

## Comparative Study of Some Bait Materials for Colonization of Honey Bee *Apis Mellifera adansonii*

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### **Abstract**

*This field experiment was carried out at the Teaching and Research Farm of forestry arboretum of Rivers State University, Port Harcourt, Nigeria. To evaluate the relationship between bait materials applied on colonization of bee-hive, honey production and bee-wax yield. A total of 12 kenyan hives were used. They were placed 5 meters apart in a complete randomized design (CRD). The baits used are Honey, Palm wines, pineapple control. The baits were applied every two weeks for 12 months. There was significant differences on the various baits used on time of colonization, quantity of honey produced, bee wax, it is therefore recommended that honey is a good bait material*

### **Introduction**

Honey bees *Apis mellifera adansonii* (Lestis) belongs to the Phylum Arthropoda and class insecta.

The West Africa honey bee lives in colony throughout the year being a social insect and a colony consist of a queen which lays the eggs, worker bees, drones (male bees) and the solders bees which protect the hive from enemies attack. Bees feed on the nectars from the flowering plant within their environment to produce honey. The pollen is used to feed the larva and nymphs, nectar is converted into honey while the resin is used to make propolies. A sticky cement substances used for sealing the top bars to prevent water and other intruders from gaining entry into the hive.

Honey has high nutritional value and is a major source of food for millions worldwide (Adjare 1984), nutritional analysis of honey shows that honey contains simple sugars such as fructose, lactose, maltose and sucrose that have no side effect on man's health as compared to synthetic sugar (Akachukwu 2001). However, bee keeping in Nigeria is highly underexploited (Nwali 1996) despite being a profitable agricultural enterprise, it enhances pollination thereby increasing productivity, practice of bee keeping aids biodiversity conservation due to deforestation activities which could lead to extinction of their golden insect of high socio-economic. Akanbi and Olaqunfu (2000). It is also a raw material for the medical, pharmaceutical, food and beverage cloth and textile etc industries. Akachuku (2001) and Annon (2005).

Bee-keeping plays a role in poverty alleviation and employment through its potential in food security FAO (2001) and enables man to utilize natural resources of plant such as nectar and pollen which would have been under-utilized. Seegeram et al (1996).

### **Justification**

Due to deforestation activities, there is need for conservation of biodiversity to prevent the extinction of these golden insect called honey bee and the need to adopt modern bee-keeping

instead of relying on non-sustainable, traditional, method of bee-keeping which is destructive in nature.

### **General Objective**

To determine the different bait materials that will enhance the colonization of bees.

### **Specific Objectives**

1. To ascertain which bait material will enhance colonization
2. To determine the relationship between bait materials and time of colonization
3. To determine the relationship between bait material and honey yield
4. To determine the relationship between bait material and bee wax yield.

### **Experimental Sites**

Materials and methods

The research was conducted at the teaching and Research farm of Rivers State University, forestry arboretum, Port Harcourt, Nigeria.

The vegetation consist of *Khaya grandifolia*, *Tectona grandis*, *Irvingia gabonensis*, *Treculia africana*, *Gnetum africana*, *Carica papaya*, *Citrus* species, *Mangifera indica*, *Manihot* species, *Elaeis guinensis*, *Moringa Olifera*, *Anacardium occidentale*, *gmelina arborea* are good source of nectar.

### **Experimental Materials**

The experimental materials are Kenyan top bar hives and a total of 12 hives were used. Made from *Terminalia ivorensis*. (Adjare, 1984 and Akanbi 2002).

### **Experimental Design**

A total of 12 hives were allotted to four trees, each was replicated three times.

Treatment	A	Honey
	B	Palm wine
	C	Pine Apple
	D	Control

Complete randomized design was used

### **Procedure**

The baits were applied once every week and dirt and unwanted intruders were removed such as spider, cockroaches, millipedes etc. All the experimental materials (hive) were homogenous while the different bait materials the only source of variability

### **Parameters**

1. Date of hive colonization
2. Weight of honey comb harvested per treatment
3. Weight of honey harvested per treatment
4. Weight of bee wax extracted per treatment.

### **Date Analysis**

The analysis was done using the mean, standard deviation and standard error.

## Results

**Table 1: Effects of Treatments on Times (days) for Colonization**

Treatment	Mean	Standard Deviation	Standard Error
Honey	100.12	70.50	35.77
Palm Wine	120.23	17.56	10.14
Pine Apple	135.10	15.01	9.02
Control	0.00	0.00	0.00

**Table 2: Effect of Treatments on Weight of Honey Comb Harvested**

Treatment	Mean	Standard Deviation	Standard Error
Honey	2.45	1.78	0.511
Palm Wine	1.85	0.57	0.33
Pine Apple	1.30	0.35	0.23
Control	0.00	0.00	0.00

**Table 2: Effect of Treatments on Quantity of Honey Harvested**

Treatment	Mean	Standard Deviation	Standard Error
Honey	2.00	1.65	0.48
Palm Wine	1.50	0.50	0.29
Pine Apple	1.00	0.20	0.15
Control	0.00	0.00	0.00

**Table 2: Effect of Treatments on Quantity of Bee Wax Extracted**

Treatment	Mean	Standard Deviation	Standard Error
Honey	125.4	96.3	27.8
Palm Wine	90.0	27.5	15.9
Pine Apple	70.0	19.5	10.5
Control	0.00	0.00	0.00

### LSD (P < 0.05)

### Discussion

The treatment had effect on colonization of hive as the use of honey as bait attracted bee colonization faster than other baits. The time interval of colonization was 7-180 days from the first day bait was allied. And this agrees with (Adjare 1984) that states that hives can colonize within 4 days after application of bait especially during the swarming period.

This was followed by palm wine, pine apple and the control had no colonization. The colonization by palm wine and pine apple and the control had no colonization. The colonization

by palm wine and pine apple agrees with Seegerem et al (1996) that sweet smelling substances are capable of attracting bees into the hive.

The result showed that there is significant difference in the various bait materials used as Honey as a bait had more quantity of bee comb as when compared to palm wine and pine apple whereas the control had no Honey comb since bees did not colonize the control.

Also, the result on the effect of treatments on quantity of honey produced showed that treatment was responsible for the quantity of honey produced and it was higher on the use of honey as a bait as when compared to the use of palm wine and pine apple which was lower and the control had no honey produced.

The result also showed that there is a significant different in the weight of bee wax extracted.

### **Conclusion and Recommendation**

This research has showed that there is need to apply honey as a bait material to enhance colonization of honey bees in the hive and this is in agreement with Richard (1997) who said that to attract bees colonies must be baited with bait materials such as; bee wax, honey, dry cassava flour, fruit juice , sweet syrup, lemon grass.

The result also showed that the aroma of Palm wine, Pine apple seem to wear out faster than the honey and this affected colonization on those baits.

### **Recommendation**

The application of honey is recommended and hives should be kept clean regularly and placed under shades of trees or plantation to protect them from excessive sun and rain thereby preventing the bees from absconding from the hives.

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