

GROWERTALKS

Features

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What Should You Build Today?

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“As the lingering effects of the recent recession fade away, we’re finding that our industry is back in an expansion phase, and growers across the U.S. and Canada are busily building greenhouses.”

This sounds like something written within the last few months, but guess what? That excerpt was taken from an article printed in the April 1984 issue of *GrowerTalks*. Many business owners are still being touched by the economic downturn; however, there are growers out there who are investing in new structures.

“I have not seen this much enthusiasm in about five years,” said Jeff Warschauer, VP of sales for Nexus Corporation. “An early indicator is this winter’s trade shows, which have been very upbeat. So I think we have turned the corner.”

Mark Davis, president of Atlas Manufacturing, agreed. “Recently, I have seen an increase in requests for quotes and talk of expansion,” he said. “Not that it hadn’t happened over the last few years, but it was a bit off. From what we’re hearing, there are some positives out there.”

In 1984, growers were looking for savings on building, energy and labor costs, and this hasn’t changed. But today’s grower is more environmentally conscious and flexible. Yesterday’s grower tended to live in the present; today’s grower looks ahead to how the new structure will adapt to a changing industry.

Then: Gutter-connected ranges Now: Taller houses with natural ventilation

Thirty years before 1984, you saw more free-standing greenhouses, so when manufacturers started offering gutter-connected structures, growers jumped on the bandwagon. They eliminated sidewalls, which made it easier to organize labor with everything under “one roof.” Plus, it helped conserve heat. This has become a common element of greenhouses today, but now growers are asking for even more energy-efficient structures that save them money and offer a better environment for the plants.

“Natural ventilation is still one of the more popular ways of growing; technology is thus focusing on how to provide better naturally ventilated structures,” explained Jeff. “When the full open-roof, vented structure [some call it a Venlo style] made its debut in the United States in the early 90s, it seemed to be the answer to our

industry's needs by providing a better environment for plants. It would do a better job 'hardening off' the plants and also help reduce the use of PGRs and other chemicals, while reducing the use of energy. And most of these open-roof applications did not have expensive cooling fans or wet pad systems."

Those were the pros of an open-roof house, but Jeff says that there were some downsides as well. First, the traditional open-roof greenhouse was costly—especially for installation, which included multiple roof vents and motors. It also was more expensive to operate and maintain. Plus, the more gutters you had, the more likely you were going to have multiple light levels within the same house.

To alleviate this, greenhouse designers improved the "chimney vent"-style (ones that open outward at the peak) with fewer gutters that are ideal for wider structures. For example, a grower can choose from a number of options for a 42-ft. wide greenhouse:

- A "full" open roof with all of the vents opening (typically four peaks)
- A "partial" or "dual" roof with chimney vents that open at 50% (usually two peaks that offers less air movement than a full open roof and a bit warmer)
- "Single" with one chimney vent (one peak with less air movement and slightly warmer than the 50% dual roof)
- Mechanical ventilation is still the choice when comes to hydroponic vegetable growers. Many hydroponic growers have both natural and mechanical ventilation so they can reduce the costs of cooling when the weather permits.

"You're always looking at ways to cut costs and naturally ventilated houses cost a lot less to operate," Mark explained. "What I see is that the grower is asking for taller and taller houses. Those gutter-connects back in the 80s with an 8-ft. or 10-ft. gutter height was pretty much the norm. Now, we're seeing 12, 14, 16 ft.—even requests for taller ones. Of course, the higher you go, the further you get away from the heat."

So why would growers want taller houses? Mark said it makes your job of controlling the environment much easier. Natural ventilation calls for higher sides. With improvements to natural ventilation greenhouses, came more efficient motors and better, more user-friendly controllers. But this also caused more of a demand for heat-retention systems ...

Then: Double poly, glass and fiberglass Now: Energy curtains and glazing systems

... which brings us to the next point. In the 1980s, polycarbonate and acrylic coverings were just coming on the scene. Poly was a good buy back then because growers felt like they got the most for their money, but they didn't have a very long lifespan at the time, so manufacturers developed polycarbonate sheets. Then came huge improvements with UV and IR additives.

"These sheets are available in many different tints, along with clear, and in single, twin and triple wall, as well as corrugated sheets," said Jeff. "Acrylic multi-wall sheets also became available like polycarbonate with superior multi-wall insulating values and superb light transmission."

Most manufacturers offer more glass, polycarbonate and acrylic these days—mostly because growers are

looking for more durable, energy-efficient, high-light structures.

According to Jeff, improvements in energy curtain systems, as well as using dual and even triple curtains, now offers growers more ways to maximize their energy savings and for them to build taller greenhouses complete with labor-saving automation.

“And don’t forget to seek out availability of grant money,” reminded Jeff, who said that many of his clients are adding curtains to existing greenhouses or more efficient heating systems with grant money to help pay for the investment. (Grants are available from the USDA, state and local agencies, and even some energy companies.)

“With growers being more conscious of energy consumption—it’s one of their big overhead line items on the budget—that increased a lot of interest in ways to control heat and cut the heating costs on taller structures,” Mark said. “You have to have something; you can’t heat the whole structure. But it brought the perfect scenario—you got your retractable shade, you got your heat retention, all in the same system. And there have been improvements on motors and controls—the kinds of things that give you information at your fingertips.” And growers aren’t the only ones concerned with sustainability. Greenhouse companies are more aware of how their products impact the environment, explained Jeff. Nexus has developed a double glazing system that more than doubles the R value over traditional single glass, while keeping the greenhouse cooler during the summer months.

