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Effects of Low Temperature and Shading during Flowering on the Yield Components in Soybeans

[Hideki Kurosaki](#)¹⁾ and [Setsuzo Yumoto](#)¹⁾

1) Tokachi Agricultural Experiment Station

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Abstract: Northern Japan, Hokkaido has cold weather damage in agriculture almost every four years. Cold weather damage to soybeans [*Glycine max* (L.) Merr] during flowering is especially severe and is caused by both low temperature and insufficient sunlight. Therefore, the damage should be analyzed from both aspects. We analyzed the effects of low temperature and shading during the flowering season on seed yield and yield components in two varieties of soybeans : cv. Hayahikari, an excellent cold weather tolerant variety, and cv. Toyomusume, a cold weather sensitive variety.

The soybean plants were exposed to a low temperature of 18°C day/13°C night, shaded (50%) without low temperature treatment, or shaded at a low temperature, during the four-week flowering season. The control plants were kept under normal conditions. The results indicated that cold weather damage is mainly caused by the low temperature, which severely reduced the number of pods per plant, in Toyomusume. However, shading also reduced the number of pods per plant in both varieties. All of the yield components examined were reduced by cold weather more severely in Toyomusume than in Hayahikari. Furthermore, shading combined with low temperature treatment caused greater damage in both Hayahikari and Toyomusume than either a low temperature or shading treatment alone.

Keywords: [Cold weather damage](#), [Flowering stage](#), [Low temperature](#), [Pod](#), [Seed yield](#), [Shading](#), [Soybean](#), [Varietal difference](#)



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