

10 Ways to Increase Production Space

More production space means more possible sales; so how do you get past that first step?

By John W. Bartok, Jr.

With fuel prices escalating this fall, now is a good time to evaluate how efficiently you are using the growing space in your greenhouses. The cost of providing the right environment is the same whether you are utilizing 50 percent of the space or if every square inch is covered with plants. The following are ways in which production can be increased as much as 100 percent. Some may require modification to the system you are now using; others are just common sense methods that we tend to overlook at times.

SPACE-SAVING TIPS

Floor production. During the energy crisis of the 1970s, when bedding plant production as we know it today was in its infancy, most growers grew plants on the floor. It was common practice to only leave enough walking-space to place one foot in front of the other. Space utilization was almost 100 percent. This low-cost system can be improved today with heated floors and boom watering. Access is only needed to observe the plants. When shipping time arrives, a work aisle can be created by removing the plants from the center of the greenhouse first.

Flood floors. A modification to the above system that is being

adopted by the larger growers is the flood floor system. Although there is a higher cost for concrete floors, pumps, tanks and controls, plant production is very uniform, allowing all the plants to be removed at the same time. Handling of the plants is best accomplished with a gantry that straddles the width of the bay or by a cart system.

Utilize aisles and walkways. I have been in many greenhouses where wide aisles were installed to allow for movement of plants. In gutter-connected houses these were sometimes 10-12 feet wide. An aisle this wide is seldom needed, and some of the space could be filled with plants, either on the floor, benches or racks. Some growers also add hanging baskets to an overhead support system over the aisle. Automatic irrigation is needed, and the watering should be done early in the morning before employees arrive to reduce the drip problem.

Movable benches. This is the traditional method of adding growing space; up to 90 percent of the total greenhouse area can be covered with benches. Two types of systems are common. The first system is the simplest to install with benches that remain in the greenhouse but move sideways on rollers placed over a support frame, leaving only one aisle for access to the plants. The steel rollers create very little fric-



Top: High space efficiency can be achieved with floor production. Root zone heat and boom irrigation can improve plant quality. **Bottom:** A gantry can speed plant handling with flood floor production. (Photos courtesy of John Bartok)

greenhouse management

tion, and a 200-foot bench can usually be pushed by hand. Existing benches can frequently be converted to movable ones to save on cost.

The second is the movable tray

system, a more efficient system from a labor standpoint. Modular trays, usually 6 inches wide by 8-20 feet long are moved to and from the growing area on rails, carts or conveyors. Transplanting, ▶



Top: Movable benches eliminate all but one work aisle. **Middle:** Plant production area can be doubled with roll-out benches. **Bottom:** Pipe frame racks work well for hanging baskets and shade-loving plants.

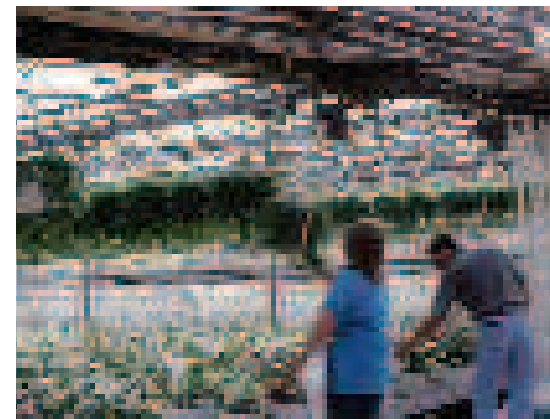
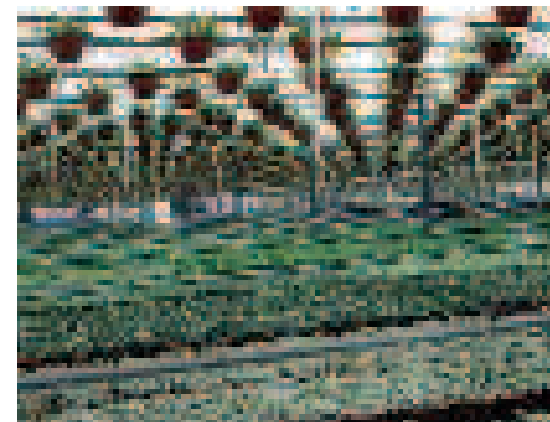
management

loading and unloading trays are done in a headhouse area where everything is more convenient.

Roll-out benches. You can double the growing space by placing one layer of plants on a heated

floor and a second layer 20-30 inches above the floor on a rack system. During the day the trays are rolled outside the greenhouse onto a matching pipe network. Both crops receive full sunlight.

At night, they are rolled back into the greenhouse. This system can be adapted to both hoop houses and gutter-connected ranges. This system is also good for hardening off bedding plants during the



Top: Limit hanging baskets to provide adequate light on benches below. **Middle:** Basket conveyors bring the plants to a work aisle for service and shipping. **Bottom:** Vertical gardening systems make good use of space in the greenhouse.



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spring and for potted plant production in the fall.

Racks. If you are growing hanging baskets or larger potted plants, an A-frame rack system can double your growing space. Racks are especially effective where foliage plants are grown, creating conditions similar to a forest canopy. They can be built with 2x4 lumber and fence pipe or with heavy steel rods. Racks can be made movable but are usually fixed to the floor or overhead trusses. Be sure that the greenhouse frame is strong enough if you are going to suspend from it.

Hanging baskets. Many growers hang baskets over part of their growing area to increase space utilization. These baskets

are fitted with an automatic watering system, and the spacing depends upon the light requirements of the crop on the floor or benches beneath. Normally, two rows of baskets every 20 feet will not adversely affect the crop underneath.

A more efficient system is the hanging basket conveyor, which is attached to the overhead trusses in the greenhouse. Plants spaced as close as 8 inches apart are supported by a conveyor that moves them past work and watering stations. Having plants brought to the end of the greenhouse for inspection and shipping can offset the cost of the system in convenience and labor savings.

Under bench production. A few growers utilize the space under benches for a production area, working well for crops such as ground cover. By adding about 25 watts of fluorescent light per square foot, other low-light crops can be grown. Watering is more difficult, and there could be increased disease problems.

Portable greenhouses. A new trend of the largest growers is to build low-cost portable greenhouses for protection of perennial and herb plants during the winter and for cool temperature production during the spring and fall. This space is the most valuable during late spring, just before shipping season begins when the conventional greenhouse space is overflowing with plants. Some heat may be needed to provide protection on cold nights.

Pre-starts or pre-finished plants. Purchasing pre-starts and pre-finished material allows you to meet your customers' needs without expanding your facilities. Flats of pre-planted seedlings or plants are delivered on carts that are rolled into the greenhouses. You can order a variety of plants in the types of containers you need. They can fill empty growing space immediately after plants are shipped, thus increasing the number of crops that can be grown during the busy spring season.

Today, as energy costs increase it is important to utilize your growing space in the most effec-

tive way. Making use of some of the above systems, keeping growing space full and providing optimum environmental control can help you to produce plants at the lowest cost. GPN

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