



HIGHLIGHTER

DELIVERY OF WORKSHOPS COVERING HERBICIDE APPLICATION EQUIPMENT CALIBRATION

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PROJECT TITLE

DELIVERY OF CALIBRATION WORKSHOPS COVERING HERBICIDE APPLICATION EQUIPMENT

FINAL REPORT ~

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ODOT SP&R 2156 TASK 4

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*Implementation of Research
for Transportation Excellence*

OVERVIEW Proper herbicide sprayer set-up and calibration are critical to the success of the Oklahoma Department of Transportation (ODOT) herbicide program. ODOT field staff are responsible for a number of activities from laying asphalt to managing roadsides for weeds. Due to the broad range of work responsibilities of ODOT field staff, they may not have a mastery of each type of activity. While overviews of weed control programs can be taught in a classroom setting, spray equipment calibration can be more effectively taught to the new individual ODOT applicators during hands-on demonstration.

RESULTS Sprayer system set-up and calibration training is provided in annual continuing education herbicide workshops offered by the Oklahoma State University Roadside Vegetation Management (OSU-RVM) Program to ODOT employees. Although pesticide applicator continuing education (CEU) workshops are offered yearly, equipment calibration is not discussed in CEU workshops in the depth of detail that can be undertaken with on-site training with individual ODOT herbicide spray crews. Therefore, four on-site ODOT herbicide applicator sprayer calibration workshops were conducted in 2013. Sixty-five (65) newly certified ODOT applicators received in-depth training on sprayer equipment calibration.

Each trainee received educational support materials at the beginning of each workshop that included (1) a copy of the Oklahoma Cooperative Extension Service publication L-322: *Boomless Roadside Herbicide Sprayer Assessment Guide*; (2) Directions on using the Calibration/Speed Adjustment Charts; and 3) the ODOT Sprayer Calibration & Tank Mix Calculation Worksheet. ODOT participants in the workshops were first trained on the sprayer components and functions listed in the publication L-322. The components on which the attendees were trained consisted of the:

- sprayer tank and lid,
- spray tank shut-off valve,
- in-line screen,
- drift control injector,
- water pump, hoses/plumbing,
- agitation system,
- pressure gauges,
- pressure regulators,
- spray nozzles,
- control arms,
- nozzle shut-off valves,
- in-cab switches,
- handgun and hoses, and
- Calc-an-Acre™ controllers.

After the introduction to the basic broadcast sprayer system and its components, OSU-RVM staff demonstrated the use of calibration measurement tools to measure pattern widths and graduated collection barrels to properly measure spray system and tip output in gallons per minute (GPM). After variables of carrier rate in gallons per acre (GPA) and pattern spray widths (SW) were collected, the ODOT Sprayer Calibration & Tank Mix Calculation Worksheet was utilized to show how calculations are necessary to ascertain the appropriate truck speed to make an accurate broadcast application. Participants were then introduced to the Directions on Using the Calibration/Speed Adjustment Charts.

The next portion of the program involved the OSU-RVM staff introducing participants to basic hand pump-up sprayers. Demonstration of the various “spray-to-wet” techniques for weeds such as Musk Thistle and brush species such as Willow were conducted. Attendees were trained upon the need to use Viton® seals to avoid the corrosive effect of commonly used broadleaf and brush herbicides. After demonstration and calculations with hand pressurized spray equipment, trailer mounted gasoline engine sprayers with powered guns (Hypro®) were demonstrated. Spray-to-wet techniques for foliar application and spot treatments were examined and discussed using the hand gun equipment.

While OSU-RVM staff worked in a “hands-on” setting with attendees, continued training of these newly certified herbicide applicators will be necessary. This training should be provided at the county unit level by seasoned spray crew leaders whom supervisors trust to properly mentor new spray crew members. The final decision regarding the capabilities of ODOT employees assigned to specific spray duties should continue to be made by supervisors familiar with each employee. The OSU-RVM professional staff also encourages supervisors and spray crews to thoroughly review spray system setup, annual spray application goals, specific target weed complexes, herbicides to be utilized and sensitive crop or sensitive area locations immediately prior to the beginning of each spray season. Participants in our joint project training effort are also encouraged to attend annual pesticide applicator CEU workshops presented by the OSU-RVM Program.

POTENTIAL BENEFITS Herbicide Application Equipment Calibration Workshops train new ODOT employees who are hired each year and newly certified employees that are assigned to ODOT spray crews. These individuals need “hands-on” orientation in system calibration and problem diagnosis. Discussions include the need for components and the consequences to applicators, the roadside, the herbicide weed control program and the environment that might result if the components failed. Applicators are taught how to diagnose and confirm component proper operation and component failure and basic preventative maintenance.

