

modified lawnmower. The finished liners are held in these areas until needed for canning or for shipping to customers

QUESTIONS FOR STEVEN HOTTOVY

BILL DOUCHER. What pesticides do you use in your seed culture?

STEVE HOTTOVY: We use thiram* for fungus control and red lead powder for rodents.

GREG AMMON: Could you give us more information on the mist nozzles?

STEVE HOTTOVY: This company manufactures various types of nozzles. It is important to find the one best suited to your needs and order that specific one by exact catalog number. The exact choice and spacing is dependent on your water pressure. We use a parasol nozzle designated as ¼ E 5.8.

VIVIAN MUNDAY. Do you have any problem with quality control when you pay incentive on a piece-rate basis?

STEVE HOTTOVY. We monitor carefully, and our employees know that if quality fails, they will not receive the additional pay

* Thiram-Arasan, duPont

THE SPEEDLING SYSTEM

GEORGE TODD, JR

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Speedling means different things to different people. To some, Speedling is the grower of quality transplants, to others a pioneer in the automation of transplant production. To still others, Speedling is the manufacturer of greenhouses, water systems, and flats that enable them to grow their own transplants. Most of our plants are presently marketed in the eastern part of the country.

The containerized transplant has obvious advantages over a bare-root plant. Primarily, these are uniformity in plant height as well as root system and the absence of transplant shock because the roots are not torn apart when the plant is pulled.

The Speedling system can be used on virtually every transplant crop. In the early days, our production was limited to vegetables. It has now expanded to include ornamentals as well as tree seedlings.

The first Speedling plants were produced in 1967 in the patented Todd Planter Flat. Other growing containers were available. However, a cylindrical container directed the roots in a circle rather than in the more natural orientation they receive from the inverted pyramid and air pruning.

Speedling uses a systems approach from seed to field. This incorporates the use of many different styles of Todd Planter Flats, Speedling seeding equipment, water system, greenhouse and transplanter.

The filling of the container is important. Of course, the right soil formulation must be used, and just as important, the soil must be loosely placed into the cell to avoid compaction. Basically, the mix is a Cornell-type formulation. If it is compacted, transplanting becomes much more difficult. The seed should be placed as near the center of the cell as possible at a uniform depth. We accomplish this with an array of seeders ranging from a small hand seeder to a semi-automatic seeder, and ultimately, to our very high-speed seeding equipment, which has a vacuum-equipped planting drum to hold the seed during the planting process (Figure 1).

