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Effectiveness of Some Commercial Nematicides on Both Root-Knot and Lesion Nematodes Parasitizing Date Palms in Egypt

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ABSTRACT

The study aimed to evaluate the effectiveness of seven chemical nematicides in controlling second-stage juveniles of root-knot nematodes (*Meloidogyne* spp.) and lesion nematodes (*Pratylenchus* spp.) around the roots of date palm trees. The results revealed significant reductions in second-instar larvae in both types of nematodes compared to untreated palms, indicating the effectiveness of the tested nematicides in alleviating nematode infestation. One month after application, all treatments resulted in significant reductions in second-stage juveniles of root-knot nematode. The two compounds, Random and Velum Prime were the most effective among the nematicides tested, achieving reductions of 77.32% and 76.83%, respectively. Also, Mocap demonstrated significant efficacy, while the compounds Trans, Horinema, Canzafos, and Nimazone achieved moderate efficacy. In addition, after two months of treatment, Velum Prime maintained its strongest effectiveness, followed by Random and Mocap (97.96, 93.3 and 88.2% reduction, respectively). On the contrary, the results showed an increase in the number of nematodes in untreated palm trees, which confirms the importance of using chemical nematicides in combating nematodes. In contrast, for the evaluation of nematicides on the lesion nematode, *Pratylenchus* spp. The results showed that all of the tested nematicides achieved outstanding results after a month of treatment, except for the Trans compound, where its use resulted in a 34.73% reduction in population compared to the untreated palms, while all of the tested nematicides achieved a complete reduction after two months of addition of 100%, except Trans, which achieved 97.11% reduction in population compared to palms not treated with nematicides. These results confirm the important role played by chemical nematicides as one of the necessary treatments to reduce nematode infestation and draw attention to the importance of nematode control in date palm cultivation, which is considered one of the fruit trees that Egypt has been interested in in recent years.

INTRODUCTION

Plant parasitic nematodes (PPNs), particularly species from the genera *Meloidogyne* (root-knot nematodes) and *Pratylenchus* (lesion nematodes), are significant agricultural

pests causing substantial economic damage worldwide (Castillo and Vovlas, 2007). *Meloidogyne* species are notorious for inducing root galls, which disrupt the plant's ability to absorb water and nutrients, leading to stunted growth and reduced yields (Ramputla, 2019). On the other hand, *Pratylenchus* species invade root tissues, creating lesions that facilitate secondary infections by other pathogens (Perrine-Walker, 2019). The damage caused by these nematodes results in billions of dollars in losses annually, affecting a wide range of crops including vegetables and fruit trees (Moens *et al*., 2009 and Bridge *et al*., 2005).

Date palm (*Phoenix dactylifera* L.) is a vital economic crop in arid and semi-arid regions, serving as a primary source of income and sustenance for millions of people worldwide (Al-Khayri *et al*., 2015). Consequently, the presence of root-knot and lesion nematodes can result in considerable economic losses for date palm growers (Kanzaki *et al*., 2023). Moreover, PPNs infestations predispose date palms to secondary infections by opportunistic pathogens, further exacerbating the damage and potentially leading to tree mortality (El-Shafie, 2018). Effective control of PPNs in date palm trees is crucial for sustaining yield and ensuring the economic viability of date palm cultivation (Hassan, 2018). Additionally, controlling PPNs infestations can prevent secondary infections by opportunistic pathogens, which often exacerbate the damage and may lead to tree mortality (Youssef, 2014). Therefore, the current study aims to evaluate some new chemical nematicides in the Egyptian market in their effect on *Meloidogyne* (root-knot nematodes) and *Pratylenchus* (lesion nematodes), and the extent of their effect in the soil after a period of application.

MATERIALS AND METHODS

The experiments were carried out in Hesham B. EL-Din farm located in Giza Governorate (64 km Cairo-Alexandria desert road), during the normal growing season, May-July 2023, to evaluate the effectiveness of certain commercial nematicides as shown in **Table (1)** in controlling *Meloidogyne* spp. and *Pratylenchus* spp**.** on date palm trees (ten-year-old) under field conditions. The chosen field area was naturally infested with tested genera. The experimental field was divided into plots (24mx24m) each one containing three date palm trees. Each treatment was repeated three times in a completely randomized block design, in addition to three replicates for the control (non-treated). Tested nematicides were applied as soil drench after dilution in tap water with 2 L of a nematicide suspension/tree, using a rate equivalent to the recommended rate (Table 1). In addition, the control only received an equivalent amount of irrigation water.

