



Equipment Calibration – Ride-On Spreader/Sprayer

Importance of Calibration

- Properly calibrated equipment affords applicators significant value including:
 - Effective product performance
 - Reduced potential for plant injury
 - Reduction in callback/cancellations
 - Enhanced reputation
 - Environmental stewardship
 - Regulatory compliance
 - Reduction in legal vulnerability
 - Economic efficiency

Importance of Calibration

- Case Study #1
 - 450 bags of Dimension[®] 0.10% + Fertilizer covers 125 acres (4.13 lbs./M)
 - Cost of product at correct rate \$11,250
 - Over apply product by 20% (**)
 - New rate of 4.9 lbs./M (.8 lbs./M more)
 - Cost for product is now \$13,500
 - \$2,250 excess product cost
 - 90 extra bags used



(**) – 20% Over/Under application rate is not unreasonable considering that there can be 1-2 lb./1,000 sq. ft. variation depending on age of spreader, application speed, etc.

Importance of Calibration

- Case Study #2
 - 23.5 gallons of Dimension[®] 2EW covers 125 acres
 - Cost of product at correct rate \$6,110
 - Under apply product by 15% (**)
 - 2 GPM = 38 oz/M
 - New Rate of 20 gallons (3.5 gal less)
 - Cost for product is now \$5,200
 - Savings of \$910



(**) – A 15% over/under application rate is not unreasonable considering that there can be a 1/4 - 3/4 GPM variation depending on age of sprayer, application speed, etc.

Importance of Calibration

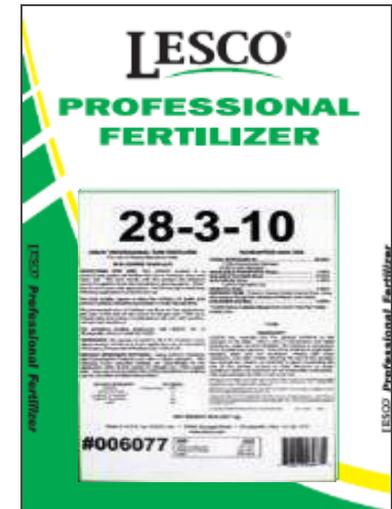
- Case Study #2 (cont.)
 - Excessive crabgrass breakthrough
 - 37-½ acres (30% of total acreage)
 - Apply LESCO® Momentum Q™ (¥)
 - 8 pints/acre
 - Example: Cost of \$5,250
 - Total cost is now \$10,450
 - \$5,200 + \$5,250
 - Excess cost of \$4,340 (over correct rate)
 - Doesn't include additional labor & vehicle expenses



(¥) – LESCO® Momentum Q™ controls over 200 broadleaf weeds including dandelions and clover plus grassy weeds like crabgrass and foxtail all with one application.

Tools Needed for Calibration

- Calculator
- Measuring wheel & tape
- Stop watch
- Turf marking paint or marking flags
- Container marked in ounces
- Catch Pans (12" x 12")
- Scale
- Small Vials



Sprayer Calibration

- Step #1 – Determine Effective Spray Width
 - Spray a concreted area with plain water in tank(s)
 - Measure the effective width of spray
 - Divide 1,000 sq. ft. by spray width
 - Example: $1000 \div 10 = 100$
 - Using a measuring wheel, mark off the distance to travel with cones or paint
 - Example: Mark off 100 ft. start and finish

Sprayer Calibration

- Step #2 – Timed Application
 - Make a timed application to this area
 - Remember to use a consistent speed
 - Begin from 20' behind the Starting line
 - Example: $\frac{1}{4}$ minute (15 seconds) to spray 1,000 sq. ft.
- Step #3 – Collect Output
 - Collect water for each nozzle the same amount of time from Step #2.
 - Run engine at same RPM used during application
 - Record each nozzle amount separately

Sprayer Calibration

- Step #4 – Total Output
 - Add up total amount of water collected from Step #3
 - Example: $15 + 16 = 31$ oz.

Sprayer Calibration

- This is a good time to check for nozzle issues
 - Take the total amount of water and divide by number of nozzles (result is average output per nozzle)
 - Example: $31 \div 2 = 15.5$ oz.
 - If nozzle variance is 10% or more (up or down) than the average output check nozzles & screens for debris and replace as needed
 - You will need to rerun Steps 3 & 4

Sprayer Calibration

- Step #5 – Determine Tank Coverage
 - Multiply total gallons of the unit by 128 oz
 - Determines the number of ounces
 - Example: 20 gallons X 128 = 2,560 oz.
 - Divide total capacity in ounces by the water collected in Step #4
 - Example: $2,560 \div 31 = 82.6$
 - 20 Gallons will cover 82,600 sq. ft.

Sprayer Calibration

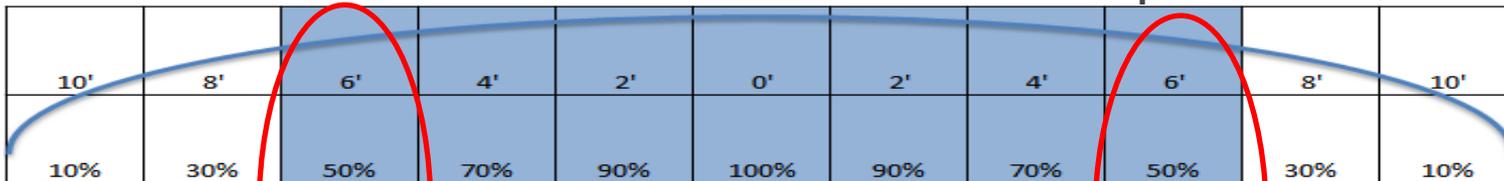
- Step #6 – Determine Amount of Chemical
 - Refer to product label for correct application rate.
 - Example: LESCO® Three-Way™ has application rate of 1.5 oz. per 1,000 sq. ft.
 - Multiply tank coverage by application rate
 - Determines correct amount of chemical to add
 - Example: $82.6 \text{ (coverage)} \times 1.5 \text{ oz. (rate)} = 124 \text{ oz.}$
 - » You would use 124 oz. of LESCO® Three-Way™
 - One tank = 124 oz.
 - Two tanks = 62 oz. per tank

