EQUIPMENT

Spreaders and Sprayers

AUTHORS & INSTITUTIONS

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SECTIONS

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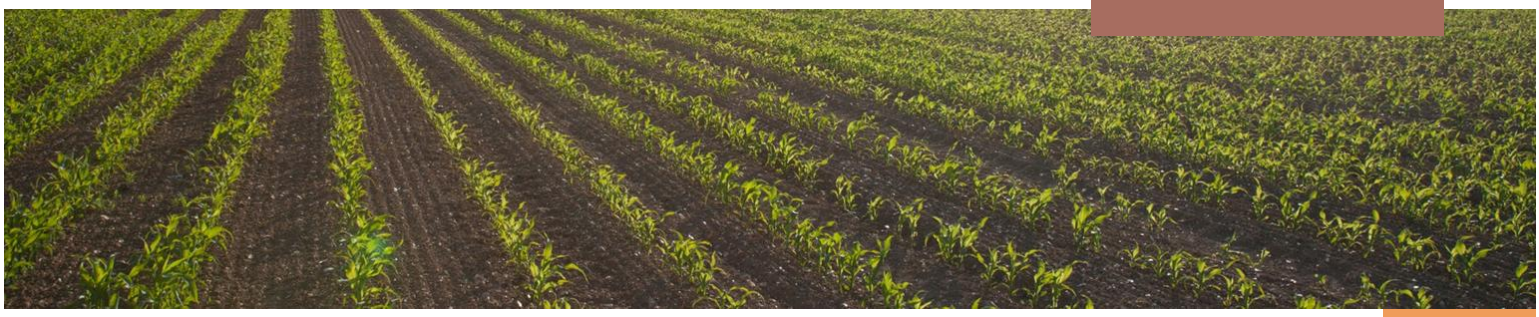
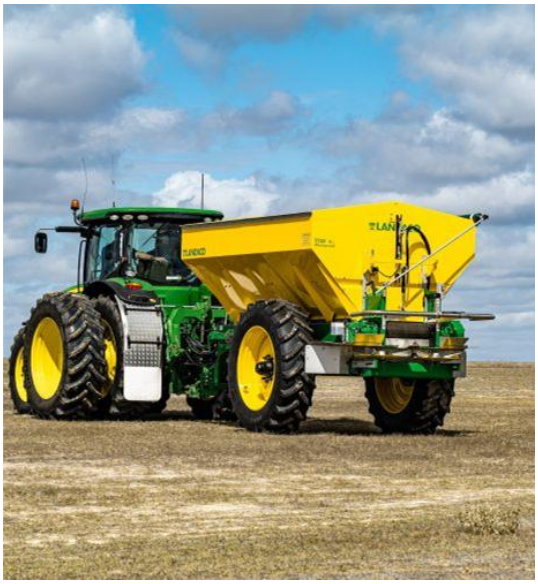


INTRODUCTION

Spreaders



Some granular and manure/compost spreaders are gravity-fed and ground-driven, meaning that a constant rate of material is delivered by gravity out of a feed gate, and a wheel running along the ground is attached to gears and chains that drive the rotor that displaces a fixed amount of granules per revolution. This locks the spreading rate to ground speed, as long as the feed gate is set at a consistent opening.

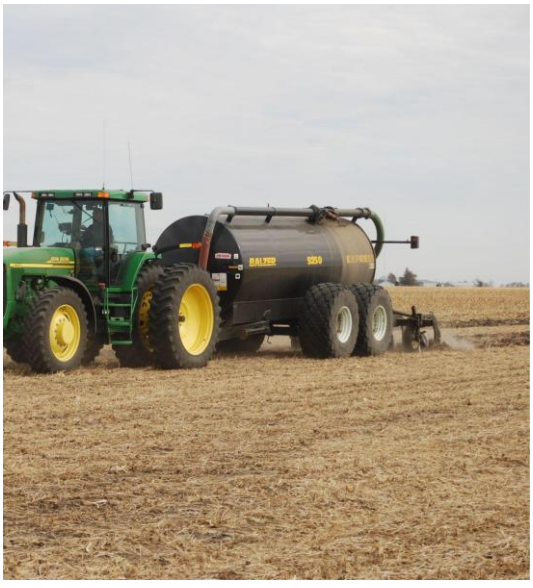
If the feed gate opening remains the same, then halving ground speed will not affect output, and doubling ground speed will also not affect output. If ground speed remains constant, then doubling the rate of granules released from the feed gate with a larger opening will double the output, and halving the rate of granules released from the feed gate with a smaller opening will halve the output.

Some granular and manure/compost spreaders have a metering unit that is independent from ground speed, and is run hydraulically, electrically, or through a hand crank or the tractor PTO. This allows for more advanced variable rate technology to modify application rates while traveling across fields. If the meter rate remains constant, then halving ground speed will double output, and doubling ground speed will halve output. If ground speed remains constant, then doubling meter rate will double output, and halving meter rate will halve output.

