Sprayer calibration simplified

In the name of safety, in the name of profits and in the name of professionalism, keeping pesticide sprayers properly calibrated is a necessity.

■ To calculate the level that your sprayer is applying liquid to an area, consider these three methods offered by Brady Surrena of ISK Biotech in Mentor, Ohio. He believes the methods—once individual nozzles have been checked for proper operation—is simple. Calculations are based on the amount of liquid delivered to a smaller area and projected to one acre. From these calculations, gallons per acre (gpa) are determined.

If your test calibration determines the gpa is not what you need, the easiest method is to change the sprayer pressure. An increased pressure will increase the gpa; a decrease in pressure will decrease the gpa.

Method one

1. Measure an area 660 feet (40 rods) long.

2. Fill the spray tank up to the neck with water and mark the water level.

3. Spray over the 660 feet at the sprayer pressure and speed to be used in the field.

4. Record the volume necessary to refill the spray tank to the level marked in Step 2.

5. Calculate the amount of water applied per acre by using this formula:

$$\text{gpa} = \frac{\text{gals. applied over the 660 ft.}}{\text{width actually treated by sprayer (ft.)}} \times 66$$

example:

$$\text{gpa} = \frac{12.12}{40} \times 66 = 19.99$$

6. The width treated by the sprayer would be the swath width for broadcast application.

Example:

Swath width = 40 ft.

Test length = 660 ft.

Area of test = 660 ft. x 40 ft. = 26,400 sq. ft.

$$\text{Acres of test} = \frac{26{,}400 \text{ sq. ft.}}{43{,}560 \text{ (sq. ft./acre)}} = .606 \text{ acres}$$

Water to fill = 12.12 gals.

$$\text{Vol./acre} = \frac{\text{gals. to fill}}{\text{acres of test}} \quad \frac{12.12}{.606} = 20 \text{ gpa}$$

Method two

1. In a band application, accurately determine the width, in inches, of the band sprayed. In a broadcast application, measure the distance, in inches, between the two adjacent nozzles.

2. Locate this width in the table below and read off the corresponding course distance. Mark it off in the course to be sprayed.

Width	Course dist.	Width	Course dist.
8"	510'	18"	227'
10"	408'	20"	204'
12"	340'	22"	185'
14"	291'	24"	170'
16"	255'	26"	157'

3. For more than one nozzle spraying the same area, as with fungicide, measure the band width of one of the nozzles and see Step 8 below.

4. Tie quart container to one nozzle to catch all that nozzle's spray.

5. Start a distance back from the beginning of the course to get operating speed, and turn sprayer ON at the beginning of the course and OFF at the end.

6. Remove quart container and read volume collected, in ounces.

7. For more than one nozzle spraying same area, multiply ounces collected by number of nozzles spraying the same area.

8. Ounces collected will equal your gpa rate.

Method three

1. Measure out 660 feet or 40 rods in the field to be sprayed.

2. Drive over the 660 feet with the sprayer and equipment that will be used during the time of spraying. This will most nearly simulate the conditions during the time that the chemical is actually being applied. Record the time required to travel over the 660 feet at the speed which will be used for the field.

3. With a stationary sprayer operating at the pressure to be used in the field, catch the volume of water delivered from 2 to 4 nozzles in the length of time it took to travel the 660 feet (time found in Step 2).

4. Record the volume caught from the nozzles and calculate how much would have been delivered from all nozzles:

$$\text{gals. over 660'} = \frac{\text{gals. caught x \# nozzles on sprayer}}{\text{\# nozzles from which spray was caught}}$$

5. Calculate the amount of water applied per acre:

$$\text{gpa} = \frac{\text{gals. applied over the 660'}}{\text{width actually treated in feet}} \times 66$$

Landscaping public areas for employee and consumer safety

Of course you're not negligent. But in court, all of a sudden you'd better be prepared to prove it.

by Dr. Arthur H. Mittelstaedt

■ In court cases involving people who are injured on public lands, about 65 percent of the defendants are government or university employees—a number that is rapidly growing.

Thus, landscape managers of public lands must be concerned about both employee safety and consumer safety, par-

ticularly from a liability standpoint.

To be safe, an employer must know his or her responsibility, accountability and the communication process. Let's examine each of these terms and what it means to the landscape professional:

Responsibility

Many municipalities or businesses avoid even thinking about safety. Legally, however, it is becoming negligent to take this approach. Omission is as bad as commission in negligence.

Top level management, if not establishing a safety philosophy, must support the one proposed and assign its policy to implement.

Policies, tailored to the organization, define the goals and objectives of the "safety effort."

Accountability

Many municipalities or businesses don't know what is safe or what is unsafe, either for employees or for customers.

The organization must possess the following:

- A complete inventory of its property or plant, especially areas subject to public use. Standards for those areas must be identified.
- A complete schedule of its activities or functions that are subject to public use. Standards for such use must also be identified and associated with such public involvement.
- A complete record of all incident forms, accident reports, logs, inspection sheets, patrol reports, medical and insurance forms, safety audits, insurance memos and all other fact-reporting files.
- A file of outside agency reports and record forms so that police, ambulance, hospital and other records can be coordinated.
- A manual which contains the aforementioned items and minutes of the Safety Committee meetings, including action and implementation schedule for follow-up on concerns discussed. It should contain personnel information of the safety officers, guidelines for investigating accidents or other safety-related problems. It should also contain the various items specified in the accompanying chart.

Communication

The communication system must include:

- Information: getting the awareness of safety to the public.
- Discussion: creating a means for feedback from the public.
- Negotiation: establishing win/win situations by responding, accommodating, attending to and following up on any type of incident or accident. Nothing is too small.

Having defined "safety," its relationship to liability and risk assumption will be covered in future issues.

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THE SAFETY MANUAL

1) Specifications for safe practices associated with equipment the public may come in contact with, like vehicles, mowers, chippers, saws, etc.

2) Regulations, including rules and activities prohibited in public areas.

3) An outline of the sign system and how it conforms with ANSI standards, U.S. DOT standards and other criteria.

4) Warning labels placed on any item the public and employees may contact.

5) List of all protective devices in use and where they are kept.

6) An outline of all emergency treatment that can be applied by staffers; emergency services and how they conform to ASTM F-30 standards and are approved by local authorities.

7) Search/rescue/recovery procedures.

8) A plan for disaster preparedness and readiness for emergencies such as terrorism, fire, storms, earthquakes, explosions, tornados, wrecks, sickness, toxic fumes, etc.

Gobble up tree limbs—not yours

Faster drum rollers on new chippers mean more danger for operators. Follow these operator hints to safety.

■ Industry leaders are expressing alarm over the increasing numbers of operators who are improperly using disc-knife chippers—often with tragic results.

These machines are designed to gobble up large tree limbs—and large limbs only—yet operators insist on trying to ram brush through the device. Amputation or death can result.

"It would be analogous to someone sticking his or her hand under a running lawnmower to clear away grass," comments Peter Gerstenberger, director of safety and education at the National