



SWATMAPS

Farmer Brochure

SWATMAPS

WHAT ARE SWAT MAPS?

Soil, Water, and Topography (SWAT) MAPS are high-resolution soil foundation maps used to execute variable rate fertilizer, seed, soil amendment, pesticide, or precision water management. They are created using our patented process.



SOIL

Factors such as soil texture, organic matter, topsoil depth, and salinity can all impact yield and fertilizer response.



WATER

Water has the biggest influence on yield and fertilizer response. SWAT MAPS categorizes dry and wet areas in your field into ten different management zones.



TOPOGRAPHY

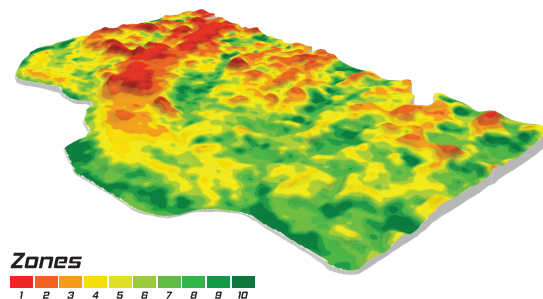
Topography is described by landscape positions in a field (hilltops, mid-slopes, depressions). It can influence soil moisture, erosion, organic matter levels, pH, and soil fertility levels.

THE SWAT ZONES

| | |
|----|--|
| 1 | Zones 1 & 2 Eroded knolls, hills, sandy soils, lower organic matter, dry areas (water shedding). |
| 2 | |
| 3 | Zones 3 & 4 Shoulder slopes, upper slopes, water runs off. |
| 4 | |
| 5 | Zones 5 & 6 Mid-slopes, flat areas, field average. |
| 6 | |
| 7 | Zones 7 & 8 Toe slopes, lower flats. |
| 8 | |
| 9 | Zones 9 & 10 Depressions, saline areas, higher clay content, peat/muck, high organic matter, wet (water collecting). |
| 10 | |

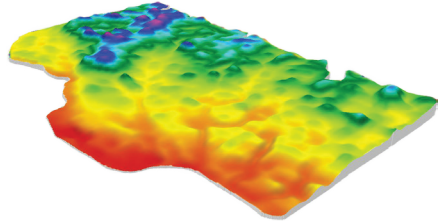
THE BENEFITS

- Increased ROI from applied nutrients
- Maximize yield potential
- Reduce lodging
- Prevent nitrogen loss
- Manage salinity and drainage
- Manage soil pH
- Improve soil applied herbicide performance.
- Even crop staging and maturity
- Minimize the risk of disease



THE LAYERS

The following layers of data are combined to make one cohesive map:



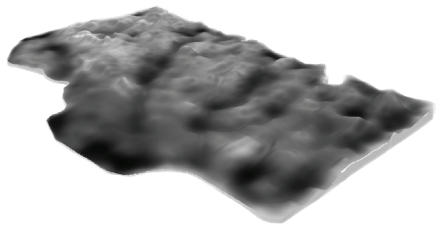
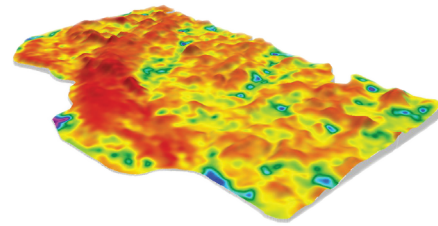
Electrical Conductivity

Electrical conductivity (EC) is related to the variability of dissolved salts, moisture, and texture differences in your soil.



Elevation

Elevation maps show your field's distance above sea level. It is used to determine water flow paths, water accumulation, and as a base layer for a topography model.



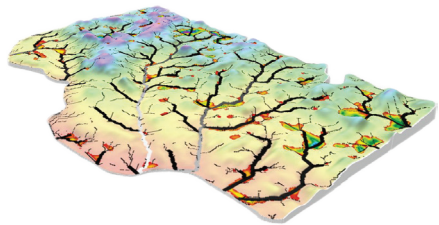
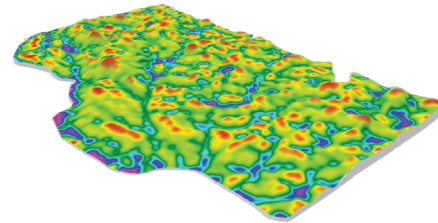
Organic Matter

Soil organic matter is the component of your soil that consists of plant and animal tissue at various stages of decomposition, substances that soil microbes synthesize. It is important for water holding capacity and nutrient supply in season.



