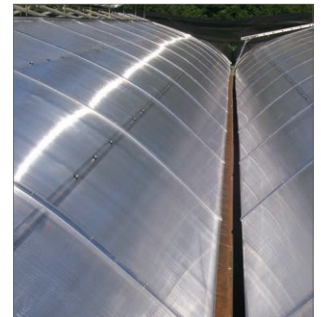


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131. Greenhouse retrofits. Brown, S. T. *Greenhouse Management* 31(7):70, 72, 73. 2011.



Left photo: Roof vents are usually the best option for natural ventilation to add to an existing structure. **Right photo:** Many older greenhouses have good structural integrity and can easily be upgraded with polycarbonate or acrylic structured sheets. **Bottom photo:** Photo shows glass structure (right side) that is being retrofitted with double poly film (left side).



GREENHOUSE RETROFITS

Retrofitting can be a viable alternative to upgrading production facilities



“Change is inevitable.” Anyone conducting business in today’s market knows this to be true. Better...faster...stronger continues to be the trend. Also, it seems as though the weather has been as volatile as the economy. Unfortunately it is very difficult to predict either the economy or the weather.

The economy and the weather are two main factors to consider when deciding whether to build new or retrofit an existing greenhouse structure. Building a new greenhouse is always the best option for preferred size, automation, efficiency and renewable resources.

However, when capital is tight new construction may not be an option. Many growers have not maintained their greenhouses with the intent of demolishing and building new. Waiting too long to complete maintenance or a retrofit can be detrimental to securing capital in the future if new construction becomes affordable.

Budgeting is critical and is one of the key reasons why a retrofit can make sense. Too often when building new, people forget to accurately budget for things such as electrical, plumbing, irrigation, benching and other equipment. Also, the permitting process for building new greenhouses is not getting easier. Another potential

GREENHOUSE STRUCTURES



Many older glass greenhouses can easily be converted to double layer polyethylene film along with adding roof vents.

problem with new construction is the loss of production if greenhouses have to be torn down and replaced. Production alterations can usually be managed more effectively with a retrofit.

Formulating a plan

Formulating a plan of action is the first step when building new or doing a retrofit. Developing a priority list whether building a new or simply re-glazing an old greenhouse is critical. The following variables should be considered before making a decision if a retrofit is the right choice.

Structural integrity. Evaluating the structural integrity of an existing greenhouse is the first step. Many older structures can be improved upon with changes that range from changing or adding purlins to cutting and sleeving existing posts.

Gutters are always something that should be carefully examined for potential improvement. Many fabricators can customize a gutter to fit older post tops in both wood rafter houses and steel frame structures. This can also help when determining how to accomplish a complete roofing upgrade.

Glazing. Many older glass greenhouses can

easily be converted to double layer polyethylene film depending on specific production needs. Polycarbonate and acrylic structured sheets are also a great alternative for longevity, durability and light diffusion options. Many older pipe frame greenhouses have good structural integrity and can easily be converted to a more modern, functional and aesthetic facility.

Ventilation. Natural ventilation can usually be added to older greenhouses to improve the growing environment and potentially reducing fan operation electricity costs. Roof vents are usually the best option to add to an existing structure. Based on structure layout, roll-up side curtains can be very useful, and many times more economical than roof vents.

Heat retention. Installing a shade/heat retention system is especially helpful in controlling the growing environment in glass structures. There are many curtain options available, including fire-retardant curtains, based on production and/or retail needs.

Heating efficiency. A variety of high efficiency heaters are available which can help to reduce overall heating costs. Whenever considering a reglaze or retrofit, alternative heating sources should be evaluated.



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GREENHOUSE STRUCTURES

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Maintenance. This is always an important consideration that is many times overlooked and can lead to a potentially expensive fix. As it relates to older greenhouse structures (e.g., lapped glass, wood rafter structures), a retrofit can substantially reduce annual out-of-pocket maintenance expenses, along with creating a more insurable structure.

Consulting with someone who has the resources and capabilities to price different options and alternatives with a variety of manufacturers and suppliers is critical when formulating a retrofit plan. Updating an older structure may not provide the efficiencies of a new structure for things such as benching and irrigation, but it may help to fund future new construction through improved production and fuel and electricity savings.

Retailer retrofits

Retrofits can be especially attractive to retail growers and garden center operators. Retailers are usually subjected to permitting restrictions that sometimes can be avoided with a retrofit. Also retailers are not as concerned as much with labor efficiencies as wholesale growers. Aesthetics are more important to the public and a good retrofit can maintain an "old school look" while adding many of the advantages of a new greenhouse. **GM**

Shawn T. Brown is president, L.L. Klink & Sons Inc., (440) 236-8332; www.lklkink.com.



Many fabricators can customize a gutter to fit older post tops in both wood rafter houses and steel frame structures.

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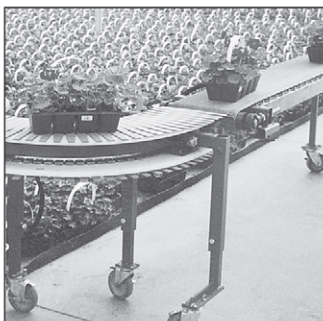
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