

Improving Spray Coverage Using Water-Sensitive Spray Cards

Many pesticides, particularly sprays that work on contact like insecticidal soap, require good coverage to be effective. Poor coverage, i.e. failure to adequately coat leaf or target surfaces, is often the reason materials don't work well. *However, spray coverage on plants is difficult to visualize.* How does one know if (1) the pesticide spray is wetting leaf undersides? (2) the sprayer is reaching the edge rows as effectively as the middle rows? and (3) the lower or inner foliage receives the same coverage as the tops? This information can provide important feedback for guiding adjustments in application methods or equipment.

Water-sensitive spray cards and the smartphone app 'SnapCard' make it easy to quantify and ensure effective spray coverage.

Why is good spray coverage important?

- ✓ Improves product effectiveness
- ✓ Reduces the need for additional applications
- ✓ Provides better pest control
- ✓ Saves time and money

How do water-sensitive spray cards work?

- The cards are coated with a bromoethyl dye that turns from yellow to blue when wet
- Provides a quick visual of spray coverage



Figure 2. An air blast sprayer covering a field of meadowsweet with the cards in place.



Figure 1. A water sensitive spray card attached to boxwood (top) and meadowsweet (bottom) after an application of water.

How does 'SnapCard' help?

- This easy-to-use free smartphone app quantifies spray performance as a % spray coverage based on card color changes, agricultural variables, spray settings, and weather conditions a grower inputs
- The app informs growers the degree to which sprays reach target areas of a plant to provide desired coverage



Figure 3. The smartphone app 'SnapCard' uses images from water-sensitive cards to help growers determine percent spray coverage on plants.

Steps by step procedure:

- 1) Clean out sprayer thoroughly by flushing with water multiple times
- 2) Fill the sprayer with water
- 3) Select the area (field) to be sprayed and make sure plants are dry before attaching cards
- 4) Attach, using a clip or clothespin, 2-3 cards per plant in different areas
- 5) Choose orientations of interest (e.g. top, bottom, middle of the canopy; facing upwards, downwards) that will help visualize and assess where spray coverage is good or lacking
- 6) Spray the area as with a pesticide application using water only
- 7) Wearing gloves, remove cards and take photos of each card with the 'SnapCard' app to help calculate percent spray coverage. **Note:** If gloves are not worn fingerprints may show up on the card and provide an incorrect reading!
- 8) Depending on results adjust spraying method (i.e. spray rate and pressure, droplet size, application speed, spray volume, direction, nozzle type, etc.)

Interested in learning more? Contact CCE's Agricultural Stewardship Program (631-740-0268 or el684@cornell.edu)