Topography

Topography is a detailed representation of the natural shapes and features in your field(s), including hills or knolls, mid-slopes, and depression areas that determine where water sheds or collects.



Water Flow Paths

Water flow paths show the direction that water will flow in your field(s).



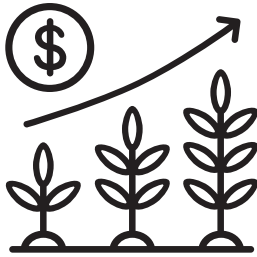
This is the future of agronomic decision making.

– Preston S.



THE BENEFITS

Ninety percent of the variable rate market is fixated on aerial imagery-based solutions. What sets us apart is our focus on soil-based maps. SWAT MAPS are so much more than a map. They're part of our SWAT ECOSYSTEM and when implemented correctly, can unlock your soil and yield potential. Our SWAT ECOSYSTEM technology paired with your SWAT MAPS service provider's agronomy background is an unbeatable combination.

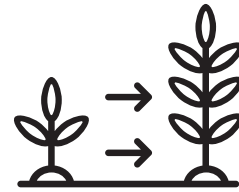


INCREASE YOUR RETURN ON INVESTMENT

Based on the developed map, we can prescribe the optimum rates of nutrients where you'll get the best response and decrease rates where soil nutrient supply is sufficient, excessive, or where the crop is unresponsive. The goal is to put nutrients where they have the highest potential for a return on investment.

MAXIMIZE YIELD POTENTIAL

Variable rate seeding by zone is one way to maximize your yield potential. Increase seeding rates to increase plant competition with weeds. Achieve even emergence, maturity, and the full genetic potential of your hybrids by matching seeding rates to soil and water potential.

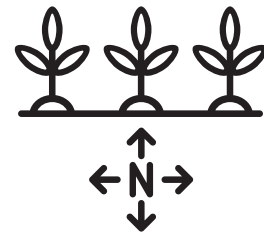


REDUCE LODGING

Address your specific nutrient balances in each zone to achieve targeted plant stands with variable rate seeding. Only use plant growth regulators in your high-risk zones.

PREVENT NITROGEN LOSS

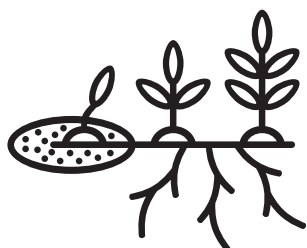
SWAT MAPS identifies zones that are prone to nitrogen loss due to leaching or denitrification. Using nitrogen stabilizers in these zones can decrease the risk of nitrogen loss and your fertilizer costs when compared to a flat rate application.



They have a really strong map. Dad said it best... 'I have been going over that land for the last 40 years and I couldn't have drawn it better myself.

– Jeff B.



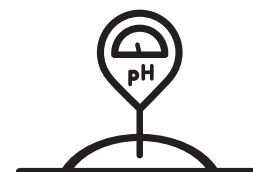


MANAGE SALINITY AND DRAINAGE

In saline areas, cut your nutrient application. You're less likely to see a return on investment due to the limited yield potential. Compete with weeds and draw down excess water by increasing your seeding rate.

MANAGE SOIL PH

Use variable rate prescriptions to apply lime, wood ash, or other soil amendments to manage soil pH and improve nutrient availability.

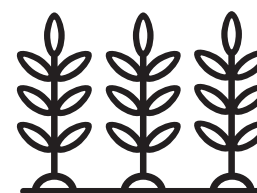


IMPROVE SOIL APPLIED HERBICIDE PERFORMANCE

Soil-applied herbicide rates are based on soil properties, like organic matter, which are mapped and measured through the SWAT MAPS process. Using variable rate methods to apply the correct rate of herbicide in each zone helps maximize weed control. Target weed species that are problematic in certain zones.

