# CONTROL OF THE GREATER DATE MOTH, *ARENIPSES SABELLA* HMPSON (LEPIDOPTERA: PYRALIDAE) AT THE NEW VALLEY-EGYPT

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***Abstract***

Two seasons of field trials were conducted to investigate the efficacy of certain insecticides and bio-insecticides against the greater date moth, *Arenipses sabella* Hmpson (Lepidoptera: Pyralida) at El-Kharga oasis, New Valley, Egypt in 2006/ 2007and 2007/ 2008. The high effects against *A. sabella* among the tested compounds were recorded in case of the treatment of date palm with Proclaim 05 SG (20 gm/ 100L water) and Deltachem super 2.6 EC (50 ml /100L water) during the two seasons. The treatment with Proclaim twice during 1and 22 November of 2006 reduced the rate of bunches infestation by the pest to 85.48% in 2007 season. During 2008 season, application with Deltachem super during 1 and 22 November of 2007 reduced the level of infestation by the greater date moth pest to 75.74%.

## INTRODUCTION

Date palm (*Phoenix dactylifera*) is considered one of the most important cash crops in New Valley Governorate. In this Governorate more than one million date palm trees are grown. Besides the local consumption, dates are also exported to foreign countries.

The lesser date moth *Batrachedra amydraula* Meyrick, the pomegranate, *Viracola livia* Klug and the almond moth *Cadra* spp. are considered the most economically important insect pests attacking date palm trees in this area (Saleh, 1974, Temerak and Sayed 1995, Sayed and El-Deeb1996, Sayed *et al.*, 2001).

*Arenipses sabella* (Lepidoptera: pyralidae) is an early season pest. Spathes, bunches and fruit stalks were attacked in March and early April, and infestation was high at the end of April. When the larvae infested at the later stage of growth, bunch bases broken and caused superficial damage to fruits and affected its quality. This usually happens during August such bunches are heavy enough and then these infested bunches were unable to bear their weight. Two generations per year were recorded (Saleh, 1974, Ali *et al.*,1988 and Abdel-Rahman *et al.*,2007).

Recently, *A. sabella* became a major pest attacks the date palm trees in the New Valley. Little information were available in the literature concerning to control of *A. sabella*. Therefore, the present study was conducted to evaluate certain insecticides and bio- insecticides against this pest.

Trials were conducted in Ganah Village, Kharga Oasis in 2006/ 2007 and 2007/ 2008. The following treatments were: 1- Tracer 24% SC (Spinosad) containing 240 active ingredient as spinosad (Spynosin A & D). It is a natural metabolite of the Actinomycete, *Saccharopolyspora spinosa* Mertz & Yao. 2- Radiant 12SC (Spinetoram) containing 120 active ingredient as spinosad (Spinosyn J&L). It is derived from fermentation of the Actinomycete, *S. Spinoza*. 3- Runner 24% SC (Methoxyfenozide). 4- Deltachem 2.6 EC (Deltamethrin 2.6%). 5- Match 5%ES (Lufenuron). 6- Proclaim 05 SG (Emamectin benzoate).

The time of applications and the compound rates were recorded in Table (1). Date palm variety Saidi (Sewi) was used. All treatments were replicated four times. One date palm tree was considered as one replicate. Samples size was all bunches / one date palm. Inspection times were conducted at two weeks interval from the middle of April until 15$^{th}$of May during the two successive seasons (2007 and 2008).

