

Putting Water to Work for You

A Resource Guide



► VARIABLE RATE IRRIGATION CAN REDUCE WATER USAGE BY 17%

You know the water needs in your fields aren't all the same, so why apply the same amount of water everywhere? Variable Rate Irrigation (VRI) allows farmers to apply customized rates of water based on individual zones within a field.

Many fields in southwest Georgia contain noncropped areas, a field edge, varying soil types, and topography. Rather than applying water at one uniform rate across a non-uniform field, VRI can distribute the **right amount of water at the right time to the right field zone**.

Use this guide to learn more about the importance of irrigating for your soil types and how VRI can help reduce water and energy use and improve crop yields and your bottom line. Then be sure to schedule a time to meet with a local irrigation expert who can identify the next steps to enhance your current irrigation efforts while keeping budget in mind.

► VIEW WATER AS AN INPUT

Soil is made up of three main components: clay, sand, and silt. The ratio of each in your soil and the amount of organic matter present regulates the water-holding capacity of your field. The amount of water your soil needs to reach field capacity without hitting the wilting point and without being oversaturated is key to maintaining yield potentials.

The table indicates that soil type and texture can significantly impact water availability to your crop. Sandy soil doesn't have as much holding capacity as soils with more loam or clay. In this graph, the dark orange color is the sweet spot of non-stressed water availability.

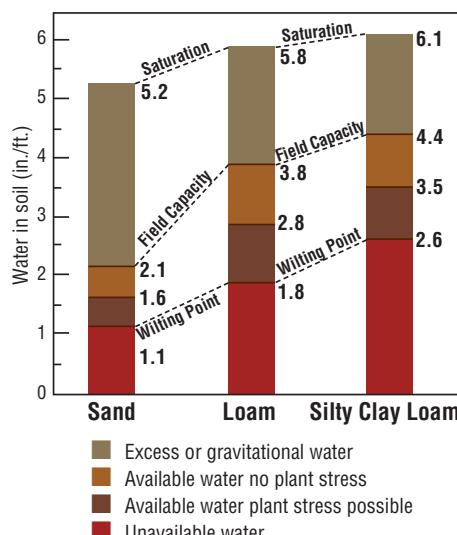
"Many farmers are already looking at variable rates for other inputs such as fertilizer and seeds, so using VRI is in line with that same thinking – you can tailor your watering too."

– Calvin Perry, researcher at the C.M. Stripling Irrigation Research Park, University of Georgia

In sandy soils, it takes more water to reach the saturation point. However, a high sand content in your soil means that your field has a lower field capacity threshold than soils with a higher loam or clay content. If you are irrigating at a standard rate across varying soils, then some areas might receive more water than they need, and others might not be receiving enough.

Water, as an input, can impact your crop yields similarly to other purchased inputs, like fertilizer, which is why it is so important to consider increasing your irrigation efficiency. Knowing how much water your fields need starts with understanding the soil types across your field. Once soil types are known, it's possible to identify your soil's water holding capacity which helps determine how much water to apply.

If you want to learn more about water-holding capacity and saturation levels and how they impact your specific soil types, there are local experts at the Flint River Soil and Water Conservation District (FRSWCD) who can help. They can also help you decide if VRI could improve the irrigation efficiency of your farming operation.

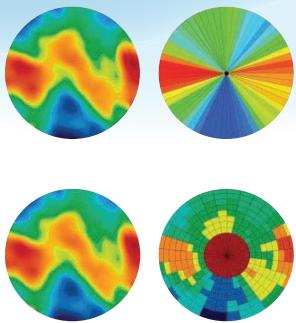


Institute of Agriculture and Natural Resource at the U of NE – Lincoln

► GET IN THE ZONE WITH VRI

VRI technology essentially converts a center pivot system into a precision water delivery system for all your irrigation management zones. There are two approaches to VRI:

Think VRI could help you be more efficient with your water and energy use? Contact a member of the Southeast Aquatic Resources Partnership (SARP) or the FRSWCD. They work with local farmers and agencies to offer tailored advice on VRI and all forms of irrigation scheduling.



1 Speed control – using pie-shaped sections, the grower can speed up or slow down the system through each “slice of the pie.”

2 Zone control – dividing the field into management zones based on soil type, topography, and hydrology, the grower can distribute no water to certain

nozzles and, when needed, as much as 200% of the normal application to other nozzles.

Creating field zones is key because VRI is based on the idea that soil conditions vary across most fields and water needs vary by soil type. Because you know your fields best, you may be able to see which zones need extra water and which zones don't. However, some fields can be tricky to interpret so if you are unsure, contact your local irrigation resource expert to help you evaluate your fields.

- Does your field have an area that is constantly saturated or dry?
- Are your crops close to a road where your irrigation is watering the gravel?
- Is your irrigation system watering unproductive, non-cropped land?
- Are you overwatering?
- Does your field contain multiple crops at different growth stages?

If so, VRI may be a cost-effective means of solving these problems by ensuring you are getting the exact amount of water where you need it and preventing excessive runoff.

Let your local irrigation experts help you make the most efficient irrigation decisions for your farm operation. To request a free on-farm consultation from the Southeast Aquatic Resources Partnership and the Flint River Soil and Water Conservation District, call 913-438-0771 or email SARP@trustinfofood.com today.

You can also go online to learn more about conservation irrigation practices such as Variable Rate Irrigation technology and request a free on-farm consultation by visiting www.trustinfofood.com/irrigationstation

If you need extra control to maintain your yields and crop quality, VRI can increase where, when and how much you are irrigating. Take advantage of the expertise at Southeast Aquatic Resources Partnership and the FRSWCD to answer these questions and make the best decision for your farm.

Studies in Georgia indicate the calculated water savings from noncropped areas using efficiency measures, irrigation scheduling and VRI is 17% on average. Combined with other conservation practices, the water savings seen by VRI technology is substantial.

► DYNAMIC VRI – REAL-TIME TECH DELIVERS EVEN GREATER EFFICIENCY

Dynamic VRI is the next generation of VRI technology and is currently between the research and commercialization stage.

University of Georgia researchers, in partnership with the FRSWCD, have conducted trials showing the addition of Dynamic VRI can increase water use efficiency by up to 40% and at the same time increase crop yields by 5% to 10% versus traditional irrigation methods.

Dynamic VRI takes VRI and adds in real-time soil moisture field data that updates water application rates by zone on-the-go. This allows growers to apply the precise amount of water at the right time and in the right location to produce a higher-yielding crop.

“Dynamic VRI is a tool that will allow us to improve the sustainability, efficiency, and profitability of our irrigated farming systems,” says Dr. George Vellidis, professor of Crop & Soil Sciences at the University of Georgia.

To get the most recent updates on Dynamic VRI, connect with your local irrigation agents and the FRSWCD team.



SARP is a regional collaboration of natural resource and science agencies, conservation organizations and corporations working together to strengthen the management and conservation of aquatic resources in the southeastern United States.

The Flint River Soil and Water Conservation District is a state agency based in southwest Georgia dedicated to the stewardship of natural resources for future generations and the exploration of conservation-driven technologies and strategic partnerships that enhance agricultural sustainability.

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