positive results respectively. ABPV was not detected in bees or varroa mites.

Table 1. Results of honey bee and Varroa destructor *samples tested for Deformed Wing Virus (DWV), Acute Bee Paralysis Virus (ABPV),* Nosema apis *(Na) and* Nosema ceranae *(Nc) collected in Benin in 2009.*

#	species	DWV	ABPV	Na	Nc
B1	*A. mellifera* (n=6)	+		-	+
B2	*A. mellifera* (n=4)	+	-		
V1	*V. destructor* (n=5)	+			
V2	*V. destructor* (n=6)	+	-		

Take home message

Both DWV and *N. ceranae* were found in samples from Benin, indicating that these pathogens are more widespread than is currently perceived. Detrimental effects of both pathogens are not uncommon in other subspecies of *Apis mellifera*. Further research is needed to add to the knowledge of the distribution and the consequences of these pathogens to African honey bees.

References

Dietemann, V., Pirk, C.W.W., Crewe, R.M. (2009) *Is there a need for conservation of honeybees in Africa?* Apidologie. 40:285-295.

Higes, M., Martin-Hernandez, R., Garrrido-Bailön, E., Botías, C., Meana, A. (2009) *The presence of* Nosema ceranae *(Microsporidia) in North African honey bees* (Apis mellifera intermissa). J. Apic. Res and Bee World 48 (3): 217 - 219.

Paraiso, A., Cornelissen, B., Viniwanou, N. (in press) *Varroa infestation of honey bee colonies (*Apis mellifera adansonii*) in Benin.* J. Apic. Res and Bee World.

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