

## **EFFECT OF ADDITION OF VARIOUS ORGANIC MATTERS TO BAITED TRAPS ON THE NUMBER OF CAPTURED RHINOCEROS BEETLES**

**HASHEM, H.H.<sup>1</sup>, OLFAT E. ARAFA<sup>1</sup>, M.M.EL-ZOHAIRY<sup>2</sup> AND  
M.A. EL-DEEB<sup>2</sup>**

*1. Plant Protection Research Institute, ARC, Zagazig, Sharkia.*

*2. Plant protection Department, Faculty of Agriculture, Zagazig University*

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### ***Abstract***

The effect of various organic matters to add to baited traps, on the number of captured rhinoceros beetles was studied under field conditions, at El-Kassassen district.

Results obtained could be summarized as follows:-

#### **1. Cattle dung**

The total numbers of different stages (eggs, larval, pupae and adults) in pits were increased during April, July and September and it had three peaks in seasons 1998 and 1999.

#### **1.2. Pigeon dung**

The total numbers of different stages (eggs, larval, pupae and adults) in pits were increased during April, July, and September and it had three peaks in seasons 1998 and 1999.

#### **1.3. Chicken dung**

The total numbers of different stages (eggs, larval, pupae and adults) in pits were increased during April, July, and October and it had three peaks in seasons 1998 and 1999.

#### **2.6. Preference of organic matter additions**

The highest counts in pits supplied with cattle dung (24163 individual) followed by pits supplied with pigeon (17862 individual) and the least recorded in chicken (2290 individual).

The results can help us to recommend that the cattle dung is the most preferable organic matter addition in pits to attract or rear this pest and to monitor the level of population .

## INTRODUCTION

Date palm trees are liable to be attacked by many insect pests and diseases, the namely *Oryctes* spp. and *Phyllognathus excavatus* Forster which cause a serious damage at roots, trunks, leaves and fruits resulting in economic loss to date fruits yield. The first record of these pests on date palm plantations of Sharkia and Ismailia Governorates was achieved by Alfieri (1976) and Shalaby (1958) in the MOA collection, Plant Prot. Res. Institute.

Although various studies have been conducted on *Oryctes* spp. and *Phyllognathus* spp. in other countries by authors such as Demel (1931) Kunhi kannan(1931), Corbett(1932), Jepson(1933 and 1935), Alibert(1938) , Cherian and Anantanarayanan (1939) Frappa (1939), Gressitt(1953), Cumber(1957), Bedford (1968 and 1976) , Monty (1978) , Lohar and Mecci (1985) , Reynolds (1988).

Little work has been done on *Oryctes spp.* and *Phyllognathus spp.* In Egypt, special stress, however has been laid by Hafez and Bishara (1961) on *Pentodon bispinosus*.

Therefore, it was found expedient that a detailed study on ecology of *Oryctes spp.* and *Phyllognathus spp.* adult under field conditions in newly reclaimed areas at El- kassassen district, Ismailia Governorates is necessary.

## MATERIALS AND METHODS

The experiments were carried out during two successive seasons, 1998 and 1999 .In field area, an area of 80 feddans at Gala farm, sabri village, Kassessen district, Ismailia Governorate.

Different types of baited traps were applied for attracting rhinoceros beetles of both *Oryctes spp* and *Phyllognathus excavatus* Forester adults and their immature stages. Five round pits (80 cm depth × 40 cm diameter) a part 83 cm. from date palm trees. Every pit was provided with organic manure (cattle dung) at the depth of 80 cm. and irrigated weekly during the two experimental years. Pits were examined weekly in the morning and the catches of different stages (eggs, larval, pupae and adults) were collected, identified, counted and sexed.

## RESULTS AND DISCUSSION

### 1. Addition of various organic matters to baited traps.

#### 1.1. Cattle dung

Data obtained in Table (1) revealed that the total number of different stages (eggs, larval, pupae and adults) in pits was increased during April, July and September and it had three peaks during 1998 and1999 seasons .These results are in agreement with that finding by Reynolds (1998) who states that cattle can cause damage to young trees, and cattle dung may serve as a breeding place for rhinoceros beetle (*Oryctes rhinoceros*, L.) a major pest of coconut.

#### 1.2. Pigeon dung

Data obtained in Table (1) studied that the total number of different stages (eggs, larval, pupae and adults) in pits was increased during April, July and September and it had three peaks during 1998 and1999 seasons.

