

# A COMPARISON OF BAREROOT AND CONTAINERIZED SEEDLING PRODUCTION

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## Keywords

Bareroot nursery, container nursery, soil, media, pesticide use

Most nursery managers and culturists are comfortable growing bareroot seedlings. A few have become comfortable growing containerized seedlings. This discussion will compare the two systems, with a focus on SYP production, and will include a discussion on capital, equipment, space, and personnel requirements.

To briefly sum up the differences between bareroot and container nursery systems:

- Infinite possibilities are expected and usually obtained in bareroot nursery beds.
- Finite possibilities are planned and sometimes achieved in containers.

## SPACE REQUIREMENTS

Space utilization varies greatly between the two nursery systems. Based on a production rate of 30 MM seedlings, the difference between the systems is large.

	30 MM Bareroot	30 MM Container
Total Site	140 acres	50 acres
Irrigated Acres	72 acres	19 acres
Production Acres	45 acres	19 acres
Production	680,000/acre	1,579,000/acre
Production/site	214,000/acre	600,000/acre

## CAPITAL REQUIREMENTS

Capital requirements also differ widely between bareroot and container nurseries, with each system having both advantages and disadvantages.

## Bareroot system

- Requirements are soil-site specific.
- Significant land is needed for production.
- Substantial cold storage is needed following lifting.
- Standard agricultural equipment can be used for production.

## Container system

- Requirements are not soil-site specific.
- Minimal land is needed for production.
- Minimal cold storage is required.
- Substantial specialized equipment is needed for production.

## Cost comparison

30 MM Production Nursery (\$/1000 Seedlings)			
Bareroot		Container	
Land	\$3 to 6	Land	\$2 to 4
Buildings	\$8 to 16	Buildings	\$4 to 8
Materials	\$3 to 6	Materials	\$30 to 60
Equipment	\$6 to 12	Equipment	\$4 to 8

## PERSONNEL

Traditionally bareroot nurseries are managed by foresters with a strong farming background. Horticulturists are more suited to growing containerized seedlings.

## EQUIPMENT REQUIREMENTS

Bareroot production relies heavily on standard farming equipment and implements. Containerized production can take advantage of either abundant labor or sophisticated and specialized equipment.

## SEEDLING PRODUCTION

### Growing

Sowing a bareroot crop usually requires less

precision and less labor. Sowing can occur 10 to 20 times faster with just a few people.

Container growing begins with precise and accurate sowing at a relatively slow pace, usually requiring a number of people.

#### *Bareroot Soils*

- Infinite possibilities of soil types exist in bareroot nursery situations.
- Continuous management of bareroot nursery soil is needed for good production.
- Bareroot soils are always changing.
- Bareroot soils should contain 1 % to 3% OM at a minimum for production.

#### *Container Soils*

- Finite possibilities exist for container media mixes.
- Nurseries usually rely on a formulated media.
- Container media is usually very uniform.
- Container media is sometimes 100% OM.

## Fertilization

#### *Bareroot*

- Bareroot seedling fertilization usually involves the application of standard granular fertilizer.
- Liquid nitrogen is sometimes used in bareroot situations.

#### *Container*

- Controlled release (time-release) fertilizers are often used in container nurseries.
- Water soluble formulations can also be applied to the containers.
- Chemigation is often used in container nurseries as either a supplemental fertilization or for the entire nutritional needs of the crop.

## Pest Management

Pest management is an important component of both bareroot and container nursery systems. There are similarities and differences in how pesticides are used and what types are required.

Activity	Bareroot	Container
Fumigation	Crucial	Not required
Insecticides	Same	Same
Herbicides	Same	Same
Fungicides	Same	Specialized

## LIFT, PACK, AND SHIP

### Bareroot seedlings

- Fair weather is required for the operation.
- High volume production is standard.
- Lifting, packing, and shipping seedlings requires expensive equipment and is labor intensive.
- Generally packing materials are inexpensive.
- Storage and transportation are expensive

### Container seedlings

- Fair weather is preferred, but not necessary for lifting.
- Equipment can be expensive, and lifting and packing is labor intensive.
- Production volume is possible, but expensive.
- Packing materials are generally expensive.
- Storage can be less expensive, but freight is more expensive than for bareroot seedlings.

The following cost comparison for lifting, shipping, and packing is based on a 30 MM production nursery with a 10 person crew:

Bareroot seedlings	Container seedlings
Average daily production is 300,000 to 800,000	Average daily production is 90,000 to 110,000
Seedlings are handled in multiples	Seedlings are handled individually
480,000 truck load	200,000 truck load
PRICE: \$25 to 75/M	PRICE: \$100 to 225/M

## CONCLUSIONS

Successful container seedling production requires every detail of attention required by bareroot seedlings.. They are just different details.