Table 1. Treatments, rates and time of applications on *Arenipses sabella*

| No. | Treatments & rates /100 L water | | | |
|---|---|---|---|---|
| | 1/11 | 22/11 | 13/12 | 3/1 |
| 1 | Radiant 10 ml | Runner 20 ml | ------ | |
| 2 | Radiant 10 ml | Runner 25 ml | ------ | ----- |
| 3 | Radiant 20 ml | Runner 20 ml | ------ | ----- |
| 4 | Radiant 20 ml | Runner 25 ml | ------ | ----- |
| 5 | Tracer 20 ml | Runner 20 ml | ------ | ----- |
| 6 | Tracer 20 ml | Runner 25 ml | ------- | ----- |
| 7 | Tracer 30 ml | Runner 20 ml | ------- | ----- |
| 8 | Tracer 30 ml | Runner 25 ml | ------ | ----- |
| 9 | Deltachem 50 ml | ------ | ------ | ----- |
| 10 | Deltachem 50 ml | Deltachem 50 ml | ------- | ---- |
| 11 | Deltachem 50 ml | Deltachem 50 ml | Deltachem 50 ml | Deltachem 50 ml |
| 12 | Deltachem 50 ml | Deltachem 50 ml | Deltachem 50 ml | ---- |
| 13 | Match 40 ml | ----- | ----- | ----- |
| 14 | Match 40 ml | Match 40 ml | ----- | ----- |
| 15 | Match 40 ml | Match 40 ml | Match 40 ml | Match 40 ml |
| 16 | Match 40 ml | Match 40 ml | Match 40 ml | ----- |
| 17 | Proclaim 20 gm | ----- | ----- | ----- |
| 18 | Proclaim 20 gm | Proclaim 20 gm | ----- | ----- |
| 19 | Proclaim 20 gm | Proclaim 20 gm | Proclaim 20 gm | Proclaim 20 gm |
| 20 | Proclaim 20 gm | Proclaim 20 gm | Proclaim 20 gm | |

Statistical analysis was done for infestation figures which turned then after to reduction % based on Abbott formula (1925).Data were statistically analyzed by F-test and the means were compared according to Duncan's Multiple Range Test ( Snedecor and Cochran 1971 ).

## RESULTS AND DISCUSSION

Data in Table, 2 indicated that, all tested compounds induced a remarkable reduction on the infestation rates with the greater date moth with different levels during season 2007.

The results indicate that the low effects against *A. sabella* (17.45, 30.13, 37.50, 37.84 and 38.63 %), were recorded in case of the treatment with one spray of Match (40 ml), Tracer/ Runner (20/ 20 ml), Radiant/ Runner (10/ 20 ml), one spray of Proclaim (20 gm) and Tracer/ Runner(20/ 25 ml).

The highest reduction in the date palm bunches infestation with no significant differences (85.82, 85.45 and 85.19%) were obtained with Proclaim 20 gm (two, three and four sprays), respectively.

Table 2. Percent reduction of *Arenipses sabella* infestation of date palm bunches New Valley, 2007.