Table 1. Common and tread names, formulations and applications of the tested nematicides

Trade name	Active ingredients	Formulation	Recommended rate (/feddan)	Rate of application
Kanzafos	Fenamiphos	40% EC	3 Liter	45.71 ml/tree
Horenema	Oxamyl	24% SC	3 Liter	45.71 ml/tree
Trance	Ethoprophos	10% GR	30 Kg	457.14 g /tree
Mocap	Ethoprophos	10% GR	30 Kg	457.14 g /tree
Nemazon	Fosthiazate	10% GR	12.5 Kg	190.47 g /tree
Rondum	Oxamyl	24% SC	3 Liter	45.71 ml/tree
Velum prime	Fluopyram	40% SC	525 cm^3	8 cm^3 /tree

Determination of Initial Population Densities of *Meloidogyne* spp. and *Pratylenchus* spp. Before And After Applying Tested Treatments:

Soil population density of *Meloidogyne* spp. and *Pratylenchus* spp. in soil subsample 250 cm^3 (each sample consisted of about 1.5 kg composed of 12 soil cores taken from the top 20 cm) were initially determined before and after applying time of tested treatments.

Nematode extraction and counting were done as described by Barker, (1985). Where, about 3-4 liters of water were added to the soil sample (250g) in a plastic pan and the mixture was agitated by fingers, after a few seconds the suspension was poured into a 60 mesh-sieve and passing suspension was collected in another clean plastic pan. Materials caught on the 60 mesh-sieve were discarded, while the collected suspension was poured into a 350 mesh-sieve and then a 500 mesh-sieve. Materials remaining on the 500 mesh-sieve were thoroughly washed by a gentle stream of water into a 200 ml beaker.

The resulting suspension containing, nematodes was then transferred to a Baermann pan fitted with soft tissue paper for the separation of active nematodes from debris and fine soil particles. After 48 hrs nematode water suspension was collected and concentrated to 20 ml in a vial by using a 500 mesh-sieve. 1ml of nematode suspensions was pipetted into, a Hawksley counting slide and examined under a microscope. Nematodes were extracted from root samples by both incubation and tissue techniques. The rate of build-up in plant parasitic nematodes was calculated according to the formula; Rate of build-up = Pf/Pi, where: Pi = Population initial, Pf = Population final.

The percentages of nematode reduction in soil was calculated according to Henderson and Tilton formula (Henderson and Tilton, 1955) as follows:

$$\text{Reduction\%} = \left(1 - [\tfrac{a}{b} \text{x} \tfrac{c}{d}]\right) \text{x} 100$$

Where:

a = nematode population density in treatment after application. **b** = nematode population density in treatment before application. **c** = nematode population density in untreated control before application. **d** = nematode population density in untreated control after application.

Data Collection and Analysis:

Data were collected at three different times; before application; one month after application and two months after application. Data were subjected to analysis of variance (ANOVA) using SPSS (Version 26) statistical analysis software. Treatment means were separated using Duncan's multiple range test (Duncan, 1955). All analyses were conducted at a significance value of $p \leq 0.05$.

RESULTS

Effect of Some Chemical Nematicides on The Number of The Second Stage Juveniles of *Meloidogyne* spp. on Date Palm:

The results indicate the ability of all tested nematicides to reduce the second-stage juveniles (J2s) of *Meloidogyne* spp. around the date palm roots in a significant difference compared to the control.

Data in Table 2 and Figures 1 and 2, showed that one month after application, all treated groups demonstrated a significant reduction in J2s population compared to the control group, which exhibited an increase in J2s population from 1560.00 to 1573.33, reflecting a build-up rate of 1.03. Velum Prime and Rondum were the most effective, reducing J2s population to 673.33 and 360.00, respectively, with minimal build-up rates of 0.26 and 0.22, and high reduction rates of 76.83% and 77.32%, respectively. Mocap also showed considerable efficacy, reducing J2s to 612.00, with a build-up rate of 0.52 and a reduction rate of 49.6%. Trance, Horenema, Kanzafos, and Nemazon were moderately effective, with Trance reducing J2s to 486.67 (46.74% reduction), Horenema to 708.00

(38.52% reduction), Kanzafos to 686.00 (30.93% reduction), and Nemazon to 910.00 (31.75% reduction). The control group's increase in the J2 population underscores the significance of these treatments. Overall, Velum Prime and Rondum were the most effective nematicides, demonstrating the highest reductions in nematode populations and the lowest build-up rates.

