

(2004/1/17 2003/10/21 )

/ % 0.4 0.2

% 0.55 1.87 6.93 65.38

.% 27.33

39.66 ,28 ,12 ,3.33

60 % 0.4

## **Laboratory Evaluation of Four Plants Powders Against Some Stored Products Insects**

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### **ABSTRACT**

The effect of the leaves of *Petroselinum sativum*, *Datura stramonium*, the seeds of *Thymas syriacus* and *Pimpinella anisum* were mixed with grain wheat at 0.2 and 0.4 %

w/w concentration. They were evaluated against adults *Tribolium confusum*, *Trogoderma granarium*, *Oryzaephilus surinamensis* and *Rhizopertha dominica*.

*O. surinamensis* was the most susceptible to plant powders. The mean percent mortality was 65.38, 6.93, 1.87 and 0.55 % for *O. surinamensis*, *R. dominica*, *T. granarium* and *T. confusum* respectively. Powders of all plants showed repellent effect to the four insect species except *T. spicata* L. powder which attracted adult of *T. granarium* at 27.33 %.

Rearing of *T. granarium* on wheat grains treated with the plant powders at 0.4 % effect the biology of the insects. The adults gave a progeny of 3.33, 12, 28 and 36.66 individuals from two pairs of insects respectively in comparison to 60 individuals in the control treatment.

|       |         |       |                       |                                         |
|-------|---------|-------|-----------------------|-----------------------------------------|
|       |         |       | %20 – 5               |                                         |
|       | 1992    | )     |                       | % 50                                    |
|       |         |       |                       | .(1994                                  |
|       |         | 1005  | (Graing et al., 1986) | .(Wright, 1967)                         |
| 31    |         | 279   |                       | 384                                     |
|       |         |       | .                     | 5                                       |
| (1997 | )       | (1991 | )                     |                                         |
|       | .( 2003 | )     | (2002                 | ) (Singh et al., 1999) (Mostaffa, 1999) |

*Datura stramonium* L .

*Pimpinella*                      *Thymas spicata* L.

*Petroselinum hortense* Hoffm.

*Tribolium confusum* Duval.

*anisum* L.

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*Trogoderma granarium* Everts

*Rhizopertha dominica* F.

*Oryzaephilus surinamensis* L.

100/ 0.4 0.2

100 .( 0.6)  
10 (³ 10)

1+30

%.5+50

6 3

.(1925) Abbott

9

(Busvine, 1971) Chemotropometer

20 20 48  
3 100

15

.(1993 )

25

100 x

=

25

100 x

=

+ =

=

- =

10

0.2

(³ 5)

%0.4

.(Steel and Torrie, 1980)

(SAS, 1982) SAS

(1)

% 0.55 1.87 6.93 65.38

% 84.53

% 72.57 73.83

% 30.61

.%10

56.66

6 % 23.33 49.99 64.99

9 % 33.23 88.19 92.35 81.45

(Ambadkar and Kham, 1994)

(2)

.% 27.33

% 46.66 – 42.66

%42.66 45.33 46.66

.% 28.66

% 29.33 29.30

% 18.66

(1991 )

.%30

% 60

| %               |       |       |              |      |   |             |      |      | %   |       |
|-----------------|-------|-------|--------------|------|---|-------------|------|------|-----|-------|
| ( )             |       |       |              |      |   |             |      |      |     |       |
| 9               | 6     | 3     | 9            | 6    | 3 | 9           | 6    | 3    |     |       |
| O. surinamensis |       |       | T. granarium |      |   | T. confusum |      |      |     |       |
| 62.90           | 62.95 | 50    | 4            | 0    | 0 | 0           | 0    | 0    | 0.2 | _____ |
| 100             | 96.28 | 63.33 | 8            | 0    | 0 | 3.33        | 3.33 | 3.33 | 0.4 |       |
| 81.45           | 79.61 | 56.66 | 6            | 0    | 0 | 1.72        | 1.66 | 1.66 |     |       |
| ( 72.57 ) a     |       |       | ( 2 ) c      |      |   | ( 1.68 ) c  |      |      |     |       |
| 95.82           | 92.55 | 73.33 | 3.99         | 0    | 0 | 0           | 0    | 0    | 0.2 | _____ |
| 88.88           | 100   | 56.66 | 3.99         | 3.44 | 0 | 0           | 0    | 0    | 0.4 |       |
| 92.35           | 96.27 | 64.99 | 3.99         | 1.72 | 0 | 0           | 0    | 0    |     |       |
| (84.53) a       |       |       | (1.90) c     |      |   | (0) c       |      |      |     |       |
| 87.5            | 70.36 | 43.33 | 0            | 0    | 0 | 0           | 0    | 0    | 0.2 | _____ |
| 88.88           | 96.28 | 56.66 | 4            | 0    | 0 | 0           | 0    | 0    | 0.4 |       |
| 88.19           | 83.32 | 49.99 | 2            | 0    | 0 | 0           | 0    | 0    |     |       |
| (73.88) a       |       |       | (0.66) c     |      |   | (0) c       |      |      |     |       |
| 33.32           | 33.33 | 23.33 | 4            | 0    | 0 | 0           | 3.3  | 0    | 0.2 | _____ |
| 33.32           | 37.03 | 23.33 | 13.63        | 0    | 0 | 0           | 0    | 0    | 0.4 |       |
| 33.32           | 35.18 | 23.33 | 8.81         | 0    | 0 | 0           | 1.66 | 0    |     |       |
| (30.61) a       |       |       | (2.93) c     |      |   | (0.55) c    |      |      |     |       |
| 60.72 a         |       |       | 0.99 d       |      |   | 0.27 d      |      |      | 0.2 |       |
| 70.04 a         |       |       | 2.75 c       |      |   | 0.84 d      |      |      | 0.4 |       |
| 65.38 A         |       |       | 1.87 C       |      |   | 0.55 C      |      |      |     |       |