| Treatment | Rate ml / 100L | Sampling dates | | | | | | Mean |
|---|---|---|---|---|---|---|---|---|
| | | 15/4 | | 1/5 | | 15/5 | | |
| | | Infes. | Red. | Infes. | Red. | Infes. | Red. | |
| Radiant / Runner | 10&20 | 16.67 | 49.98 | 38.89 | 30.29 | 38.89 | 32.24 | 37.50 I |
| | 10&25 | 11.11 | 66.66 | 33.3 | 40.00 | 33.33 | 41.93 | 49.53 G |
| | 20&20 | 10.81 | 67.56 | 27.02 | 51.34 | 27.02 | 52.92 | 57.27 F |
| | 20&25 | 8.89 | 73.32 | 25.00 | 54.99 | 25.00 | 56.44 | 61.58 DE |
| Tracer / Runner | 20&20 | 20.83 | 37.50 | 33.33 | 40.00 | 50.00 | 12.89 | 30.13 J |
| | 20&25 | 20.40 | 38.79 | 34.69 | 37.55 | 34.69 | 39.56 | 38.63 I |
| | 30&20 | 18.38 | 44.85 | 18.38 | 66.91 | 1838 | 67.97 | 59.91 E |
| | 30&25 | 17.07 | 48.78 | 19.51 | 64.87 | 19.51 | 66.01 | 59.88 E |
| Deltachem | | | | | | | | |
| One spray | | 19.05 | 42.88 | 36.51 | 34.27 | 36.51 | 36.39 | 37.84 I |
| Two sprays | 50 | 9.37 | 71.88 | 21.87 | 60.62 | 21.87 | 61.89 | 64.79 C |
| Three sprays | | 9.61 | 71.15 | 23.07 | 58.45 | 23.07 | 59.80 | 63.13 CD |
| Four sprays | | 9.30 | 72.00 | 23.26 | 58.12 | 23.26 | 59.47 | 63.19 CD |
| Match | | | | | | | | |
| One spray | | 28.57 | 14.28 | 45.71 | 17.71 | 45.71 | 20.36 | 17.45 K |
| Two sprays | 40 | 20.00 | 39.99 | 32.00 | 42.39 | 32.00 | 44.25 | 42.21 H |
| Three sprays | | 18.46 | 44.61 | 33.33 | 39.99 | 33.33 | 41.93 | 42.17 H |
| Four sprays | | 10.44 | 68.67 | 16.11 | 70.99 | 20.89 | 63.59 | 67.75 B |
| Proclaim | | | | | | | | |
| One spray | | 14.29 | 57.12 | 22.22 | 60.00 | 25.39 | 55.76 | 57.62 F |
| Two sprays | 20g | 4.00 | 87.99 | 8.33 | 84.99 | 8.33 | 85.48 | 85.82 A |
| Three sprays | | 3.57 | 87.99 | 8.92 | 83.92 | 8.92 | 84.45 | 85.45 A |
| Four sprays | | 5.00 | 84.99 | 6.66 | 88.01 | 10.00 | 82.57 | 85.19 A |
| Control | | 33.33 | | 55.55 | | 57.40 | | |

Means within columns followed by the same letter (s), are not significantly different at 0.05 level of probability

Data presented in Table (3) showed that the percentage in reduction of the date palm bunches infestation due to treatment with the tested compounds during 2008 season.

In general, the treatments with Radiant / Runner or Tracer/Runner induced the lowest reduction percentages of the infestation with the greater date moth.

Treatments with Deltachem 40 ml (two and four sprays) recorded the highest reduction percentages infestation to the date palm bunches with no significant differences (75.74and75.25%), respectively. On the other hand, treatments with Proclaim 20gm (two, three and four sprays) gave a good results with no significant differences recording (73.43, 72.83 and 73.02%), respectively.

Table 3. Percent reduction of *Arenipses sabella* infestation of date palm bunches New Valley, 2008.