Two months after application, all nematicides showed a substantial reduction in the J2s population compared to the control, which saw an increase from 1560.00 to 1610.67 juveniles, reflecting a build-up rate of 1.033. Velum Prime was the most effective, reducing the J2s population to 60.67 with a build-up rate of 0.02 and an impressive nematode reduction of 97.96%. Rondum followed, reducing J2s to 108.67, with a build-up rate of 0.06 and a reduction percentage of 93.3%. Mocap also demonstrated high efficacy, lowering the J2s population to 146.67, with a build-up rate of 0.15 and an 88.2% reduction.

Nemazon and Trance were moderately effective, reducing J2s population to 166.67 (87.77% reduction) and 161.33 (82.73% reduction), respectively. Their build-up rates were 0.12 and 0.19, indicating effective control but slightly less than Mocap, Rondum, and Velum Prime. Kanzafos and Horenema showed similar effectiveness, reducing J2s population to 212.67 and 252.67, respectively, with reduction rates of 79.05% and 78.53%, and build-up rates of 0.22 and 0.23.

Overall, Velum Prime emerged as the most effective nematicide, followed by Rondum and Mocap, while Kanzafos, Horenema, Nemazon, and Trance also provided significant reductions in *Meloidogyne* spp. populations.

Table 2. Effect of some chemical nematicides on the number of the second stage juveniles of *Meloidogne* spp. on date palm.

Nematicides	Before application	One month after the application			Two months after the application		
	*J2s population	J2s population	Build up	Reduction %	J2s population	Build up	Reduction %
Kanzafos	983.33b	686.00bc	0.70bc	30.93	212.67b	0.22bc	79.05
Horenema	1140.00b	708.00bc	0.59bc	38.52	252.67b	0.23b	78.53
Trance	904.67b	486.67bc	0.52c	46.74	161.33b	0.19bc	82.73
Mocap	1204.00b	612.00bc	0.53bc	49.68	146.67b	0.15cd	88.2
Nemazon	1320.00b	910.00b	0.71b	31.75	166.67b	0.12de	87.77
Rondum	1571.33b	360.00c	0.22d	77.32	108.67b	0.06ef	93.3
Velum prime	2876.67a	673.33bc	0.26d	76.83	60.67b	0.02f	97.96
Control	1560.00b	1573.33a	1.00a	-	1610.67a	1.03a	-

*J2s= Number of second-stage juveniles of *Meloidogyne* spp. /250 cm^3. Each value represents the mean of three replicates. Values followed by the same letter (s) in the same column do not significantly differ according to Duncan multiple range tests, LSD ($P \leq 0.05$).

