Why Spreader Calibration Matters

Getting the application rate from the controller to the road

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Most highway departments have application-rate charts and controller settings. We talk about pounds per lane mile, pavement temperature, storm conditions and level of service. The question is whether the truck is actually putting out the amount shown on the chart or controller.

That is what calibration answers. It is not just a preseason exercise or a Green SnowPro paperwork requirement. It tells the operator and supervisor what each setting actually delivers. Without that information, even a good treatment decision is still partly a guess.

What can happen when a spreader is not calibrated

A truck may be set for 300 pounds per lane mile but discharge 360. A manual spreader may use the same dial setting as another truck even though its gate height, hydraulic flow or auger output is different. A controller can display the requested rate while worn equipment, repairs or an incorrect setup change what reaches the spinner.

The operator may not see the difference from the cab. The road may still look treated, and the extra material becomes part of the normal route total. By the end of the winter, the department may have used many more tons than it intended without being able to identify why.

A practical cost example

Assume a truck is supposed to apply 300 pounds per lane mile but is actually applying 360 pounds. That is 60 extra pounds on every treated lane mile. Over a 50-lane-mile route, the truck uses an extra 3,000 pounds each application. If that happens 20 times during the winter, the difference is 60,000 pounds, or 30 tons of salt.

At an example price of $115 per ton, that is $3,450 in salt from one truck and one route. That figure does not include the time spent loading and handling the extra material, additional trips to the stockpile, or wear on the conveyor, auger and hydraulic system. Multiply that by several trucks and the value of calibration becomes pretty clear.

Route example	Without calibration	After calibration
Selected rate	300 lb/lane mile	300 lb/lane mile
Actual output	360 lb/lane mile	300 lb/lane mile
50 lane miles x 20 applications	180 tons	150 tons
Difference at $115 per ton	$3,450 extra material	Rate delivered as intended

Note: This example assumes the truck spreads on all 50 lane miles for 20 applications. Actual routes and treatment decisions will vary.

What changes after calibration

After calibration, the crew has a verified chart or controller setting for that specific truck and spreader. If conditions call for 200, 300 or 400 pounds per lane mile, the operator has a reasonable basis for selecting the setting. The supervisor can also compare route distance, application rate and salt used to see whether the numbers make sense.

Calibration does not mean always using less salt. There are storms and pavement conditions that call for a higher rate. The benefit is knowing that the selected rate is being delivered. It also makes it easier to reduce the rate when conditions allow, because the crew can trust the equipment instead of adding extra material just to be safe.

A lesson from municipal operations

During my time in municipal public works, we moved from a salt-and-sand operation toward treated salt, better application-rate control and more attention to material use. Annual salt use dropped by roughly 400 tons, and winter sand

use dropped by more than 3,000 cubic yards. Calibration did not produce those results by itself. Plowing practices, treated material, training, application decisions and operator buy-in all played a part.

Calibration was important because it gave us a known starting point. We could not ask operators to lower an application rate, compare one route with another, or measure the benefit of treated salt if we did not know what the trucks were putting out. It also helped move the conversation away from the number on the dial and toward pounds per mile and actual material use.

Environmental stewardship without losing sight of road service

Public works departments have to keep roads passable and respond to changing conditions. Calibration supports that work; it does not work against it. The goal is to place enough material to do the job, at the right time and in the right location, without paying for salt that provides no additional benefit.

Did you know? *NHDES notes that one teaspoon of salt can permanently pollute five gallons of water. Every unnecessary pound eventually goes somewhere - into snowbanks, drainage systems, surface water, soil or groundwater.*[1]

That is why equipment calibration is part of the NHDES Green SnowPro best management practices and why Municipal Green SnowPro certification requires calibration records. Good records should identify the truck or spreader, date, person conducting the test, material, gate height or controller settings, test method and measured discharge rate.

When to calibrate

- Before the winter season.
- After controller, hydraulic, conveyor, auger or gate repairs and adjustments.
- When moving a spreader or controller to a different truck.
- When changing materials in a way that may affect flow or discharge.
- When route totals do not match the expected application rate and distance.

Make the calibration useful to the operator

The best calibration is one the crew understands and uses. Involve operators in counting revolutions, collecting material, weighing the samples and building the chart. Post a copy in the truck and keep another with the department records. For computerized ground-speed-controlled systems, complete an output check instead of assuming the displayed rate is correct.

Then use the information during the season. Compare tons loaded and returned with route miles and selected rates. If the numbers are off, check the equipment and the records before assuming the operator simply used too much material. Calibration can identify worn chains, augers, gates, spinners, hydraulic problems and controller issues before they become a season-long cost.

UNH T2 calibration training and resources

UNH T2 covers calibration as part of Green SnowPro and other winter maintenance training. We also provide hands-on calibration training and technical assistance for New Hampshire municipalities. The following resources can help departments calibrate manual and computerized systems and keep usable records:

- Calibration of Winter Salt Spreading Equipment video series
- Formula-equipped spreader calibration workbooks
- Printable spreader calibration worksheets
- UNH T2 Green SnowPro training information
- UNH T2 training calendar
- NHDES Municipal Green SnowPro certification

For calibration questions or assistance with a municipal winter maintenance program, contact UNH T2 Center at T2.Center@unh.edu or (603) 862-1362.

[1] NHDES, Winter Salt Awareness Week promotes best practices, 2025
https://www.des.nh.gov/news-and-media/blog/winter-salt-awareness-week-promotes-best-practices