| Treatment | Rate ml / 100L | Sampling dates | | | | | | Mean |
|---|---|---|---|---|---|---|---|---|
| | | 15/4 | | 1/5 | | 15/5 | | |
| | | Infes. | Red. | Infes. | Red. | Infes. | Red. | |
| Radiant / Runner | 10&20 | 47.16 | 13.75 | 54.18 | 0.23 | 54.71 | 5.36 | 6.44 M |
| | 10&25 | 36.95 | 32.42 | 54.34 | 0.62 | 54.34 | 6.00 | 13.01 L |
| | 20&20 | 31.91 | 41.64 | 48.93 | 10.51 | 48.93 | 15.36 | 22.50 K |
| | 20&25 | 29.51 | 46.03 | 37.70 | 31.05 | 37.7 | 34.78 | 37.28 I |
| Tracer&Runner | 20&20 | 39.28 | 28.16 | 44.64 | 18.36 | 44.64 | 22.78 | 23.10 K |
| | 20&25 | 25.00 | 54.27 | 40.06 | 26.73 | 40.06 | 30.70 | 37.23 I |
| | 30&20 | 22.06 | 59.65 | 38.23 | 30.08 | 38.23 | 33.86 | 41.19 G |
| | 30&25 | 20.63 | 62.27 | 36.51 | 33.22 | 36.51 | 36.84 | 44.11 F |
| Deltachem | | | | | | | | |
| One sprays | | 25.49 | 53.38 | 41.17 | 24.70 | 41.17 | 28.78 | 35.62 J |
| Two sprays | 50 | 12.50 | 77.13 | 12.5 | 77.13 | 15.62 | 72.98 | 75.74 A |
| Three sprays | | 10.00 | 81.71 | 17.50 | 67.99 | 17.50 | 69.72 | 73.14 B |
| Four sprays | | 12.82 | 76.55 | 12.82 | 76.55 | 15.38 | 72.66 | 75.25 A |
| Match | | | | | | | | |
| One sprays | | 31.11 | 43.10 | 33.33 | 39.04 | 35.55 | 38.50 | 40.21 H |
| Two sprays | 40 | 25.81 | 52.79 | 25.81 | 52.75 | 28.12 | 51.35 | 52.29 E |
| Three sprays | | 25.37 | 53.60 | 25.37 | 53.60 | 28.86 | 50.07 | 52.42 E |
| Four sprays | | 21.54 | 60.60 | 24.61 | 54.99 | 24.61 | 57.42 | 57.67 D |
| Proclaim | | | | | | | | |
| One sprays | | 19.35 | 64.61 | 22.25 | 59.30 | 22.25 | 61.51 | 61.80 C |
| Two sprays | 20g | 14.28 | 73.88 | 14.28 | 73.88 | 15.87 | 72.54 | 73.43 B |
| Three sprays | | 12.28 | 77.54 | 14.03 | 74.34 | 19.29 | 66.63 | 72.83 B |
| Four sprays | | 13.20 | 75.85 | 13.20 | 75.85 | 18.86 | 67.37 | 73.02 B |
| Control | | 54.68 | | 54.68 | | 57.81 | | |

Means within columns followed by the same letter (s) are not significantly different at 0.05 level of probability

The present results indicated that, the bio-insecticides like Tracer and Radiant when applied as a rotation program with Runner gave the lowest effects against *A. sabella* followed by Match compound. Meanwhile, the highest reduction percentages

of the infestation with the greater date moth when the date palm treated with Proclaim 20 gm or Deltachem 40 ml two sprays during 1 and 22 November.

Treatment the date palm during 1 and 22 November with Proclaim or Deltachem my be reduced the population density of *A. sabella* larvae which will be enter as overwintering larvae or pupae (Abdel-Rahman *et al.*, 2007) then, the population density of the emergence adults will be low during the spring season.

It could be useful recommended the use of Proclaim 20gm or Deltachem 40ml two sprays during 1 and 22 November.

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# مكافحه فراشة البلح الكبرى بمحافظة الوداى الجديد- مصر

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أجريت هذه الدراسة بمزارع النخيل بواحة الخارجة-محافظة الوادي الجديد لمعرفة تأثير بعض مبيدات الآفات والمركبات الحيوية على نسبة اصابة سباطات نخيل البلح (صنف صعيدى) بفراشه البلح الكبرى *Arenipses sabella* Hmpson خلال اعوام ٢٠٠٦ و٢٠٠٧ و ٢٠٠٨ .

بصفه عامه أوضحت النتائج أن أعلى تأثير للمركبات المختبره ضد آفه فراشه البلح الكبرى وجد عند معامله نخيل البلح بمركب بروكليم بمعدل ٢٠جرام/ ١٠٠ لتر ماء ومركب دلتاكيم سوبر بمعدل٥٠ مللى/١٠٠لتر ماء خلال موسمى الدراسة.

خلال موسم ٢٠٠٧ وجد ان أعلى نسبه للخفض (٨٥,٤٨%) لأصابه السباطات بفراشه البلح الكبرى تم تسجيله عند تطبيق المعامله مرتين بمركب بروكليم خلال ١ ، ٢٢ نوفمبر٢٠٠٦.

أثناء موسم ٢٠٠٨ وجد ان أعلى نسبه للخفض (٧٥,٧٤%) لأصابة السباطات بهذه الآفه تم ملاحظته عند تطبيق المعاملة مرتين بمركب دلتاكيم سوبر خلال ١ ، ٢٢ نوفمبر ٢٠٠٧.