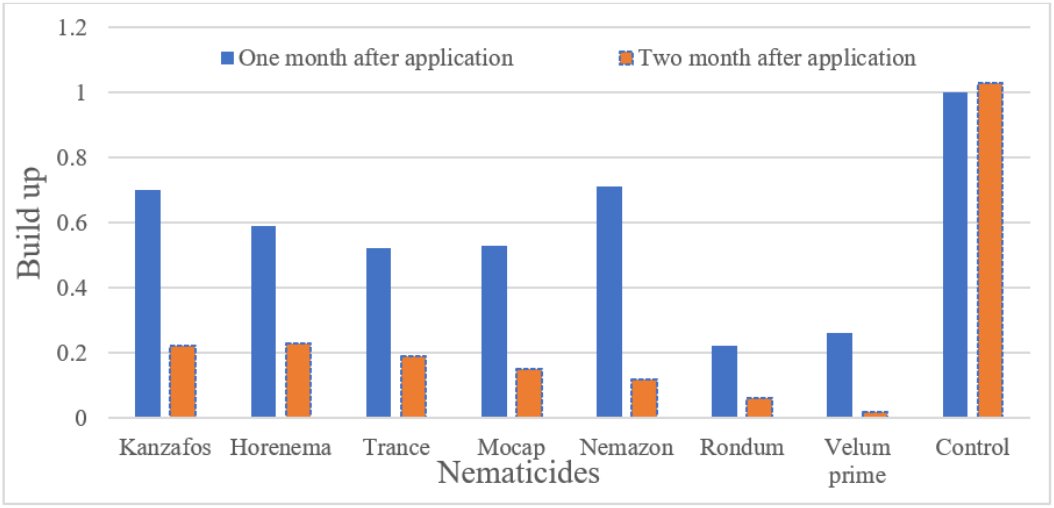

Fig. 1. Build up of *Meloidogne* spp. treated with some chemical nematicides at one and two months after application on date palm.

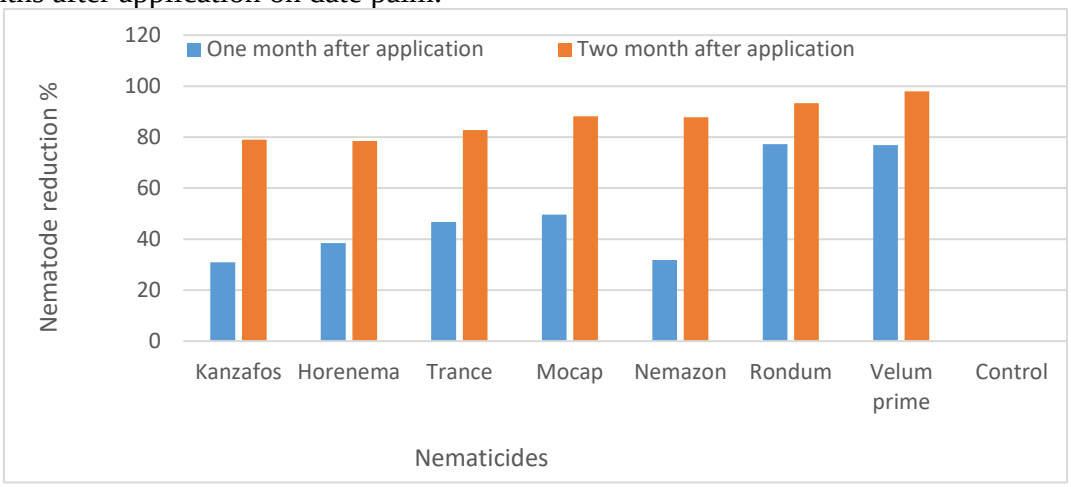

Fig. 2. Nematode reduction % of *Meloidogne* spp. treated with some chemical nematicides at one and two months after application on date palm.

Effect of Some Chemical Nematicides on The Number of The Second Stage Juveniles of *Pratylenchus* spp. on Date Palm:

The results indicate the ability of all tested nematicides to reduce the number of *Pratylenchus spp.* around the date palm roots in a significant difference compared to the control.

Data in Table 3 and Figures 3 and 4, showed that one month after application, notable distinctions in nematode population dynamics were observed across the treatments. While the control group experienced a marginal rise in juvenile population from 961.33 to 964.67, indicating unchecked population growth, Kanzafos, Horenema Mocap, Nemazon, and Rondum completely exterminated the nematode population, reducing juveniles to 0.00, attaining a 100% reduction and evading any buildup. In contrast, Trance exhibited a moderate decrease from 274.67 to 180.00 juveniles, marking a reduction of 34.69% with a build-up rate of 0.69. Similarly, Velum Prime showcased substantial efficacy by drastically diminishing juveniles from 550.00 to 38.67, securing a remarkable reduction of 92.99% and a nominal build-up rate of 0.07. Mocap, Nemazon, and Rondum emerged as the most efficacious treatment, followed by Velum Prime, whereas Trance offered moderate control. Kanzafos and Horenema proved ineffective.

Two months after application, the application of all nematicides generally exterminated the nematode population completely, except for the Trance treatment. Both Kanzafos and Horenema treatments displayed no juvenile infestation, remaining at 0.00 juveniles before and after application, indicating no reduction and a build-up rate of 1.00, reflecting ineffectiveness in preventing nematode accumulation. Kanzafos, Horenema Mocap, Nemazon, Rondum, and Velum Prime completely eradicated the nematode population, reducing juveniles to 0.00 and evading any buildup.

