

Remodeling Your Greenhouse: A Ten-Year Plan

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If your greenhouses were built before 1988 and have not been updated since, they are probably obsolete. Greenhouse technology has made great strides in the last 10 years. Recent developments include:

Glazing – Wide pane, tempered glass that increases light levels as much as 20%.

- Three-year, heat-saving poly film that has a payback of just a few months.

Heating systems – Flame retention and pulse burners with efficiencies of 85% or more.

- Root zone heating that grows better plants in less time.

Ventilation – Roll-up sides and hinged roofs that reduce the electricity cost associated with fans.

Air Circulation – Horizontal air flow (HAF), an efficient method to achieve uniform temperature, reduced diseases and higher leaf carbon dioxide levels.

Controls – Solid state controllers that integrate heating and cooling equipment.

- Computers that integrate all environment aspects and provide a history of the crop.

Irrigation – Boom sprayers for uniformly watering plug and cell trays.

- Ebb and flood and flooded floor containment systems for ground water protection.

Material Handling Equipment – more efficient container filling and transplanting systems.

- Movable bench and tray systems.

Updating facilities should be a continuous process. The investment made will pay for itself in higher efficiency and better crops. It also improves the resale value should the operation have to be sold.

One comment frequently made by older growers is that it is too difficult to learn how to operate the new equipment. One way to overcome our resistance to change is to assign the newer technology to the younger members of your staff. They will love the challenge and may be more familiar with the newer systems such as computers.

Take advantage of grower tours, open houses and trade shows to see what is available and how it is being used. One of the real

advantages that the greenhouse industry enjoys is the free exchange of information and ideas. This is not true in many other industries.

Although we consider changes to technology moving very rapidly, in fact, it takes a fairly long period of time, usually 10 years, before a good idea develops from a research project at a university or manufacturer to one that is generally adopted by the growers.

Take the air inflated poly roof that Professor Bill Roberts, Rutgers University first tried in 1965. It was the mid-70s before it was being used on most greenhouses. Part of the delay was the need to develop stronger film that would take the stress from the weather.

Another example is the horizontal air flow (HAF) system of air circulation developed by Emeritus Professor Jay Koths at the University of Connecticut. This concept was first reported in the Connecticut Greenhouse Newsletter in January 1969. Until 1980, the high efficiency, 1/15 hp circulating fans had to be assembled from components purchased from W.W. Grainger, Co. Today, these fans are available from most greenhouse suppliers.

If you want to see what technology will be common in 10 years, look at the best research that is being done today. Computer control based on crop models, irrigation water containment, automatic transplanters for all size growers, efficient supplemental lighting systems; just to name a few.

Updating to keep pace with current technology should be a goal for all growers. This will keep your operation competitive with growers that are building new facilities. Consider the following steps:

1. Evaluate your present facilities. List the systems that meet current technology and those that need improvement. Also evaluate the condition of each. Sometimes simple maintenance and repair is all that is needed. In some cases where the structure is in poor condition; deteriorated foundation, rusted frame, etc., it may be best to develop a planned replacement schedule.

2. Determine where the greatest savings can be achieved. Where can new technology reduce these costs? What will improve the quality of the plants produced? Where can labor efficiency be improved?

For example, labor because it is the largest single cost item in the production of plants should be given a high priority. Increased productivity can be achieved by mechanizing some of the transplanting/potting operations. Installing a transplanting conveyor can double or triple output as compared to conventional hand transplanting on a bench. Associated with this should be conveyors or carts to move the plants to the growing area.

3. Develop a priority list of improvements for each greenhouse. Assign a cost to each. A payback based on the savings accrued or

the improved plant quality should be estimated.

For example, many older ranges were heated by a central steam boiler. Besides being obsolete, the system may have poor functioning valves and rusted piping. One solution might be to install high efficiency, hot air unit heaters in each house. Besides better control of temperature, operating costs will be reduced considerably. This is an affordable solution that can be done over time with current income paying for the new furnaces.

4. Budget for the improvements. Once the priority list is finalized, funding for the changes needs to be found. Small ticket items can usually come out of current income. Large costs may require borrowing. In both cases, funding for improvements to the system should be built into the prices that are charged for the plants.

Because most technology is obsolete in 10 years, a good way to approach renovation is to plan to improve all facilities on a 10 year schedule. Take one greenhouse or one component of the range each year and install the latest technology. This will help to keep your operation competitive with your neighbors.