ROOTING DECIDUOUS SOFTWOOD CUTTINGS IN PLUGS

DALE G. DEPPE

Spring Meadow Nursery
Grand Haven, Michigan 49417

Spring Meadow Nursery produces 2¼ in. potted liners for resale to other growers. We have been growing potted liners for four years and currently grow ¾ million plants per year. Over 90 different kinds of plants, mostly deciduous, with a few broadleaf evergreens are grown. The system we use, rooting cuttings in a plug tray and transplanting to 2¼ in. pots, was designed to provide our customers with the most uniform plant possible. The system is clean and neat, easy to work with, easy to mechanize, and allows for maximum production from unskilled labor. I hope this paper gives you an idea of how we do it.

PLUG SELECTION

There are many different types of plug trays now on the market. Most of them are not suitable for rooting cuttings. Some are too shallow or small. Those made of heavy plastic are too expensive, while the light plastic types cannot be carried around. Each time a new idea comes along, the price goes up. We tried plugs with ribs and ridges, small drain holes, large drain holes, and ones that are round, square, and even paper. We were not convinced. None of these new generation types was better than the old bedding plant flat and molded insert.

Our selection for rooting cuttings was a 10-20 R8 flat with an 8-12 insert. This gives us 96 cells or plugs that are 1½ × 1⅛ × 2¼ in. deep. Each plug has a slight taper for easy plant removal and enough depth and volume for excellent rooting. The 8-12 insert is used only once and then discarded. By using a new insert for each crop, we maintain a very clean environment. The flat is not used again in propagation, but is used later when the plugs are potted up. The cost for each 96 cell or plug insert is 17 cents — a real bargain when compared with other types of plugs trays.

MEDIUM

The medium used for propagating is standard for all 90 kinds of plants. It provides good drainage, aeration, and water holding capacity. It also has enough nutrient holding capacity to keep the cuttings actively growing while rooting. Equal amounts of commercially bagged Peat-lite mix and coarse horticultural grade perlite are combined with 6 lb. Osmocote (19-6-12) per yard are mixed in a drum type mixer. The medium

is mixed moist, but not wet. When filling plug trays by hand, be careful not to pack the medium down.

CUTTING WOOD AND STICKING

Cuttings are taken as soon as possible in the spring from greenhouse grown 2¼ in. potted liners. Most of our potted liners will have two batches of cutting wood cut from them before being sold in May. Cutting wood not available from liners is taken from field stock plants in early summer. Timing is not as critical when cuttings are taken from greenhouse-grown plants because the cutting wood is growing rapidly and is very soft.

Cuttings are 3 to 5 in. long depending on the kind of plant. The cuttings are cut directly above a node and the lower leaves are removed. This leaves the internode for sticking and allows the next set of leaves to hold the cutting upright in the medium. Cuttings are very soft and wilt quickly, therefore, we handle them carefully to avoid any damage. Before sticking, cuttings are quick-dipped in Wood's hormone. A 1 to 20 dilution is used. Very little hormone is needed because of the soft condition of the cutting wood.

One cutting is stuck in each cell which yields 96 cuttings per tray. The whole process of cutting, sticking, and transferring to mist takes less than 30 min. Our crew is expected to do between 750 and 1200 cuttings per man-hour depending on the kind of plant.

ROOTING STRUCTURES

Greenhouses are 30 by 96 ft quonset type poly houses. Every house has a 3 ft wide cement walkway in the center and is connected to all other houses by cement walks. Misting houses are covered with clear poly and a 50% shade saran cloth. Ventilation in the summer is achieved by cutting holes in the poly as needed. Each misting house also serves as a growing house after the mist system is removed.

After covering the floor with perforated black plastic, a mist system is set up using brass Spraying System ¼E 10 (ten) nozzles. These nozzles are mounted on 24 in. risers at 5 ft. intervals. They also have a large hole to reduce clogging, but spray a medium type mist at 60 lb pressure. The system is operated by a Phototronics timer. Misting varies from 4 sec./8 min. to 6 sec./32 min. depending on weather conditions. Plug trays are placed on top of an inverted empty flat for drainage. Each misting house will hold 130,000 plugs.

