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COVER: WESTERLAY ORCHIDS; TOP: JANI KRANENDONK | ADOBE STOCK; BOTTOM LEFT: HOFFMAN NURSERY; BOTTOM RIGHT: W. GARRETT OWEN

METROLINA GREENHOUSES' EXPANSION PLAN

By Chris Manning

OVER THE NEXT FIVE TO EIGHT YEARS,

Metrolina Greenhouses in Huntersville, North Carolina, will add 40 acres of new greenhouses to its existing acreage. According to Art Van Wingerden, one of the co-owners of the company, Metrolina's expansion plans are based on one key factor.

"First, we look at our customer needs," he says. "Do we need to have that much more product? Right now, we contract grow quite a bit, so we know we have the business we need."

The 40 acres of land Metrolina is building on was purchased 10 years ago, according to Van Wingerden, and was always earmarked for expansion. At the time, however, it had two other ongoing expansion projects — one was 15 acres from completion, and another had about eight acres left — so the timing wasn't right.

"We tend to be pretty deliberate when we add on," Van Wingerden says. "We don't just add on to add on. It has to be profitable."

Financially, Van Wingerden says the greenhouse will be paid for with funds already budgeted for internal improvements. As for the greenhouse equipment, he says the exact specifications



Metrolina Greenhouses is in the process of adding 40 acres of growing space to the 170 acres it already has at its Huntersville, North Carolina, facility.

aren't 100-percent finalized yet, but will be based on what Metrolina is already using in its other 170 acres of greenhouse space. One change it has decided on, however, is switching from diesel-powered cranes to electric ones in order to be more energy efficient.

Additionally, Van Wingerden says the structures themselves will go from being MX-style glass structures — which are what the last 100 acres worth of greenhouses they built are made of — to MX-style plastic structures. Van Wingerden and his brother Tom headed up the construction aspect of the expansion, zeroed in on plastic and consulted with Metrolina's growers to make sure it would work before finalizing the switch.

"We can get the diffused light in there like we want to," Van Wingerden says. "It's easier to insulate. The motors don't have to be as strong to push the windows open. And plastic now is so good that it lasts five years, minimum, before you have to recover it." ✕

THREE LEADING GROWERS EXPAND

Metrolina Greenhouses, Westerlay Orchids and NatureFresh Farms have each added dozens of acres of new greenhouses.

PHOTO: JAN KRANEIDONKI / ADOBE STOCK

PHOTO COURTESY OF METROLINA GREENHOUSES

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WESTERLAY ORCHIDS EXPANDS FOR ITS FUTURE

By Chris Manning

IN OCTOBER, Westerlay Orchids purchased 39 acres of production space in Oxnard, California — roughly a 30-minute drive from its other facilities in Carpinteria, California. The land, currently used for open field agriculture, will eventually be home to a new orchid growing facility.

According to owner Toine Overgaag, Westerlay required new growing space to build the business for its long-term viability. The challenge was finding available land in Oxnard, Carpinteria or the surrounding communities, where it's both valuable and limited.

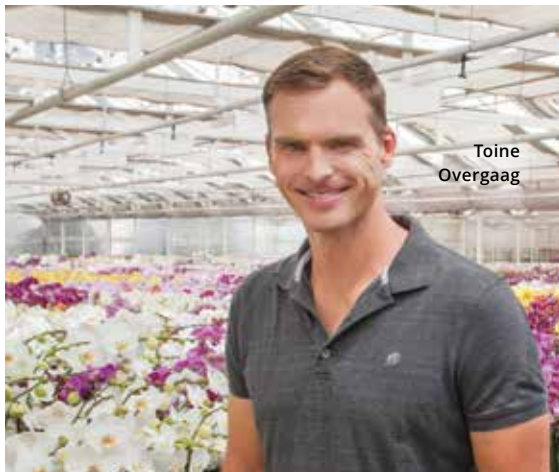
"We're in a place that has been one of the most intensely cultivated places for agriculture," Overgaag says. "Lots here tend to go fast. We're near the ocean and near markets like Los Angeles. But we're also cramped for space. Lots tend to be 10 acres or smaller. The permitting process here is complicated. So, what you see here is a lot of greenhouses that were built in the '70s, '80s or '90s and almost nothing since the early 1990s."