EVEN CROP STAGING, MATURITY, & MINIMIZE THE RISK OF DISEASE

Achieving a proper plant stand with variable rate seeding minimizes excessive tillers in cereal crops that delay maturity, or increases plant stands in areas with low survivability. In broadleaf crops and high producing areas, minimize the risk of diseases like white mould in soybeans or canola for instance, by decreasing seeding rates.



Ranking accuracy of fertility zone maps on a scale of 1-10, I would say satellite maps would be a 6 and SWAT MAPS would be a 9.5.

– Kelly B.



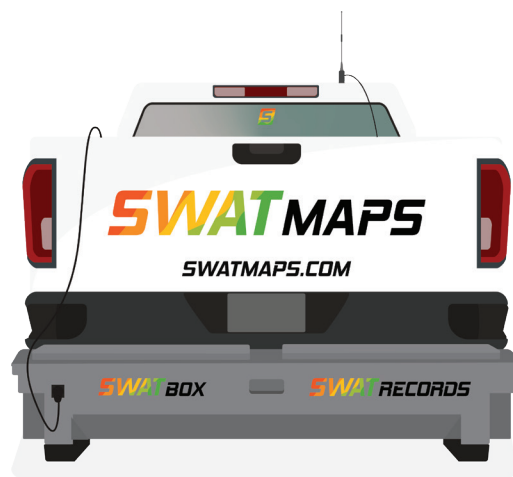
UNLOCK YOUR SOIL POTENTIAL

The soil potential portion of the SWAT ECOSYSTEM is based on creating high-resolution soil foundation maps used to execute variable rate fertilizer, seed, soil amendment, pesticide, or precision water management.

Understanding soils is the core of a successful fertility program. Your SWAT MAPS service provider will help you execute this 6-step process so you can start unlocking your soil potential today.

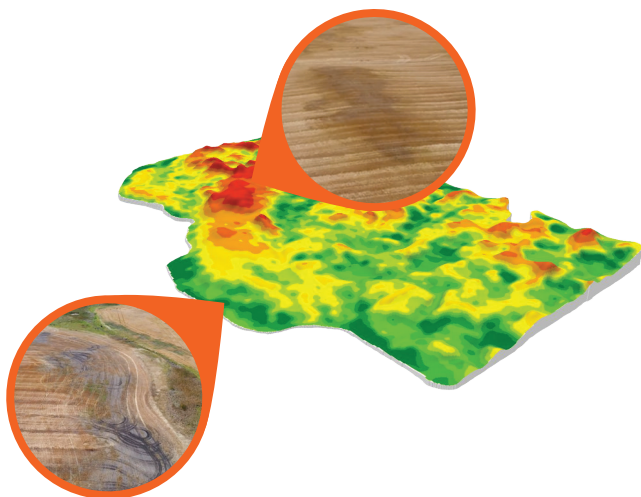
1 DATA COLLECTION

The first step is collecting the quality data needed to create your SWAT MAP. A SWAT MAPS service provider will drive your field(s) in 80ft (24m) passes, using their SWAT BOX. Our patented SWAT BOX is an autonomous soil mapping system that can be mounted to many different vehicles, most commonly trucks, ATVs or other off-road vehicles, but also seeders or planters.



2 LAYER DEVELOPMENT

The raw data collected by the SWAT BOX automatically gets uploaded and sent to our SWAT RECORDS software and is ready for our team of experts to analyze and use it to create multiple SWAT MAPS options.



3 GROUND TRUTHING

With several potential SWAT MAPS created and uploaded to SWAT RECORDS, your service provider will return to the field(s) to ground-truth the maps. This is an essential step in the process, it ensures your SWAT MAPS accurately depicts the soil and water variability in your field(s).



We have been using this technology on our farm for ten years. Best maps in the industry in my opinion. Very practical and logical approach to variable rate seed and fertilizer.

– Mark B.

