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NebGuide

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When to Sample for Alfalfa Weevil

Dates for initiating alfalfa weevil scouting are provided, based on 30 years of climatic data used to estimate appropriate degree day accumulations for northern and southern Nebraska.

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Sampling activities for alfalfa weevil need to be timed properly because it is inefficient to sample when the pest is not active or present. Conversely, delayed sampling is financially risky because economic damage can occur before a management practice is implemented.

Integrated pest management programs often use degree day accumulations to initiate activities, while producers often use calendar dates. Calendar scheduling is traditionally based on subjective experience rather than research. Consequently, calendar dates are not as precise as degree day accumulations. This is not to imply that calendar dates have no value; indeed, they can be a valuable technique for determining when to initiate sampling activities particularly when real-time degree day information is not available. This approach can be improved, however, by using climatic "normal" temperature data (1961-1990) to determine the probable date when a specified number of degree days will have accumulated.

Typically, two degree day (DD) accumulations are used to initiate alfalfa weevil sampling in Nebraska -- 250 and 300 DD. Differences in autumn egg-laying patterns in Nebraska lead to differences in the timing of egg hatch and larval populations the next spring. In Nebraska, autumn egg-laying varies depending on climatic conditions. Research at Iowa State University suggests that alfalfa weevil sampling should begin at 250 DD in the southern half of Iowa and at 300 DD in the northern half. It's likely that these DD accumulation requirements are similar for Nebraska. Thus, the accumulation of 250 DD should be used south of a line from Omaha to Ogallala and 300 DD north of that line.

Figures 1-3 identify dates for the accumulation of 250 DD at the 10%, 25%, and 50% probability levels, based on the climatic "normal" temperature data of 1961-1990. Dates for the accumulation of 300 DD at the 10%, 25%, and 50% probability levels are given in *Figures 4-6*. Growers in southern Nebraska should use the information in *Figures 1-3*, while growers in northern Nebraska should use information in *Figures 4-6*. Those close to the dividing line may want to use a combination when making their decision.

The dates in the six figures provide alfalfa growers with a sense of the risk assumed if sampling is

initiated on these dates. In *Figure 1*, for example, if sampling is initiated by March 26 in southwestern and south central Nebraska, the alfalfa grower will have begun sampling at or before the beginning of alfalfa weevil egg hatch in nine of ten years. If sampling is initiated by March 31, the grower will have begun sampling at or before the beginning of egg hatch in three of four years (*Figure 2*). And if the grower waits until April 10, they will have begun sampling at or before the beginning of egg hatch in one of two years (*Figure 3*).

The dates in Figure 4 indicate that if sampling is initiated by April 10 in north central and northeastern Nebraska, the alfalfa grower will have begun sampling at or before the beginning of alfalfa weevil egg hatch in nine of ten years. If sampling is initiated by April 15, the grower will have begun sampling at or before the beginning of egg hatch in three of four years (*Figure 5*). And if the grower waits until April 20 (April 25 in parts of north central and northeastern Nebraska), they will have begun sampling at or before the beginning of egg hatch in one of two years (*Figure 6*).

Although there is some probability that alfalfa weevil egg hatch will be missed when any date is used, there is usually still time for management (if needed) because economic damage typically will not occur until at least one week after egg hatch. Therefore, the 25% probability level is an effective level to use. Using the 10% probability level would require the decision maker to sample too early most years.Real-time degree day accumulations are the most accurate predictors of alfalfa weevil egg hatch and should be used whenever possible. However, when real-time degree day accumulations are not available, the information presented here can be used to initiate alfalfa weevil sampling activities.

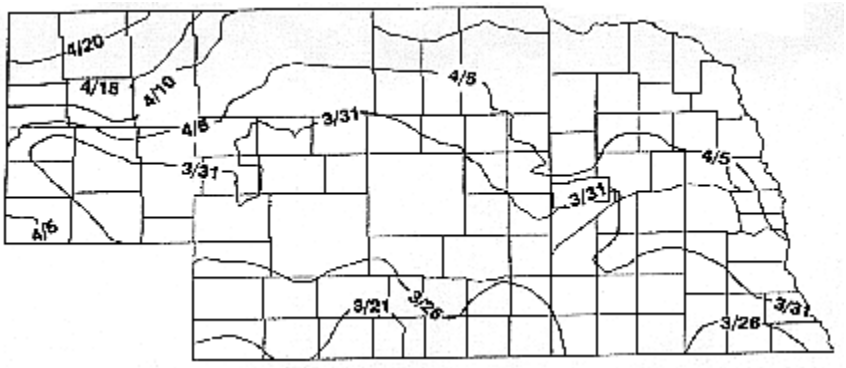

Figure 1. Date on which an alfalfa grower using the 250 DD base will initiate alfalfa weevil sampling at or before egg hatch in 9 of 10 years. The 250 DD base is typically used for southern Nebraska.

