

How to Manage Wastewater and Save

WITH PRECISION VRI – ZONE CONTROL IRRIGATION



Highbrighton/Barrington Dairy wastewater effluent being applied to the field via Precision VRI – zone control irrigation.

ROI SUMMARY

- \$35,183 savings annually in commercial fertilizer costs.
- \$16,350 savings annually in wastewater disposal costs.
- Energy savings up to 25 percent with Watertronics pump stations and control technology.
- Additional time and labor savings with FieldNET Wireless Irrigation Network.

CHALLENGE

When it comes to wastewater management, Highbrighton and Barrington Dairies are using Precision VRI – zone control irrigation to lighten their environmental footprint and improve their bottom line at the same time.

Dairy wastewater, or effluent, requires proper management. Not only to comply with all appropriate federal, state and local environmental rules and regulations, but also to maximize the value of the effluent.

Highbrighton and Barrington Dairies, located side-by-side near Montezuma, Georgia, milk a combined 7,200 cows.

The dairy operations produce millions of gallons of effluent, which is managed through a system of lagoons, storage tanks, filtration separators, pumps and Zimmatic center pivots.

“We apply all of our wastewater effluent to 2,100 acres (850 ha) of crops through 18 center pivot irrigation systems,” says Richard Gelber,

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crops manager for Highbrighton/Barrington. “The effluent has value to our operation as a fertilizer and a soil conditioner. As a result, we don’t buy any commercial fertilizer for our crops.”

The effluent is applied to fields of corn, sorghum and ryegrass, which is fed to the dairy cows at Highbrighton/Barrington. Gelber says they are able raise two to three crops per year, depending on the weather.

The dairies recently faced a challenge of having to avoid applying effluent near a drainage ditch and buffer area that runs through one of their fields.

“Our goal was to find a solution that was simple, relatively easy to implement and cost effective,” Gelber says.

SOLUTION

Highbrighton/Barrington turned to their local Zimmatic dealer, Sharp Systems in Leslie, Georgia, for help in finding a way to avoid applying pivot-irrigated effluent near a drainage ditch running through a field, and an adjacent 50-foot (15.2 m) buffer zone.

“Precision VRI was a simple option to handle and dispose of the effluent.”

– Richard Gelber

The answer: a new site-specific irrigation product from Zimmatic called Precision VRI.

With easy-to-use mapping software, Precision VRI – zone control irrigation allows users to create custom irrigation zones that can be defined by soil type, topography, crop type, field obstacles, or any other variable.

“The first thing we did was map the field, the drainage ditch and the buffer zone,” says Elton Sharp, president of Sharp Systems. “For improved water flow and maximum efficiency, the existing pivot was equipped with large volume sprinkler guns.”

In all, 13 acres (5.26 ha) of the 122-acre (49.37-ha) field needed to be excluded from the effluent application via the pivot,

according to Al Kuta, Lindsay product manager.

“Historically, water application rates could only be changed by changing the speed of pivots,” Kuta says. “Now, with Precision VRI, growers and livestock producers like Highbrighton/Barrington can have full control over select areas of their fields when applying irrigation water or effluent.”

The seven-year-old Zimmatic pivot on the Highbrighton/Barrington field is 1,300 feet (396 m) long, and includes seven spans, with a 44-foot (13.4 m) overhang at the end. Each span covers 179 feet (55 m).

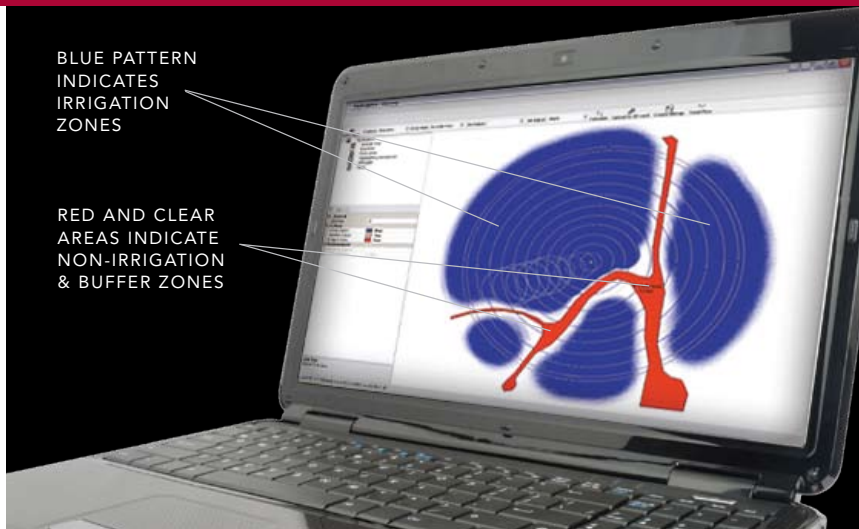
Gelber says the drainage ditch is dry most of the year and the pivot wheels actually run through it in certain areas.