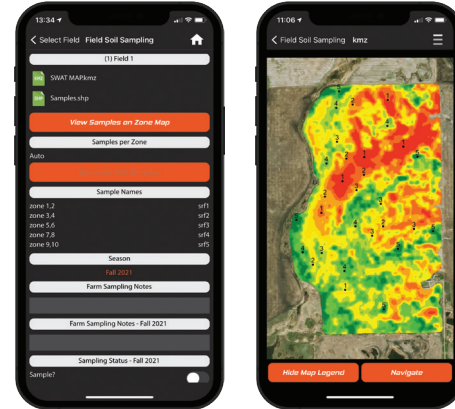


4

SOIL SAMPLING

Once your SWAT MAP is ground-truthed, it's time to soil sample your field(s) by zone. Multiple cores are taken at five out of the 10 SWAT zones, on the field, end goal, and cost vs. benefit of sampling intensity. The number of samples taken per zone is defined by your service provider. Your soil sample results will be uploaded to the SWAT RECORDS app when they are complete.

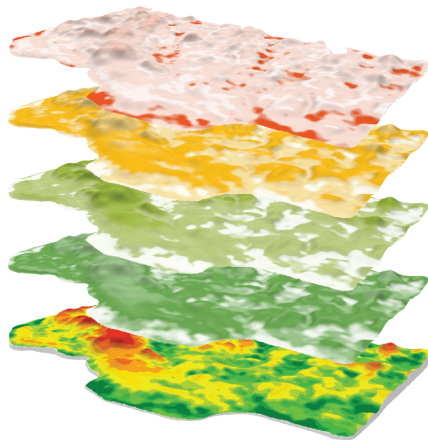
Soil samples are taken every year after harvest at the same geo-referenced locations to track nutrient levels and ensure your prescriptions are meeting your yield targets, accounting for soil mineralization and any nutrient losses.



5

RECOMMENDATIONS

This step involves the service provider collecting information and assessing your seeding equipment, machinery, logistics, fertilizer products, crops, and other general fertility and seed plans. Your service provider will have the local agronomic expertise to make informed recommendations through SWAT RECORDS with the support of our team.



6

PRESCRIPTIONS & CROP ASSESSMENTS

Next, your service provider will create variable rate prescriptions for seed, fertilizer, or soil-applied herbicides based on zones in the SWAT MAP and the results from soil tests. This step turns data into actionable value.

Once the crop has emerged, your service provider will do an early crop assessment, checking plant stands by zone and looking for any early nutrient issues that should be addressed. This is a valuable step for monitoring success of seeding rates, or to identify any future opportunities with seed and fertility. All assessments are recorded in the SWAT RECORDS app so you can view them immediately. Later in the season late crop assessments along with yield data can be analyzed by SWAT zone to measure success.



We farm a variety of soil types and topography usually in the same field and SWAT MAPS have really helped us improve plant stands and crop maturity across those fields. Crop grades, grain moisture, and straw management have all improved with VR seeding and fertility.

– Rob D.

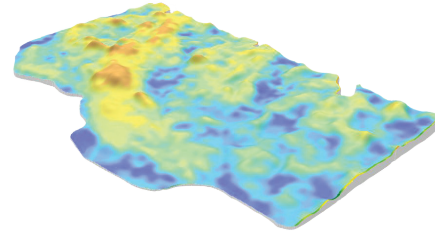


UNLOCK YOUR YIELD POTENTIAL

Crop variability is influenced significantly by soil variability, therefore your soil potential must be unlocked before a SWAT MAPS service provider can unlock your yield potential.

1 SWAT WATER

Using SWAT MAPS as the base layer, SWAT WATER takes detailed soil moisture sensor data, to create a soil water map. SWAT WATER calculates your field's moisture holding capacity, plant available water, and days to stress by zone. This information can be used for fertilizer top-dress applications, fungicides, growth regulators, and variable rate irrigation. To implement SWAT WATER on your farm, a weather station and soil moisture probe are required.

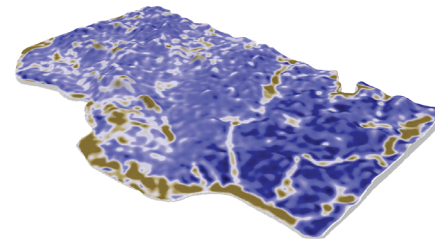


2 SWAT CAM

SWAT CAM is a sprayer-mounted camera that uses machine learning to create high resolution weed and crop maps. More details coming soon!