. 0.05

:2

| (+)     | %        |  | %        |                 |
|---------|----------|--|----------|-----------------|
| 30.66   | 46.66 a  |  | 16.00 c  | T. confusum     |
| 13.33   | 18.66 c  |  | 5.33 ab  | T. granarium    |
| 34.66   | 37.33 ab |  | 2.66 a   | O. surinamensis |
| 26.66   | 42.66 a  |  | 16.00 c  | R. dominica     |
| 32.73   | 43.33 a  |  | 10.6 b   | T. confusum     |
| 24.00 + | 3.33 d   |  | 27.33 d  | T. granarium    |
| 14.00   | 28.66 b  |  | 14.66 bc | O. surinamensis |
| 12.00   | 28.66 b  |  | 16.66 c  | R. dominica     |
| 20.00   | 44.00 a  |  | 24.00 d  | T. confusum     |
| 14.67   | 29.33 b  |  | 14.66 bc | T. granarium    |
| 54.66   | 54.66 a  |  | 0.00 a   | O. surinamensis |
| 34.67   | 45.33 a  |  | 10.66 b  | R. dominica     |
| 33.33   | 42.66 a  |  | 9.33 b   | T. confusum     |
| 27.97   | 29.30 b  |  | 1.33 a   | T. granarium    |
| 33.33   | 33.33 b  |  | 0.00 a   | O. surinamensis |
| 44.00   | 46.66 a  |  | 2.66 a   | R. dominica     |

. 0.05

(1988 ) (3 )

.(1991 )

(1993 )

.....

:3

|          |             |             |          |
|----------|-------------|-------------|----------|
| Apiole   | Anethol     | C           | A        |
| Thymol   | %55         |             |          |
| Tannin   | Rasine      | Carvacrol   |          |
| Atropine | ( )         |             |          |
| Tannins  | Scopolamine | Hypocyamine |          |
|          |             | Faty oils   |          |
| Pinine   | Anethol     | Safrol      | Limonine |

. *T. granarium*

(4)

% 0.2

:4

|         |         | %   |  |
|---------|---------|-----|--|
| 49.16 c | 61.66   | 0.2 |  |
|         | 3.33    | 0.4 |  |
| 39.60 c | 64      | 0.2 |  |
|         | 12      | 0.4 |  |
| 38.83 c | 49.66   | 0.2 |  |
|         | 28      | 0.4 |  |
| 54.99 b | 70.33   | 0.2 |  |
|         | 39.66   | 0.4 |  |
| 60.00 a | 60      |     |  |
|         | 48.99 A | 0.2 |  |
|         | 20.74 B | 0.4 |  |

. 0.05

, 70.33 , 49.66 , 64, 61.66

2

60

% 0.4

12 , 3.33

, 28

(1992 )

( )

.2003

. *Trogoderma granarium* Everts (Coleoptera : Dermestidae)

.( ) (2) 21

.1997

146

.1991

111

.1992

339

.1992

559

.2002

. *Callosobruchus maculatus* (Fab.) (Coleoptera : Bruchidae)

66

.1991

.185–179 (2) 23

.1993

520

.(

)

.1991

848

.1988

477



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