Rotary spreaders fling the material in a fan-like pattern to either side of and behind the spreader, drop spreaders and air booms release material in a sheet-like pattern straight down directly over the footprint of the spreader, and many of these can be modified to band granules along a row with deflecting plates or drop tubes or shanks for soil injection. There are pull-behind, 3-point mounted, and self-propelled options.

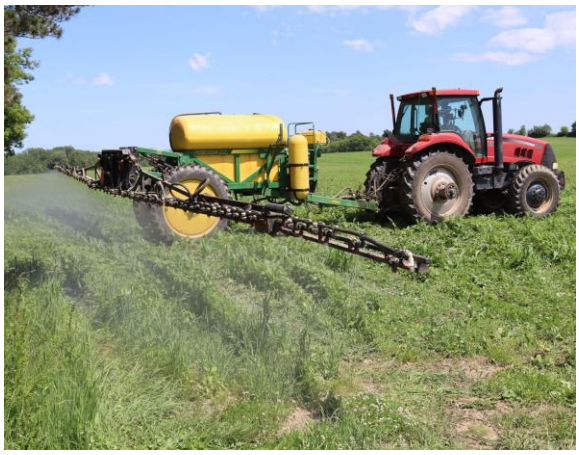
Liquid Manure Spreaders

In large animal operations, manure collection into pits generates a thick liquid manure product that can be spread by tankers with a broadcaster that makes a fan-like pattern with a high pressure pump and a deflecting plate, or with injectors that pump the liquid into the soil with manifolds, hoses, coulters and shanks. They are typically pull-behind units powered by PTO or hydraulically, though some are self-propelled.



Sprayers

Sprayers use a pump mechanism that runs independently from the tractor wheels, or your legs. They are often powered hydraulically, electrically, or through a hand pump, gas motor, or the tractor PTO. Variable rate technology can be used to modify the output on the fly while driving across a field.



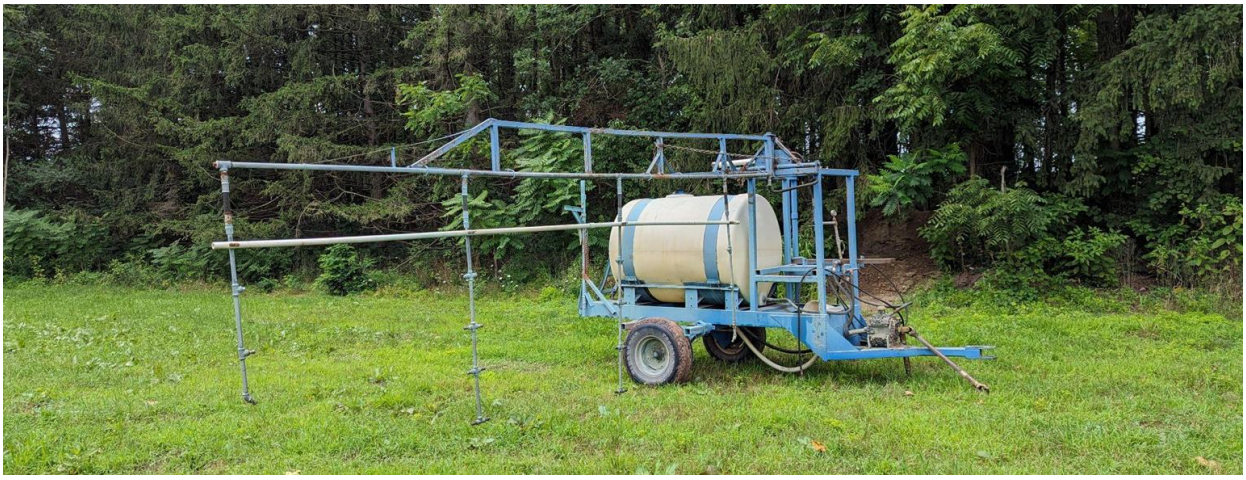
If the pressure remains constant, then halving ground speed will double output, and doubling ground speed will halve output. If ground speed remains constant, then quadrupling pressure will double output, and quartering pressure will halve output.

