Bailey Nurseries

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Organization Background

Bailey Nurseries is a family-owned, fifth-generation wholesale nursery company. Headquartered in Woodbury, Minnesota, Bailey has facilities in multiple locations in the Twin Cities as well as in Georgia, Illinois, Oregon, and Washington. This project investigated facilities that cover approximately 17 million square footages and produce millions of plants a year. As one of the nation's largest growers and breeders, Bailey Nurseries has established itself as a trusted source of diverse and unique plant species.

"Working at Bailey through the MnTAP internship has been incredibly rewarding. I gained an extensive set of useful skills that I don't believe I could have developed through any other experience. Everyone at MnTAP and Bailey was a pleasure to work with, and I will look back on this project fondly." ~ CH

Project Background

The facilities of interest are using 483 million gallons of water and 7.8 million kilowatt-hours (kWh) per year. Bailey's sustainability team identified water and energy use as major areas of improvement for the company. This project aimed to increase resource use efficiency by investigating ways to reduce water and energy consumption without impacting production.

"Clare was a fantastic addition to the team and brought great energy, a strong work ethic, and a real eagerness to learn. Whether she was working at her desk crunching numbers or collecting data in the very hot greenhouses, she approached each task with enthusiasm and professionalism. Her water conservation project will lead to major savings and lasting impact on Bailey's resource management."

~ Ryan Goodmanson, Potting Foreman, Bailey Nursery

SOLUTIONS

Irrigate Precisely to Pot Size

At the container field, most plants, regardless of size, are watered for two hours on average at a time. This results in some plants being overwatered, and some plants being underwatered. Adjusting irrigation settings to address the needs of various pot sizes will ensure that all plants receive the optimal level of water drainage. This will save 115.7 million gallons of water a year and $3,100 in pumping energy.

Install Wireless Irrigation System

The irrigation team at the Container East facility manually operate valves on lines and pumps for between 30 minutes to 2 hours each day. Installing the wireless irrigation system would allow valves to be operated wirelessly and irrigation settings to be scheduled ahead of time. This would allow for greater precision when irrigating and save an estimated 398.5 hours of labor and $9,960 each year.

Solutions

Limit Boom Overspray

At the Nord Farm, booms are currently spraying water around 35 inches past the ends of the plant rows. To prevent this extra overspray, growers should program the booms with fan nozzles to stop no further than 3 inches past the plants and 24 inches past the cone nozzles. This has no implementation cost and will save 316,000 gallons and $9 in pumping energy a year.

Reduce Greenhouse Irrigation Settings

Growers at Nord Farm follow general guidelines of how much water each size tray of plants should be getting per irrigation setting. These guidelines have remained the same for many years and have not been reevaluated to ensure plants still receive the proper amount of water. Evidence suggests reducing watering by 20% in plants may not affect plant health. Applying this reduction to all irrigation settings will save 4.8 million gallons and $136 from reduced energy use a year.

Recommendation	Annual Reduction	Annual Savings	Status
Irrigate precisely to pot size	115.7 million gal water	$3,100	Recommended
Install wireless irrigation system	398.5 labor hours	$9,960	Recommended
Limit boom overspray	316,000 gal water	$9	Recommended
Reduce greenhouse irrigation settings	4.8 million gal water	$136	Recommended

MnTAP Advisor: Jon Vanyo, Senior Engineer