

A comparison of several standard seed viability tests such as rolled paper towel, blotter and soil tests are made to determine the ease and reliability of these tests. These are compared with chemical tests using the same seeds. Seeds are soaked in 0.004% malachite green and the live tissue turns the green stain into colorless leucomalachite while the dead tissues remains green. Other seeds when placed in a colorless 0.25% solution of 2,3,5-triphenyltetrazolium chloride soon turn red in the viable, respiring areas. The chemical is reduced to an insoluble red dye called triphenyl formazan. In dead tissues there is no color change.

Seeding laboratories also occur in other horticultural courses such as nursery production and management where the students determine the seed storage and after-ripening requirements, prepare the seed bed, fumigate the soil, sow and later transplanting the seedlings. In the plant breeding courses students make their own crosses, determine the germination requirements for these seeds and grow these seedlings. In floriculture production courses students may select a seed-grown crop for their project, find out the germination requirements as well as the culture, and then grow the crop.

What we are trying to do in our seed laboratories is to teach the students the principles of seed germination and familiarize them with the various sources of information so that they can prepare schedules for pretreatments and sowing in order to get the required number of normal seedlings when they are needed.

Friday Morning, December 12, 1980

Dr. Leonard R. Stoltz served as moderator of the morning session.

GRAFTING — HOW, WHY, WHEN

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Today, I would like to talk about “out of the ordinary” grafting techniques. The first technique, grafting a scion onto a root piece, can be used with a plant when you do not have a suitable understock and the plant is difficult to root. We have used this technique with *Sciadopitys verticillata*. Long root pieces are cut into sections and the scion is grafted to a root piece utilizing a side veneer graft. The grafting operation is conducted

at the same time when you would root the cuttings in February-March. We have achieved a 90% success rate with this method. With *Sciadopitys verticillata* we have noticed that the scion is often rooted after one growing season. This is often called, "nurse-root grafting"

Every so often in an organization like ours we make a mistake. Instead of having some potted understock ready for grafting we find ourselves ready to graft and lacking understock. We have found with red, Scotch, Austrian and white pines that understock can be fresh dug and immediately grafted. In some cases the understocks have literally been chopped out of ice. The understock is grafted bareroot with a side veneer graft and placed in peat. After union formation, the rootstock is pruned back and the grafts are potted up.

The third grafting type, "cutting-grafting", is useful with new clones that are difficult to root. We have used this technique on rhododendrons. Cuttings of an easy to root cultivar, such as R. 'Roseum Elegans', are made and the scion is then attached with a side veneer graft. After tying, the easy-to-root cultivar is treated with hormone and stuck in the bench under a polytent. When the cuttings are rooted and graft union formation has occurred the understock is cut back and the grafts are potted up.

The last grafting technique, single-node grafting, is useful when you have a shortage of grafting material. We have used this technique with Japanese maples. In single node grafting a small scion piece, about one inch in length, is grafted to the rootstock. To show you the stock buildup potential of this method, we were able to take one Japanese maple cultivar in 4 years to 20,000 plants

THE EFFECT OF GIBBERELIC ACID AND BENZYLADENINE IN INDUCING BUD BREAK AND OVERWINTERING OF ROOTED SOFTWOOD CUTTINGS

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Abstract. Gibberellic acid (GA₃) and a cytokinin, N-6-benzyladenine (BA) were applied to softwood cuttings of *Salix pentandra* L (laurel willow) and *Viburnum lantana* L (wayfaring tree) in an attempt to promote shoot growth and