

미국 콜럼비아 중부지역 체리과실파리의 월동 후 발생예측모형

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A forecasting model of Western Cherry Fruit Fly, *Rhagoletis indifferens* Curran (Diptera: Tephritidae), after hibernation in the mid Columbia area of the Western United States

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The western cherry fruit fly (CFF), *Rhagoletis indifferens* Curran, is a major pest of cherries in the Mid Columbia Area of the Western United States. Because of a "zero tolerance" for damage detecting CFF emergence is critical for successful control. Due to low CFF populations in the major cherry-growing districts in the Mid-Columbia, emergence cannot be detected reliably with traps. Phenology models developed elsewhere have not proven accurate enough for predicting emergence and oviposition. To improve predictions of CFF emergence, historical observations on first emergence, rainfall, and temperature were analyzed. The amount of precipitation in March found to accelerate the first CFF emergence. In average, CFF emerges nine days earlier in The Dalles than in Hood River, however, the heat unit (degree days, DD) were required 71DD more in The Dalles than in Hood River. A phenology model of CFF emergence and oviposition was developed using the distributed time-delay concept. The model was validated with trap catch records from several years. From the simulation, a simple heat requirement values (DD) for the first emergence are recommended as 480DD in The Dalles and 550DD in Hood River for the site-specific prediction.

Key words: phenology, prediction, model, degree-days, western cherry fruit fly