

Update on Evaluations of New Nematicides **Joe Nunez, Vegetable/Plant Pathology Farm Advisor-Emeritus**

We have been screening various nematicides and biological products for several years and we have shown that several new nematicides are very effective in managing root knot nematodes (RKN). That was the case again this year in our 2017 nematode trials.

Nimitz is an Adama product that is currently on the market and is registered on fruiting vegetables (tomatoes, peppers, okra etc.), cucurbits (melons), brassica leafy vegetables (kale, cabbage mustards etc.), leafy vegetables (lettuces) and low growing berries (strawberries).

Velum is a Bayer product that is sold in three different formulations but with the active ingredient fluopyram that is both a nematicide and fungicide. It's registered on brassica crops (head, stem and leafy brassica crops), cucurbits (melons, squash, cucumbers) fruiting solanaceous crops (peppers, eggplants, and tomatoes), strawberries and potatoes. It's also registered on several tree crops.

The third nematicide is Salibro which was developed by DuPont. It is not currently registered or marketed as of yet but hopefully it will be released in the near future by DuPont.

The remarkable thing about these three products is that they are all non-fumigants and are relatively speaking very safe products having only a warning as the signal word on each of these products. The fumigants used for nematode control are restricted use products with danger or poison as their signal word.

The other remarkable factor about these products is that they are true nematicides that target nematodes and seem to have little activity on other organisms in the soil. Fluopyram is also a fungicide however and was sold first as a fungicide before it was found to help control nematodes also.

In our 2017 trials we looked at these three products on tomatoes and as expected saw great results with these products. In these 2017 trials these products were applied only once at planting or in the case of Nimitz, 7 days pre-plant.

2017 Tomato Nematicide Trial

| <u>Treatment</u> | <u>Rating</u> |
|------------------|---------------|
| 1. Control | 8.0 A |
| 2. Velum | 3.6 B |
| 3. Nimitz | 1.4 B |
| <u>4 Salibro</u> | <u>2.5 B</u> |
| Probability= | 0.0019 |
| %CV= | 54.48 |
| LSD $P=0.05$ | 2.905 |

Treatment 3 was applied on 4/24/17 and the others applied at planting on 5/1/17.

Only a single application pre-plant or at planting was applied for each treatment.

Five roots per plot were harvested the week of 8/7/17 and evaluated for rootknot nematode galling.

Roots were rated on a scale of 1 to 10 with 1 being no visible galling and 10 the roots being over 90% galled.

These results follow closely what we have been observing in previous trials in other years. This is our tomato trial data for 2016:

| <u>Treatment</u> | <u>Nematode Root Rating</u> |
|---|-----------------------------|
| 1. Control | 4.8 A |
| 2. Velum 6.5 fl oz/A pre and 21 DAP post | 1.8 B |
| 3. Nimitz 5 pints/A as a 24 band | 2.2 B |
| 4. Nimitz 5 pts/A as a full 60inch bed | 1.7 B |
| <u>5. DP pre at 30.7 fl oz/A & 1 post at 15.4 fl oz/A</u> | <u>3.0 AB</u> |
| Probability | 0.0238 |
| % Coefficient of Variation | 52.16% |
| LSD $P=0.05$ | 1.910 |

The following table is our findings in 2015:

2015 Tomato Nematode Trial at Shafter

| | Nematode Rating * | Total Yield 3 plants lbs |
|--|----------------------|-----------------------------|
| 1. Control | 8.5 A | 23.9 |
| 2. Vydate @ 1 gal/A 1 pre & 2 post | 6.8 AB | 28.5 |
| 3. Nimitz pre at 80fl oz/A | 6.5 AB | 37.3 |
| 4. Nimitz pre & Vydate 2 post | 5.2 BC | 44.5 |
| 5. Bayer at 8.55 oz/A pre & 2 post | 2.4 CD | 41.6 |
| 6. Nimitz pre & Bayer 2 post | 2.7 CD | 42.9 |
| 7. DP pre at 30.7 fl oz/A & 2 post at 15.4 fl oz/A | 1.5 D | 32.0 |
| 8. <u>Melocon pre at 4 lbs/A</u> | <u>8.8 A</u> | <u>39.8</u> |
| Probability | 0.000 | 0.1305 |
| % CV | 33.84 | 34.31 |
| LSD _{P=0.01} | 3.134 | NS** |

* Nematode rating 1= 0% infection, 10=100% root infected with RKN

** Not significant

In 2014 we also saw very good results with these products. However this is before we had a chance to look at the Bayer product, Velum.

2014 Tomato Nematode Trial at Shafter

| <u>Treatment</u> | <u>Nematode Rating</u> |
|---|------------------------|
| 1. Control | 9.1 A |
| 2. Vydate 3 pt/A pre | 6.5 B |
| 3. Nimitz 3.5 pt/A pre | 1.1 D |
| 4. Nimitz and Vydate | 0.4 D |
| 5. DP 30.7 fl oz at planting & 2 post @ 15.4 | 4.7 C |
| 6. <u>DP 30.7 fl oz pre & 2 post @ 15.4 fl oz</u> | <u>4.4 C</u> |
| Probability | 0.0000 |
| %CV | 17.96 |
| LSD _{P=0.05} | 1.648 |

In the earlier trials DP is the code word for the DuPont product Salibro. As we have demonstrated these are very effective nematicide products and the labeling of these products suggest that are much safer for workers safety, the general public and to the environment than the fumigants that are currently in use. When the third product reaches market and the crops on the labels increase even more then it will be easier to fit these products into a nematode management program. Rotating these products amongst themselves and following IPM management practices should provide long life of these new nematicides and excellent nematode control.

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