Another "Mild" Winter: What Should We Expect?

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Relatively speaking, the past two years in Wisconsin have been "mild" winters compared to "normal" years; so I've been told. So what's a normal year anyway? For those of you who are natives of Wisconsin, no further explanation is needed. However, a normal winter in Wisconsin (depending on what part of the state you are from) typically consists of what appears to be endless days and/or weeks of frigid temperatures (below zero) and periodic snowfall events that provide continuous snow cover.

Whenever we experience such atypical winters, people frequently ask the question: how will the mild winter affect or have an impact on (if any) insect populations? The logical response to this question is that insect populations will most likely be higher than normal. Unfortunately, the answer to this question is not so simple. There are numerous abiotic (non-living) and biotic (living) factors that affect an insect's ability to survive. The obvious abiotic factors include temperature, humidity, and light intensity. Other abiotic factors such as precipitation (rainfall/snow), wind, barometric pressure, and even altitude can affect insects. Since insects are cold-blooded, they physiologically react or respond with great sensitivity to temperature. Biotic factors can also affect insect populations. Such biotic factors are often affected and even dependent on abiotic factors such as weather. These biotic factors include: diseases, natural enemies, and food shortage.

So, the question still remains, based on past, present, and anticipated weather conditions, will there be an increase in subsequent insect populations? The "bottom line" is that it is relatively impossible to predict the abundance of insects. However, one can predict the occurrence or anticipated presence of insects, not abundance. There are three primary means by which entomologists can use to predict insect occurrence. One way is to simply rely upon **calendar dates**, whereby populations of a specific insect occur approximately at the same time each year. This method can be highly variable since weather conditions are often different from year to year. Another method is to use a **degree-day model** to predict insect occurrences. Degree-days models are a method of accounting for heat units. Since insects physiological development is dependent upon temperature (the higher the temperature, the faster the development and visa-versa), a prediction of insect development or activity can be made. The third method relies upon plant **phenology**, or plant development in relation to the season. This method correlates certain plant developmental characteristics of specific plants with the activity of specific insects. Although no one method is foolproof, certain methods are better than others; however, each method has its own strengths and weaknesses.

As for predicting insect populations for the 1999-growing season, based on experience and data from comparable winters of previous years, it is anticipated that insect population may be up as much as 20% from "normal" years. However, factors such as rainfall, or the lack of, spring and summer temperatures (low or high, including an always possible late spring frost), humidity, abundance of natural enemies and diseases, and availability of food sources can all significantly influence subsequent insect populations.