

**CYST NEMATODE ON COLE CROPS**  
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 UC DAVIS

14th ANNUAL  
 DESERT CROPS  
 WORKSHOP  
 DECEMBER 3,  
 2003

WWW ADDRESS:  
[ucdnema.ucdavis.edu](http://ucdnema.ucdavis.edu)



1991 California growers' economic losses from nematode damage on the nine crops with greatest historic usage of 1,3-D = \$106.8 million (Landels, 1992)

Millions of Dollars Lost  
**ROOT-KNOT NEMATODE (RKN)**

|                                   |      |
|-----------------------------------|------|
| Tomatoes                          | 13.4 |
| Cotton                            | 9.8  |
| Sweet potatoes                    | 7.5  |
| Potatoes                          | 0.4  |
| Carrots                           | 15.1 |
| <b>SUGARBEET CYST &amp; (RKN)</b> |      |
| Broccoli                          | 15.7 |
| Cauliflower                       | 7.9  |
| Sugar beets                       | 6.1  |
| Brussel sprouts                   | 0.7  |

**SUGARBEET CYST NEMATODE ON SUGARBEET**



COMPOUND

FUMIGANTS

|                                     | <u>VOLATILITY</u><br>HIGH | <u>\$/ACRE</u> |
|-------------------------------------|---------------------------|----------------|
| Methyl Bromide - Tarped             | 5                         | 1,200          |
| - Nontarped                         | 5                         | 280-400        |
| Chloropicrin                        | 7                         | 1,200          |
| 1,3-Dichloropropene(1,3-D.Telonell) | 30                        | 100-500        |

|  |     |         |
|--|-----|---------|
| Methyl isothiocyanate<br>( Metam Sodium, Vapam, Basamid) | 500 | 150-400 |
|--|-----|---------|

ORGANOPHOSPHATES & CARBAMATES

|                     |             |          |
|---------------------|-------------|----------|
| Ethoprop(Mocap)     | 100,000     | } 50-250 |
| Carbofuran(Furadan) | 1,000,000   |          |
| Aldicarb(Temik)     | 1,500,000   |          |
| Fenamiphos(Nemacur) | 10,000,000  |          |
| Oxamyl(Vydate)      | 100,000,000 |          |
|                     | LOW         |          |

**METHYL BROMIDE - ALTERNATIVE FUMIGANTS:**

- 1,3 - DICHLOROPROPENE
- TELONE II, TELONE C35
- INLINE (EMULSIFIABLE)
- CHLOROPICRIN (PIC EC)
- SODIUM TETRATHIOCARBONATE (ENZONE)
- METAM SODIUM
- DAZOMET (BASAMID)
- OZONE GAS
- \*METHYL IODIDE (Iodomethane)
- \*PROPARGYL BROMIDE

