

# THE EFFECTS OF ROVE BEETLES *PAEDERUS STAPHYLINIDAE* (SKIRT AND BLOUSE) AND WAX MOTHS ON PROFITABLE COMMERCIAL BEEKEEPING IN CHALLENGING ECONOMY JOS SOUTH, PLATEAU STATE NIGERIA

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## Abstract

It is clear that economic growth is a global or worldwide issue. The economic impact of insects to animals, plants and man are common in the tropics. The rove beetle (skirt and blouse), which is commonly a pest of cereals like maize, bears different local names on the plateau. In man, what usually follows arthropod bite is referred to as *Papular urticaria*. Accordingly, dermatological reactions following contact with only insect or insect fluid content in the absence of bites are rare. Bee honey keeping is human resource development. This study reported the cases of bee farm (A) ravaged by swarm of rove beetles called skirt and blouse and farm (B) which was ravaged by wax moth caterpillars feeding on the honey combs thereby causing psychological trauma and causing severe financial loss to the farmers. Fumigation with dried bitter leaves yielded about 80% effectiveness (Farm A) against skirt and blouse. Hand picking of wax moth caterpillars could not yield positive results. All affected combs (A and B) were destroyed, hives cleaned, open sun dried and left in the rain and restocked. Commercial beekeeping production for honey and other products with untapped great economic potential is indeed a new opportunity for the diverse fields: researchers, veterinarians, medics, toxicologist and entomologists, environmentalists and ecologist, pharmaceutical, cosmetics industry and the agricultural system. In this study, we see bee honey as food producing golden animal beyond an insect in the same vein with other livestock animals. To our knowledge, this is the first reported case of these pests or disease of beehive honey. We advised that as standard management practice in beekeeping, hives be should be placed on benches or stands with legs dipped in used engine oil or grease or suspended with binding wires against insects. Use of chemicals or insecticides be discouraged and more bee research works are advocated in Nigeria.

**Key words:** effects, rove beetles, skirt and blouse, wax moth caterpillar, bee honey golden animal

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## INTRODUCTION

According to Oyedeji *et al.* (2005) cited Morsy *et al.* (1996) that rove beetle belongs to the genus *paederus* in the family Staphylinidae. There are over 200 species of the rove beetles and the specie implicated in the cases studied is yet to be identified (Oyedeji *et al.*, 2005). These beetles are actually rove beetles and not blister beetles although, they can induce blister like lesions on the skin (Couppie *et al.*, 1992). They occur in Africa, Asia, and South America (Oyedeji *et al.*, 2005)). Previous reports on similar skin reactions to insects are rare and have not been documented among Nigerians (Alva-Davalos *et al.*, 1999 and Adam S. Stibich *et al.*, 2001). Gabriele (2005) reported the devastating effects of insect control in the tropics.

## **MATERIALS AND METHODS**

### **Location and production sites**

Beehives (A) Vom and (B) Bukuru both in Jos South Local Government Area of Plateau State Nigeria. Beehives (A) commercially raised in a mixed fruits orchard made of Guava, cashew, pawpaw, citrus, coffee, sisal, straw berry, bitter leave, avocado pear, mahogany, mango and eucalyptus trees in the environment as good floral landscaping. Beehives (B) were raised in Urban residential backyard with mango trees, coffee, sisal, bitter leaves, pawpaw, cashew and eucalyptus trees covering 90% of the vegetation reserve.

### **Diagnosis**

“Skirt and blouse” was diagnosed in Beehives (A) by the farmer who identified the insects and was conversant with them. Farmers and children in Plateau State, are very conversant with these insects and identified them as skirt and blouse.” The Mwaghavul tribe from Mangu Local Government Area of Plateau State Nigeria call them “dangdep or langghar” while the Ron people of Bokkos call them “yuorh “in their dialect. Diagnosis in Beehives (B) was based on the massive different size population of insect caterpillars directly feeding on the honey combs with wax moths identified in the hives.

### **Procedures**

Routine visits of the beehives were made by the beekeepers and were proven satisfactory. Almost at the point of harvesting the honey, there seemed not to be active movement of the bees from the hives outlets as expected. The cover of the hives were carefully removed and inspected and swarm of insect pests were seen with Massive colony or swarm of insects identified as “skirt and blouse” (A) were seen moving in and out of the Kenyan top bars hive and cells feeding on the honeycombs. Similar observations were seen in (B). The bees absconded or deserted the hanging combs and confined themselves to few bars at the extreme end of the hive (A) and the causative insect is nocturnal in habit.

In Beehives (B), only visual observations were routinely made by the farmer; the most active bees movement suddenly became less active and very few bees were seen motionless at the outlets. Finally, no bees were seen going in and out of the hives.

