

Section III
Biological & Cultural Control

CEREAL LEAF BEETLE BIOLOGICAL CONTROL PROGRAM IN OREGON, 2008

B.B. Bai¹, R.A. Worth¹, H.W. Rogg¹, and G.W. Brown²

¹ Oregon Department of Agriculture, 635 Capitol St. NE, Salem, OR 97301

² USDA, APHIS-PPQ, 6135 NE 80th Ave. #A-5, Portland, OR 97218

bbai@oda.state.or.us/503-986-4645

Annual survey

Our 2008 survey found one new positive county - Lincoln County, for cereal leaf beetle (CLB), *Oulema melanopus*. The beetle is now considered distributed in 20 counties in Oregon: Baker, Benton, Clackamas, Columbia, Crook, Deschutes, Jefferson, Lane, Lincoln, Linn, Malheur, Marion, Multnomah, Polk, Tillamook, Umatilla, Union, Wallowa, Washington, and Yamhill (Figure 1).

In 2008, ODA, USDA, and OSU continued cooperation on the biological control program to monitor, release, and redistribute the two parasitoid species, *Anaphes flavipes* and *Tetrastichus julis*, within the CLB infested counties in Oregon.

Egg parasitoid – *Anaphes flavipes*

We did not release any egg parasitoids in 2008 due to lack of source and funding. Instead, our effort was directed toward the recovery surveys at previous insectaries or release sites.

Two field insectaries in Washington Co. - at Banks and Scholls, one in Union Co., and various growers' fields in Washington and Linn counties, have been utilized as release sites for the egg parasitoid since 2000. After several seasons of releases, the parasitoids had a brief establishment

in the Banks and Scholls insectaries during 2002-05, where the parasitism rate (PR) reached a maximum of 30%. However, all recovery rates dropped to zero in 2007. Recovery surveys in 2008 also resulted in no parasitoid. A recovery effort was also made in Union County for the first time since the release there in 2005. CLB population was so low there that no eggs could be collected. To date no *A. flavipes* is permanently established at detectable levels at any of the release sites. Future recovery efforts may yet detect *A. flavipes* but, given its lack of success in other western states, the outlook is bleak.

Larval parasitoid – *Tetrastichus julis*

The goal for 2008 was to monitor *T. julis* distribution and parasitism rates, and to continue redistribution of the parasitoid to central Oregon. Collected CLB larvae were routinely dissected for parasitism assessment.

The OSU insectary field in Union County was discontinued since 2007. That area had high *T. julis* and low CLB populations in recent years. In fact, the success of *T. julis* there made it difficult to find CLB in Union County in 2008. The OSU insectary field at the Central Oregon Agricultural Research Center in Madras, Jefferson County, was still active in 2008 but received no *T. julis* releases. *T. julis* were redistributed and released in only two counties. The numbers of parasitized CLB larvae (and estimated number of *T. julis*) released in each county in 2008 are: Crook, 330 (1,600) and Deschutes, 405 (1,964). The parasitism rates among CLB release material from all areas ranged from 97 to 100%. *T. julis* continues to establish well in previous release areas. Samples tested from Umatilla County showed a 100% PR very early in the season. Baker and Multnomah counties continue to have high PRs after many years of establishment. The peak PRs of *T. julis* in each county were as follows: Baker (100%), Crook (0%), Deschutes (0%), Jefferson (12%), Linn (18%), Marion (3%), Multnomah (97%), Umatilla (100%), Washington (84%) (Figure 2). An estimated 383,626 *T. julis* parasitoids were released and redistributed in Oregon during 2000-2008 (Table 1).

Economic Impact

Spraying for CLB is up considerably in Oregon in 2008 according to the most recent pesticide use survey by USDA/APHIS/PPQ. The acres of grain planted increased 6.7% in the state (Oregon Ag statistics). An estimated 57,347 acres were treated, up from 19,141 acres in 2007. The high price for grain this year and the increased cost of chemicals and fuel combine to increase the economic impact of CLB in 2008. The estimated cost to treat CLB in Oregon this year was \$742,644.

T. julis can spread long distances on its own within grain production areas. In Union and Baker counties larval parasitism rates have been high since 2006. Growers there have gained confidence that the parasitoids will kill CLB larvae before yields are affected. Treated acres are down 99% compared with that of 2003, the peak year for CLB treatments. Experience in Union County indicates *T. julis* can effectively reduce CLB damage below economic levels.