COMBINATIONS OF  
 THE ABOVE

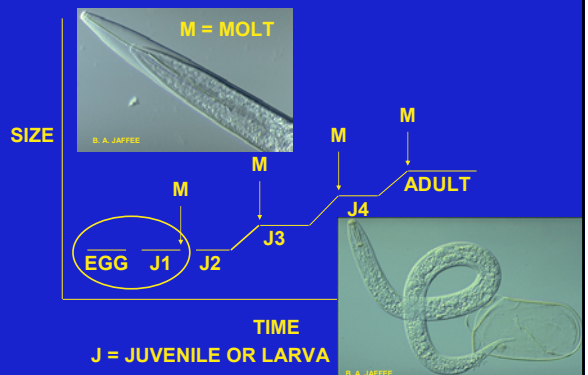
\*NOT REGISTERED

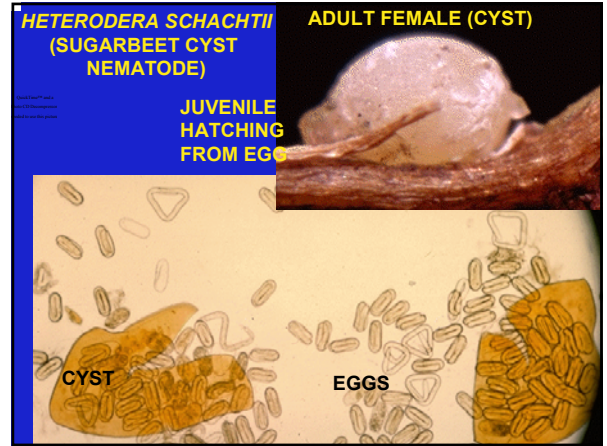
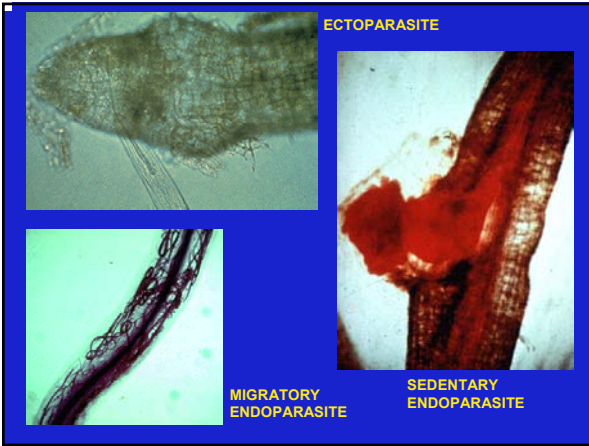


**DISTRIBUTION OF SUGAR BEET CYST NEMATODE:**



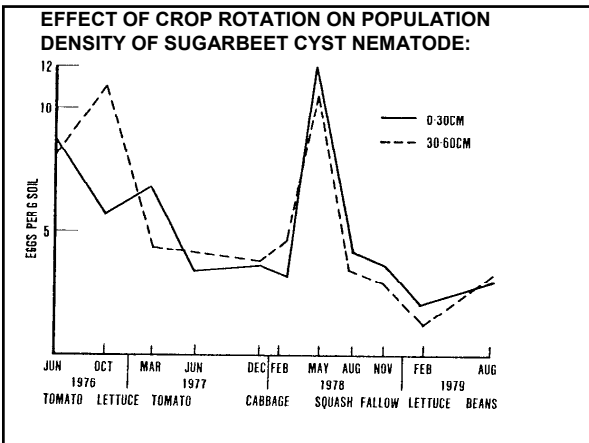
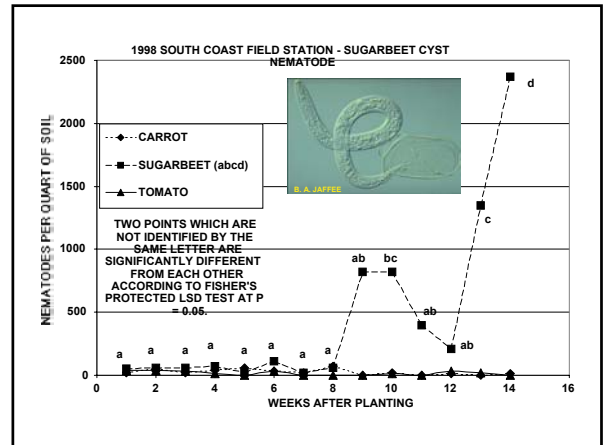
**LIFE CYCLE OF A TYPICAL PLANT PARASITIC NEMATODE:**



