COMBINATION OF SOIL SOLARIZATION AND CHEMICAL TREATMENTS FOR THE CONTROL OF ROOT-KNOT NEMATODES IN SOUTHERN ITALY

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A field experiment was carried out in 1998-1999 in southern Italy, to assess the combined effect of soil solarization and chemical treatments in the control of the root-knot nematode *Meloidogyne incognita* on cantaloupe.

Soil solarization was performed between June 20 and August 1, 1998. Nematicides were applied before planting cauliflower in autumn or before planting cantaloupe in spring. Metam potassium and 1,3 D were applied either on August 6 or on March 10, 1999 and fenamiphos, granular or microcapsulated, aldicarb, prophos and cadusafos either on September 1 or on May 14. Fenamiphos, aldicarb, prophos and cadusafos were also applied after soil solarization either as single treatment or as a second treatment 30 days after planting cantaloupe. Plots measured 3 x 3 m and were separated each other by 1 m interspace.

Cauliflower, cv. Regata, was planted on September 2, 20 plants/plot, and harvested next January; cantaloupe, cv. Super Market, was planted on May 15 and harvested between July 6 and 26, 1999.

Cauliflower residues were ploughed into the soil in January 1999. The usual agricultural practices were applied during the experiment. The data were analysed by Duncan's Multiple Range Test.

The results (Table 1) indicate that not big differences occurred among the yields of cauliflower. However, the crop had been severely damaged by hail in November. Concerning cantaloupe yield, 1,3 D was the best nematicide when applied as the only treatment. Soil solarization was as effective as all the other chemicals, except 1,3 D, and improved the effectiveness of metam potassium, fenamiphos and aldicarb, when applied in spring. When fenamiphos, aldicarb, prophos and cadusafos were applied as single post plant treatment, after soil solarization, the effectiveness of fenamiphos only slightly improved compared to it's fall preplant application, but no yield increases occurred when post plant treatments followed the fall preplant treatments, after soil solarization.

Table 1. Combined effect of soil solarization and chemical treatments on the yield of cantaloupe in 1998-1999 (plot size 3 x 3 m)

Treatments (preplanting)			Chemical 30 days postplanting	Yield (Kg)				Final root-knot index on cantaloupe	
Soil solarization (8 wk)	Chemical 1998	Chemical 1999		Cauliflower		Cantaloupe			
No	None	None	None	8.5	ab	6.2	a	4.8	a
Yes	None	None	None	11.2	abc	22.7	bcdefgh	2.5	efgh
Yes	Metam potassium 1000 l/ha	None	None	11.2	abc	25.5	fgh	2.0	gh
Yes	1,3 D 150 l/ha	None	None	12.7	abcd	36.5	i	2.0	gh
Yes	Fenamiphos G 200 Kg/ha	None	None	12.7	abcd	21.5	bcdefgh	2.0	gh
Yes	Fenamiphos CS 31 l/ha	None	None	11.7	abc	21.7	bcdefgh	2.5	efgh
Yes	Aldicarb 60 Kg/ha	None	None	16.7	cd	24.5	efgh	2.5	efgh
Yes	Prophos 100 Kg/ha	None	None	9.0	abc	18.0	bcdefgh	3.7	bc
Yes	Cadusafos 80 Kg/ha	None	None	9.0	abc	16.5	bcde	3.0	cdef
No	Metam potassium 1000 l/ha	None	None	11.2	abc	14.5	b	3.2	cde
No	1,3 D 150 l/ha	None	None	12.5	abcd	25.0	efgh	3.0	cdef
No	Fenamiphos G 200 Kg/ha	None	None	11.0	abc	17.0	bcdef	3.2	cde
No	Fenamiphos CS 31 l/ha	None	None	12.5	abcd	16.5	bcde	3.2	cde
No	Aldicarb 60 Kg/ha	None	None	12.2	abcd	15.0	bc	3.0	cdef
No	Prophos 100 Kg/ha	None	None	6.5	a	15.2	bcd	3.2	cde
No	Cadusafos 80 Kg/ha	None	None	10.2	abc	17.2	bcdefgh	3.5	cd
Yes	None	Metam potassium 1000 l/ha	None	10.0	abc	24.5	efgh	2.0	gh
Yes	None	1,3 D 150 l/ha	None	12.5	abcd	26.0	h	3.0	cdef
Yes	None	Fenamiphos G 200 Kg/ha	None	10.0	abc	24.2	efgh	2.7	defg
Yes	None	Fenamiphos CS 31 l/ha	None	12.2	abcd	23.5	cdefgh	2.7	defg
Yes	None	Aldicarb 60 Kg/ha	None	8.5	ab	26.0	h	2.2	fgh
Yes	None	Prophos 100 Kg/ha	None	10.5	abc	20.5	bcdefgh	2.7	defg
Yes	None	Cadusafos 80 Kg/ha	None	8.2	ab	21.2	bcdefgh	3.0	cdef
Yes	None	None	Fenamiphos G 200 Kg/ha	11.5	abc	23.7	defgh	2.2	fgh
Yes	None	None	Fenamiphos CS 31 l/ha	8.7	ab	23.5	cdefgh	2.2	fgh
Yes	None	None	Aldicarb 60 Kg/ha	9.0	abc	22.7	bcdefgh	1.7	h
Yes	None	None	Prophos 100 Kg/ha	11.7	abc	18.2	bcdefgh	3.0	cdef
Yes	None	None	Cadusafos 80 Kg/ha	10.5	abc	18.5	bcdefgh	3.0	cdef
Yes	Fenamiphos G 200 Kg/ha	None	Fenamiphos CS 10 l/ha	14.0	abcd	20.2	bcdefgh	2.5	efgh
Yes	Fenamiphos CS 31 l/ha	None	Fenamiphos CS 10 l/ha	14.7	bcd	19.2	bcdefgh	3.0	cdef
Yes	Aldicarb 60 Kg/ha	None	Fenamiphos CS 10 l/ha	15.5	bcd	25.7	gh	2.5	efgh
Yes	Prophos 100 Kg/ha	None	Fenamiphos CS 10 l/ha	13.2	abcd	19.7	bcdefgh	3.5	cd
Yes	Cadusafos 80 Kg/ha	None	Fenamiphos CS 10 l/ha	13.2	abcd	22.2	bcdefgh	2.5	efgh
Yes	Metam potassium 1000 l/ha	None	Fenamiphos CS 10 l/ha	13.5	abcd	25.2	fgh	2.2	fgh
Yes	1,3 D 150 l/ha	None	Fenamiphos CS 10 l/ha	19.5	d	34.5	i	1.7	h
Yes		Cadusafos 50 Kg/ha	Cadusafos 30 Kg/ha	9.0	abc	15.5	bcd	2.5	efgh

Data flanked in any column are not statistically different according to Duncan's Multiple Range Test (small letters for P=0.05).