

## Utah IPM/SA Mini-Grant Final Report 2013

**Project Title: 'Alfalfa Stem Nematode Resistance as a Tool To Ameliorate Crop Losses'**

**Location of Project: Weber County, Utah**

**Total Grant Award: \$1,802**

**Principal Investigator: James Barnhill**

**Co- Principal Investigators: Claudia Nischwitz, Earl Creech, Ricardo Ramirez, Michael McClure**

**Cooperators: Jay Christensen**

**Objectives of Project:** Determine the comparative level of stem nematode resistance of ten alfalfa varieties to a Utah population of nematodes and determine the economic advantage of selecting a variety with high resistance. After four years the effect of alfalfa stem nematode resistance on stand longevity would be determined.

### **Summary of Project:**

Plots containing six replications of ten alfalfa varieties were established in 2012. This was our second year of harvesting the trial. The field had been heavily infested with alfalfa stem nematode three years ago, before it was planted to grain. Surrounding fields also exhibit high levels of alfalfa stem nematode infestation.

A soil analysis of the plot area indicated that it continued to be deficient in both Phosphorus and Potassium. We applied the fertilizer recommended by the soils lab.

Six inch soil samples were taken from the trial area each June and sent to Arizona for nematode analysis. The soil averaged 0.28 and 0.56 *Ditylenchus* nematodes/cc of soil in 2012 and 2013 respectively. So the number of nematodes is rising, but still fairly low. We hope that this number will come up so that we can put more nematode pressure on the alfalfa varieties being evaluated.

In June five stems from each of the plots were evaluated for alfalfa stem nematode. The results showed that six of the ten varieties had at least one plot with alfalfa stem nematode in it. Last year, only three of the varieties had plots where alfalfa stem nematode was identified in the stem tissue. We did another stem evaluation in October in hopes of finding higher levels of alfalfa stem nematodes, but only found nematode in the sample of one variety.

Stem counts were taken in three locations in each plot using a 0.1 meter<sup>2</sup> quadrant. The number of stems/.01m<sup>2</sup> ranged from 85 to 109 in 2012, and 66 to 84 in 2013. Ranger, the alfalfa stem nematode susceptible variety, has had one of the higher stem counts in the trial, so at this point we are not seeing any alfalfa population loss due to alfalfa stem nematode.

Yield data indicates that Ranger, the alfalfa stem nematode susceptible variety, yields less than the varieties marketed as resistant. This may be due to improved production breeding instead of resistance to alfalfa stem nematode, as the nematode population is still quite low.

### **Results of Project**

Spring alfalfa stem nematode counts from 5 stem samples is in table 1

Stem counts values are listed in table 2.

Yield values for the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> cuttings are listed in table 3.

### **Evaluation and Impact**

The trial will require further years of evaluation to be able to make any conclusions.

## Educational Outreach

Table 1

Alfalfa Stem Nematode/ 5 Stem Sample – Spring 2013	Rep 1		Rep 2		Rep 3		Rep 4		Rep 5		Rep 6	
Variety	1	#	2	#	3	#	4	#	5	#	6	#
Ranger	101	0	201	1	301	0	401	0	501	0	601	0
DKA 43-22 RR	102	1	202	1	302	0	402	0	502	0	602	0
PGI424 producers choice	103	0	203	1	303	0	403	0	503	0	603	0
PGI557producers choice	104	0	204	0	304	0	404	0	504	0	604	0
WL 363	105	0	205	0	305	0	405	0	505	0	605	0
Americas Alfalfa 445NT	106	0	206	1	306	0	406	0	506	0	606	0
Croplan Denali 4.10 RR	107	0	207	0	307	0	407	0	507	1	607	0
Eureka 4R200 RR	108	0	208	0	308	0	408	0	508	0	608	0
Pioneer 54V09	109	1	209	0	309	0	409	0	509	0	609	1
Pioneer 54Q25	110	0	210	0	310	0	410	0	510	0	610	0

Table 2

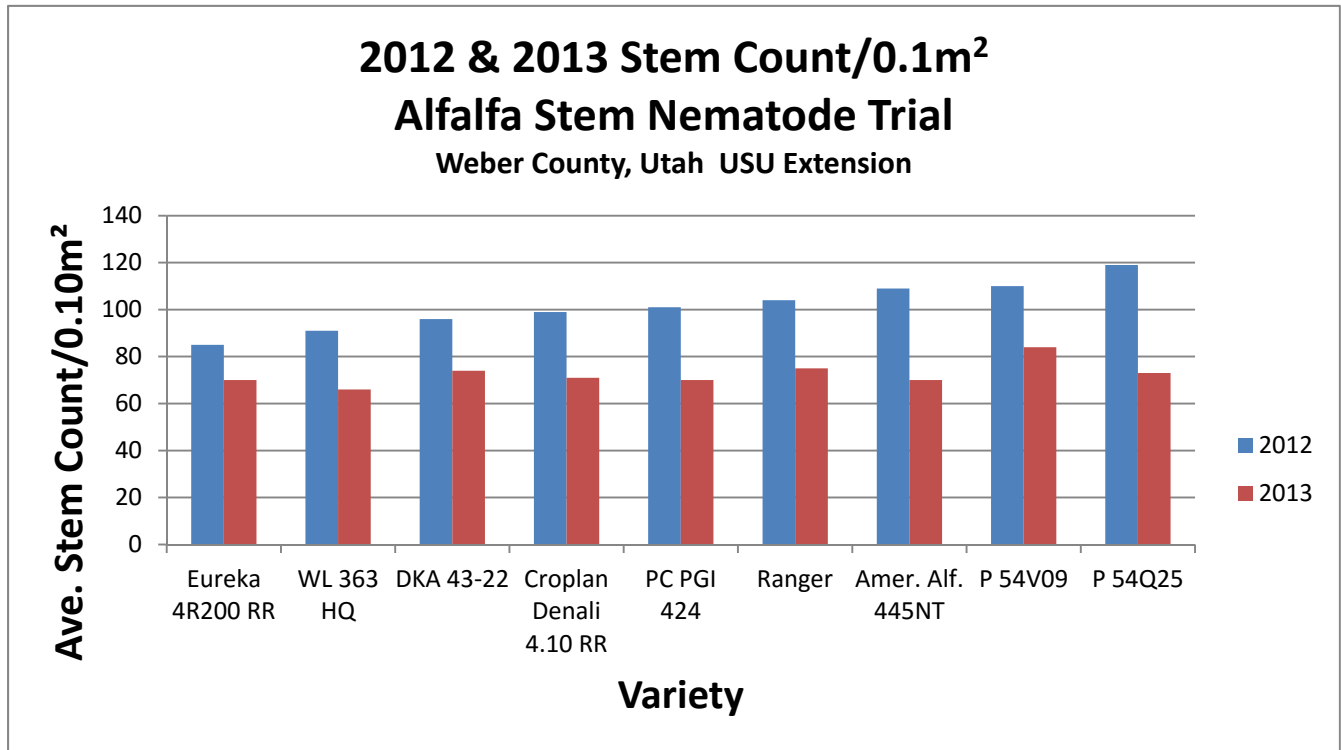


Table 3

