CONCLUSIONS

Both the TE™ Weed Prevention Coco Discs and organic mulches (e.g., SPM) have proven to be cost-effective weed control methods. When compared to other weed discs, TEô Weed Prevention Coco Discs sit flatter and are less likely to lift upon container tip-over and wind exposure. Mulches also offer an excellent weed barrier, however they can spill out from a tipped container and some of them (e.g., Econo) do break down somewhat over the growing season. From purely a weed-suppression standpoint, the Coco Discs and SPM are close rivals. Coco Discs outperformed SPM in weed control (at the last two dates) yet the SPM may be a more attractive option to the consumer.

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Decreasing the Production Time of Seed-grown *Lilium* and *Dodecatheon*©

Catherine Thomas

Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, Illinois 60022 U.S.A.

INTRODUCTION

One drawback of growing some species from seed is the length of time required to produce a plant large enough to plant out. *Lilium* and *Dodecatheon* are two species where this is the case. At the Chicago Botanic Garden we have an extensive *Lilium* breeding program requiring the growing of *Lilium* from seed. We also have natural areas where the genetic diversity of seed-grown *Dodecatheon* is desired. In order to produce plants of these two species in less time, two growing cycles were compacted into 1 year.

METHODS AND MATERIALS

Manipulating the day length and temperature in the greenhouses where the seedlings were grown shortened the growing cycles. Seeds were given the warm and cold stratification required for germination. After germination occurred, the seedlings were put through a cycle including growth in the greenhouse, conditions to induce dormancy, and a dormant period. This sequence was repeated until the plants were large enough to plant out. The process for both *Lilium* and *Dodecatheon* is as follows.

Lilium. Seed was sown as soon as it was received and placed under mist on bottom heat at 70 ºF. Species with immediate epigeal germination germinated within a couple weeks. Upon germination these seedlings were moved to a 72 ºF greenhouse where they were grown under 14 h days for 8 weeks. At this point the seedlings were moved to a 60 ºF greenhouse with short day length to induce dormancy. After 4 to 6 weeks the seedlings were sufficiently dormant to be moved to a cooler at 38 ºF for 8 weeks. *Lilium* species with delayed hypogeal germination were treated the same way except they required 12 weeks of warm stratification followed by 12 weeks of cold stratification for germination. After germination they followed the same process of warm and cold cycles as the immediate epigeal germinating species. Most species required at least two or three cycles to reach a large enough size to plant out.

Dodecatheon. The seed was given 6 weeks of cold-moist stratification beginning in August. This was accomplished by mixing the seed with damp sand and placing it in a cooler at 38 °F. After stratification, the seed was sown and placed under mist on bottom heat at 60 °F. The flats were moved to a 60 °F greenhouse after germination where they were grown for 8 weeks, followed by 8 weeks in a 72 °F greenhouse under 14-h days. The warm temperatures and long day length caused the plants to go dormant just as they do in the summer in their natural environment. The dormant plants were then places in a cooler at 38 °F for 8 weeks. After the cold treatment, the flats were placed back into a cool greenhouse where the plants began to grow very quickly and were ready to shift up into larger pots within 3 weeks. These plants were large enough to plant out in our prairie in late May.

RESULTS AND DISCUSSION

Manipulating the length of the growing cycles effectively reduced the production time of seed-grown *Lilium* and *Dodecatheon* and two growing seasons were compressed into 1 year. Our greenhouse facilities made different environments with different temperatures and day lengths possible. This process would be more difficult to carry out without these facilities, but it could still be accomplished. The timing of the seed sowing might change to take advantage of natural day lengths and temperatures. This process also could be used on other slow-growing plants that respond well to induced dormancy.