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Sub-Freezing Temperatures and Insects

Try to think of *one* good thing that came from the couple of bitterly cold stretches we've had so far this winter. Agronomically, there might not be many. Could soils have gotten cold enough we'll initiate some freeze-thaw cycles to help alleviate compaction? Possibly. Maybe a few insect pests froze, reducing next season's feeding pressure? Not likely.

Insects actually handle cold pretty well. For those overwintering in soil (wireworms, Japanese Beetles, etc..), soil itself actually provides them with good insulation against the coldest temperatures. The snow cover prior to the cold snap helped buffer soil temperatures even further. In fact, data from Kansas Mesonet (https://mesonet.k-state.edu/) stations in Corning and Oskaloosa confirm soil temperatures have barely reached freezing much below the surface. Soil temperature at these stations is taken under grass so are buffered a bit, but neither the two or four inch soil temperature has yet touched the freezing mark.

Bean leaf beetles overwinter in more exposed areas and would have greater potential exposure to cold injury, but even they adapt and find ways to protect themselves against cold. Natural body mechanisms (European corn borer larvae can produce glycerol, a biological antifreeze) can help, but even many freeze *susceptible* insects won't experience much mortality until temperatures drop to four degrees below zero – and often lower. We don't see soybean aphids here, but they overwinter as eggs and can tolerate temperatures as low as -29 degrees F.

Keep in mind as well that many insect pests don't overwinter here and are therefore unaffected by our cold temperatures. Fall armyworm, black cutworm and corn earworm all prefer warmer winter climates and tend to migrate north during the growing season.

That's not a very positive outlook, but remember: if the damaging insect has survived, it's likely beneficials have as well. That's good news for insects like parasitoids and other natural predators that can help us keep damaging pests at bay.