Cannabis influence

In addition to a desire to grow his busi-

ness, Overgaag says the quickly growing cannabis market in California created an opportunity.

"What has happened here is that because there is this base of greenhouse production, there are a lot of folks who are longtime growers here and also outside investors who want to get into



Toine
Overgaag

cannabis," Overgaag says.

He says Westerlay had three properties in the area and was able to sell one located in Carpinteria to a cannabis grower for "more than it was worth" to his business. The property needed to be refurbished, but that didn't dampen its value.

"We sold it for a price that you couldn't have imagined a couple of years ago," he says. "This was a 'Strike



Westerlay Orchids' recent land purchase in Oxnard, California was funded by the sale of an older facility in Carpinteria, California to a cannabis grower.

while the iron is hot' thing."

Overgaag adds that the price for the land in Oxnard, which is in a different county (Ventura) than Carpinteria (Santa Barbara), was lower and the land was less in demand because the Ventura County government has been less welcoming to cannabis operations than Santa Barbara's county government; Overgaag adds he has no plans to get into cannabis production.

Going green

At the new facility, Overgaag plans to go green. Upon purchasing the facility, he was told Westerlay would be able to access a source of 100-percent recycled water for all its greenhouses.

"Water is a major, major issue in Ventura," he says. "So, having a source of ag water is huge."

As he begins planning the greenhouses that will be built at the

facility, Overgaag is looking at the Netherlands for inspiration. He says in the Netherlands, there is talk of growers becoming 100-percent carbon neutral — meaning a greenhouse business would release zero carbon dioxide into the air — by 2024. He believes it is possible to become carbon neutral at his location, and perhaps sooner than 2024. Overgaag is also considering using solar energy at the facility to further reduce the use of fossil fuels. He estimates that could save more than \$1 million per year on energy costs by going green.

Overgaag says he wants to go green for the same reason he wanted to expand: He wants Westerlay to thrive for the next 20 or 30 years and not only the next five.

"We could muddle along for the next couple of years, but we want to be viable for the long run," he says. ✂

PHOTOS COURTESY OF WESTERLAY ORCHIDS

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ADDING ACRES UPON ACRES

By Patrick Williams

IF THERE'S A GROWER who knows a thing or two about building greenhouses, it's Peter Quiring, the owner and president of NatureFresh Farms and the owner of South Essex Fabricating in Leamington, Ontario.

In 1993, Quiring started a machining business that became South Essex Fabricating, a fabricator of commercial greenhouse structures and equipment. He founded NatureFresh in 1999 and began growing produce. To this day, Quiring juggles both of these roles. "[At South Essex Fabricating] we build up to 200 acres a year — typically 100 to 150 acres a year, including for ourselves, but mostly for others," he says. Some of those other growers are

NatureFresh Farms' competitors.

Several times a year, Quiring says the South Essex team and NatureFresh teams travel to the Netherlands and other locales across the globe to learn about new technology. "We have a lot of contact with Dutch suppliers and innovators," he says. "We typically will try new technology at NatureFresh. We're kind of the guinea pig."

If the technology works at NatureFresh, South Essex will sell it. "We don't keep a lot of secrets," Quiring says. "We sell all the technology that we try out that actually works."

Through a series of expansions in Leamington, some of the most recent of which have included the adoption

PHOTOS COURTESY OF NATUREFRESH FARMS



Beyond Leamington, Ontario, (pictured) and Delta, Ohio, NatureFresh Farms is looking at additional areas where it could add a new location.

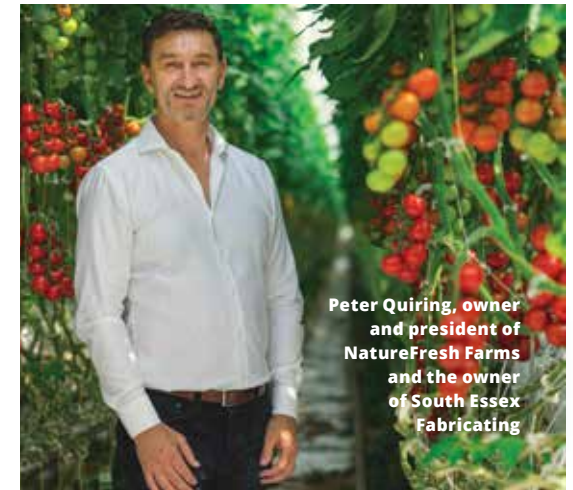
of high-pressure sodium (HPS) lights, NatureFresh Farms has grown to 175 acres of greenhouses. In the Essex County, Ontario municipality, the operation grows numerous varieties of tomatoes, and a smaller selection of pepper and cucumber varieties. A 32-acre expansion is nearing completion and will feature tomato production in spring 2019. In addition, NatureFresh is planning for another expansion to follow.

