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James Darrow, Manager at Jolly Farmer, about LED:

**“We’re happy with better quality, and energy savings are an added bonus”**

**Based on the values of integrity, quality and reliable service, Jolly Farmer has been supplying cuttings and seedlings to the greenhouse sector across North America for many years. James Darrow, General Manager, discusses experiments with innovative solutions such as automated sticking machines and LEDs in the company's ongoing quest to find new and better ways to grow high-quality plants for its customers.**

James Darrow has been with the company for 46 years, having joined when he was just 16 years of age. He spent many years working in the maintenance department before progressing to a management role.

Today, as General Manager, he has overall responsibility for shipping, marketing and purchasing as well as production in the company's greenhouse. “I oversee the team leaders responsible for each area on a day-to-day basis and answer any questions they might have. In

addition, we hold a weekly meeting to discuss any issues, problems and ideas as a team.”

#### **Responsiveness**

“In total, our company employs over 200 people during the peak season, including temporary workers, plus sales reps and transport drivers,” continues Darrow. “Transport has always been very expensive to hire in, so we formed a subsidiary trucking company called Jolly Farmer Transport in 1998 which now has 19

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trucks. Owning our own fleet gives us more responsiveness as well as huge cost benefits.”

The company's key values are integrity, quality and reliable service. Selling directly rather than through a broker network enables the company to offer personal service – including expert cultural advice – and be more responsive to customer needs. To accommodate those needs, particularly of small to mid-size operations, the company works with a minimum order size of just a few trays. Furthermore, the selection of tray sizes and over 3,000 varieties means that the year-round greenhouse operation is a very complex one.

### Extensive automation

The greenhouse includes extensive automation. There are four computerized cylinder seeding lines from the US-based supplier Blackmore, which handle 20,000 trays of all sizes per week at peak times. There are also two patching machines from the Dutch manufacturer TTA. “It was very advanced technology when we bought the first one ten years ago, and it replaced 50 people in terms of manual labour, so it paid for itself within two years. But there has been clear progress over the past decade because the new machine we bought last year is around 40% faster than the old one, achieving a rate of up to 20,000

plantlets per hour,” he explains. “The machine blows out any sub-grade plantlets and these are supplemented by plantlets from the donor tray at the side. This machine enables us to sell full-count trays regardless of the germination rate.”

### Automatic transplanter

The greenhouse is also equipped with two automatic transplanting machines. “The most recent one, which was purchased in 2018, is a wireless transplanter that does up to 60,000 plants per hour. It's a fantastic machine, very versatile,” he says. “On the cuttings side, we still stick by hand, but we are currently trialling an automatic sticking machine from another Dutch manufacturer, ISO. It can stick up to 2,500 cuttings per hour, compared with an average of around 800 manually. We currently peak at 1.5 million cuttings per week and sticking is very labour intensive, so this has the potential to offer savings,” states Darrow.

“Furthermore, installing Wi-Fi a number of years ago has led to more improvements. Now, all the growers can check and adjust the settings on their irrigators using their mobile devices as they go around the greenhouse.”

### LED experiments

In January of this year, 1.2 ha of the greenhouse were retrofitted with LEDs to replace HPS, with an expected payback time of around six years. “We first heard about LEDs at the Cultivate trade show in 2012 and were immediately interested. After all, we love growing high-quality plants for our customers and are always looking for new and better ways to do that. But the price point was still extremely high,” recalls Darrow.

“Also, back then there was plenty of research involving various types of vegetables, but the results were unknown for the 3,000 varieties of plants we grew,” he continues. “We started testing different technologies and suppliers over several years. In 2016 we purchased a hundred fixtures from Signify for a substan-



*LEDs have produced improved root development and more compact plant growth.*





**Jolly Farmer employs over 200 people at its site in New Brunswick, Canada.**

tial two-year trial. Our approach was just to experiment with various plants in various locations to see the response to the different light spectrums.”

### Future plans

The overwhelming majority performed very well, showing improved root development and more compact growth. “Both of which are excellent for our customers, plus it means we can reduce our use of growth regulators. That’s especially relevant in herbs and vegetable seedlings, which is a growth area for us now, not least due to the grow-your-own trend and our recent acquisition,” he adds.

“Our employees found it a little disorientating to work in the purple light, so we’ve

sacrificed some efficiency by adding a little bit of white light. Most people had adjusted to the new conditions after less than a month. We’re really happy with the better quality of product, and the fact that we’re using just 48% of the electricity we used before is an added bonus.”

Looking ahead, Darrow expects to place a new order for another 1.5 ha of LEDs soon. There are also plans to buy three more ISO automatic sticking machines before the end of this year.

### Summary

Jolly Farmer was established in 1967 and is currently located in the Saint John River Valley of New Brunswick, Canada, with a 5 ha greenhouse. Per year, the company grows and ships between 90 and 100 million young annual, perennial, vegetable and herb plantlets for the greenhouse industry and finished material for the retail sector. It serves customers across North America – from Alaska and the Northern Territories to Texas and beyond. Most recently, the company expanded its product line by acquiring potted herbs and vegetables company Sweet Valley Herbs.



**The transport division with 19 trucks has enabled the company to reduce costs and increase its responsiveness.**



## Winter in Baku

Budget is the magic word. Expectations are high and as a Dutch grower you need to live up to the highest standards. But with no previous data it is hard to predict winter production. So I started to gather information about light and yields from experienced growers nearby. With this data I was able to produce a production schedule showing pruning and fruit load. Then it’s a matter of keeping the plant in balance and hoping the budget and grow plan make sense.

We planted in week 34 and from week 40 to week 1 we pruned the trusses on two tomatoes. The lowest plant load was 20 tomatoes/m<sup>2</sup>. The weather was okay up until January, when we had weekly averages of between 500 and 600 joules per day. February was another story – cold, windy and wet, with weeks averaging 300 joules per day – but our pruning plan helped us through this dark time. The management had little faith in the grow plan we had calculated, but the fact that we were producing above budget relieved the stress and boosted confidence.

We started building up fruit load in January, so when spring comes the plant will convert the light into yields. New heads were made after week 4 and yields started to rise from week 8. Everything went according to plan but, more importantly, exceeding the budget. Now that the crop is growing well, we have decided to start phase two. This means we are now building another 10 ha, which will be planted in September.

This first winter in Baku was challenging for growing. In terms of living here, it was cold, with temperatures dropping to no more than 2°C, but there is always a cold wind coming from the huge land mass to the north east, which makes it feel very cold even at 5-7°C. But Baku has also provided us with new friends, people who want to make you feel at home, and expats sharing frustrations or just celebrating an adventurous live.

John van der Lee  
Tomato grower in Azerbaijan