

The Effect of CLB Damage and Parasitism at Nine Mile Falls, WA, 1998 to 2008

Diana Roberts (WSU Extension) and Kit Cutler

A question from the Western CLB Group was, “What damage to cereal crops has CLB caused in Washington, and how has the larval parasitoid contributed to preventing this damage.” Kit Cutler compiled a summary (Table 1) of the effects of CLB and the parasitoid on winter and spring wheat crops on his irrigated farm at Nine Mile Falls.

Table 1. Progression of CLB infestations and *T. julis* parasitism levels at the Cutler Farm, Nine Mile Falls, WA, from 1998 to 2008. Yields are for Alpowa spring wheat from 1998 to 2006, and for Tara and Louise for 2007 and 2008.

Year	Alpowa Spring Wheat Yield (bu/A)	Insecticide Applied for CLB (Warrior 3 oz.A)	Madsen Winter Wheat Yield (bu/A)	Insecticide Applied for CLB (Warrior 3 oz.A)	T. julis in insectary/ commercial fields (% parasitism)	Notes
1998	85	NO	85	NO	NA	K. Cutler saw CLB but didn't identify/report it
1999	119	NO	119	NO	NA	CLB reported in WA by WSDA (M. Klaus) and K. Cutler
2000	114	NO	114	NO	NA	Lots of CLB - ate bluegrass to whiteness. Even neighbors reported flights of CLB. WSDA began release of <i>T. julis</i> in field borders
2001	68	NO	121	NO	0/0	Release of <i>T. julis</i> in field borders continued.
2002	36	NO	88	NO	0/0	WSU spring wheat replicated trial yielded 60 bu/A in sprayed plots and 44 bu/A in untreated plots (27% loss). Established first managed insectary.
2003	97	Whole Field	122	Whole Field	0.8/0	First recovery of overwintering <i>T. julis</i> . First release of <i>Anaphes flavipes</i>
2004	97	NO	121	NO		18 <i>T. julis</i> wasps reared - method did not provide percentage. One (1) overwintering <i>A. flavipes</i> reared.
2005	96	Whole Field w/ Herbicide	124	NO	6/NA	Drift occurred to insectary from aerial application. One (1) overwintering <i>A. flavipes</i> seen under microscope.
2006	90	Borders only	102	NO	79/60	No <i>A. flavipes</i> recorded
2007	79 (Tara & Louise)	NO	123	NO	NA/95	Insectary discontinued. No <i>A. flavipes</i> recorded
2008	101 (Tara & Louise)	NO	127	NO	NA/98	Parasitism recorded in strip of oats adjacent to spring and winter wheat

Kit Cutler's greatest losses from CLB were in 2001 and 2002, when he didn't spray and although the parasitoid had been released it had not yet established in detectable numbers. In 2002, not all the yield loss was due to CLB – frost and a plant disease also contributed to the loss. WSU replicated spring wheat trials on the farm that year yielded 60 bu/A in insecticide-treated (Warrior) plots and non-treated plots yielded 44 bu/A (27% yield loss). Similarly, in 2007 the yield depression was not attributed to CLB

In 2006 the parasitoid was effective enough that he sprayed only field borders and in 2007 and 2008 he did not need to spray his crops at all and the level of parasitism in his spring wheat was 95% and 98% respectively. In 2007 and 2008 he seeded a strip of oats adjacent to his spring wheat and winter wheat (see document *2007 WA Oat Strip Trap Crops for CLB Management* for further details).

The impact of CLB and the larval parasitoid are shown in Figure 1. These data demonstrate how a farmer can move from depending on insecticides to utilizing *T. julis* parasitism for CLB management.

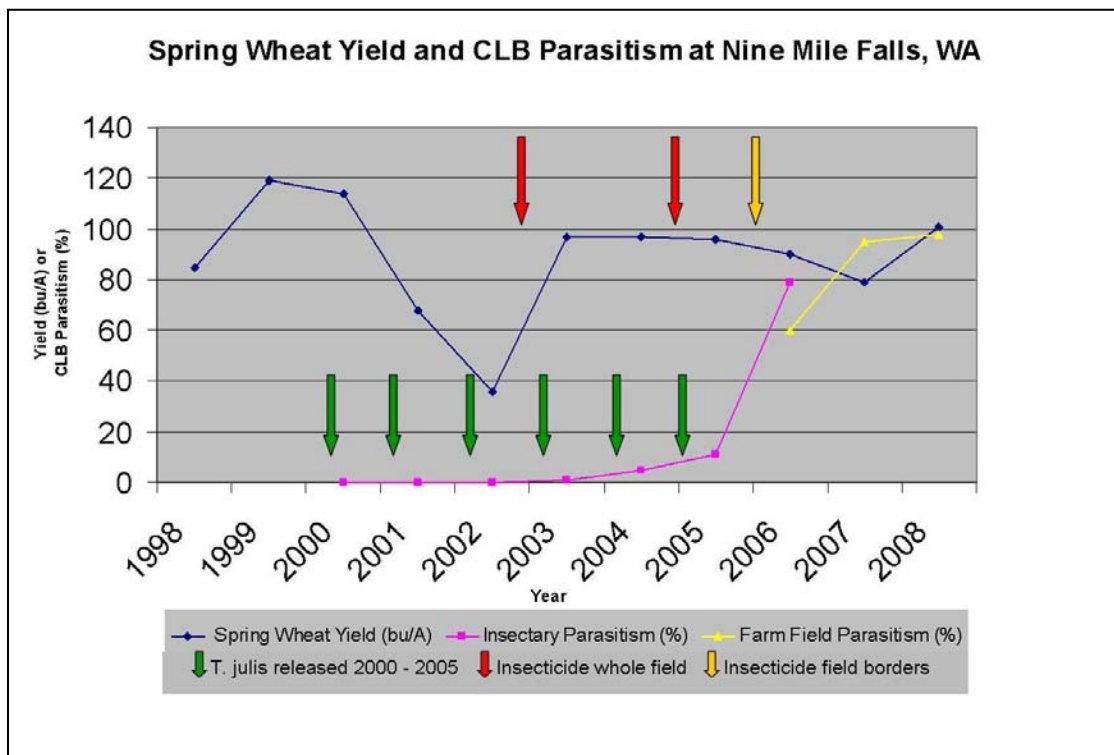


Figure 1. The impact of CLB infestations and *T. julis* parasitism on irrigated spring wheat yields at Nine Mile Falls, WA, from 1998 to 2008. Yields are for Alpowa spring wheat from 1998 to 2006, and for Tara and Louise for 2007 and 2008. Yield loss in 2002 was about 27% due to CLB, and in 2006 yield depression was not attributed to CLB.