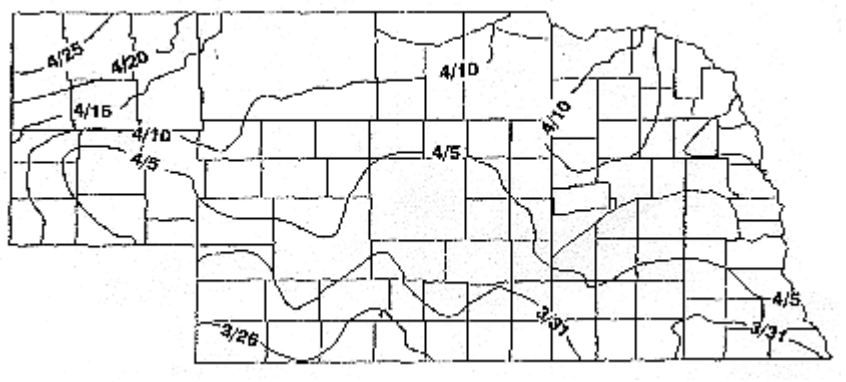

Figure 2. Date on which an alfalfa grower using the 250 DD base will initiate alfalfa weevil

sampling at or before egg hatch in three of four years. The 250 DD base is typically used for southern Nebraska.

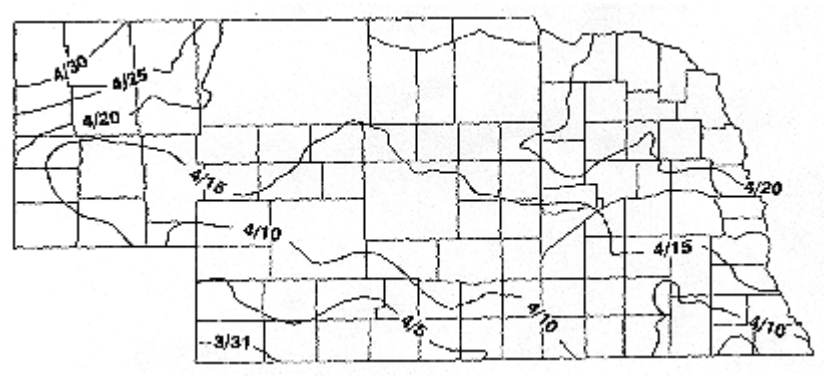

Figure 3. Date on which an alfalfa grower using the 250 DD base will initiate alfalfa weevil sampling at or before egg hatch in one of two years. The 250 DD base is typically used for southern Nebraska.

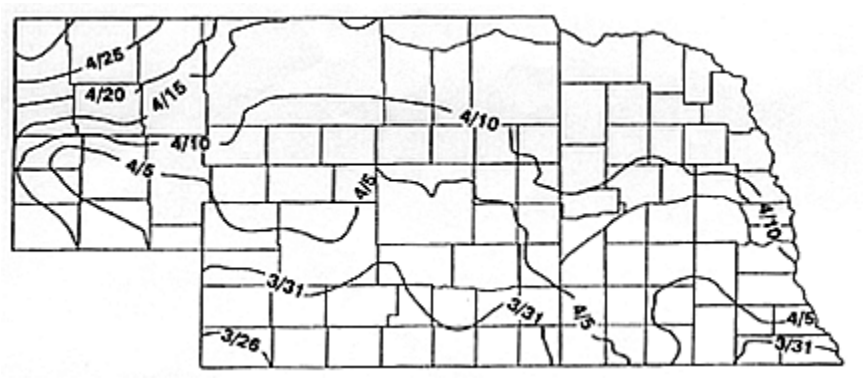

Figure 4. Date on which an alfalfa grower using the 300 DD base will initiate alfalfa weevil sampling at or before egg hatch in 9 of 10 years. The 300 DD base is typically used for northern Nebraska.

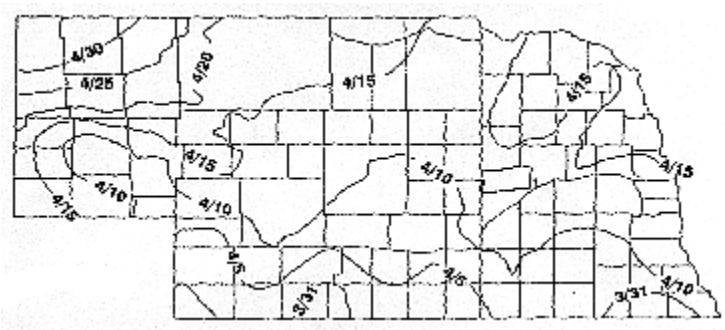

Figure 5. Date on which an alfalfa grower using the 300 DD base will initiate alfalfa weevil sampling at or before egg hatch in three of four years. The 300 DD base is typically used for northern Nebraska.

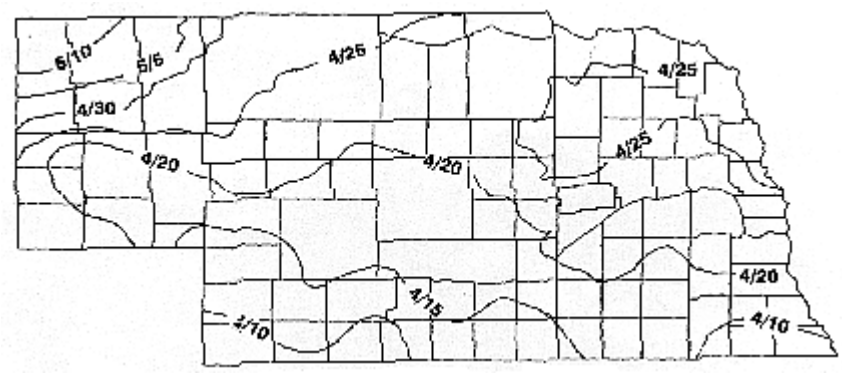

Figure 6. Date on which an alfalfa grower using the 300 DD base will initiate alfalfa weevil sampling at or before egg hatch in one of two years. The 300 DD base is typically used for northern Nebraska.

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