

What Affect Does Cold Temperatures and Excessive Amounts of Water Have on Insects?



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Insects are cold-blooded animals; their physiological development is dependent on temperature. Generally speaking, insect development occurs as the accumulation of heat units occurs above a certain developmental minimum for a 24-hour period. This method of measuring and estimating heat unit accumulation is called the degree-day method. Below this minimum temperature, no physiological development occurs; most (not all) insects have developmental minimum or threshold of 50 F°. To calculate degree-days simply determine the minimum/maximum temperature within a 24-hour period, take the sum of these two values and divide by 2 and compare this value to the developmental minimum (i.e., 50 F°). For example, assuming the minimum temperature was 46 F° and the

maximum temperature was 82 F°, the degree-days accumulation would be 64 F° minus 50 F°. Using this example, 14 degree-days would have occurred. Different insect species have varying degree-day requirements for development, thus knowledge of specific biological information is necessary. Such information is available for many insects, but not all.

Does excessive water affect insects? There is no simple or straight forward answer to this question! The effect of excessive water is largely dependent on the insect species. Some insects are considerably more vulnerable to water than others. In some instances water can be used directly for suffocating insects. For example, in a non-turf agricultural situation, flooding of cranberry bogs is an extremely valuable tool

for controlling several insect pests of cranberry. Flood irrigation is also effective in controlling white grubs in sugarcane, especially under conditions of high temperature. Conversely, other insects such as mosquitoes thrive in water. Nonetheless, we cannot control the weather; when excessive rainfall events occur over continuous periods of time, it is possible that a negative impact on the development and survival of some turf-grass insect pests may result.

All in all, both cold temperature and excessive water can play an important roll in development and survival. Because we have no measurable influence on temperature, and flooding is not a practical control strategy on turf, especially since flooding can be detrimental, these pest management approaches are not relevant. ♻

