Calibration Workshop

Demonstrating the Basics of Boom Sprayer Calibration

Author: Dean Slates, Agriculture & Natural Resources Extension Agent,
Holmes Co., Ohio State University Extension

Audience: Private Applicators

Category: Core

Duration: One hour

Teaching Aids/Materials:
- Boom sprayer (with tractor) with at least 1/2 tank of water
- Stop watch
- 100-ft. tape or measuring wheel
- Tape measure
- Collection jars/flask/cylinders (at least 2)
- Flow meter (with fittings)
- Pressure gauge (with fittings)
- Personal Protective Equipment
  - Splash-proof goggles
  - Nitrile gloves
  - Chemical resistant suit with hat/head cover
  - Chemical resistant boots
  - Paper towels
  - Soap handcleaner
- Traffic cones/flags/stakes for speed course
- Calculators (handheld)
- Flip chart, marker pens, easel
- Clip boards
- Paper/pens/pencils
- SPRAYCAL computer program
- Computer and printer
- Table for computer & electricity
- Chairs
- Pesticide Education Program also has a sprayer boom available for programs. (614) 292-4070.

Handout:
- Boom Sprayer Calibration OSU Fact Sheet AEX520

Take Home References:
- Ohio Agronomy Guide OSU Bulletin 472
- Ohio Weed Control Guide OSU Bulletin 789

Topic:
Demonstration on calibrating boom sprayers for agricultural crops. Also emphasis on determining the sprayer's delivery rate and proper Personal Protective Equipment (PPE) while working on a sprayer.

Learning Objectives:
- List the steps in calibrating a boom sprayer
- Identify methods to adjust the delivery rate of the sprayer
- List consequences of not calibrating a sprayer
- Recognize the importance of Personal Protective Equipment (PPE)

Background:
Every sprayer delivers the herbicide at a different rate. It's important to have the sprayer in working order and applying the herbicide at the rate needed. Over or under application of herbicides could result in problems.

To calibrate, make a trial run on a field or turf area and measure the variables with your chosen equipment. Adjustments can be made to ensure proper application rate of the pesticide. Calibration will also help determine the delivery rate of the sprayer. By calibrating a sprayer, the private applicator can save money in pesticides and have more control over the spraying process.

Team teaching is the best way to conduct a calibration workshop. The additional person can contribute information and help answer individual questions during the demonstration. Some ideas for the second person:
- Another OSU Extension agent
- Local machinery dealer
- Agriculture product sales representative
- Personnel from other agencies: NRCS/SWCD/FCS
- Vocational agriculture teacher
- Extension advisory committee representative
- Interested farmer/leader

Methods:

1. Review with the participants the importance of sprayer calibration. Also discuss checking the safety and field-readiness of their sprayer. Plugged nozzles can be fixed, pressure can be adjusted and leaky hoses can be replaced.

2. Explain the steps of calibration. The flip chart could be used, or a handout given to the participants. Follow the steps outlined in OSU Extension Fact Sheet AEX-520 – Boom Sprayer Calibration.

3. Emphasize safety! Explain the different items of PPE and how they should be used for protection when working around sprayers.

4. Following the calibration steps, take the needed measurements of the demonstration sprayer. Have some of the audience participate in taking measurements. (Make sure they wear their PPE!) Have someone record the data on the flip chart. Using Fact Sheet AEX 520 as a guide, measurements should include:
   - Nozzle spacing
   - Boom height
   - Boom length
   - Travel distance
   - Travel speed
   - Nozzle output

5. Calculate the application rate. Provide clipboards, calculators, paper and pens so the participants can perform the calculations. After calculating, involve the audience in discussing problems with the sprayer's delivery rates that could affect the application.

Tips for an Effective Workshop

- This workshop requires a lot of equipment. Use the "Teaching Aids/Materials" section of the lesson as a checklist for planning your workshop.
- Plan for the workshop to be held outdoors, but make arrangements for bad weather.
- Lay out driving course for speed before start of workshop.
- If possible, have a water source to fill the sprayer. Include anti-back-siphon device and bring an extra water hose.
- Other items might be helpful during the demonstration:
  - *Trash can for disposable PPE*
  - *Screwdrivers (flathead, phillips)*
  - *Crescent wrench*
  - *Channel locks pliers*
  - *Pocket knife*
  - *Nozzle brush*
  - *Flashlight*
  - *Teflon tape*
  - *Portable public address system*
  - *Magnifying hand lens*

6. Discuss methods to solve the application problems identified by the audience and instructors. These could include adjusting the pressure, fixing plugged nozzles, changing tractor speed, etc. If time allows, make the adjustments on the sprayer and take new measurements to verify corrections.

7. Demonstrate the SPRAYCAL computer program. The program can help applicators determine the needed adjustments, the amount of chemicals to put in the tank for an application and the amount of money saved through the calibration procedure. The SPRAYCAL program is available through Ohio State University Extension software and publications.