#### 1.3. Chicken dung

Data obtained in Table (1) recorded that the total number of different stages (eggs, larval, pupae and adults) in pits were increased during April, July and October and it had three peaks during 1998 and1999 seasons. These results are in agreement with the finding of Jepson (1935) in Colombo studied that larvae of *Phyllognathus*

*dionysius*, F., and *Oryctes rhinoceros*, L., were found together in green manure around the base of young coconut palms had been severely damaged by the latter. Lohar and Mecci (1985) mentioned the Scarabaeidae of the campus of Sind. Agricultural University in Tandojam, Pakistan, were sampled in dung, fallow soils and field crops between June and December. *Oryctes rhinoceros* maximum numbers were collected in June- August.

## 2. Preference of organic matter additions

Data obtained in Table (1) revealed that the highest counts in pits supplied with cattle dung (24163 individual) followed by pits supplied with pigeon (17862 individual) and the least recorded in chicken(2290 Individual).

The results can help us to recommend that the cattle dung is the most preferable organic matter addition in pits to attract this pest and to monitoring the level of population or to rear under laboratory condition. These results are in agreement with the finding of Nirula *et al.* (1952) who stated that the preferred breeding medium to *O. rhinoceros* was cattle dung, and eggs were not laid in coir dust or in coconut husks that were mulched and buried or left to decompose in the open for over three months.

Table 1. Monthly average number of *Oryctes* spp. and *Phyllognathus excavatus* adult and their different stages (eggs, larval, pupae and adults) attracted to five pits as baited traps ,supplied cattle dung, pigeon dung and chicken dung , sited under date palm trees orchard,at El-Kassessen district, Ismailia Governorate during two seasons 1998 and 1999.

Date	Cattle dung			Pigeon dung			Chicken dung		
	1998	1999	total	1998	1999	total	1998	1999	total
Jan	0	192	192	0	122	122	0	27	27
Feb	0	13	13	0	12	12	0	3	3
March	0	1495	1495	0	960	960	0	124	124
April	2729	2012	4741	1943	1518	3461	236	187	423
May	974	885	1859	694	660	1354	109	82	191
June	462	1165	1627	326	916	1242	45	112	157
July	2539	1697	4236	2007	1373	3380	200	120	320
Aug	740	743	1483	626	596	1222	57	59	116
Sept	1733	1715	3448	1245	1168	2413	149	108	257
Oct	1343	1133	2476	1031	877	1908	139	164	203
Nov	747	636	1383	507	604	1111	156	112	268
Dec	570	640	1210	407	270	677	55	46	101
Total	11837	12326	24163	8786	9076	17862	1146	1144	2290

**REFERENCES**

1. Alfieri, A. 1976. The Coleoptera of Egypt. Bull. Soc. Ent. Egypt, 5: 217.
2. Alibert, H. 1938. Etude sur les insectes parasites du palmier à huile au Dahomey. Rev. Bot. Appl., 207 (18): 745 – 773.
3. Bedford, G.O. 1968. Observations on the ecology of *Oryctes* (Coleoptera: Scarabaeidae: Dynastinae) in Madagascar. Bull. Ent. Res. 58 (1): 83 – 105.
4. Bedford, G.O. 1976. Rhinoceros beetles in Papua New Guinea. South Pacific Bulletin, 26 (3): 38 – 41
5. Cherian, M.C. and K.P. Anantanarayanan. 1939. Studies on the coconut palm beetle (*Oryctes rhinoceros* Linn.) in South India. Indian J. Agric. Sci., 3 (9): 541 – 559.
6. Corbett, G.H. 1932. Entomological Notes. First Quarter. Malayan Agric. J., xx (4): 185 – 186.
7. Cumber, R.A. 1957. Ecological studies of the Rhinoceros Beetle *Oryctes rhinoceros* (L.) in Western Samoa. Tech. Pap. S. Pacif. Comm., vi (107): 32.
8. Demel, C.N.E.J. 1931. Habits and control of the coconut black beetle *Oryctes rhinoceros* (L.) Trop. Agriculturist, Lxxvii (2): 99 – 111.
9. Frappa, C. 1939. Contribution à l'étude des *Oryctes* des Madagascar. Bull. écon. Macâ giscar (N.S.), (12): 344 – 378.
10. Gressitt, J.L. 1953. The coconut rhinoceros beetle (*Oryctes rhinoceros*) with particular reference to the Palau Islands. Bull. Bishop Mus., viii (212): 157.
11. Hafez, M. and S.I. Bishara. 1961 a. Studies on the biology and ecology of *Pentodon bispinosus* (Kust.) in Egypt. I – the adult stage (Coleoptera: Scarabaeidae: Dynastinae). (with 2 text figures) Bull. Soc. Ent. Egypt, xlv: 155 – 177.
12. Jepson, E.P. 1933. Report on the work of the Division of Plant Pest Control. Adm. Rep. Div. Agric., 107 – 115.
13. Jepson, E.P. 1935. Report on the work of the Division of Plant Pest Control. Adm. Rep. Div. Agric., 104 – 124.
14. Kunhi Kannan, K. 1931. Ground grubs and their movements in the soil. J. Mysore Agric. Exp. Un., xii (1): 3 – 4.