In 2015, NatureFresh began production in the United States, starting with 15 acres of greenhouse space in Delta, Ohio, west of Toledo. That facility is now 45 acres, and NatureFresh has plans to build a new distribution center in Delta. "That will be built in 2019, and right after that, we're planning the next 45 acres in Ohio," Quiring says.

Beyond Leamington and Delta, Quiring says NatureFresh is also looking at other areas to possibly add a new location.

Construction for the next 45 acres of production space will likely begin in 2020, Quiring says. It will probably contain tomatoes, but may instead house peppers, as Quiring says demand for U.S.-grown peppers is increasing.

Quiring noted that NatureFresh has had to both increase hiring and enhance logistics as it expands its production space. Logistics is becoming one



Peter Quiring, owner and president of NatureFresh Farms and the owner of South Essex Fabricating

of its largest costs, and labor remains its biggest challenge. "Now it's an even bigger challenge than it ever has [been] before," he said.

In 2017, NatureFresh halted an expansion of the Delta greenhouse because of a labor shortage, according to the *Toledo Blade*. At the same time, the business has adopted artificial intelligence to monitor plant growth and track pest and disease issues, as well as to replace some tasks that are difficult to hire employees to do, Quiring told *Greenhouse Management*. "We will continue to [automate], for sure," he says. "I think anybody that's not doing that is at risk of having serious issues."

NatureFresh Farms focuses on providing consistent supply and finding ways to improve and innovate, Quiring says. "The day that we rest on our laurels is probably the day that we start moving backward," he says. "It's a very dynamic, exciting industry, but you have to be on every day." ✂



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AN OLD, BUT NEW, GREENHOUSE

When looking to upgrade its structures, Hoffman Nursery bought a used greenhouse that offered the company exactly what it was looking for. | **By Chris Manning**

IN 2015, Hoffman Nursery in Rougemont, North Carolina, began a three-part expansion project to update its greenhouse structures. The first part of that plan was adding a 51,000-square-foot greenhouse that the ornamental grass grower bought used.

According to David Hoffman, the business' chief customer experience officer and the son of owners/founders John and Jill Hoffman, they became aware that a plastic, gutter-connected greenhouse owned by Carolina Nurseries, a grower near Charleston, South Carolina, that had went out of business, might be available. It was the exact type of greenhouse Hoffman wanted to upgrade to.

"We used to grow in a lot of hoophouses," David says. "We had heard about this



Hoffman Nursery's used greenhouse had been used for five to 10 years before the grower purchased it.

greenhouse [that was] not necessarily available, but out there and not being used. We figured we would offer and see if they were interested in selling it. And they [were]."

Vetting the structure

Before the deal was complete, David says his parents went to inspect the greenhouse where it stood. According to Hoffman, the structure had not been used in five to 10 years before the family found out about it and looked into buying it.

David describes the buying process for a used greenhouse as similar to buying any used item: They needed to understand what kind of shape the structure and equipment were in before buying it. When John and Jill deemed it up to par, the sale went ahead. But even then, there were some unknowns.

"The conditions of the motors and even the control system [were a concern] — we weren't even sure that they were in the best working condition because they hadn't been run [recently]," David says. "It had to be set up, trialed and replaced, and whatever else was necessary from there." He says that when Hoffman began its second and third expansion phases, it upgraded the environmental control system in the used greenhouse.



David Hoffman says Hoffman Nursery's used greenhouse purchase was a cost-effective way to upgrade its structures from hoophouses.

He adds that James Parris, a sales representative with Stuppy Greenhouses, was key to making the used greenhouse project successful. Parris had done the original construction of the used greenhouse, still had the original building plans and helped them rebuild it at their facility after it was moved.

