4.8.- TRIAL TO DETECT THE PRESENCE OF RESIDUES OF VARIOUS INSECTICIDES IN DATES AND GROWING POINTS OF PALM TREES TREATED WITH ENDOTHERAPY.

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1.- Introduction.-

The aim of the trails is to detect the presence of pesticide residues in dates and at the growing point of palm trees treated by endotherapy using the SOSPALM peg with different insecticides.

2.- Residues in dates.-

2.1.- Materials and methods

A plot of land containing 135 Metjoul date palms, 179 Confiteras date palms, 232 normal date palms and 11 Washintonias palm trees, property of Mr. Antonio Urban was used. The Metjoul palms were obtained from “in vitrio” production, planted between 2002 and 2003, and originated from the Estacion Phoenix of Elche.

The trial was carried out on female Metjoul variety palms of similar size with samples of recently set fruit.

Two applications of insecticides were planned. The first when the fruit was recently set, and the second half way through the production cycle.

On the 31st of May the palms were selected for the first part of the trial as can be seen on the attached diagram.

Each subdivision contained one palm, and three repetitions were established for each test.

15 palms were marked out which were made up of 12 treated palms and 3 untreated (testimonial) palms

From the 15 palms a random selection was made, the results of this selection can be seen in detail in the attached table.

2.2.- First Treatment.-

The first treatment was carried out by Mr. Alfredo Ahumada on the 1st of June.

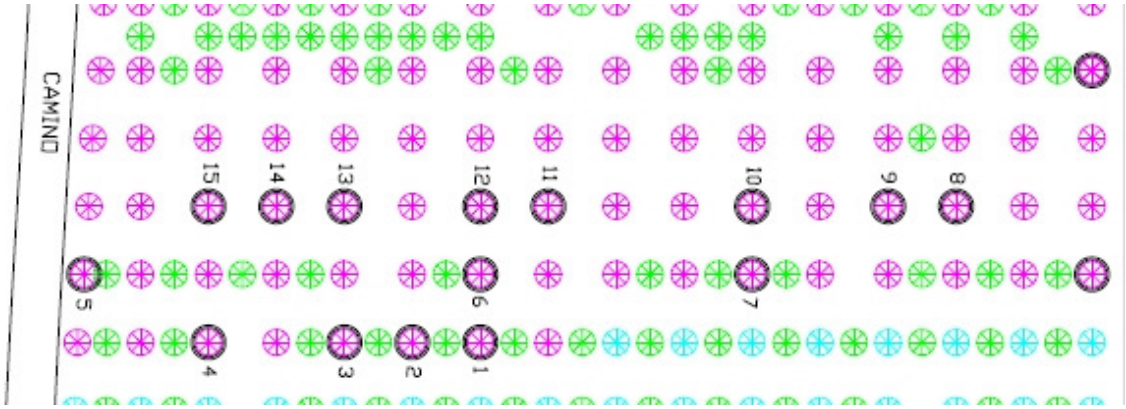
Two SOSPALM pegs were installed on each of the selected palms at approximately 1 metre from the base.

The insecticides tested were:

Active Material	Comercial name	Manufacturer	Dose	Palm No.
tiametoxan	Actara	Syngenta	6 cc+20 cc d.w.	2,4,7
emamectine	Pursuit	Syngenta	30 cc pure	3,13,14
abamectine	Vertimec	Syngenta	6 cc+20 cc d.w.	1,10,15
imidacloprid	Confidor	Bayer	6 cc+20 cc S.P.	6,9,11
Testimony	Untreated	---	---	5,8,12

d.w. = distilled water
S.P. = SosPalm liquid.

Diagram of the plot.



2.3.- Second treatment.-

On the 30th of August new palms were randomly selected in the presence of Mr. Antonio Urban. Metjoul palms were injected for each of the following tests which were numbered as follows:

Imidacloprid Nº 19 - 22 - 27

Tiametoxan Nº 20 - 23 - 26

Abamectine Nº 17 - 21 - 24

Emamectine Nº 16 - 18 - 25

No new, untreated testimonial palms were selected as the palms from the first phase of the trial could still be used.

Palm Metjoul 1 a 15 (10-10-2013)

Palm nº 25 (10-10-2013)

Fruits (10-10-2013)

2.4.- Extraction of Samples.-

On the 21st of November samples were taken from each of the tests. Each sample was composed of 25 dates which were placed in transparent blue bags. They were labelled and stored in cool box with freezer blocks and on the 22nd of November they were taken to the Regional Agriculture Laboratory of the Conselleria de Agricultura for analysis.

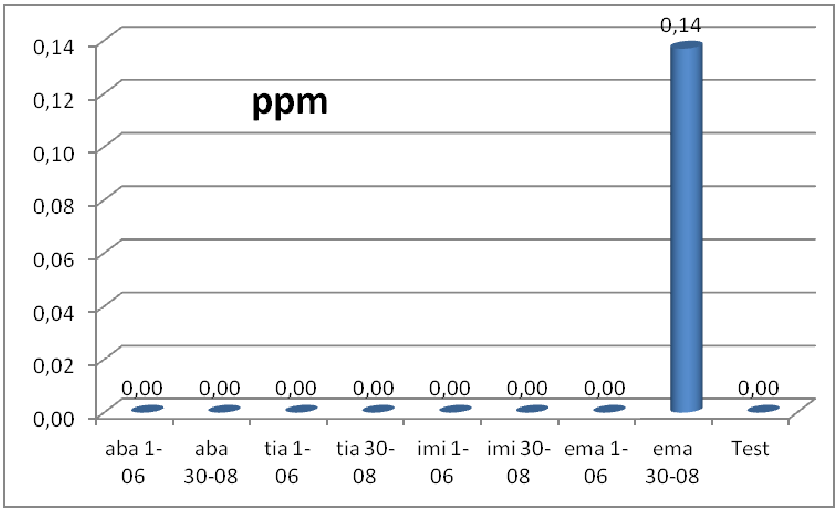
The date of arrival at the laboratory, sample numbers, codes for each sample, insecticide and laboratory analysis results can be seen in the attached table.

