

TEMPERATURE-DEPENDENT DEVELOPMENT IN THE INTRODUCED EUROPEAN CRANE FLY, *Tipula oleracea*

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Tipula oleracea, a native of Europe, is a species of crane fly that has been recently introduced into Oregon. *T. oleracea* is suspect of feeding on the crowns and young, tender shoots of plants, and causing extensive damage to crops such as mint and grass-seed. Unsightly and costly damage resulting from these pests has been observed in residential, and golf course lawns within the Willamette Valley in Oregon. Damage caused by *T. oleracea* is believed to be caused by extensive feeding by the larval stages of the insect. The crane fly species that are native to Oregon are thought to feed only on dead organic matter and therefore cause no damage to plants and pose no threat to local agriculture.

Recently it has become common for golf course managers and growers to control this pest with toxic chemicals. Pesticides have been applied to fields in the past without knowledge of when the targeted immature stage of the pest exists in the field. Knowledge of the development rate of *T. oleracea* will assist growers and golf course managers in predicting when immatures are likely to be causing the most damage in their fields. We examined temperature-dependent development of *T. oleracea* by exposing eggs and immatures to (6, 8, 12, 16, 20, 28, 32 °C) in incubators. Percent survivorship and development time for each instar at each temperature was recorded. This information is useful for development of degree-day models for *T. oleracea*. Individuals who choose to use a chemical control will be able to use the degree-day model to optimally time the application of pesticides to reduce the amount of toxic chemicals released into the environment and maximize control of the pest.