## RESULTS

### EPIDEMIOLOGY OF SKIRT AND BLOUSE

#### Figures 1a, 1b and 1c from Farm (A)

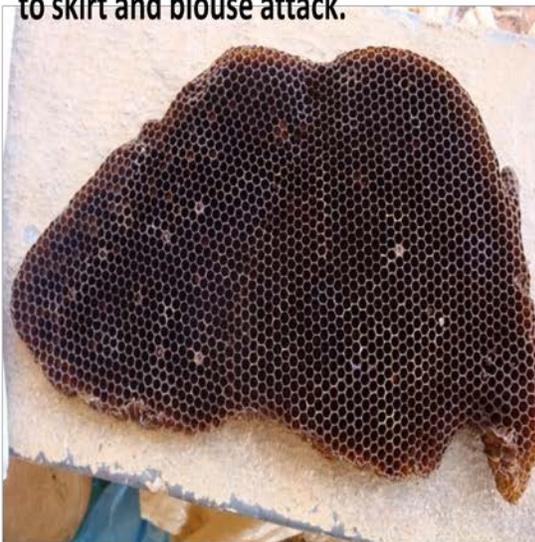
1a: Apiary attacked by skirt and blouse insects



1b: A swarm of skirt and blouse infestation in a beehive



1c below: Absconded queen cell comb due to skirt and blouse attack.



1d below: A related skirt and blouse that caused linear dermatitis in human (by [Macmilla](#))



EPIDEMIOLOGY OF WAX MOTH

**Farm (B) Figures: 2a, 2b, 2c and 2d Devastated by wax moth**

Figure 2a: Moth wax caterpillars borrowing inside combs



Figure 2b: Farm B; Sealed honeycomb with Wax Moth silky wool with scattered eggs- like

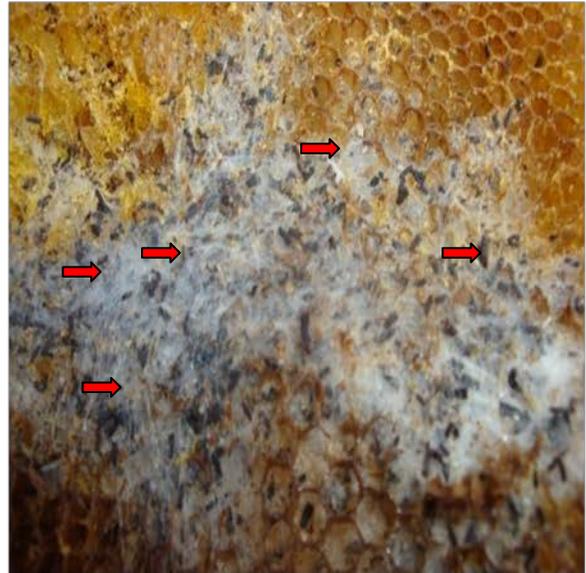


Figure 2c below: Sealed Wax Moth cocoons



Figure 2d below: A fully grown Wax Moth



## **DISCUSSION**

In this studied beehives (A) skirt and blouse specie is not known to cause any effect on human beings but Morsy *et al.* (1996) reported that, in Egypt members of the rove beetle (genus *Paederus*) have been found to contain pederin, which is a potent toxin capable of causing a necrotizing lesion (dermatitis linearis) and conjunctivitis when left in contact with the human skin and eye respectively (Couppie *et al.*, 1989 and Oyedeji *et al.*, 2005)

Apart from the wax moth laying copious eggs in comb cells and later capped by the bees hatched into larvae which formed into caterpillars feeding on the already made honey. The caterpillars caused devastating economic loss on the entire hive. It could also mean that other insect intruders contained vesicant in their haemolymph which scared and repel bees instead of fighting back and protect their colonies. As reported by Adam *et al.* (2001), coming in contact with insects may induce cutaneous or systemic reactions, ranging from mild, to annoying or life threatening reactions this could be one of the reasons why bees absconded their hives.

The economic financial loss of apiary (A) were evaluated; four beehives were devastated by the skirt and blouse. A hive had 28 Keyan top bars. In total, 112 top bars with combs were affected. Previous harvest from a hive yielded about 20 litres of honey. A litre of honey under market survey cost N1500.00 (USA\$6), market survey was N250 = USA\$1. Apiary (B) lost five hives due to wax moth caterpillars.

The diagnosis of beehives intruder (pests) requires a high index of suspicion and familiarity with the insect fauna of the area in which one's patient lives and visits as observed by Steen *et al.* (2004).

While prevention of insects attack on humans is based on use of effective insecticides and repellent, this will ensure avoidance of contact with offending insect (Stibich *et al.*, 2005), it may not be applicable to beehives due to hazard analysis (chemical residual effects).

## **CONCLUSION AND RECOMMENDATIONS**

The skirt and blouse had access to the hives due to direct contact with the trees providing shade and climbing the hives' stands. The pests might have sent special chemical signals or poignant odor that might have sent the bees off to abandon their normal cell activities.

The skirt and blouse infested hives' combs were destroyed; the hives with the bees were fumigated three times with dry bitter leaves. About 80% of skirt and blouse died while the rest escaped. There was no remedy given to five beehives attacked by wax moth; combs were destroyed and hives cleaned and allowed to stand open in sun and rain for some time before reassembled for new stock. Hive stands were dipped or greased in used engine oil to prevent insects access into the hives as a remedy while the use of chemical insecticides were discouraged (residual effects).

Good standard management practice of beekeeping is advocated. Further studies need to be carried out to determine the insect species and the chemicals and toxins found in these insects. Could these insects cause secondary bacterial infection, which could call for an appropriate antibiotic?. Further studies need to be carried out to determine the effect of insecticides and repellents on the bee intelligence and orientation when in distress.

## **ACKNOWLEDGMENT**

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