"He helped with all of the little pieces," David says.

Benefits of a used greenhouse

David says that, if the opportunity presented itself and the structure was sound and passed an inspection, he would be comfortable purchasing another used greenhouse.

"Obviously, each greenhouse has its own set of variables," he says. "One thing I would say is that we are trying to set universal standards [for growing]

at the company, so I would be more inclined to buy one if it was similar to what we have now." Consistent bay width is the characteristic that he would cite as the most important in a potential used structure.

As far as advantages goes, David says there are clear benefits to purchasing a used greenhouse. For starters, it allows a grower to recycle materials and structures instead of throwing them away. Secondly, buying a used greenhouse may be cheaper than purchasing a brand-new structure. For the Hoffmans, this allowed them to upgrade their technology, and make sure it fit their business, before building more structures.

"You have to make sure it fits your needs," David says. "Just because it's a good bargain doesn't mean it's a good fit." ✂

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WIND AND SNOW PREPARATION FOR GREENHOUSES

Growers can implement simple, but effective, strategies to prevent structural issues during the winter months.

By W. Garrett Owen

POINSETTIAS ARE FINISHED. The end of the year is near. For most, it's time for a well-deserved break. Your enthusiasm to spend the last few days at the greenhouse is almost nonexistent and the last thing one may want to do is spend time outside preparing for Old Man Winter. His arrival brings gray skies, strong winds, and cold, snowy days upon most of the United States. As a greenhouse grower and operator, are you prepared for strong wintry winds or to remove heavy, wet snow that may accumulate on the greenhouse? This is an excellent topic to address before Old Man Winter arrives.

Wintry winds and wind load

During the winter months, we do not often experience pleasant, breezy days, but more frequently encounter violent winds

that apply pressure and force upon our greenhouse structures. This act is referred to as wind load. Wind load (**Fig. 1**) is influenced by the wind angle and speed, greenhouse structure orientation, shape, size, and the presence of openings such as greenhouse doors, louvers and vents. For instance, when strong winds pass over your greenhouse in the direction from which the wind blows (windward side), a positive pressure is generated, while negative pressure occurs on the side to which the wind blows (leeward side). When these pressures combine, the force acts on the greenhouse structure and, if not engineered correctly, may result in damage or collapse. Though there isn't much we can do to control wind angle and speed, we do have the ability to address wind load

during design and engineering. These considerations are outlined by the National Greenhouse Manufacturers Association (NGMA) at

ngma.com/industry-information

For those who are not designing or constructing a greenhouse, there are numerous actions that one can perform to minimize wintry wind damage on an existing greenhouse. These actions are as simple as inspecting the area outside, around and between greenhouse structures for loose objects that could be easily blown over or picked up and forced through glazing materials. If windbreaks are planted along the greenhouse, inspect the plant material for weak limbs or splitting. Close and secure all openings such as doors, roll-up side curtains, louvers or vents that