Spreader Calibration

- Step #1a – Determine effective spread width
 - Place catch pans (12” wide) on paved surface in a straight line perpendicular to spread path
 - Leave room for wheels to pass
 - Set the hopper opening to manufacturer's recommendation on product label
 - Fill hopper ½ full of product
 - Make multiple passes (same direction) over the catch pans at your normal application (3 mph)

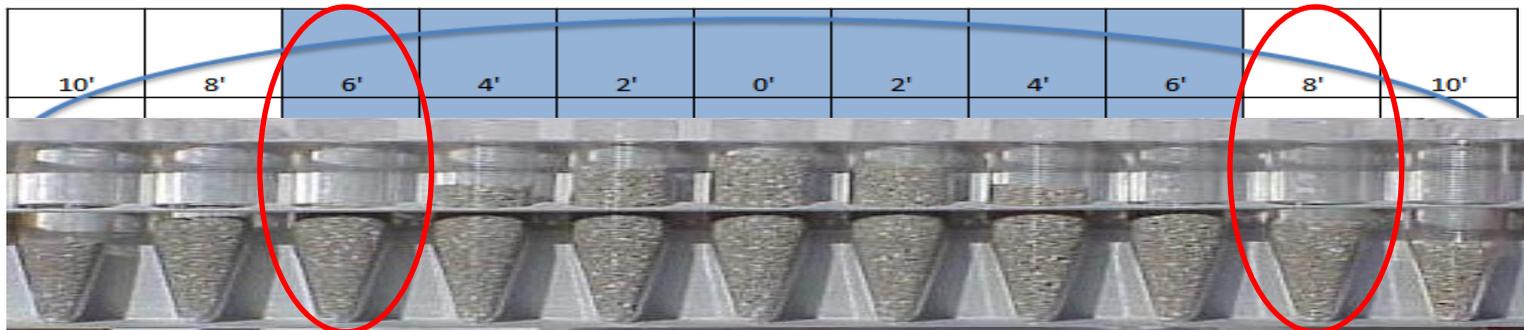
Spreader Calibration

- Step #1b – Determine effective spread width
 - Pour contents of each box into separate vials
 - Determine which vials on each side has $\frac{1}{2}$ the amount of the center vial. Count the number of vials between the two end vials and this is your effective spreading width
 - 12' would be our effective spread rate in this example



Spreader Calibration

- This is a good time to check for and address variations in the spread pattern
 - I.E. If 50% capacity of the middle vial occurred on 3rd vial on the left and 4th vial
 - Consult the spreader Owner's Manual for assistance



Spreader Calibration

- Step #2 – Determine Distance to Travel
 - Divide 1,000 by the determined effective spread width
 - Example: $1000 \div 8 \text{ ft.} = 125 \text{ ft.}$
 - Using a measuring wheel, mark off the distance to travel with cones or paint
 - Example: Mark off 125 ft. start and finish

Spreader Calibration

- Step #3 – Determine Application Rate
 - Weigh out 15 lbs. of product & pour in hopper
 - Set your spreader according to mfg. setting
 - Ensuring same speed from Sprayer Calibration is used spread product over given distance (125 ft.)
 - Weigh the product left in the hopper
 - Subtract end amount from beginning amount
 - Example: 15 lbs. – 10 lbs. = 5 lbs.
 - 5 lbs. of product was applied in 1,000 sq. ft.

Spreader Calibration

- Step #4 – Fine Tuning
 - Open or close the hopper opening and repeat step #3 until the amount dispersed is equal to the amount indicated on the label
 - Example: LESCO® 24-5-11 50%PolyPlus® should be applied at a rate of 4.2# per 1,000 sq. ft.



Achieving the Correct Application Rate

- Labeled settings are approximate and should be used only as a starting point.
- Many factors can influence product delivery rate including:
 - Application speed, Age and condition of spreader, and Weather (humidity, wind, etc.)
- Maintain consistent speed throughout the day

Achieving the Correct Application Rate

- Always get up to application speed (used during calibration) before applying liquid or dry product.
- Likewise stop applying liquid and dry products before forward motion has stopped
- Be sure screen is in place to prevent lumps or debris from clogging openings
- Check to ensure nozzle screens are clean

Common Problems With Spreaders

- Dry products with different granule sizes and weights do not spread uniformly
- Overlapping to obtain a uniform pattern changes with each product
 - Particle size and bulk density can vary from product to product
- The drop holes often get clogged

Rotary Spreader Maintenance Tips

- Empty spreader after each use
- Wash and dry the spreader thoroughly after use
- Keep the impeller clean!
- Lubricate all moving parts on a regular basis
- Periodically check tire pressure and adjust to manufacturers' recommendation

Sprayer Maintenance Tips

- Empty & rinse sprayer after end of round
 - Pump, in-line filter, hoses, nozzle screens, etc.
- Calibrate sprayer at least once a month
 - Many factors can alter application rates
- Winterizing: RV Anti-freeze in pump, hoses, etc.