



CASE STUDY

Bushel Boy Farms Optimizes Production With LUNA AI's Automated Crop Registration

PRODUCTS PURCHASED

LUNA AI

VALUE

- Increased crop registration coverage by 500x through automation
- Decreased fertilizer costs by 10%

Bushel Boy Farms is a top greenhouse grower in the United States. They combine the latest in greenhouse design and technology to produce tomatoes and other vine crops year-round. Based in Minnesota and Iowa, they supply fresh, local, tomatoes, strawberries and cucumbers to the Midwest. Their greenhouses produce up to 30x more, and with less water, than outdoor tomato operations and maintain an ideal climate to produce superior tomatoes, even during harsh Midwest winters.

Manual Crop Registration is Labor Intensive, Error Prone, and Misses Anomalies

Roberto Ramirez, Head Grower, at Bushel Boy Farms relies on expert observation paired with crop registration data to drive crop steering decisions and achieve production goals.

Collecting this data is labor intensive, and prior to using LUNA AI growers manually collected data once a week on only a very small sample, totaling less than 0.2% of all plants.

These measurements are used to drive critical crop steering decisions, yet their estimates are prone to human error and do not take into account anomalies outside the sample, often missing key events.

“Crop registration is done manually and when we rely on people to take this data it is not always accurate and includes bias. It’s hard to trust the data.”

Felix Tarrats, Horticultural Consultant for Bushel Boy Farms

Proactive Decisions with LUNA AI’s Automated Crop Registration

With LUNA AI’s automated crop registration, Bushel Boy Farms has increased their crop coverage to more than 500x what they were previously able to collect manually. At full 100% crop coverage, Bushel Boy Farms expects to save 20% of every Assistant Grower’s time.

In addition to cost savings, it allows the team to focus on daily changes to climate strategy instead of weekly, shifting to more proactive production. As Ramirez explains, it provides his growing team with, “leading indicators vs lagging indicators.”

This comprehensive crop coverage identifies anomalies beyond what the previous small samples captured, enabling the growers to steer their crop with confidence.

Optimized Production and Lower Costs Using Head to Flowering Truss Height Measurements

Bushel Boy Farms uses head to flowering truss height as a key indicator of crop balance between vegetative or generative growth. With LUNA AI, the team now has access to reliable head to flowering truss height data week-over-week. Bushel Boy Farms uses this data to understand anomalies, trends, and to change irrigation, labor, climate, and fertilizer strategies.

Ideally, the stem length between trusses is consistent week over week. If the distance between the head and the flowering truss is too short, the plant is growing too generatively, resulting in a weaker plant over time. If the distance is too long, the plant is growing too vegetatively and will not meet fruit production and quality targets.

“Plants don’t lie, and when you see the data from the plants you know exactly what is going on.”

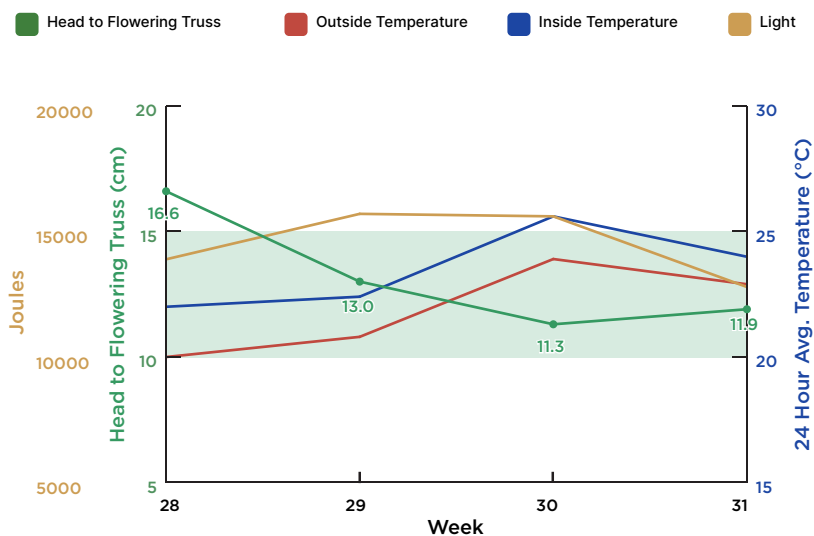
Roberto Ramirez, Head Grower at Bushel Boy Farms

In week 28, it was clear from LUNA AI that the crop was approaching full fruit load. Bushel Boy Farms determined that it was growing too vegetatively based on the data and the team made adjustments.



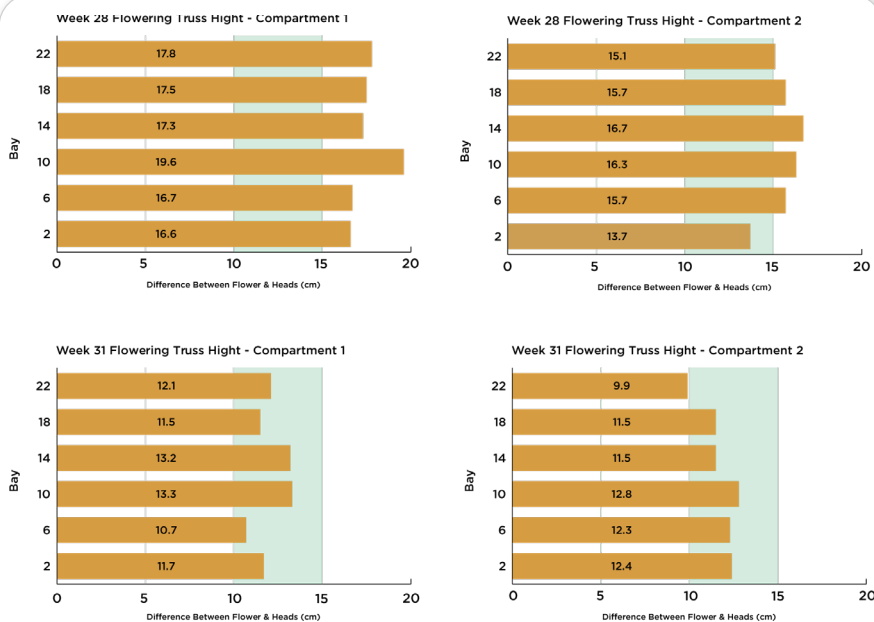


Weekly Head to Flowering Truss



The impact that outdoor light and temperature trends had on head to flowering truss as the crop reached full fruit load around week 28.

Ramirez explains, "Based on the metrics, we changed our irrigation strategy. We modified irrigation to increase dry out overnight in the bags over 10%. We changed the irrigation schedule to finish irrigation earlier and start irrigation later in the morning so there is more dry out."



Spatial visualization of Flowering Truss Height across the greenhouse before and after growers modified irrigation strategy to steer the crop back into balance.

By week 31, the head to flowering truss height was within the expected range, the crop was growing more generatively, and they realized a 10% savings in fertilizer costs.

