



# Ag Cost Savings Report

## New Speed and Efficiency For Your Sprayer in 2017

- ▶ Minimize Product Waste
- ▶ Reduce Sprayer Downtime
- ▶ Automate Records Management

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# New Speed and Efficiency for Your Sprayer in 2017



Spraying operations are key to effective crop protection. Timeliness is critical. Field efficiency directly affects the overall cost of operation and chemical performance. Perhaps a larger sprayer will not add much field efficiency compared to faster loading times. What if you saved 10 to 20 minutes on every fill?

I looked for an expert to help answer this question and I found Tom Wolf with Agrimetrix Research & Training. Tom has done an excellent job of evaluating sprayer efficiency. He considered multiple factors including sprayer size and ground speed. This summary comes from Tom's study of sprayer field efficiency.

*"For the base condition, the sprayer spent 15% of its driving time turning, and 37% of its on-field time stationary (i.e. filling). For every hour spent on the field, less than half the time **(48%) was spent spraying.** This resulted in an average **productivity of 82 acres/h.***


*Increasing the spray speed to 18 mph increased average productivity to 93 acres/h, but it also increased the proportion of time spent turning and loading, resulting in just **40% of the field time spent spraying.***

*Decreasing the loading time from 20 to 10 minutes reduced the proportion of field time spent stationary to 23%, covering 100 acres/h at 14 mph. Surprisingly, this was the productivity-winner, resulting in **62% of on-field time spraying.***



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In further conversations with Tom, he shared some quick math regarding the cost of operating a sprayer and specifically the cost of the idle time while filling.

***“One other aspect of reducing downtime for sprayers and any other equipment is the retention of resale value. As you know, dealers tend to value equipment according to the number of engine or separator hours. When I asked several dealers about their numbers, they said the devaluation of equipment ranges from \$100 to \$300 per engine hour for sprayers, depending on model and age.*”**

*On the Canadian prairies, we’re seeing sprayers that put on 450 hours/yr. About 1/3 of those are idling. If we can reduce idle time from 150 to 100 h per year, that can mean 50 h \* \$200/h = \$10,000 in resale value. If we assume a modern farm that trades equipment every 3 years or so, the value is \$20,000 to \$30,000 per sprayer. **That’s why it makes sense to our customers to invest in better tender systems.**”*

**You will find Tom’s full report at:**

<http://sprayers101.com/increase-sprayer-productivity-without-driving-faster/>

To use the Productivity Calculator and more go to <http://agrimetrixapps.com/>

Please read this article and many others at <http://sprayers101.com/>



As you can see, there is exceptional value in keeping a sprayer operating efficiently.

Ultimately the best solution will put the tender close to the sprayer to minimize travel time and loading time is limited to pumping speed. This can be achieved several different ways and each method needs to be evaluated.

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## Mixing Speed Is Only Half of the Equation

Data needs to be captured automatically during mixing operations. It takes time to log the mixing records in the field. Quite often the accuracy is not good. There are two aspects of the records: How accurate are the measuring systems; and if the measurements are entered manually, does the operator accurately record the measurements?

**The Mid-November 2016 issue of Successful Farming magazine had an article titled**

***"Finding The Value In Your Data."***

**The following quote is from that article:**

### **"AUTOMATIC INPUT IS NECESSARY"**

*"For any system to be successful, Hackney is convinced the human element must be removed from the equation. 'You can't trust any data created and maintained by human hands,' he says.*

*'At a minimum, you must have automated capture and population of all data associated with executing a crop plan. If you are relying on humans running the right app on their mobile phone every time or humans making entries on a virtual terminal every time, you should give up now.'*

*Partial data, he explains, is the same as no data. Inaccurate data is worse than no data. 'Inaccurate data is what you get from humans,' Hackney says. "When it comes to data, you can't trust the humans."*

**Please read the full article here:**

<http://www.agriculture.com/technology/data/finding-the-value-in-your-data>

If we can't trust the humans, then the data needs to be collected automatically. This is true. I am diligent with my records, but occasionally I forget a detail that will take time for me to figure out later. Correcting errors takes a considerable amount of time and the result is usually a compromise since you are not sure of the accuracy.

## Evaluating Mixing Options

There are many mixing systems on the market that range from build your own to high-end fully automated stationary mixing plants. Manual mixing systems do not create records automatically. Most systems that give automated records have a starting price of around \$25,000. Many of the faster manual systems are in the \$10,000 to \$25,000 price range. Mixmate has a starting price under \$10,000 for automated mixing and recordkeeping.

## Mixmate System Details

Mixmate streamlines the mixing process or completely automates chemical mixing with the bonus of automated records. Our Android app is easy to use and easy to learn. The operator only has to follow the prompts to complete the mixing and the records are automatic. Our data connections reduce errors, lower labor costs, and simplify the system for users in the office and the field.

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## Weight Based Options

The Mixmate inductor is central to many systems. The hopper weighs the products as they are added to the mix. Up to six bulk products can be connected directly to the Mixmate hopper. The system controls the 12 volt pumps used on most minibulk tanks. The Mixmate hopper is ideal for jug processing and measuring smaller quantity ingredients.

No premeasuring is required. Products are weighed as they are added to the Mixmate hopper and the actual amounts are recorded. Additional scales can also be part of a mixing system. A scale can be used under a larger mixing tank and it will control the valves to meter each product into that tank.

