



HOW TO CALIBRATE A LITTER SPREADER

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In several counties, cost-share monies have been allocated for the purchase of poultry litter applicators. The environmental benefits derived from litter applicators depend on their proper calibration and use. For effective nutrient management, poultry litter should be applied uniformly and at a known rate.

Darrell Doby of Lee County recently purchased a new 18-foot litter spreader body and sought help to calibrate it. NCDA&CS regional agronomist David Dycus worked with him on this project. Together they compiled the following calibration guidelines to help other litter applicators.

Set Up in the Field

- Set five shallow plastic trays (similar to cat litter boxes) out in the field in a straight line about 10 feet apart.
- Lay out a large tarp about perpendicular to the end of the line of plastic trays (see photo). Doby and Dycus used a 11.5 × 19-foot tarp and placed rocks on the edges to weigh it down.
- Measure the square footage of the tarp. [$11.5 \text{ ft} \times 19 \text{ ft} = 218.5 \text{ ft}^2$]
- Convert the square footage of the tarp to acreage. [$218.5 \text{ ft}^2 \div 43560 \text{ ft}^2/\text{acre} = 0.005 \text{ acre}$]



Litter applicator truck doing its calibration run — straddling the center tray. The tarp is placed to one side.

Calibration Procedure to Assess Spread Pattern and Output

- Run the truck across the field so it straddles the center plastic tray. Use standard settings to apply the litter.
- Check the trays for evenness of litter distribution: the center tray should contain the most litter; the two trays on either side of the center the next largest amount, and the trays on the far ends the least. If distribution is uneven, adjust spinner speed and/or check for worn-out parts or spinner blades.
- Weigh the amount of litter on the tarp. You can do this by pouring the litter into a large bucket of known weight. Weigh the bucket with the litter in it, then subtract the weight of the bucket: for example, weight of litter (18.8 lbs) minus the weight of the bucket (1.8 lbs) = 17.0 lbs litter.
- Divide the weight of the litter from the tarp (17.0 lbs) by the area of the tarp (0.005 acre) to get the rate applied = 3400 lbs/acre.
- Calculate the actual rate applied based on the overlap that is expected to occur during subsequent passes across the field. In this particular situation, a second pass was made 30 feet away, resulting in 100% overlap. Therefore, the actual rate of litter applied was twice the rate calculated in the previous step [$3400 \text{ lbs/acre} \times 2 = 6800 \text{ lbs/acre} = 6800 \text{ lbs/acre} \div 2000 \text{ lbs/ton} = 3.4 \text{ tons/acre}$].
- Calculate the rate of nitrogen (N) being applied based on a current waste analysis. In this case, the litter had a N content of 29.8 lbs per ton of litter, which translates to an application rate of $29.8 \text{ lbs/ton} \times 3.4 \text{ tons/acre} = 101 \text{ lbs/acre of N}$, under the settings and conditions of this calibration.
- Make note of spinner and bed chain settings and speed of travel so you can duplicate the application rate later.



Doby and Dycus get ready to weigh the litter caught on the tarp.

For more information on calibrating fertilizer or litter spreaders, contact your area NCDA&CS regional agronomist. Visit www.ncagr.com/agronomi/rahome.htm to identify the regional agronomist for your area, or call the Agronomic Division office (919-733-2655). For information on the possibility of obtaining cost-share money for the purchase of a litter applicator, contact your county Soil & Water District office. Some of the counties that have already allocated cost-share money for this type of purchase include Chatham, Lee, Montgomery, Moore, and Richmond.