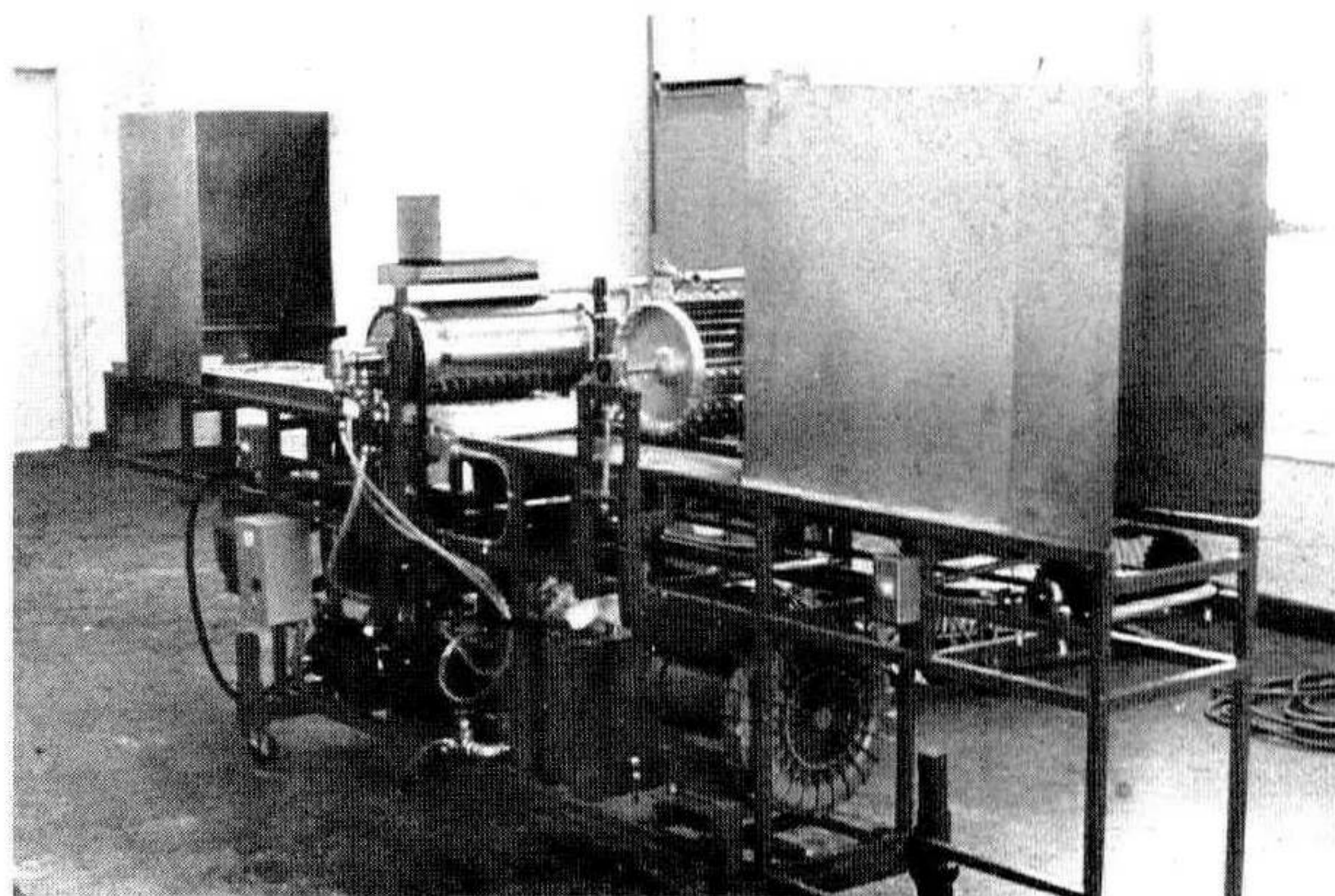


Figure 1. The Speedling seeder.

After a stay in the germinating room the seeded flats are placed on aluminum rails in the greenhouse. The T-rail supports only the edge of the flat so that the drain holes in the bottom of the flat are exposed to air circulating under the bench. This allows air pruning to take place when the root reaches the bottom of the soil.

The Speedling greenhouse has several good features (Figure 2). The side-curtain design allows ventilation on warmer days without using costly electric fans. This design gives us a ventilating area to bench area ratio of 1 to 4, or about 25%. If we take into consideration the ventilation area from the bench to the ground, it increases our number to 46%. The greenhouse has radiant heat, which is a very efficient heating system. The heat is then directed to the crop and the air is heated only by the heat given off from the crop. This results in a drier foliage and fewer disease problems. The system itself is expensive, however.



Figure 2. The Speedling greenhouse. Note the watering mechanism and side ventilation.

The greenhouse has either a ground-drive or aerial watering system. This system waters one side of the house, gets to the end of the house, reverses, and then waters the other side. This means that the starting point for the watering system is always at a particular end of the house. Typically, one grower controls approximately 10 greenhouses.

Transplanting is an important part of the Speedling system. The Speedling transplanter has provided a uniform planting method for Speedling transplants. When I refer to transplanting, I am talking about moving a plant from a smaller flat size into a larger flat size. This allows us to save a considerable amount of greenhouse space during the early weeks of a crop's growth. Then when the plant fills the smaller cell, it is moved into a larger flat size (Figure 3). Transplanting also gives us the opportunity to grade the plants and use only the stronger plants in the group. This additional step of grading out the weaker plants adds to the uniformity of the crop.

