Sugarbeet Cyst Nematode Population Response to Fall or Spring Planting of Nematode Resistant Oil Radish and Yellow Mustard Varieties. S.L. Hafez¹, K. Hara¹, D. Searle², D.D. Bowers². ¹University of Idaho, Parma Research and Extension Center, 29603 U of I Lane, Parma, ID 83660, ²Amalgamated Sugar Company, P.O. Box 87, Nampa, ID 83653.

The sugarbeet nematode can dramatically affect the growth and development of the sugarbeet plant. Severe nematode infestations have reduced root yields as much as 70 percent. It is a common practice for sugarbeet growers to spend \$80 to \$200 per acre for nematicides to control the pest. The availability of two of the most commonly used nematicides, Telone II and Temik, is in question since both compounds are presently under review by the Environmental Protection Agency and have come under attack recently by several environmental groups.

Trap crops of oil radish and yellow mustard have been developed for control of the sugarbeet nematode. Trap crops are usually planted after small grain harvest in the summer and are allowed to grow until winter temperatures kill the crop. Growing trap crop in nematode-infested soils triggers the nematode eggs to hatch. The nematode larvae enter the trap crop root but are not able to reproduce. The nematode population density in the soil is reduced and conditions are again favorable for sugarbeet production.

Oil radish var. (Pegletta) and Buckwheat var. (Prego) were planted in the fall of 1991, following wheat, in sugarbeet fields heavily infested with SCN in the Dry Lake area of Idaho. Soil samples for nematode analysis were collected before planting the cover crops, after discing and before planting sugarbeet. Nematode were extracted by the sugar flotation-centrifugation technique. Results (Table 1) showed that Pegletta and Prego reduced the SCN egg population by 78 and 18% from the initial population. In the following spring (1992) field was planted to sugarbeet and Temik was applied at planting on part of the oil radish and buckwheat plots. Root yield was measured and results showed (Table 2) no significant yield differences between oil radish, buckwheat or Vapam (standard nematicide treatment). Also, there was no significant difference between the use of Temik and non-use of Temik on either crop.

In a different study, two nematode resistant oil radish varieties (Pegletta and Nemex) and yellow mustard var. (Maxi) were planted in the spring of 1991 in sugarbeet fields heavily infested with SCN at Parma. Each variety was replicated five times in complete randomized strip design.) Results (Table 1) indicated that Pegletta, Nemex and Maxi significantly reduced the number of SCN eggs by 67, 23 and 87% of the initial population respectively. The control treatment, fallow, reduced egg population by 28% of the initial population.

Results of both studies indicated that resistant catch crops should be used as a part of integrated systems. Also, different varieties of catch crops has different levels of resistance (none of them are absolute).

Important conditions to increase the effectiveness of nematode-resistant catch crops on reducing S.B.C.N. nematode populations:

1. Dense planting and deep root penetration

2. Create optimum conditions for egg hatching (temperature and moisture)

3. High resistant levels in the varieties

The effect of fall planting of oil radish (Pegletta) and buckwheat (Prego) on sugarbeet cyst nematode population. Dry Lake, ID. 191, Saad L. Hafez. Table 1.

Crops	Befor	ematode Popula re Planting /12/91	After	Planting	% Reduction
	V.C.*	Total E&L**	V.C.	Total E&L	
Oil Radish (Pegletta)	4.2	510.8	2.0	114.0	77.7
Buckwheat (Prego)	16.0	2,121.6	12.7	1,739.9	18.0

The effect of fall planting of oil radish (Pegletta) and buckwheat (Prego) on sugarbeet root yield and percent sugar. Table 2.

	Treatments	1,318	1,078	Sugarbeet Root T/A	% of Sugar	
1.	Oil Radish Fall 91			44.7 a	16.41	
2.	Oil Radish Fall 91 35 lbs Temik AP		0.0	47.3 a	16.60	
3.	Buckwheat Fall 91			46.0 a	16.50	
 4. 5. 	Buckwheat Fall 91 35 lbs Temik AP	T.	57	44.7 a	15.90	
5.	Vapam Fall 91	-	Sec.	46.0 a	16.29	

Means followed with the same letter are not significantly different.

^{*}V.C. = Viable Cyst

**E&L = Eggs and larvae
Planting date: 8/08/91
Plowing date: 10/17/91

Table 3. The effect of spring planting of oil radish and white mustard on sugarbeet cyst nematode population. Parma, ID 1991, Saad L. Hafez

Crops	Pre	Pre-Planting 3/24/91			natode Population in 500 o Post F 06/04/91			07/15/9	% Reduction	
	v.c.*	E&L/ cyst	Total E&L	V.C.	E&L/ cyst	Total E&L	V.C.	E&L/ cyst	Total E&L	
Pegletta	18.0	178	3,204	12.2	108	1,318	8.0	134	1,072	66.5
Nemex	12.0	132	1,584	9.8	110	1,078	9.6	127	1,219	23.0
Maxi	8.0	168	1,344	11.0	111	1,221	1.6	108	173	87.1
No Plant	17.6	176	3,086	20.6	146	3,008	12.2	174	2,223	28.0

^{*}V.C. = Viable Cyst Planting date: 3/29/91 Plowing date: 7/16/91

0.612