Fig.1

Cereal Leaf Beetle 2008 Survey

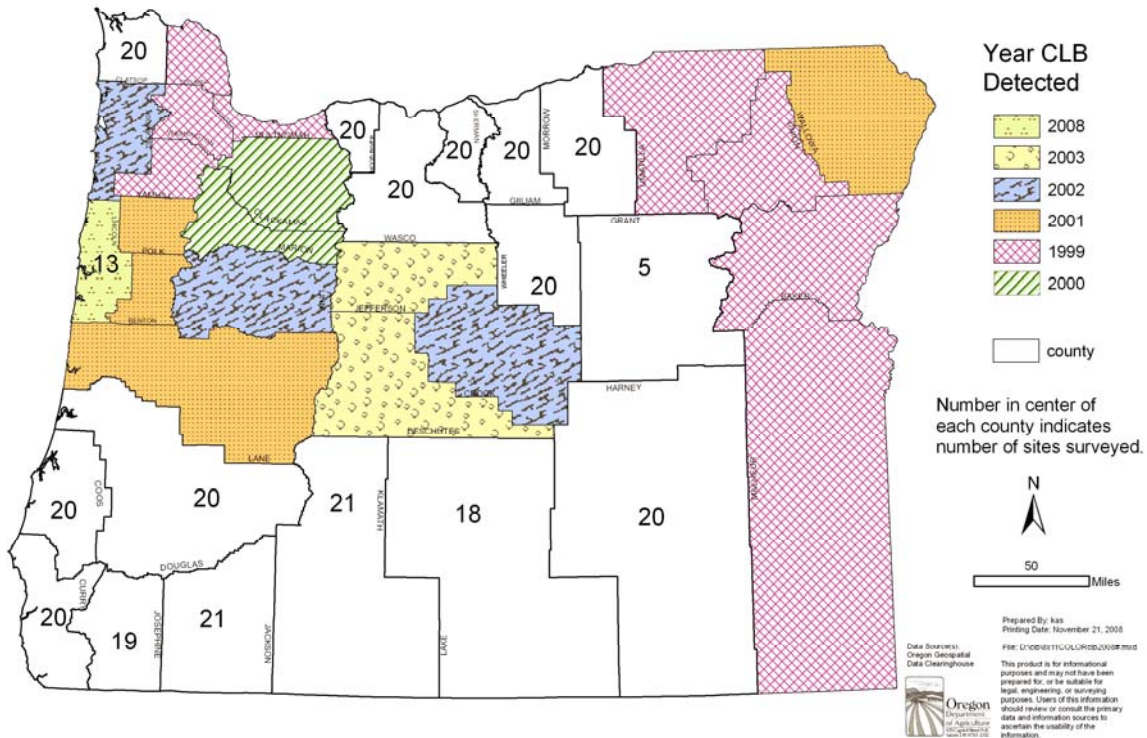


Fig. 2

T. julis Activity Sites in Oregon, 2008

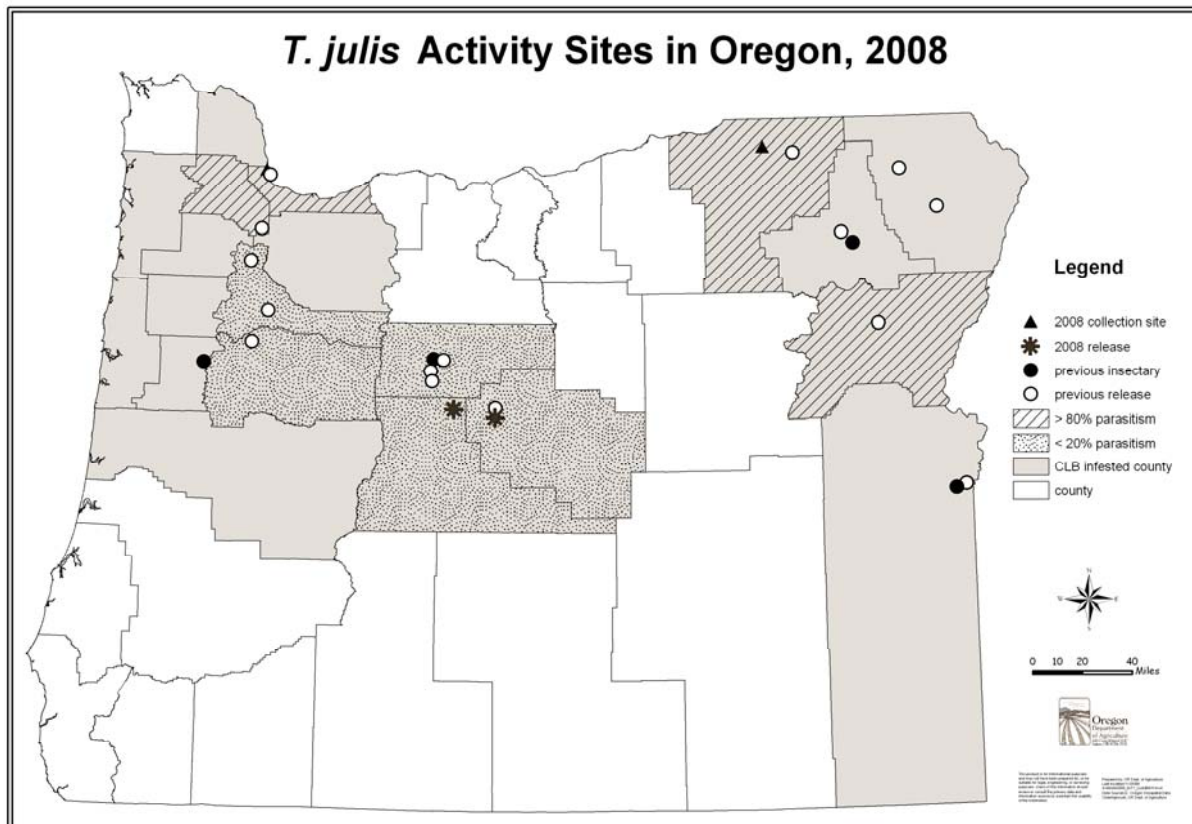


Table 1. Estimated number of parasitoids released in Oregon during 2000-2008.

Year *A. flavipes* *T. julis*

2000 263 12,310

2001 434 18,905

2002 6,200 107,566

2003 28,111 108,949

2004 26,213 51,000

2005 31,904 23,160

2006 16,750 41,965

2007 4,285 16,207

2008 0 3,564

Total 114,160 383,626