3 SATELLITE IMAGERY

In season imagery can be helpful when monitoring crop variability due to all factors, not just soil and water. NDVI based maps are a great resource for writing on/off fungicide, crop desiccation, and plant growth regulator (PGR) prescriptions. When incorporated with your SWAT MAP data layers, they can be used to enhance nitrogen topdressing prescriptions as well.



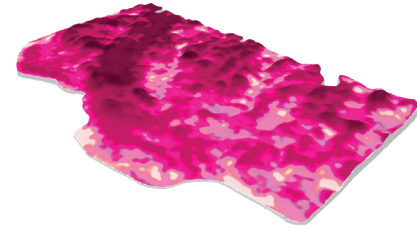
Our whole farm has been mapped with SWAT MAPS. Our soil and available water changes in short distances on our land and the SWAT MAPS mapping system delivers high-definition maps representing the fields.

– Colin R.



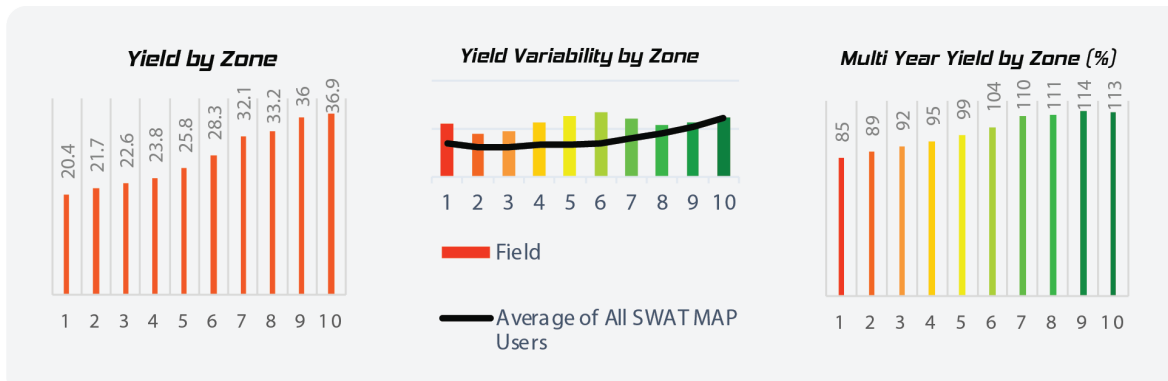
4 CROP PRESCRIPTIONS

Fungicide and topdressing prescriptions are two common examples of in-season applications that can utilize real-time soil moisture and imagery to maximize your yield potential.



5 YIELD ANALYTICS

Yield Analytics gives you a detailed look at your farms yield, gain a better understanding of what areas in your field are under performing and why. Analyze your yield by SWAT zone to make better informed targets for in the future.



6 SWAT CERTIFIED

If you implement SWAT MAPS on your entire farm and follow this list of qualifications, you're eligible to be SWAT CERTIFIED, recognizing your commitment to environmental stewardship. Learn more about what it means to be a SWAT CERTIFIED farmer at swatmaps.com.

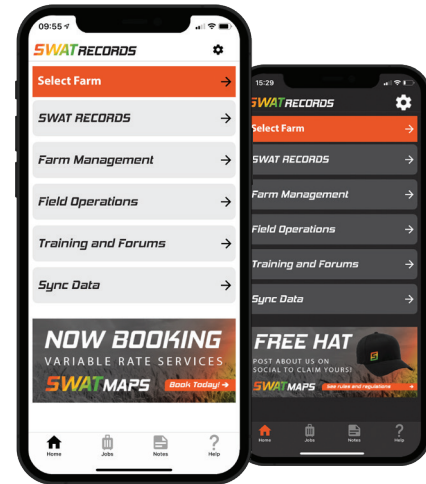


SWAT RECORDS



THE APP

SWAT RECORDS is our software that runs the entire SWAT ECOSYSTEM, think of it as the foundation. Our mobile app is free to download in the App Store and Google Play Store. Use SWAT RECORDS with ease from your phone, tablet or computer.



