

# Multi-State Soybean Aphid Survey

Name (Date): \_\_\_\_\_ ( / / )

Latitude: \_\_\_\_\_

Longitude: \_\_\_\_\_

Field Description: \_\_\_\_\_

| Rating Scale for Aphid Severity |  |
|---------------------------------|--|
| Rating                          | Aphids observed on one 1 plant in 45 sec or less |
| 0                               | 0  |
| 1                               | 1-10   |
| 2                               | 11-100   |
| 3                               | 100+   |

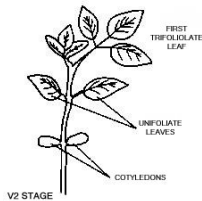
| Plant # | Stage      |              | Aphids                                |                                  |  | Predators<br>Present = +,<br>Otherwise<br>leave blank | Mummies<br>Present = +,<br>Otherwise<br>leave blank | Infected<br>aphids<br>Present = +,<br>Otherwise<br>leave blank | Optional Notes<br>(Sample taken from field<br>edge? Aphids in upper,<br>middle, or lower canopy?<br>Dominant predator?) |
|---------|------------|--------------|---------------------------------------|----------------------------------|--|---|---|--|---|
|         | Vegetative | Reproductive | Present = +<br>Absent,<br>Leave Blank | Severity<br>(See scale<br>above) | Winged forms<br>present?<br>(Check if yes) |   |   |  |   |
| 1       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 2       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 3       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 4       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 5       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 6       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 7       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 8       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 9       |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 10      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 11      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 12      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 13      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 14      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 15      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 16      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 17      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 18      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 19      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 20      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 21      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 22      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 23      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 24      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 25      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 26      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 27      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 28      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 29      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |
| 30      |            |              |                                       |                                  | <input type="checkbox"/>                   |   |   |  |   |

**Protocol:**

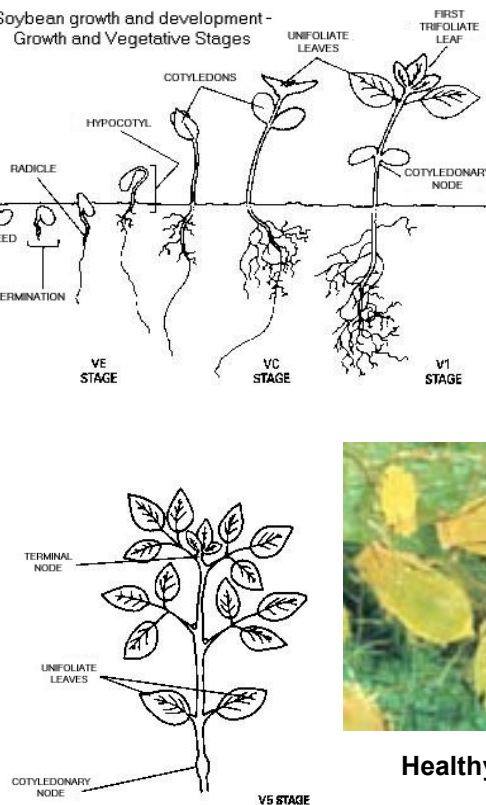
1. Arbitrarily select a soybean field. Note the approximate latitude and longitude of the field with a GPS unit.
2. Select 30 plants at random (from 10 locations [at least 10 paces apart], including field edge).
3. Cut a plant at the soil surface. From each location, note vegetative and reproductive stage of 1 plant.
4. Examine the stem of a plant for aphids, predators, mummies, or pathogens.
5. Examine the underside of leaflets, starting from the top of the plant, for aphids, predators or mummies; attempt to count/estimate the number of viable aphids observed. Spend no more than 45 seconds in total to examine an individual plant.
6. Record the presence of aphids, mummies, predators, and infected aphids (whole dead aphids on leaves; see figure below). Provide a rating for the total number of aphids on a plant following the rating scale provided on the front of this sheet. Apterous (not winged) aphids are assumed to be present. Note whether alate (winged) aphids were also observed. If only apterous aphids are present (very rare but possible), make a note in the space for optional notes.
7. If possible, place a leaf with aphids in a vial containing 95% ethanol for future confirmation of species identity. Label vial with date and field location.
8. If you observe a potential aphid "hotspot" in the field, take a separate sample of 10 plants from this area. Note position, presence of aphids, severity of infestation, etc. for the hotspot on a separate data sheet.

**Vegetative Stage Description**

- VE Emergence
- VC Cotyledons unfolded
- V1 One node with unifoliate leaves
- V2 Two nodes with a trifoliate leaf



- V3...V(n) Three nodes to nth node with expanded trifoliates (V5 depicted in figure on right)



**Common Predators in Soybean**

- Coccinellids (Ladybugs)
- Chrysopids (Lacewings)
- Minute Pirate Bugs
- Nabids
- Syrphids



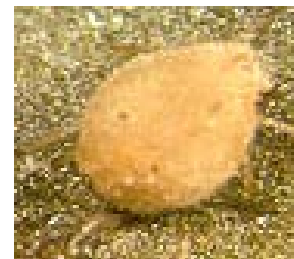
**Healthy Aphids**



**Mummy**

**Reproductive Stage Description**

- R1 Beginning bloom- one open flower
- R2 Full bloom- blooms to the top
- R3 Beginning pod- 3/16 inch pod at one of the four upper nodes on the mainstem
- R4 Full pod- 3/4 inch pod at the same point
- R5 Beginning seed- 1/8 inch seed in a pod at the same point
- R6 Full seed- a pod with green seed that fills the seed cavity
- R7 Beginning maturity- fully developed pod with mature color located on the mainstem
- R8 Full maturity- 95% of the pods have turned mature color.



**Pathogen Infected Aphid**

(Illustrations from Michigan State University; Descriptions from Iowa State University)