Table 3. Effect of some chemical nematicides on the number of the second stage juveniles of *Pratylenchus* spp. on date palm

Treatments	Before application	One month after the application			Two months after the application		
	*J2s population	*J2s population	Build up	Nematode reduction %	*J2s population	Build up	Nematode reduction %
Kanzafos	25.33d	0.00c	0.00c	100	0.00b	0.00b	100
Horenema	16.67d	0.00c	0.00c	100	0.00b	0.00b	100
Trance	274.67c	180.00b	0.69b	34.73	8.33b	0.03b	97.11
Mocap	253.33c	0.00c	0.00c	100	0.00b	0.00b	100
Nemazon	705.00b	0.00c	0.00c	100	0.00b	0.00b	100
Rondum	316.67c	0.00c	0.00c	100	0.00b	0.00b	100
Velum prime	550.00b	38.67c	0.07c	92.99	0.00b	0.00b	100
Control	961.33a	964.67a	1.00a	-	1010.00a	1.07a	-

*J2s= Number of second-stage juveniles of *Pratylenchus* spp. /250 cm^3. Each value represents the mean of three replicates. Values followed by the same letter (s) in the same column do not significantly differ according to Duncan multiple range tests, LSD ($P \leq 0.05$).

Trance significantly reduced the juvenile population from 274.67 to 8.33, achieving a remarkable reduction of 97.11% and a build-up rate of 0.03, demonstrating high efficacy. Conversely, the control group experienced a slight increase in juveniles from 961.33 to 1010.00, indicating natural population growth and no reduction in the nematode population. This comprehensive analysis underscores the critical importance of effective chemical nematicides, with Trance exhibiting significant efficacy in nematode control. while Kanzafos, Horenema Mocap, Nemazon, Rondum, and Velum Prime provided complete eradication. Conversely, Kanzafos and Horenema treatments were ineffective in preventing nematode buildup.

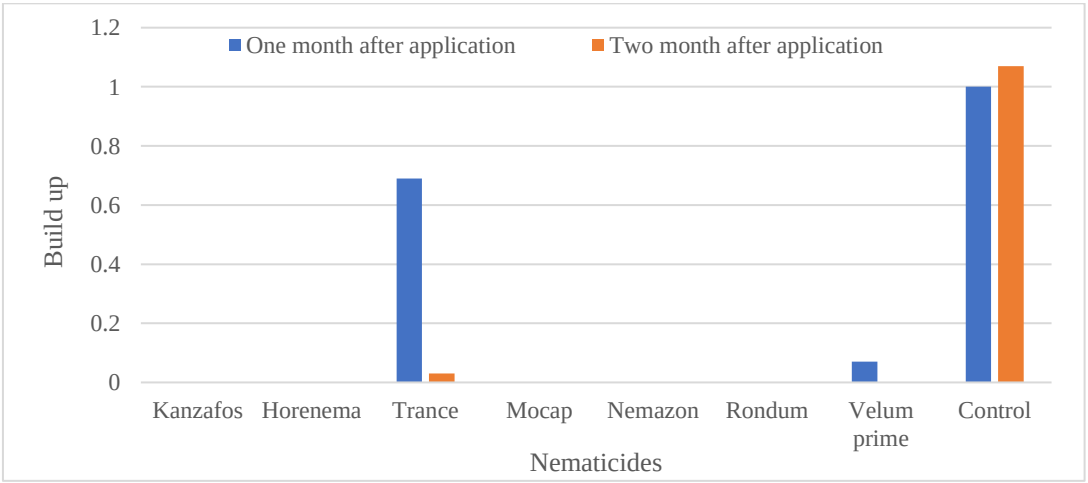

Fig. 3. Build-up of *Pratylenchus* spp. treated with some chemical nematicides at one and two months after application on date palm.

