

Section IV.
Cereal Crop Pests

HESSIAN FLY RESISTANCE IN WSU SRING WHEAT VARIETIES

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A trial consisting of 3 varieties of Washington State University soft white spring wheat varieties was established at Farmington, Washington, in May, 2001. A RCBD of 3 reps per 2 treatments per variety early seeding date and 3 reps per 2 treatments per variety late seeding date was used, with the 2 treatments being UTC, and 1.33 oz/cwt Gaucho 480. Hessian fly (HF) puparia per 5 plants were counted for each rep at soft dough stage, and yield data were collected by Hegi plot combine at harvest. The data show a strong trend toward reduction of HF by early seeding and NSD between all treatments regardless of variety or insecticide treatment. The late seeding Farmington data show strong resistance to HF by Zak and Eden (WA7902), and total susceptibility by Alpowa in late seeding conditions, with Eden SD from Zak, and Alpowa with Gaucho NSD from Zak. Alpowa seeded late sustained a yield reduction and HF damage. Weather mandated later than average seeding dates on the Palouse Region in 2001. In addition, while some puparia were found in Eden, they were biologically dead due to apparent anti-biosis exhibited toward the E, G, and H biotypes of HF common to the Palouse Region around Farmington as identified by Dr. Roger Ratcliff.

Data shared by Dr. Richard Smiley*, OSU Columbia Basin Agricultural Research Center, Pendleton, OR, from trials containing the varieties Zak and Eden plus 20 others, show a different trend from Farmington, WA. Identifications of HF biotypes by Roger Ratcliff (retired ARS Entomologist at Purdue) indicate the virulent F biotype in the Walla Walla/Umatilla Counties of the Columbia Basin. The F biotype also attacks Madsen winter wheat with damage up to 30% of tillers lodged, and can damage 80% of spring wheat tillers in this area. While Zak demonstrates good resistance under heavy HF pressure at Pendleton, Eden shows high numbers of puparia and less yield compared to Farmington data for this variety. This indicates resistance to all HF biotypes is unknown, and will require large-scale studies in several locations with identified HF biotypes. See data in tables below:

Farmington Early Seeded Trail Means

Variety	HF Puparia/5 Plants	Yield bu/ac
Alpowa	0.67a	71.8a
Alpowa/Gaucho	0.67a	73.5a
Zak	0.00a	71.8a
Zak/Gaucho	0.00a	75.3a
Eden	0.33a	73.7a

Eden/Gaucha 0.00a

77.3a

ANOVA: LSD t Test 0.05 numbers followed by same letter NSD.

Farmington Late Seeded Trial Means

Variety	HF Puparia/5 Plants	Yield bu/ac
Alpowa	11.00d	53.1c
Alpowa/Gaucha	8.33c	57.4b
Eden	3.00b	60.5a
Eden/Gaucha	3.33b	60.3a
Zak	0.00a	55.6b
Zak/Gaucha	0.00a	56.4b

ANOVA; LSD t Test 0.05

OSU Columbia Basin Comparisons*

Variety	HF Puparia/1 or more plants	White Heads%	Yield bu/ac
Zak	5	2	58
Eden (WA7902)	85	7	18
Alpowa	na	na	na

* Trial contained 22 varieties w/ varying degrees of HF resistance.