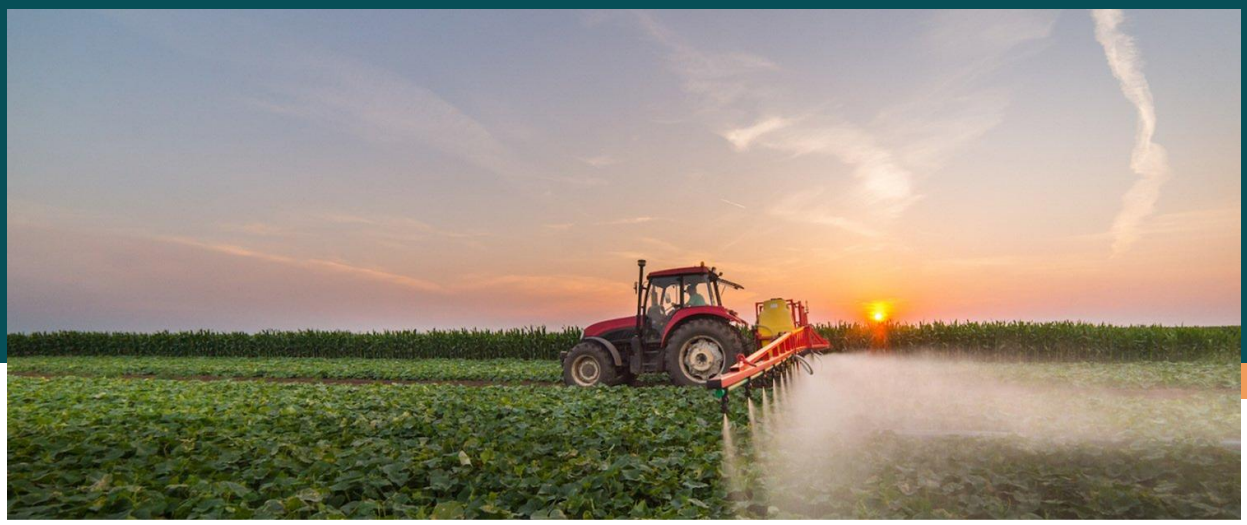
Boom sprayers apply a sheet-like mist along the length of the boom or cover a series of narrow bands over rows with one or more nozzles grouped together, and are typically used in small-statured plants grown in fields or greenhouse tables. Airblast sprayers generate a high-pressure directional fog and are typically used in more permanent and vertical systems like orchards, vineyards, and hopyards, though some air-assisted boom sprayers exist as well. There are pull-behind, 3-point mounted, and self-propelled options. Wand sprayers have one or more hand-directed nozzles used for small or irregular shaped plants or plots, and some models can generate a fog or mist.

How To Get Started

Start by talking to someone doing what you hope to do.

Perhaps go online and look up implements that you think would fit the scale of your operation, read their manuals and watch their instructional videos. Then, go to a trade show or equipment dealership or a grower that has a lot of different things to learn more about its operation, support, and maintenance. Look for auctions and individuals selling used online.





SECTION 1

Spreaders & Sprayers

Primary Considerations

- Determine what equipment you have for towing or powering a spreader or sprayer. Some require a three-point hitch, and some are towed with a single hitch pin. Some require PTO, hydraulic, electric power, or a combination.
- Do you grow individual rows of this and that all jumbled together? Then a boom sprayer or rotary might not be the best tool for you. Those tools cover wide swaths of area and would treat all rows equally whether they need the attention or not. For a small operation growing a few beds at a time, a drop spreader, hand spreader, or wand sprayer would be a better option.

Process for getting started

- Define your treatable areas and how much area you might need to spread or spray over at a time. Does the size or shape of that area change throughout the year? This would help determine what sort of equipment you would use, or could result in re-arranging fields to accommodate a spreader or sprayer of certain dimensions.
- Talk to a mentor.
- Research equipment online.
- Visit a trade show or dealership.

Disclaimer: For a specific list of resources in the above description, view the Necessary Resources area of this section.

SPREADERS & SPRAYERS

COMMON QUESTIONS

01 Do I really need something to spread or spray materials?

Better crop uniformity can be achieved when using technology that meters material onto the ground or crop at a predictable rate and spread pattern. Soil fertility and pest management inputs are expensive, and a good device and protocol for using them pays off.

02 How do I know how much material to use?

For soil fertility inputs, a soil test from MSU or another service provider would be most helpful to determine what amount of material to add to the soil. For pest management inputs, the Midwest Vegetable Production Guide is a good start. Once you know how much to apply per area, you then need to calibrate your sprayer or spreader to achieve that.

03 How do I calibrate?

Calibration involves measuring various combinations of speed, time, area, volume, and weight so that you deliver the proper amount of product to an area. The **following document** outlines some procedures for calibrating spreaders and sprayers.

04 When should I apply materials?

Soil fertility inputs are best applied in the spring before planting. However, when changing pH with lime or sulfur it is better to apply those products in the fall before a production year. For weeds, herbicides can be used before they emerge, or after they emerge. Fungicides are almost always used before symptoms are obvious, but conditions are good for disease development. Most insects can be managed after infestations have begun.

05 Is it safe?

All materials that you would spread or spray on a farm have risk levels associated with them. It's always a good idea to cover your skin when mixing, loading, or applying these materials. For dusty or splashy materials, a respirator and eye protection is also a good idea.