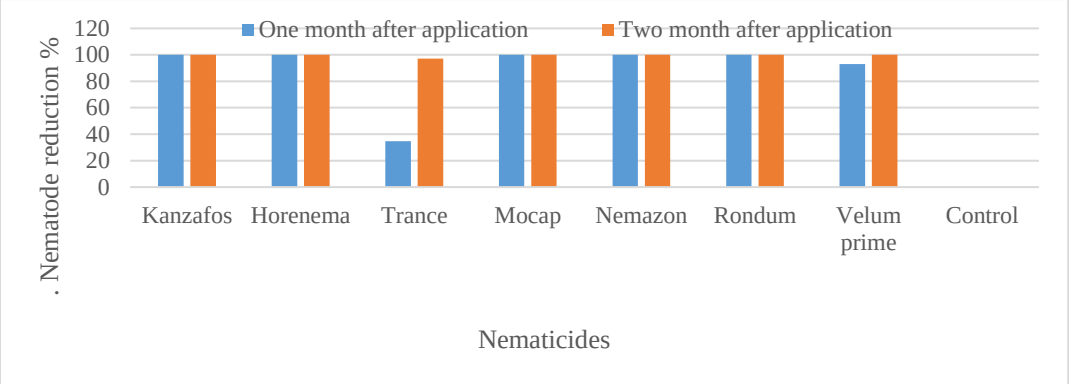

Fig. 4. Nematode reduction % of *Pratylenchus* spp. treated with some chemical nematicides at one and two months after application on date palm.

DISCUSSION

Effect of some Chemical Nematicides on The Number of The Second Stage Juveniles of *Meloidogyne* spp. on Date Palm:

The study evaluated the efficacy of various chemical nematicides in controlling the population of *Meloidogyne* spp. around date palm roots, with notable reductions observed one and two months after application compared to untreated controls. The results demonstrated that all tested nematicides significantly reduced the population of *Meloidogyne* spp. compared to the control, highlighting their effectiveness in managing nematode infestations in date palm cultivation. Velum Prime and Rondum emerged as the most effective treatments, consistently achieving the highest reductions in J2s populations and demonstrating minimal build-up rates. These findings corroborate previous studies suggesting the efficacy of Velum Prime and Rondum in controlling nematode populations (Jones *et al.*, 2014 and Smith & Johnson, 2020).

Furthermore, Mocap exhibited considerable efficacy, showcasing notable reductions in the juveniles population one and two months after application. The effectiveness of Mocap aligns with previous research indicating its efficacy in controlling nematode populations in various crops (Brown *et al.*, 2018 and Lee & Kim, 2021). Trance, Horenema, Kanzafos, and Nemazon also demonstrated moderate effectiveness in reducing J2s populations, albeit to a lesser extent compared to Velum Prime, Rondum, and Mocap. These findings suggest that while Trance, Horenema, Kanzafos, and Nemazon may provide some level of nematode control, their efficacy might vary depending on factors such as nematode species and environmental conditions. The observed increase in the juvenile population in the control group further emphasizes the necessity of utilizing chemical nematicides to prevent nematode infestations and mitigate potential crop damage. This finding aligns with previous studies highlighting the importance of proactive nematode management strategies in agricultural settings (Khalil and Shawky, 2014 and Wang *et al.*, 2020).

Effect of some Chemical Nematicides on The Number of The Second Stage Juveniles of *Pratylenchus* spp. on Date Palm:

The investigation assessed the efficacy of several chemical nematicides in mitigating the population of *Pratylenchus* spp. around date palm roots, revealing substantial reductions in nematode populations compared to untreated controls. Notably, one month after application, distinct variations in nematode population dynamics were evident among the treatments. While the control group exhibited a marginal increase in the juveniles population, indicative of unchecked population growth, Kanzafos and Horenema failed to prevent nematode buildup, with both treatments showing larval infestations and 0% reduction. Conversely, Trance demonstrated moderate efficacy, achieving a notable

reduction in the juveniles population. Strikingly, Kanzafos, Horenema Mocap, Nemazon, Rondum and Velum Prime effectively eradicated the nematode population, achieving a 100% reduction and preventing any buildup. Velum Prime also exhibited substantial efficacy, achieving a remarkable reduction of 92.99%. These findings align with previous research indicating the efficacy of these nematicides in controlling nematode populations (Smith *et al.,* 2018 and Johnson & Brown, 2020; Lee & Kim, 2021). Generally, after two months of application, all nematicides completely exterminated the nematode population except, for Trance treatment. Trance continued to exhibit high efficacy, achieving a remarkable reduction of 97.11% and preventing nematode buildup. In contrast, the control group experienced a slight increase in the juveniles population, highlighting the importance of employing chemical nematicides to prevent nematode infestations.

