

## Project Assessment

Name: \_\_\_\_\_

Grade: \_\_\_\_\_

**Introduction** Do farmers make a random guess as to when to plant corn? NO! There's a whole lot of science behind knowing when to plant corn, when to expect different stages of growth, and when to harvest – it's called growing degree days (GDD). This activity requires some mathematical calculations to find out when is the optimum time to plant corn.

### Materials

- Calculator
- Growing Degree Days Worksheet

**Activity** Take a look at the table below labeled, Growing Degree Days: An A"maize"ing Harvest Calculation. As you can see the temperature plays an important part in the growth of healthy corn. The formula for calculating the GDD is as follows. We are using F for Fahrenheit in this activity.  $GDD^{\circ}F = 50$  (Lower Base Temperature in F for Corn)

There are two rules to follow:

- Rule 1: If the daily minimum temperature is (less than)  $< 50^{\circ}F$ , set it equal to  $50^{\circ}F$  as the Lower Base Temperature in the equation. (For example, if the temperature is  $38^{\circ}F$ , we bump it up to  $50^{\circ}F$  in the calculation.)
- Rule 2: If the daily maximum temperature is (greater than)  $> 86^{\circ}F$ , set it equal to  $86^{\circ}F$  in the equation. This is the Upper Limit Temperature.

Example: If on a beautiful May day, the high (maximum temperature) was  $80^{\circ}F$  and the low (minimum temperature) was  $56^{\circ}F$ , then: The average temperature for the day is  $= (80^{\circ}F + 56^{\circ}F) \div 2 = 68^{\circ}F$  And that day's Corn GDD ( $^{\circ}F$ )  $= 68^{\circ}F - 50^{\circ}F$  (this is the lower base temperature)  $= 18$  GDD ( $^{\circ}F$ )

### Growing Degree Days: An A"maize"ing Harvest Calculation

Temperature Impact on Corn	Temperature
Little to no growth	Below $50^{\circ}F$
Ideal growth conditions	Between $50^{\circ}F$ and $86^{\circ}F$
Some negative impacts on growth	Above $93^{\circ}F$
Heat stress and harm to growth	Above $110^{\circ}F$

## Growing Degree Days Worksheet

### Directions

1. Answer the Questions
2. Calculate the GGD's for each day from the following tables.
3. Add up the GGD's for the entire week in Table 1 and Table 2
4. Add the totals from Table 1 and Table 2 together.

### Questions

1. List the three most important factors that are needed for corn to grow.
2. What are some of the other factors, (not listed above) that a farmer must consider before planting corn?

**Growing Degree Table 1**

	Monday	Tuesday	Wednesday	Thursday	Friday
<b>Maximum Temperature</b>	68°F	72°F	60°F	69°F	69°F
<b>Minimum Temperature</b>	52°F	54°F	50°F	54°F	55°F
<b>GDD's Totals</b>					

Totals for the Week \_\_\_\_\_

**Growing Degree Table 1**

	Monday	Tuesday	Wednesday	Thursday	Friday
<b>Maximum Temperature</b>	78°F	80°F	80°F	90°F	79°F
<b>Minimum Temperature</b>	59°F	60°F	45°F	58°F	59°F
<b>GDD's Totals</b>					

Totals for the Week \_\_\_\_\_

Totals from both tables \_\_\_\_\_