



## Accumulated Degree Days

A degree day is a unit of measurement for temperature. Degree days are the amount of heat required for an organism to develop within certain life stages. Degree days are typically used in agriculture to determine when insect pests will become a problem. They are also used as growing degree days to determine how much heat it will take for a crop to develop. A degree day is one day (24 hrs) with which the temperature is above or below a fixed reference temperature; in the case of the vector report, this temperature is 18.3 °C for *Cx. pipiens/restuans* (F. Hunter, personal communication). Therefore, if the temperature remained at 18.3 °C for 24 hours, then one degree day would be accumulated.

Accumulated degree days are the continuous addition of consecutive degree days from a set starting point.

### Example

It takes 10 accumulated degree days for an insect to molt to an adult with a reference temperature is 2 °C. If the next five days have an average temperature of 4 °C (+2 degree days), it would take five days for the insect to molt. If the day's temperature was 12 °C (+10 degree days), then it would only take one day to molt. Lower temperatures can also slow the development time (a day at 0 °C would be -2 degree days).

In the table below, using 2 °C as the temperature threshold, we can see that after 20 days the accumulated degree days would be 125 and that our example insect would have molted around day 7.

Day	Temp (24 hrs)	Degree Day	Accumulated Degree Days
1	0	-2	-2
2	2	0	-2
3	2	0	-2
4	4	2	0
5	5	3	3
6	6	4	7
7	6	4	11
8	9	7	18
9	9	7	25
10	11	9	36
11	15	13	49
12	10	8	57
13	10	8	65

14	12	10	75
15	12	10	85
16	11	9	94
17	11	9	103
18	9	7	110
19	9	7	117
20	10	8	125

Accumulated degree days can be recorded from specific weather stations and mapped out to give a visual of what areas within Ontario are of a set number of degree days (see example below).

