

PROTOCOL FOR ASSESSING WATERMELON POLLINATION

We have provided a data sheet that can be taken into the field. Observe your crop during full bloom on sunny, calm days between 9-11 am. There should be little to no wind and the temperature should be above 65°F. Try to do the assessment two or three times during bloom.



1.) Observations

Choose five open flowers close enough to each other so you can watch them all at the same time. Make sure that your shadow doesn't fall over the flowers. Start a timer for 1 minute and record the number of times a bee visits any of the five flowers. Separate visits into the four groups of bees using the photographs on the "Types of bees" page. You do not need to record other non-bee visitors (e.g. wasps, flies). The goal is to count the number of visits to the five flowers by each type of bee. Because you are counting the number of visits to the five flowers, not the number of bees, if the same bee moves from one flower to a second flower it counts as two visits.

- Record the number of visits by each type of bee during the first 1-minute observation in the "Observation 1" row of the data sheet.
- Next move to a new area of the field and select a different set of five open flowers that you can watch all at the same time, then start a new 1-minute observation. Record the number of visits by each type of bee during this second 1-minute observation in the "Observation 2" row of the data sheet.
- Repeat this process until you have done ten observations (each 1-minute) and filled in each of the rows "Observations 1-10" on the data sheet. Move to new parts of the field for each observation so that you cover the edges and center of the field and different rows. 10 observations (50 flowers total) are required for the final calculation.

2.) Calculations

Once you have completed ten 1-minute observations and have filled in "Observation 1-10" in the table:

- For each bee type, add up the numbers in each column (Observation "1-10") and record the total in **Row A: "TOTAL Visits"**. This gives a measure of the flower visitation rate by each type of bee in your farm.
- For each column in **Row C: "Group % Pollen Deposition"**, multiply the numbers from the same column in **Row A: "TOTAL Visits"** by **Row B: "Single Visit % Pollen Deposition"**. This gives you the percent of the pollen necessary for a flower to set a fruit deposited by that bee group, given how often they visit the watermelon flowers in your field.
- Finally, add up the four numbers in **Row C: "Group % Pollen Deposition"** and write the total in **Row D: "Farm Level Pollination"**. This gives you an estimate of the percent of pollination flowers are receiving in your watermelon field.