

# Winter Weather Effect On Alfalfa Stands

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Recently I read an article that discussed the affect that winter weather can have on alfalfa yields the following spring. The work upon which the article was based was conducted at Michigan State University.

The authors of the study note that injury to alfalfa can be caused by many factors. Among these factors are temperature fluctuations, lack of snow cover, and the persistence of

ice sheeting. In addition, the weather conditions in the preceding fall and the following spring can also impact the winter survival of the alfalfa stand.

Fluctuating temperatures with highs in the 40- to 60-degree range during winter can cause plants to break dormancy and initiate growth too early for normal spring development. Snow cover is usually beneficial from the stand point of temperature moderation at the crown and root zone and to protect

the plant from extremely low temperatures. A rapid meltdown of snow, followed by cold temperatures, can result in long-term ice sheeting. This can cause smothering, as the roots must breathe over winter, or low temperatures can injure plants because ice has a poor insulating value verses snow cover or "dry" soil.

Weather conditions during the fall hardening season have been identified as aiding or hurting winter survival. Long fall periods

with sunny but cool conditions favor winter hardening. Fall periods with cloudy conditions and warmer temperatures tend to decrease plant hardening. In early spring, wide temperature fluctua-

tions are not desirable and usually contribute to plant injury. Ideal conditions would be a gradual warming of air and soil with increasing day length periods.

In the Michigan study, the researchers measured first cut yields of alfalfa as they related to 12 weather variables. The researchers used data from moderately winterhardy alfalfa varieties managed in a four-cut system, last cut taken on Oct. 15. Yields were taken from variety trial plots in the second and third production seasons.

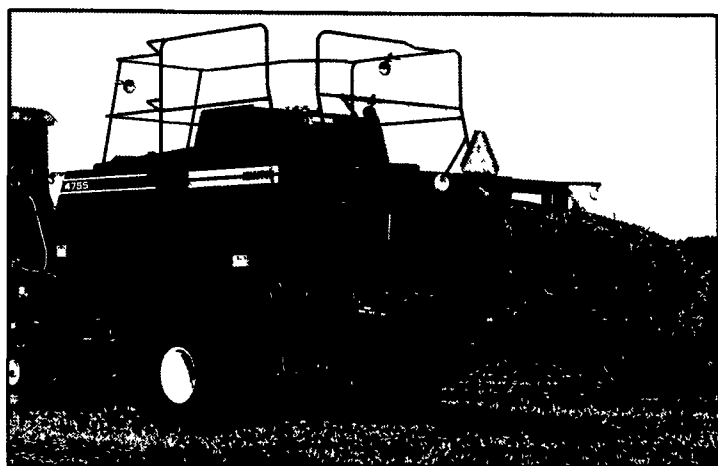
Of all the weather variables tested, winter temperature fluctuations and spring growing degree day accumulation were the most important weather variable affecting first cutting yields. Fluctuations measured daily air temperatures rising above and falling below 31 degrees with less than six-inches of snow cover.

A higher than average number of fluctuations in winter temperatures resulted in lower yields and increased spring growing degree days improved yields. In this study, the minimum daily winter temperature did not reduce first cut yields.



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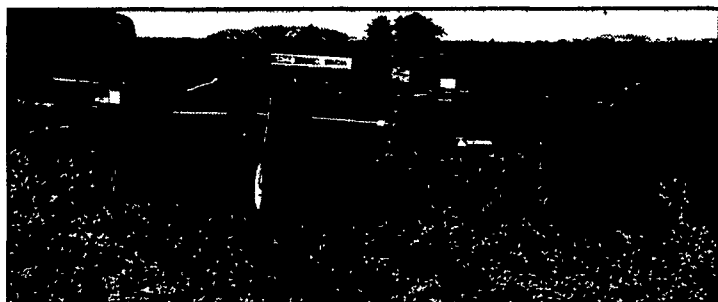
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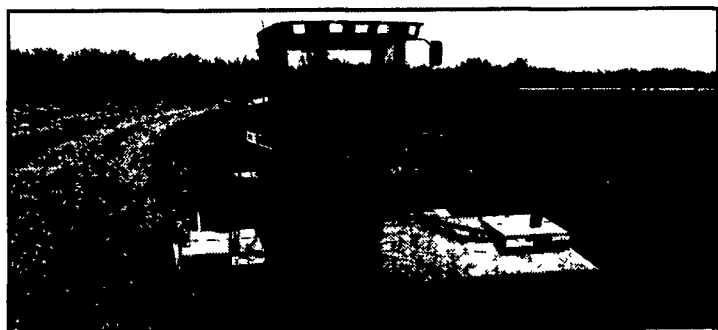
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