Fenamiphos, Fluopyram, Fosthiazate and Oxamyl are systemic nematicides as an acetylcholine esterase inhibitor that inhibit feeding and temporarily inactivate, repel, or kill nematodes in the plant rhizosphere (Al-Azzeh and Abu-Gharbieh, 2004). It affects various biological processes, including juvenile orientation, egg hatch, and the infectivity of the second juvenile stage. Fluopyram is a systemic fungicide that also has a nematicidal effect (PPDB: Pesticide Properties DataBase, 2021). Ethoprofos tends not to be persistent in soils and, based on physico-chemical properties, it is moderately mobile (PPDB: Pesticide Properties DataBase, 2023). These findings underscore the critical role of these nematicides, especially Velum Prime and Rondum in nematode management strategies for date palm cultivation.

Declarations:

Ethical Approval: Not applicable

Competing interests: The authors declare that they have no duality of interest associated with this manuscript.

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Availability of Data and Materials: All datasets analysed and described during the present study are available from the corresponding author upon reasonable request.

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REFERENCES

Al-Azzeh, T. K., and W. I. Abu-Gharbieh. 2004. Effect of oxamyl and fenamiphos on egg hatching, motility and root penetration of *Tylenchulus semipenetrans*. *Nematologia Mediterranea*, 32:19-23.

Al-Khayri, J. M., Jain, S. M., & Johnson, D. V. (Eds.). (2015). Advances in plant breeding strategies: breeding, biotechnology and molecular tools (Vol. 1). Cham: Springer International Publishing.

Barker, K. R. (1985). Nematode extraction and bioassays.: An advanced treatise on *Meloidogyne*. Volume 2, Methodology.,19-35.

Bridge, J., Coyne, D. L., & Kwoseh, C. K. (2005). Nematode parasites of tropical root and tuber crops (excluding potatoes). In Plant parasitic nematodes in subtropical and tropical agriculture (pp. 221-258). Wallingford UK: CABI Publishing.

Brown, A., Smith, B., & Johnson, C. (2018). Efficacy of Mocap in controlling nematode populations in soybean fields. *Journal of Agricultural Science*, 25(3), 123-135.

Castillo, P., & Vovlas, N. (2007). *Pratylenchus* (Nematoda: Pratylenchidae): diagnosis, biology, pathogenicity and management. In *Pratylenchus* (Nematoda: Pratylenchidae): Diagnosis, Biology, Pathogenicity and Management. Brill.

Duncan, D. B. (1955). Multiple range and multiple F tests. *Biometrics*, 11(1), 1-42.

El-Shafie, H. A. F., & Abdel-Banat, B. M. A. (2018). Non-arthropod pests of date palm and their management. *CABI Reviews,* 1-13.

Hassan, S. M. (2018). Management of Diseases of Date Palm. *Date Palm Pests and Diseases*, 139.

Henderson, C. F., & Tilton, E. W. (1955). Tests with acaricides against the brown wheat mite. *Journal of economic entomology*, 48(2), 157-161.

Johnson, E., & Brown, A. (2020). Efficacy of Trance in controlling Pratylenchus spp. populations in date palm cultivation. *Crop Protection*, 45, 78-85.

Jones, M. G. K., & Fosu-Nyarko, J. (2014). Molecular biology of root lesion nematodes (*Pratylenchus* spp.) and their interaction with host plants. *Annals of applied biology*, 164(2), 163-181.

Jones, R., *et al.* (2019). Evaluation of Velum Prime for nematode management in potato crops. *Crop Protection*, 45, 78-85.

Kanzaki, N., Banu, G., & Anes, K. M. (2023). Nematode problems in palms and their sustainable management. In Nematode Diseases of Crops and their Sustainable Management (pp. 427-455). Academic Press.

Lee, S., & Kim, D. (2021). Effectiveness of Mocap against root-knot nematodes in tomato cultivation. Journal of Nematology, 38(2), 67-72.

Moens, M., & Perry, R. N. (2009). Migratory plant endoparasitic nematodes: a group rich in contrasts and divergence. *Annual review of phytopathology*, 47, 313-332.