## Flow Based Options

Several flowmeter options are available for product measurement and each has distinct advantages. Flowmeters can cover a broad range of needs. Typically, flowmeters are best for the larger volume products that can be pumped directly from a tank. Several types of flowmeters can be used.

The mag meter is very good for water and fertilizers. It also works well with most water based chemicals. The accuracy is  $\pm 1\%$  across a variety of products and the cost is low. Mass flowmeters are the highest accuracy type of meter and they work with all chemicals without recalibration.

The mass flowmeter is the best option when accuracy is important and a mag meter will not work. The accuracy is  $\pm .33\%$ . Other pulse type meters can also be used such as a turbine type meter. Turbine meters must be calibrated for accuracy. When you have the need for speed, flowmeters are usually the fastest mix option.

## Modular Design

The modular design of Mixmate allows the system to be configured as needed and can be expanded at any time. Communication between the modules and valves is with CAN bus. The Android devices can communicate with WiFi. Multiple scales, flowmeters, and valves can be used in a system to blend from multiple sources simultaneously when speed is needed. The limiting factor becomes pumping speed.



# The Mixmate Software



Our software goes well beyond basic mixing. We expect data at our fingertips on our mobile devices and in the office. Mixmate was designed to be connected. Software updates come through the Android device to the embedded modules automatically. Records are automated to maximize field time and accuracy.

The software can be set up ahead of time with prescriptions and jobs. When the operator is ready to mix, he can just select the job and confirm the batch size and settings. A few button presses is all it takes to start a mix. The Android app is optimized to make it fast and easy at mixing time.

One of Mixmate's patented features is the ability to adjust the batch for field conditions. A factor such as wind speed can adjust the amount of drift retardant . . . or the size of a weed can adjust the amount of herbicide in the mix. The batch is automatically calculated according to the current conditions. The operator does not need to make decisions or do the calculations which reduces errors. This feature can also be used to manually enter a rate for a product to be mixed automatically.

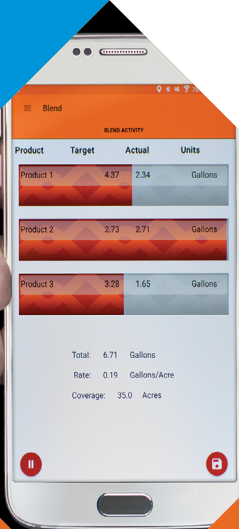
## Intersect is our Cloud Service Connected to Mixmate

Intersect is the easy way to access and manage one system or multiple Mixmate systems. Jobs can be set up in minutes and assigned to a Mixmate. Accurate work records are generated during the mixing process and synced with Intersect.

Reporting can be done from the Mixmate tablet or the Intersect cloud service. Intersect was designed for individual users and large multi-location operations. Intersect synchronizes data between multiple Android devices and the office. This is very useful for multiple users in a farming operation or a commercial applicator.

Mixmate is the first system designed for the farm with data integration and portability. No other system offers the features and flexibility of Mixmate. Follow the link to learn how Mixmate streamlines mixing operations.

Request a quote to take advantage of our introductory offer.



## Multiple Mixing Operations

Products that are common or not detrimental to multiple crops can be mixed at the central plant and the balance of the mixing is done in the field. There are advantages to this system. Fewer products need to be hauled to the field and mixing can be easier. Tender trucks do not need to be cleaned and cross contamination is not an issue.

## Repackaging Jugs Into Bulk

Chemical jugs are time consuming and the jugs must be disposed of. Hauling the full jugs to the field and empty jugs back is not always ideal. Sometimes space is not available and loose jugs are hard to contain. Consider repackaging the jugs into a minibulk tank. The rinse water from the jugs would also be included in the minibulk.

If the rinse water is a known amount, the use rate of the product can be adjusted for the water. Some products may require agitation after water is added and good quality water should be used. A Mixmate inductor is an excellent option for processing jugs and building a concentrated mix.

## Consider Tender Loading Time

The fastest solution is to have a water storage tank and the chemicals staged on the farm ready to be loaded on the truck. It is easy to spend two hours getting a load of fertilizer from our local supplier when we are strip tilling.

***New automated mixing systems give all of the advantages of hot mixed loads without all of the disadvantages.***

## Hot Mix Factors to Consider

### *Advantages:*

- Fast load time in the field
- Better records when kept at a central plant (traditional methods)
- More experienced mix operator (traditional methods)

### *Disadvantages:*

- Flexibility is lost for varying field conditions
- Products can lose potency when stored in a mix
- Contamination of tender trucks

## Summary of Highlights

### **When you can't trust the humans,**

*You can trust Mixmate for accurate records. Data is collected automatically as you work with no additional input from the operator.*

### **Lower operating costs**

*Save time on machines and labor. Fast loading times reduce valuable idle time and automated records save time in the field and the office.*

### **Reduce lost inventory**

*Accurate measurements and records can eliminate lost inventory. Remember the humans are the problem.*

### **Priced competitively**

*Mixmate is priced competitively with some manual systems that have no recordkeeping and no automation. Options are available to measure by weight and flow.*

Our company name, Praxidyn, is a call to action. It comes from two Greek words. Praxis, which means to put an idea or theory into practice or practical and Dyne which is a measure of force.

Powerful Ideas... Practical Solutions.

Your next step is to contact us.



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