

**Virtual Lab: Dependent and Independent Variables
Instructions**

1. Open the virtual lab: Dependent and Independent Variables
2. The screen will display the virtual lab simulation on the right side, and a “Questions” column on the left side.
3. Read all information in the Greenhouse Handbook. To open the handbook, click on “Greenhouse Handbook” on the shelf above the growth chamber in the lab simulation.
4. Read all background information and instructions in the “Questions” column.
5. Answer questions 1-5 on the Dependent and Independent Variables Worksheet.
6. Follow the instructions in the “Questions” column and complete the lab experiment. There are 4 seed varieties, two transgenic varieties – BT 123 and BT 456, and two non-transgenic varieties – Golden Crop and Super Harvest. You must gather data for all four varieties at levels of no infestation, low infestation, and high infestation. You may need to reset the simulation several times to see and select each of the four varieties. Record all of your data in Table 1 of the Lab 1 Worksheet. Calculate the average yield for each seed variety at each level of infestation. To calculate the average yield for one seed variety at one level of infestation:

$$(\text{Pot 1 yield} + \text{Pot 2 yield} + \text{Pot 3 yield})/3 = \text{average yield}$$

6. Calculate the percent (%) reduction in yield for each seed variety. To calculate the % reduction in yield for one seed variety:

$$(\text{avg. yield no infest.} - \text{avg. yield high infest.})/\text{avg. yield no infest.} \times 100 = \text{\% reduction in yield}$$

Record this data in Table 2 of the Lab Worksheet.

7. Answer questions 6-12 on the Lab Worksheet.