

Project Title: Sm1 Interspersed Refuge Evaluation – 2014

Project Personnel: Bob Stougaard, Brooke Bohannon, Luther Talbert and Nancy Blake

Objective: To evaluate the efficacy and agronomic performance of the interspersed refuge system.

Results:

The purpose of the interspersed refuge system is to delay the selection of virulent, Sm1 resistant, midge populations. The refuge, or susceptible variety, is blended with the midge resistant variety at a ratio of 1:9. The combination is then planted together in an effort to maintain the genetic diversity of the midge population.

In this study, CAP 34-1 and Egan (formally CAP 400-1) contain the Sm1 gene for OWBM resistance, while Solano and Choteau are midge susceptible varieties. These four cultivars were planted alone and as blends (Table 2), where the midge resistant cultivars comprised 90% of the blended mixture.

Differences were detected in the number of OWBM larvae per spike. Solano had the greatest level of infestation. The Sm1 resistant cultivars, as a single variety or in the refuge system, afforded 88% to 100% midge larvae mortality. However, no differences in yield were observed due to low insect populations.

Table 1. Materials and Methods - Sm1 Interspersed Refuge Evaluation - 2014

Seeding Date: 5/1/2014	Harvest Date: 8/29/2014
Julian Date: 121	Julian Date: 241
Seeding Rate: 80 lb/A	Soil Type: Kalispell VFSL
Previous Crop: Fallow	Soil Test: 431-40-258
Tillage: Conventional-Till	Fertilizer: 200-30-100
Irrigation: N/A	Herbicide: Huskie 11 floz/A and Axial XL 16.4 floz/A
	Fungicide: Headline 9 floz/A

Table 2. Agronomic data for the efficacy of the Sm1 interspersed refuge system - 2014.

Treatment	HD Julian	HT in	LOD %	YLD bu/A	PRO %	TWT %	OWBM no/spk	TKW g
SOLANO	183	27.7	2.7	120.2	15.4	60.8	5.7	38.0
CHOTEAU	181	35.7	3.7	109.2	15.0	60.4	1.4	35.6
CAP 34-1	180	34.3	3.3	118.9	14.2	60.9	0.0	36.2
EGAN	184	36.0	4.0	108.7	16.5	59.9	0.2	34.5
CAP 34-1 & SOLANO	180	33.7	3.0	121.5	14.4	61.2	0.0	35.8
CAP 34-1 & CHOTEAU	181	33.3	3.0	108.9	14.4	61.3	0.7	36.0
EGAN & SOLANO	184	36.7	1.3	111.6	16.5	60.1	0.2	34.2
EGAN & CHOTEAU	184	37.3	3.7	111.8	16.5	60.1	0.4	35.1
Mean	182	34.3	3.1	113.9	15.4	60.6	1.1	35.7
CV	0.5	4.8	50.0	5.6	1.7	0.5	160.9	4.4
LSD	1.4	2.9	ns	ns	0.4	0.5	3.0	ns
Pr>F	0.0001	0.0001	0.5511	0.1000	0.0001	0.0003	0.0193	0.1831

HD: heading, HT: height, LOD: lodging, YLD: yield, PRO: protein, TWT: test weight, OBMW: orange wheat blossom midge, TKW: thousand kernel weight, MC: moisture content, ns:nonsignificant.