

# SELF-PROPELLED SPRAYER ROI – PART I:

Pull-Type Versus Self-Propelled Sprayers — Five Things You Need to Know



SELF-PROPELLED  
**VS.**  
PULL-TYPE



## What's Inside:

- ① Tank capacity does not equal productivity
- ② Hidden operating costs of a pull-behind
- ③ Comfort and technology have their costs as well
- ④ You might be lying to yourself about acreage
- ⑤ Yield is almost certainly going to be higher with a self-propelled

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## 5 FACTORS TO CONSIDER

In the first half of this white paper, we will explore the five most relevant factors to consider when comparing a pull-behind sprayer to a self-propelled sprayer. It's a good starting point because in order to understand the real return on investment (ROI) of a self-propelled sprayer, it's important to understand why it is superior to alternative application systems, particularly pull-behind sprayers.

Unless you already own a self-propelled sprayer, you are likely in one of two camps: You either own a pull-behind sprayer or you hire custom applicators. You may do both. As you contemplate owning your own sprayer, you likely know that a self-propelled sprayer would be better to have on the farm and far more efficient than a pull-behind, but at what cost? More importantly, what does that cost mean to your operation's overall ROI?

Your first decision point: Can I afford it? The answer, believe it or not, is likely yes. As with all capital investments on the farm, you need to consider the impact the decision will have on your total operation and its ROI.

These five factors will help you do just that:

### 1. Tank capacity does not equal productivity

The old adage that "bigger is better" is simply untrue when dealing with tank size. A 750-gallon product tank on a self-propelled sprayer can actually be just as productive as a 1,200-gallon product tank on a pull-behind model. It's all about the number of acres you cover in a specified time window.

Think about it — a pull-behind travels at speeds roughly 60 percent of a self-propelled sprayer. But, according to Equipment Technologies Sales Manager Nick Smith, there is more to productivity than simply ground speed.

"Speed relates to nozzle selection, which relates to the amount of product that gets sprayed," Smith says. "So, not only are you moving faster in a self-propelled sprayer, you're applying chemical far more efficiently. Flow rate aside, the issue of speed is very compelling by itself."

Smith backs up this statement with a simple math equation that provides his customers with an idea of the acreage covered in an hour in a self-propelled versus a pull-behind sprayer:

**Speed (MPH) x Boom Width x 5280 (ft. in a mile) / 43,560 (sq. ft. in an acre) = Acres Sprayed in 1 hour**

For example, let's use a self-propelled sprayer running at 12 mph and a pull-behind running at 7 mph — both with 90-foot booms:

- Self-propelled: 12 mph x 90 ft. x 5280 / 43,560 = **130.91 acres sprayed in an hour**
- Pull-behind: 7 mph x 90 ft. x 5280 / 43,560 = **76.36 acres sprayed in an hour**

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## 2. Hidden operating costs of a pull-behind

If you're comparing the costs of operating a pull-behind versus self-propelled sprayer, the fact is many of the costs for a pull-behind are hidden and create the illusion that it is more cost efficient to operate. In contrast, the costs of a self-propelled sprayer are right out in the open, so they are often perceived as being higher.

Some of the hidden costs of a pull-behind:

### **Fuel Consumption**

This cost is generally related to the fuel being burned by the weight being pulled, plus the overall high horsepower, heavy tractor needed to pull weight of a pull-behind sprayer.

### **Compaction**

A pull-behind sprayer and tractor will always outweigh a self-propelled sprayer. This leads to much more severe soil compaction, which spawns more hidden costs like poor root growth, poor drainage, etc.

### **Crop Damage**

The issue of crop damage can be blamed on two likely culprits: the extra set of tire tracks from the tractor and the lower crop clearance of a pull-behind sprayer.

### **Labor and Custom Application**

If you take the number of acres covered in an hour and spread that cost out over a week or two, then factor in the hourly wage of hired help or your own time, you will see how much money can be saved by cutting the time in half. Labor can include external help as well, like hiring custom applicators to do late-season work because the lower crop clearance of a pull-behind would almost certainly damage your crops. An additional factor to consider: oftentimes custom spray operators will run out of time to complete fields due to inefficiencies and the previously mentioned clearance issue.

### **Lost Productivity**

What else could your tractor be doing while it is dragging a pull-behind sprayer all of over your farm? A self-propelled sprayer is an efficiency multiplier in the sense that it not only saves time and money, but it frees up your tractor for other work to be done.

## 3. Comfort and technology have their costs as well

Today's self-propelled sprayers offer far more comforts than those of just a few years back. They are designed for full visibility of your booms and offer fully integrated precision options that are specific to spraying; the precision options are ergonomically laid out in the cab for maximum comfort and productivity. Many pull-behind owners have to retrofit their precision spraying equipment into a tractor that is generally not as comfortable as today's self-propelled sprayer. This combination presents a long day of bouncing, reaching and straining as the operator tries to keep an eye on the booms while working the precision equipment and driving the tractor.

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## 4. You might be lying to yourself about acreage

“We talk to a lot of growers that have 1,200 and 2,000 acres and they don’t feel they can justify or afford a self-propelled sprayer,” said Mike Flatt, Director of Dealer Operations. “The truth is that 2,000 planted acres generally equals anywhere from 4,000 to 6,000 application acres.”

Taking this into consideration, when you look at the application acres versus planted acreage of the farm and combine them with the pull-behind’s hidden costs of extra fuel consumption, compaction, crop damage and lost productivity, you really start seeing how easy it is to justify the cost of purchasing and operating a self-propelled sprayer.

## 5. Yield is typically going to be higher with a self-propelled sprayer

Most near and dear to any grower’s heart is the impact a farming change will have on yield. According to Smith, “The growers we talk with indicate an increase of at least one percent in yield when switching from a pull-behind sprayer to a self-propelled because of a number of factors including reduced crop damage, reduced compaction and a timelier application.”

Equipment Technologies has developed a tool that calculates the difference in ROI between a pull-behind and a self-propelled sprayer.

“The yield increase information is what makes the comparison a slam dunk for a self-propelled sprayer,” Smith stated. “In fact, when ET does the analysis, we typically only put the increase in yield at .4 percent just to show that even with conservative estimates, it costs no more to own a self-propelled sprayer than it does a pull-behind and it most likely will make you money faster.”

Interested in a self-propelled sprayer cost of ownership analysis?

Looking to get additional information or have any questions?  
Contact [whitepapers@etsprayers.com](mailto:whitepapers@etsprayers.com) to talk with an  
Application Specialist today!

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