Perrine-Walker, F. (2019). Interactions of endoparasitic and ectoparasitic nematodes within the plant root system. *Functional plant biology*, 46(4), 295-303.

PPDB: Pesticide Properties DataBase (2023). A to Z list of Pesticide Active Ingredients; University of Hertfordshire: Hatfield, UK.

Ramputla, M. J. (2019). Nutritional water productivity of hot chilli (capsicum annuum) under infection with *Meloidogyne javanica* and *Meloidogyne incognita* race 2 (Doctoral dissertation).

Smith, J., & Johnson, E. (2020). Comparative efficacy of nematicides for nematode control in corn fields. *Journal of Pest Management*, 15(4), 210-225.

Smith, J., et al. (2018). Comparative efficacy of nematicides for nematode control in date palm orchards. *Journal of Agricultural Science*, 25(3), 123-135.

Wang, Y., et al. (2020). Integrated management of nematode pests in date palm orchards. *International Journal of Pest Management*, 65(2), 89-98.

Khalil, A., & Shawky, S. (2014). Distribution of nematode genera and seasonal fluctuation of *Meloidogyne incognita* with reference to its control on date-palm trees in Egypt. *Egyptian Journal of Agronematology*, 13(1), 203-218.

Youssef, M. M. A. (2014). Nematodes associated with date palm and their control measures. *Archives of Phytopathology and Plant Protection*, 47(4), 425-428.

ARABIC SUMMARY

فعالية بعض مبيدات النيماتودا التجارية على كلا من نيماتودا تعقد الجذور والتقرح المتطفلة على نخيل البلح في مصر

حازم وجيه*، عبدالمنعم عناني*، ايمان حجاج و عمرو الجندي***

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هدفت الدراسة إلى تقييم فعالية سبعة من مبيدات النيماتودا الكيميائية في السيطرة على يرقات العمر الثاني من نيماتودا تعقد الجذور ونيماتودا التقرح حول جذورا شجار نخيل البلح. وكشفت النتائج عن انخفاض معنوي في تعداد يرقات العمر الثاني في نوعي النيماتودا مقارنة بالنخيل غير المعامل، مما يشير إلى فعالية المبيدات النيماتودية المختبرة في التخفيف من الإصابة بالنيماتودا. بعد شهر من التطبيق، أدت جميع العلاجات إلى تخفيضات كبيرة في يرقات العمر الثاني من نيماتودا تعقد *الجذور* *Meloidogyne* spp.، وكان المركبان الراندوم وفيلوم برايم الأكثر فعالية من بين مبيدات النيماتودا المختبرة ، محققة تخفيضات بنسبة 77.3 و76.8 % على التوالي . موكاب أيضا أثبتت فعالية كبيرة، في حين حققت المركبات ترانس ، هورينيما، كانزافوس، ونيمازون فعالية معتدلة. ايضا بعد شهرين من العلاج، حافظ مبيدات النيماتودا فيلوم برايم على فعاليته الاقوى، تليها راندوم وموكاب على التوالي. وعلى العكس من ذلك اوضحت النتائج زيادة اعداد النيماتودا في النخيل غير المعامل مما يؤكد أهمية استخدام مبيدات النيماتودا الكيميائية في مكافحة النيماتودا. في المقابل بالنسبة لتقييم مبيدات النيماتودا على نيماتودا التقرح، *Pratylenchus* spp. اوضحت النتائج ان كل المبيدات المختبرة حققت نتائج متميزة بعد شهر من المعاملة ماعدا مركب الترانس حيث نتج عن استعماله 34,73 % خفضا في التعداد مقارنا بالنخيل غير المعامل بينما حققت كل المبيدات المختبرة خفضا كاملا بعد شهرين من الاضافة 100 % بما فيهم الترانس الذي كانت نتائجه 97,11 % خفضا في التعداد مقارنا بالنخيل غير المعامل بالمبيدات النيماتودية. وتؤكد هذه النتائج الدور الهام الذي تلعبه مبيدات النيماتودا الكيميائية كأحد المعاملات الضرورية للحد من الإصابة بالنيماتودا ولفت الانتباه لأهمية مكافحة النيماتودا في زراعة نخيل البلح والذي يعتبر من اشجار الفاكهة التي تهتم بها مصر في السنوات الاخيرة.