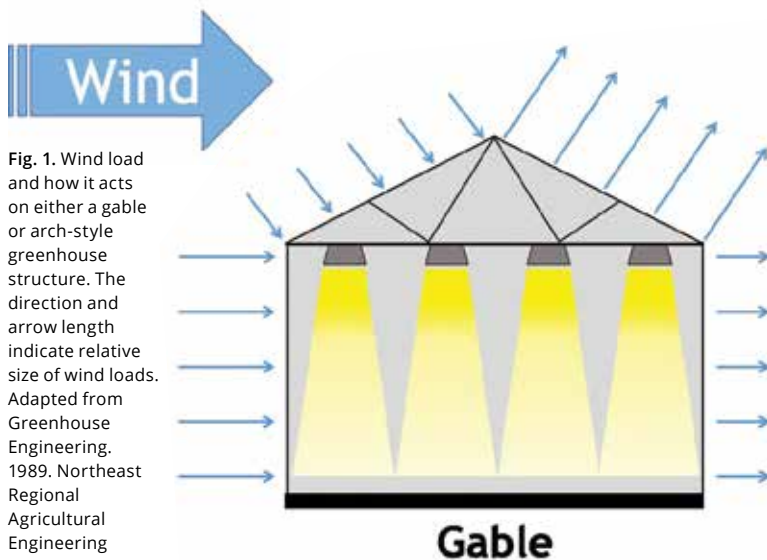
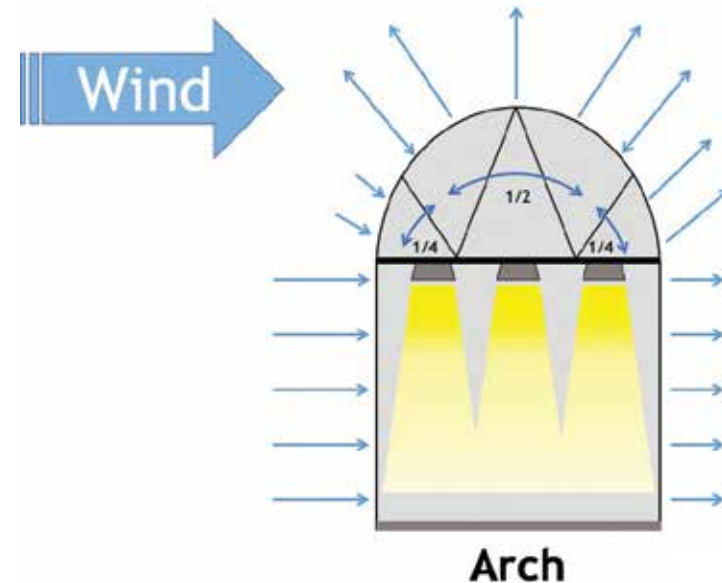


Fig. 1. Wind load and how it acts on either a gable or arch-style greenhouse structure. The direction and arrow length indicate relative size of wind loads. Adapted from Greenhouse Engineering, 1989. Northeast Regional Agricultural Engineering Service



GRAPHICS: W. GARRETT OWEN



Fig. 2. Collapsed greenhouse caused by an uneven snow load

could be forced open by wind gusts. In some instances, installing plastic inside the greenhouse around louvers and vents can be beneficial and minimize heat loss. Inspect and secure greenhouse plastic with wiggle wire or batten tape and tape any

holes. For poly-covered greenhouse structures without electricity, growers can use batten tape as a strap to tighten the covering. For double poly-covered greenhouses, use the blower fan to increase the inflation pressure, which will reduce the rippling

PHOTOS: W. GARRETT OWEN

effects and the potential for the covering to rip. With these simple strategies, growers can better prepare their greenhouse structure for wintry winds.

Snowfall and snow load

We all have experienced snow in one way or another and likely recall if it was dry or wet. Dry snow typically occurs at very low temperatures, while wet snow occurs when moisture is picked up from large bodies of water or when the temperatures hover around 32° F. For greenhouse operations near large bodies of water, wet snow can weigh four times as much as dry snow, causing a considerable amount of weight to bear down upon every square foot of greenhouse roof surface. Snow load is based on expected ground accumulation: greenhouse roof slope, whether the structure is a gutter-connect or free-standing greenhouse; and whether the greenhouse is heated or unheated during the time of snowfall. In general, an uneven snow load that blankets the greenhouse is more likely to collapse (Fig. 2) the structure because the pressure of the snow is not evenly distributed among the bows. Snow can also collapse the side of a greenhouse frame and sometimes, the endwalls. Therefore, snow load should also be considered during the design process of a greenhouse structure.

To prepare for winter and the inevitable snowfall, greenhouse operators should inspect welds and tighten bolts, screws and clamps on the greenhouse structure. Installation of diagonal braces from the peak to the baseboard on all four corners of the endwall provides stability and additional strength. For double poly-covered greenhouses, 2-foot by 4-foot boards can be placed under weight-bearing bow and purlin connections to provide additional support. Finally, growers should locate snow removal tools such as snow rakes or knotted ropes to have on hand. For more information about snow load and removal, refer to the e-GRO Alert, “Greenhouse Snow Load and Removal,” at bit.ly/egro-snow

Overall, an action plan should be established by greenhouse operators before winter weather arrives. It is recommended to frequently inspect greenhouse structures, secure openings, and have additional structural supports and snow removal equipment at the ready. With these considerations, growers will provide a safe greenhouse space for their plants and employees. ✂

Garrett (wgowen@msu.edu) is a floriculture and greenhouse outreach specialist in the Department of Horticulture at Michigan State University.

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