CULTURE

Flats of cuttings are placed under the mist as soon as possible. Twice a day, newly stuck cuttings are lightly watered by hand. We have no fungicide program and have used only two pounds of Benlate in 4 years. Tables, flat carts, and tools are cleaned each day. Trays used for transfer of cutting wood are replaced with new trays. Traffic is limited in the misting houses in order to keep contamination to a minimum.

Soft cuttings taken in early spring begin to root in 2 weeks and are removed from the misting house after the roots have reached the bottom of the plugs. The trays of rooted cuttings are placed in 50% shade saran covered houses for hardening off. Trays are watched carefully and watered automatically twice a day until potted.

POTTING

Our potting medium is a combination of 75% Peat-lite mix and 25% composted pine bark mix. Osmocote (18-6-12) at 10 lb/yd and Micro Max Plus at 10 lb/yd are added during blending in a drum type mixer.

Plugs are potted up into an 804 insert which fits into the same bedding plant flat that was used to hold the plug tray. Each of the 32 cells in the 804 insert is slightly larger than a 2¼ in. peat pot. This size container allows for easy transplanting of the smaller plug, plus it gives ample room for growth.

Rooted cuttings grow very rapidly and need pruning before potting. All plugs are pruned with an electric lawn mower mounted over a roller conveyor. The trimmed cuttings are pulled from the plug trays with a fibrous root system intact. Plugs are graded during pulling, and unacceptable plants are discarded. One plug is placed in each 2¼ in. pot cell of the potting tray. Cells are potted individually at a potting bench by holding the plug upright and filling it with medium. After all cells are filled, the flat is dropped on the potting bench to pack the medium. The tray can then be angled to allow excess medium to slide off. This is a very quick process and easy to do. Our potting crew averages more than 500 plants per man-hour, including picking up plugs, trimming, pulling, potting, and returning the potted trays to the greenhouse.

GROWING CULTURE

Greenhouses are 30 by 96 ft. poly covered quonset houses. Each has a cement walkway for easy carting of flatted plants. Houses are watered automatically using Nelson Whiz heads on 15 ft. spacing. Supplemental heat is provided for early spring growing with Modine propane heaters. During the summer,

the poly coverings are replaced with 50% shade saran cloths for wind protection to keep the potted plugs from drying out.

The potting of all plugs is completed in September which allows new roots to become established before winter. Houses are recovered with double poly in mid-October. New root growth continues until mid-December, even without supplemental heat.

Supplemental heat is not used until approximately mid-February. Potted liners are frozen during the winter with a minimum soil temperature of 25°F. Because of snow cover, the greenhouses hold ground heat very well. When the heat is turned on, a temperature of 40°F is maintained at night. The sun heats the houses to 75°F during the day. As new growth appears, regular liquid feeding begins.

When new growth is about 3 to 4 in. long, we begin taking cuttings again. After the cuttings are removed, the flats are trimmed with the electric lawn mower. This trimming maintains a very compact, uniformly branched liner. Shipping of 2¼ in. potted liners begins May 1st and continues until mid-June.

CONCLUSION

Plug trays have made the propagation system at Spring Meadow Nursery flow from beginning to end. We like trays because they are sterile, in addition to being easy to carry, inventory, root in, and discard. It is a system with nothing left over at the end of the year. I have been in the nursery business for over 20 years and a member of the IPPS for 15 years. Many good ideas have come and gone. I like the plug tray system. If you haven't used it, try it.

DESCRIPTIONS OF EIGHTEEN TETRAPLOID *LOBELIA* CULTIVARS

WRAY M. BOWDEN and ARTHUR J. OSLACH

Simcoe, Ontario
Canada

Oslack Nurseries, Inc.
R.R. 1
Simcoe, Ontario, Canada

Since 1940, considerable data on the North American species and hybrids of *Lobelia* sect. *Lobelia* have been published by Bowden (3) and Bowden and Hirao (5). Some of the complex tetraploid hybrids that have resulted are excellent perennials for temperate-zone gardens. The parentage, ancestry, and history of these hybrids have been described by Bowden