15. Lohar, M.K. and A.K. Mecci. 1985. Occurrence and habits of scarab beetles. Pakistan Journal of Agricultural Research, 6 (1): 49 – 54.
16. Monty, J. 1978. The coconut palm rhinoceros beetle, *Oryctes rhinoceros* (L.) (Col., Dynastidae) in Mauritius and its control. Revue Agricole et sucrière de l'île Maurice, 57 (2): 60 – 76.
17. Nirula, K.K., J. Antony and K.P.V. Menon. 1952. Investigations on the pests of the coconut palm. (1) The rhinoceros beetle (*Oryctes rhinoceros*). control of grubs of *Oryctes rhinoceros*. Indian Cocon. J. 4 (1): 5 – 12, 34 – 35.
18. Reynolds, S.G. 1988. Some factors of importance in the integration of pastures and cattle with coconuts (*Cocos nucifera*). Journal of Biogeography, 15 (1): 31 – 39.
19. Shalaby, F. 1958. Alphabetical list of Egyptian insects in the collection of MOA. Tech. Bull., 135 – 284.

## تأثير أنواع المواد العضوية المضافة إلى حفر المصائد الجاذبة على مجموع الأعداد المصادة من حشرات جعل النخيل

حليم حسن هاشم<sup>١</sup>، الفت السيد عرفة<sup>١</sup>، منصور محمد الزهيرى<sup>٢</sup>، محمد على الديب<sup>٢</sup>

١- معهد بحوث وقاية النباتات-مركز البحوث الزراعية - الزقازيق -الشرقية

٢- قسم وقاية النبات - كلية الزراعة - جامعة الزقازيق

تمت هذه الدراسات بمزرعة الجلا بعزبة صبرى بمنطقة القصاصين محافظة الإسماعيلية  
خلال مواسم ١٩٩٨-١٩٩٩م وكانت النتائج كما يلي:-

١- السماد البلدي :- وجد أن أعلى تعداد للأطوار المختلفة في الحفر المزودة بالسماد البلدي زاد في  
ابريل و يوليو وسبتمبر وأكتوبر وكان لها اربعة ذروات نشاط في موسمي ١٩٩٨ و ١٩٩٩م.

٢- روث الحمام:- وجد أن أعلى تعداد للأطوار المختلفة في الحفر المزودة بروث الحمام زاد في  
ابريل ويوليو وسبتمبر وأكتوبر وكان لها اربعة ذروات نشاط في موسمي ١٩٩٨ و ١٩٩٩م .

٣- روث الدجاج:- وجد أن أعلى تعداد للأطوار المختلفة في الحفر المزودة بروث الدجاج زاد في  
ابريل ويوليو وأكتوبر وكان لها ثلاثة ذروات نشاط في موسمي ١٩٩٨ و ١٩٩٩م .

٤- التفضيل بين أنواع المواد العضوية المضافة إلى حفر المصائد الجاذبة:-

وجد أن أعلى تعداد للأطوار المختلفة زاد في الحفر التي زودت بالسماد البلدي وسجل أعلى عدد  
(٢٤١٦٣ فرد) يليها الحفر المزودة بروث الحمام (١٧٨٦٢ فرد) وقلها الحفر المزودة بروث الدجاج  
(٢٢٩٠ فرد)

هذه النتائج تساعدنا في اتخاذ التوصيات الآتية بأن السماد البلدي يعتبر المادة العضوية  
المفضل اضافتها في الحفر لجذب وتربية الآفة والتنبأ بمستوى التعداد أو لتربيتها تحت ظروف  
المعمل