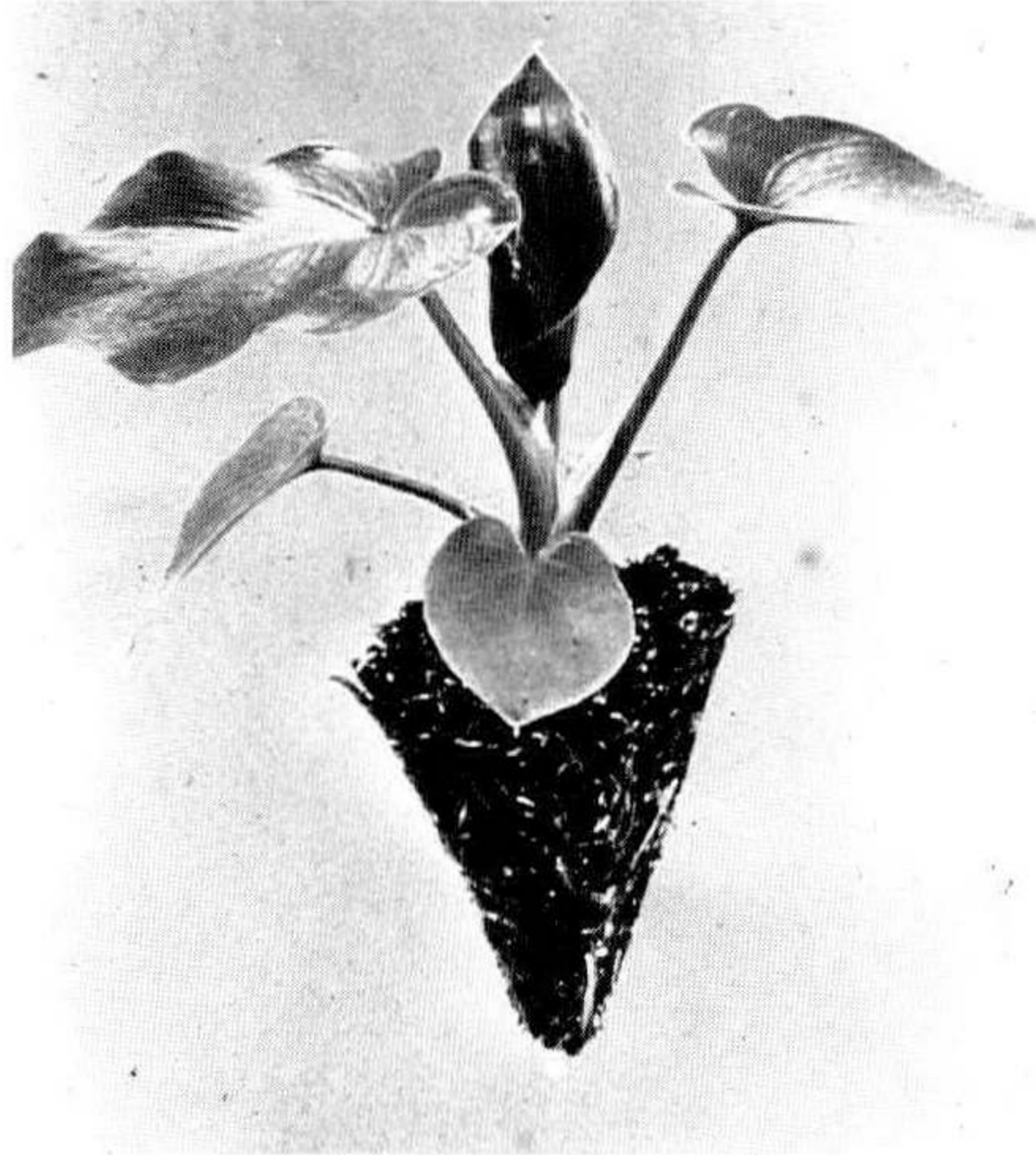


Figure 3. A Speedling transplant. Note shape of root ball.

When the crop is ready to go to the field, we bring it from the greenhouse to our central packing facility on racked trailers. There they are packed in corrugated boxes and shipped to the customer. Some customers pick up their plants in their own racked containers. These containers can be taken to the field for the field transplant operation (Figure 4). Of course, this is economical only for growers who are relatively close.



Figure 4. Mechanized transplanting of lettuce from Speedling flats.

Speedling transplants are especially helpful in applications where the crop must not wilt. They are used in very hot climates and when a crop is planted through plastic. In these applications, if the plant wilts and lies down, it will surely die.

The Speedling system works best when high quality seeds are used. After seeding and throughout their life, we try to protect the plants from any stresses that would hinder their uniformity. Uniform transplants are essential for a profitable growing operation.

QUESTIONS FOR GEORGE TODD

CHARLIE PARKERSON: Do you reuse your trays?

GEORGE TODD: Yes. We shake out the soil and rinse with 5% Clorox solution. We expect about 30 rotations as they are very durable

CHARLIE PARKERSON: What if the grower takes them with him?

GEORGE TODD. We charge a deposit

PRODUCING BUDDED *MAGNOLIA GRANDIFLORA* CULTIVARS

GEORGE ITAYA

Saratoga Horticultural Foundation
Saratoga, California 95070

The procedure of budding magnolias at Saratoga Horticultural Foundation evolved for several reasons. For our purposes propagation by budding was superior to propagation by cuttings or grafting since the necessary controlled greenhouse environments and structures were unavailable. Budding also allowed us to conserve our propagation material at the time our magnolia cultivars were introduced and the stock of these new cultivars was limited. Now our small acreage does not allow the extravagant use of space necessary for the stock plants that would be required to produce the same quantity of magnolia cultivars we produce by budding

Saratoga Horticultural Foundation propagates four selected cultivars of *Magnolia grandiflora*, namely 'Russet', 'Samuel Sommer', 'San Marino' and 'St. Mary'. The production schedule and budding techniques are the same for all of them.

PRODUCTION OF UNDERSTOCK

The production schedule starts with the collection or purchase of fresh seed of *Magnolia grandiflora* in the fall of the year. It is immediately stratified at 38° to 48°F for 90 days and,