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:
   \[
   gpa = \frac{\text{gals, applied over the 660 ft.}}{\text{width actually treated by sprayer (ft.)}} \times 66
   \]
   **Example:**
   \[
   gpa = \frac{12.12}{40} \times 66 = 19.99
   \]
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.
- Acres of test = 43.560 (sq. ft./acre) = .606 acres
- Water to fill = 12.12 gals.
- \[
   \text{Vol./acre} = \frac{\text{gals to fill}}{\text{acres of test}} = \frac{12.12}{.606} = 20 \text{ gpa}
   \]

### 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.

<table>
<thead>
<tr>
<th>Width</th>
<th>Course dist.</th>
<th>Width</th>
<th>Course dist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>510'</td>
<td>18&quot;</td>
<td>227'</td>
</tr>
<tr>
<td>10&quot;</td>
<td>408'</td>
<td>20&quot;</td>
<td>204'</td>
</tr>
<tr>
<td>12&quot;</td>
<td>340'</td>
<td>22&quot;</td>
<td>185'</td>
</tr>
<tr>
<td>14&quot;</td>
<td>291'</td>
<td>24&quot;</td>
<td>170'</td>
</tr>
<tr>
<td>16&quot;</td>
<td>255'</td>
<td>26&quot;</td>
<td>157'</td>
</tr>
</tbody>
</table>
3. For more than one nozzle spraying the same area, multiply ounces collected by number of nozzles spraying the same area.
4. 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:
   \[
   \text{gals. to fill} = \text{gals. caught} \times \# \text{nozzles on sprayer}
   \]
   \[
   \# \text{nozzles from which spray was caught}
   \]
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-
 particularly 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 com-
misision 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 fol-
lowing:
- 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 iden-
tified and associated with such public
involvement.
- A complete record of all incident
forms, accident reports, logs, inspection
sheets, patrol reports, medical and insur-
ance forms, safety audits, insurance
memos and all other fact-reporting files.
- A file of outside agency reports and
record forms so that police, ambulance, hos-
pital and other records can be coordinated.
- A manual which contains the afore-
mentioned 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 situa-
tions 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 cov-
ered in future issues.

—Dr. Mittelstaedt is board chairman of
the Recreation Safety Institute, P.O. Box
392, Ronkonkoma, NY 11779. Phone num-
ber at the institute is (516) 563-4806.

**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 chip-
ners—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," com-
ments Peter Gerstenberger, director of
safety and education at the National