RURAL CONNECTIVITY

SWAT RECORDS synchronizes all your data between users and platforms. The app works without a cellular or wi-fi signal; any changes made are saved in the app and are synchronized when the device re-establishes connection.

YOU OWN YOUR DATA

We take your data seriously and are committed to protecting your privacy. You will always own your data.

SWAT APIS

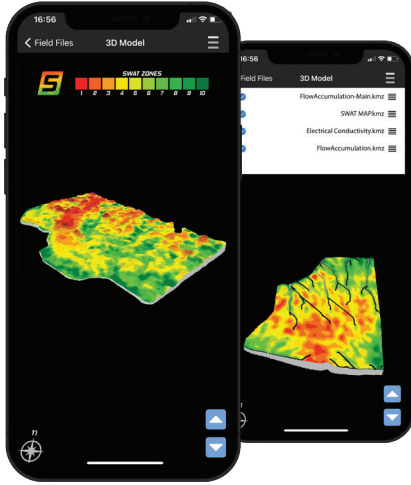
SWAT RECORDS integrates with the following partners and software. Share your SWAT MAPS, SWAT WATER maps, flow paths and more. With more connections being added regularly, get the most out of our software and unlock your soil and yield potential today!



SWAT RECORDS is a huge advancement in record keeping and logistics around our farm. I wouldn't want to farm without it!

- Jeff P.



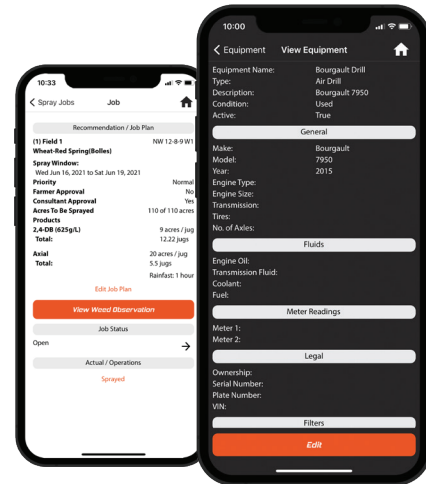


ACCESS ALL YOUR SWAT MAPS AND FILES
View the SWAT MAPS for each of your fields. The maps can be viewed in the app and are georeferenced for ease of use when scouting. View all the fields and farms you manage on one screen. Colour code your field outlines by crop. Navigate easily for scouting and sampling.

FARM RECORD KEEPING

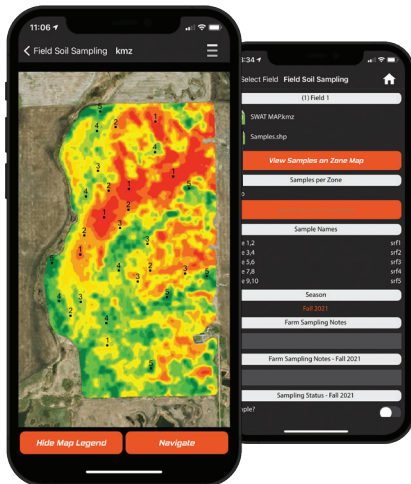
Record the following information in the app and track the history of all your field operations by year.

- Field names
- Field areas and locations
- Crops, varieties, and yield
- Farm equipment details
- Seeding, fertilizing, spraying, harvest and other jobs



FIELD SCOUTING & RECOMMENDATIONS

Input your field scouting data for weeds, insects, and diseases. Tissue test results will be directly imported to SWAT RECORDS by your lab or service provider.



VIEW SOIL SAMPLE RESULTS

SWAT RECORDS connects with many labs globally, so your results are automatically uploaded to the app. We are regularly adding more labs to our list. The results can be manually uploaded so they're all accessible in one easy to find place.

ACCESS THE SWAT SUPPORT PORTAL

Access the SWAT SUPPORT portal from your app to view frequently asked questions, quick start guides, blogs, and other SWAT MAPS content. Check it out online: support.swatmaps.com.