According to Sharp, the sprinkler heads on the Highbrighton/Barrington pivot turn off as they approach the drainage ditch and the unique buffer area (see illustration). Precision VRI – zone control irrigation allows Highbrighton/Barrington to program exactly where effluent can and cannot be applied in the field.

“The Precision VRI system is remarkable technology,” says Gelber. “The pivot has GPS on it so when it gets to a certain



Highbrighton/Barrington Dairies recently faced a challenge of having to avoid applying effluent near a drainage ditch and buffer area. As shown here, the sprinkler guns on the Highbrighton/Barrington pivot turn off as they approach the drainage ditch.



CUSTOM MAPPING OF THE Highbrighton/Barrington Field determines exactly where effluent water can and cannot be applied.

point near the buffer zone, it knows exactly which guns to turn on and off.”

Sharp recommended that the wastewater pumps at the dairy be equipped with variable frequency drives (VFDs) since the effluent is pumped more than two miles from the dairy on some of the fields.

The VFD-equipped pumps provide a slow start-up and balance the pressure as the big irrigation guns cycle on and off in the select zones.

RESULTS

Gelber is pleased with the way Precision VRI – zone control irrigation has worked in the Highbrighton/Barrington wastewater management system.

“This is exactly what we were looking for – a site-specific solution that was simple and yet highly effective. We knew we had to do something and Precision VRI was a simple option to handle and dispose of the effluent while at the same time avoiding the drainage ditch and buffer zone.”

By applying dairy wastewater effluent with Precision VRI – zone control irrigation, Highbrighton/Barrington displaces, or in other words, saves an estimated \$35,183 annually in commercial fertilizer costs, including nitrogen, phosphorus and potash.

In addition, the dairy saves an estimated \$16,350 annually in labor, fuel and equipment costs by not having to spread the dairy effluent to fields with a liquid spreader.

One of the key benefits of Precision VRI – zone control irrigation is that it can be custom-designed to fit the unique needs of a livestock wastewater management system.

“This was a test project to see how Precision VRI could be used in a precision water application and it has worked well,” says Sharp.

“I think the precision technology of Precision VRI now has a lot of potential to be used in other dairy and livestock operations as part of an efficient wastewater management system.”

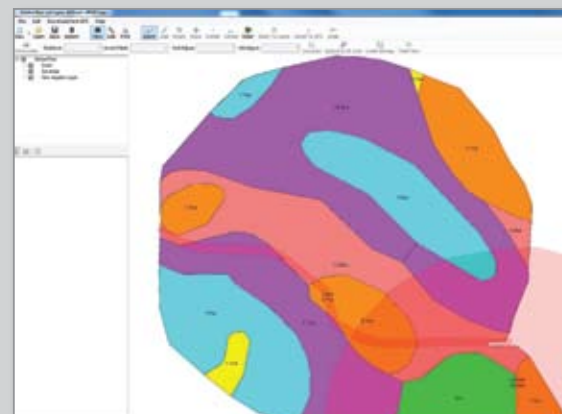
PRECISION VRI VERSATILITY

ZONE CONTROL OR FULL VARIABLE RATE APPLICATION

Precision VRI provides total irrigation flexibility – depending on your unique irrigation needs.

BENEFITS

- Maximizes yields/profitability with full control over each square foot of your field
- Saves water by turning off sprinklers over tracks, buildings, etc.
- Decreases power consumption
- Changes application rate over different crops/soils
- Optimizes irrigation speed
- Reduces runoff and leaching
- Saves on fertigation and chemigation costs
- Less track maintenance



Easy-to-use custom mapping tool defines variable application rates for individual sprinklers over the entire field.

FAST FACTS – HIGHBRIGHTON AND BARRINGTON DAIRIES

- Located near Montezuma, Georgia
- 7,200 dairy cows
- Among the largest dairies in the southeastern U.S.
- Grow 2,100 irrigated acres (850 ha) of corn, sorghum and ryegrass
- Feed all of their own crops, plus additional crops from nearby farmers
- Apply dairy effluent to their crops and buy no commercial fertilizer
- Eighteen center pivots
- Effluent managed through a system of lagoons, storage tanks and filtration separators



Highbrighton and Barrington Dairies are working with Lindsay on a new, highly efficient wastewater management system using variable rate irrigation technology called Precision VRI.



www.zimmatic.com

As a leader and pioneer in irrigation technology, Zimmatic is uniquely positioned to provide a powerful yet simple solution to your wastewater management needs. To learn more about Precision VRI, visit our website for the latest news and information on precision irrigation technology.

For more information about Zimmatic and Lindsay irrigation solutions, talk to your Lindsay dealer.

SOURCE: HIGHBRIGHTON/BARRINGTON DAIRIES and Lindsay.

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