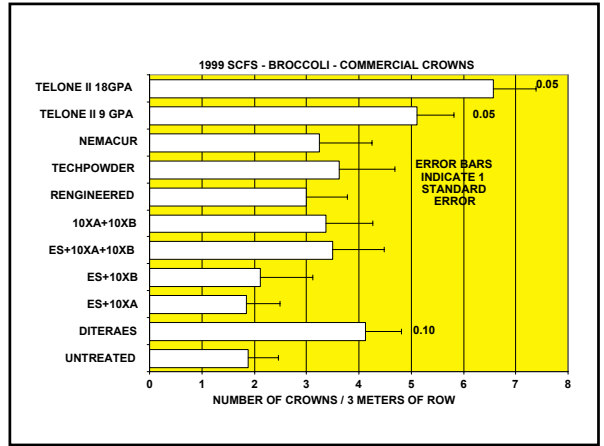


**INFLUENCE OF TEMPERATURE ON NEMATODES:**

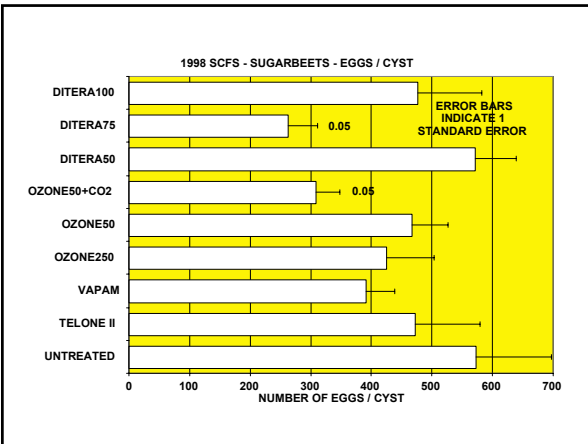
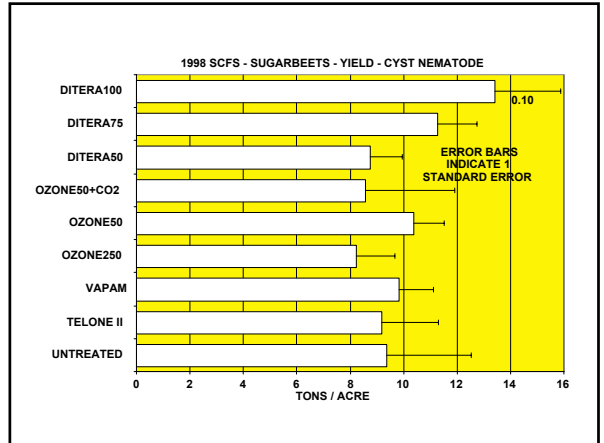
|   | MINIMUM FOR INFECTION | OPTIMUM REPRODUCTION | OPTIMUM FOR ACTIVITY |
|---|-----------------------|----------------------|----------------------|
| <b>ROOT KNOT</b>  |                       |                      |                      |
| <i>MELOIDOGYNE SP.</i>  |                       |                      |                      |
| <i>M. CHITWOODI</i> (COLUMBIA)  | 45F (6C)              | 45F (6C)             | 68-77F (20-25C)      |
| <i>M. HAPLA</i> (NORTHERN)  | 54F (12C)             | 54F (12C)            | 77-86F (25-30C)      |
| <i>M. INCOGNITA</i> (SOUTHERN)  | 65F (18C)             | 50F (10C)            | 76-90F (25-32C)      |
| <b>SUGARBEET CYST</b>   |                       |                      |                      |
| <i>HETERODERA SCHACHTII</i>   | 50F (10C)             | 46F (8C)             | 70-81F (21-27C)      |
| <b>NEEDLE LONGICORUS AFRICANUS</b>  |                       |                      |                      |
| DAMAGE TO LETTUCE SEEDLINGS IS MINIMAL AT SOIL TEMPERATURES LESS THAN 22C (72F) |                       |                      |                      |



**DITERA**  
**VALENT (ABBOTT LABORATORIES)**  
**KILLED MICROBIAL**  
**TOXIN PRODUCED BY A FUNGUS**  
**VERY WATER SOLUBLE**  
**CA REGISTRATION ON SEVERAL CROPS**



**SUGARBEETS**



**MUSTARD AND RADISH COVER CROPS**

QuickTime™ and a  
 4x CD Decompressor  
 are required to use this picture.

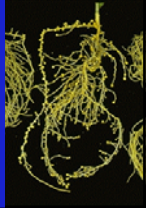


QuickTime™ and a  
no CD Decompressor  
are required to use this picture.

## NEMATODE / HOST ASSOCIATION DATABASES

H. FERRIS, E. CASWELL-CHEN, B. WESTERDAHL  
FROM URL: <http://ucdnema.ucdavis.edu/>  
SELECT: VIEW DATABASES

NEMABASE Nematode-Host Association Database  
(can also be obtained from ucipm website)  
Nematode Common-Scientific Name Database  
Plant Common-Scientific Name Database  
Lownsbery Nematode-Host Association  
Database  
Radewald California Ornamental  
Nematode-Host Association Database  
Nematode Primer Database  
Knowledge Planning Database



BIOFUMIGATION (CASWELL-CHEN, WESTERDAHL):  
EVALUATION OF BROCCOLI RESIDUE FOR  
SUGARBEET CYST NEMATODE CONTROL  
BRASSICACEAE PRODUCE GLUCOSINOLATES  
BROCCOLI DEGRADATION RELEASES  
ISOTHIOCYANATES  
METAM SODIUM IS A SYNTHETIC ISOTHIOCYANATE



UC SOUTH COAST RESEARCH  
AND EXTENSION CENTER  
SUGARBEET CYST NEMATODE  
(*HETERODERA SCHACHTII*)  
RANDOMIZED COMPLETE BLOCK  
3-4 REPLICATES PER TREATMENT