**Then: Pricing fluctuated a lot, with aluminum going up 30%
Now: Pricing is more affected by overseas markets—and shipping costs more**

According to Jeff and Mark, U.S. steel companies have been getting pummeled by companies from China and India during the last few years. And during the recession, steel and aluminum pricing became extremely unpredictable—across a number of industries—which brought increases every few months, allowing the price of metals to double within a decade. Now, the market has calmed a bit, allowing steel companies in the States to offer better pricing.

“I believe with greenhouse prices at very competitive prices, interest so low and it’s getting easier to borrow, the market opportunities are great,” Jeff stated. “I think many see the economy/Wall Street getting stronger and believe interest rates may go up, so it is the right time to invest in your business that you control, as many are less likely to dump all their money into Wall Street.”

The future, then and now

Then

- New polycarbonates to trap and block radiated heat
- Computerized growing
- A decrease in stand-alone greenhouses
- Improvements in glazing and insulation materials

- HID lights
- Arched and peaked houses

Now

- New longer-life, higher-light polycarbonates and acrylics with a filler that can be added at night or on cloudy days to raise R-values and even manipulate shade factors
- Bio and geothermal energy applications, heating with waste heat
- More greenhouses on rooftops, like in corporate and industrial centers, schools and hospitals (Jeff says that much of this will be in food production.)
- New curtain systems that allow heat to escape when needed, along with much simpler installation
- LED lights that work together with glazing and provide additional light as required
- Jeff predicts that greenhouse shapes may change to adapt to new coverings and covering technology, like solar films

Soon: “One future idea will be that greenhouses and growing systems will be much more adaptive to growing food,” Jeff said. “Flood floors or benches that grow plants can also grow a few turns of lettuce in late September to mid-January when the greenhouse may be empty.”

Mark concurred. “We’ve seen a big increase from the hydroponic vegetable grower,” he said. “It’s been surprising how much interest there is in that product. I think there’s more emphasis in food safety and there have been things that have happened in recent years that has brought it to the forefront.” **GT**

Thinking about building?

Jeff Warschauer of Nexus Corporation offers his advice to make sure you have all of your I’s dotted and T’s crossed before you go down the path of investing in a new structure.

Keep in mind not all your greenhouse choices need to be the same for your entire operation. There is no one answer to your success. Recognize that your plan should not be based just on the crops you grow today. Be flexible: You might be propagating a high-light crop (calibrachoa) this year and next year growing a lower-light crop (hosta). It’s much easier to have a high-light greenhouse that can do it all rather than trying to grow a high-light crop in the upper Northeast in the winter under double poly. Sure it can be done, but at what sacrifice?

Be aware of all the costs that go into a greenhouse. Structure costs vary with the style of the greenhouse. There are many styles available—from simple polyethylene ground-to-grounds to gutter-connected, shade houses; flat or peak retracts; and gutter-connected covered in double poly, polycarbonate, acrylic and glass. It’s important if you purchase a greenhouse with double poly and think you might want to convert the roof cover to a hard cover later on that you’re able to do this without a major change to the structure framing and that the structure is engineered to do this. Narrower houses may require multiple pieces of allied equipment, such as more watering booms versus a wide boom on wide-span structures. Look at the cost of natural ventilation versus mechanical cooling. And energy curtains—should you do single, dual or even triple curtains?

Snow and wind loading is very important. Be sure your structure will meet all local codes and insurance requirements. If you don't use your structure in the winter and you're in an area that has heavy snow, be sure you verify that you can keep the greenhouse unheated. If not, are you prepared to turn on the heat to melt the snow in order to keep it from collecting on the roof(s)? *[Editor's note: Jeff said as of press time, that there have been more than 120 claims on greenhouse loss from the state of Connecticut after the severe snow storm in early February. Much of those were because of snow and wind damage, along with heating problems.]*

Will you need a utility structure with metal-insulated coverings? When designing your greenhouse, your manufacturer may be able to gutter-connect that utility structure to your greenhouse, making this very attractive when it comes to price and flow from one structure to the next, and allowing you to integrate your master plan with one manufacturer.

Visit other growers. If you haven't made recent purchases and don't have opportunities to keep up on the latest and greatest technology, be sure to visit growers near you that have different style houses and equipment.

Plan ahead. Planning allows you to cut out surprises and to make the best decisions. Here are some things to include in your plan:

- Take the time to work with your greenhouse manufacturer to design your greenhouses to fit your needs today and in the future. Designs, building codes and permitting is becoming much more complicated, so be sure to hire an architect and other professionals when you're doing something that's out of your comfort zone/experience.
- Permitting can cause major delays or obstacles. Do your homework.
- Be sure that your new greenhouse meets code and the greenhouse manufacturer's engineer seals the plans with their seal applicable to your state.
- Make sure to budget for excavating costs, electricians, plumbers, engineers, architects and rental equipment.
- Contact your utilities companies and allow ample time to have water, gas and electric brought in and permitted.
- If you're planning to cut in a road, be sure it's allowed by not just local, but state and federal agencies. This can take months and even a year to be approved.
- Be ready to build again. One thing I hear from growers and retailers over and over again is that they wish that they had built more space than they did. **GT**