dates (order by sample No.)				
Entry No.	Sample No.	Code	Insecticide	mg/kg
303959	17	A.U.D.1	Abamectina	LC
303968	24	A.U.D.10	Abamectina	LC
303973	28	A.U.D.15	Abamectina	LC
303975	30	A.U.D.17	Abamectina	LC
303979	34	A.U.D.21	Abamectina	LC
303982	37	A.U.D.24	Abamectina	LC
303961	19	A.U.D.3	Emamectina	LC
303971	26	A.U.D.13	Emamectina	LC
303972	27	A.U.D.14	Emamectina	LC
303974	29	A.U.D.16	Emamectina	0,18
303976	31	A.U.D.18	Emamectina	0,05
303983	38	A.U.D.25	Emamectina	0,18
303964	21	A.U.D.6	Imidacloprid	LC
303967	23	A.U.D.9	Imidacloprid	LC
303969	25	A.U.D.11	Imidacloprid	LC
303977	32	A.U.D.19	Imidacloprid	LC
303980	35	A.U.D.22	Imidacloprid	LC
303985	40	A.U.D.27	Imidacloprid	LC
303963	41	A.U.D.5	Testigo	LC
303966	42	A.U.D.8	Testigo	LC
303970	43	A.U.D.12	Testigo	LC
303960	18	A.U.D.2	Tiametoxan	Lc
303962	20	A.U.D.4	Tiametoxan	LC
303965	22	A.U.D.7	Tiametoxan	LC
303978	33	A.U.D.20	Tiametoxan	LC
303981	36	A.U.D.23	Tiametoxan	LC
303984	39	A.U.D.26	Tiametoxan	LC

2.5.- Discussion.-

Once the samples had been analyzed, it was noted that residue levels were below the limit of detection except in the case of the Emamectine which was applied on the 30th of August.

On that date the 3 samples with Emamectine analysed gave positive results.



Following the results of this trial, we can conclude that all the insecticides tested can be applied at the dose used, both after blossoming and throughout the summer, except in the case of Emamectine which can only be applied when the fruits are recently set.

3.- Assesment of residues in dates and growing points of Confitera and Metjoul Palms.

3.1.- Growing Points.-

3.1.1.- Materials and methods.

On Thursday 27th of June 4 palms were treated: 2 Confiteras and 2 Metjoul with 6 cc Imidacloprid + 20 cc Sospalm Liquido

Treatment dates

1st Injection	Jun 27
2nd Injection	Jul 25
3rd Injection	Aug 30
4th Injection	Sep 26
5th Injection	Oct 25

The treatment of the 25th of October was only carried out on one Metjoul palm and one Confitera to see if at a greater interval, residue levels would decrease.


Confitera 1 (10-10-2013


Cofitera 2 (10-10-2013)


Metjoul 1 (10-10-2013)


Metjoul 2 (10-10-2013)

3.1.2.- Extraction of Samples.-

On the 21st of November samples were taken for each of the tests, placed in transparent blue bags, labelled and placed in a cool box with Freezer blocks, and on the 22nd of November they were taken to the Regional Agriculture Laboratory for analysis.




Sequences sampling





Plot		Insecticide	Sample Height	Palm Height
Antonio Urban	Con	Imidacloprid	3,6	4
Antonio Urban	Con	Imidacloprid	3	3,7
Antonio Urban	Met	Imidacloprid	2,7	3,2
Antonio Urban	Met	Imidacloprid	3	3,5

3.1.3.- Results.-

On the 4th of December the results were obtained. These can be seen, along with the sample number, identification code, and entry number in the attached table.

Palm tissue (order by sample No.)				
Entry No.	**Sample No.**	**Code**	**Insecticide**	mg/kg
303998	13	A.U.C.1	**Imidacloprid**	**LC**
303999	14	A.U.C.2	**Imidacloprid**	**LC**
304000	15	A.U.M.1	**Imidacloprid**	**LC**
304001	16	A.U.M.2	**Imidacloprid**	**LC**

As the results demonstrate, no residues appeared in any of the four palms treated with Imidacloprid in the months of July, August and September.
There were also no residues found in the two palms treated in October.

3.2.- Dates.-

3.2.1 – Extraction of samples

On the 12th of December, dates were taken from these four palms and delivered to the laboratory for analysis.

3.2.2.- Results.-

On the 19th of December the results were received.

dates (order by sample No.)				
Entry No.	**Sample No.**	**Code**	**Insecticide**	mg/kg
1304581	1	A.U.C.1	**Imidacloprid**	**LC**
1304582	2	A.U.C.2	**Imidacloprid**	**LC**
1304583	3	A.U.M.1	**Imidacloprid**	**LC**
1304584	4	A.U.M.2	**Imidacloprid**	**LC**

No residues were detected in the dates of these four palms which had been treated via endotherapy with imidaclopride during the months of June, July, August, and September, nor were any detected in the two palms which had received additional treatment in October.

3.3.- Discussion.-

After studying the results of these trails, it can be concluded that following monthly applications of imidaclopride during the months of June, July , August, September and October, no residues were found in the dates or at the growing points of any of the plants which were tested.

Sketch of the plot.-