

LITERATURE CITED

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THE SELECTION AND PROPAGATION OF DWARF CONIFERS

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Turning first to the selection of dwarf conifers by the purchaser:- My experience at flower shows is that, (having disposed of queries as to whether my dwarf conifers are bonsai, or house plants, or ferns; or even, on one occasion, cacti) the first serious question raised by visitors always is "How big will it grow"?

This is so basic to the production and sale of dwarf conifers that it is a matter on which I feel we, as nurserymen, should be able and willing to give the public much clearer guidance than we sometimes do. First and foremost we must endeavour to put over the fact that there is no simple answer to this apparently simple question; the concept of "ultimate size" just does not apply to plants which continue to grow throughout their long lives. Although the term "Dwarf Conifers" is too well established ever to be ousted from the language, one fact I believe we must get across is that they would be more accurately described as "slow-growing conifers" in that they are dwarf only because their rate of growth is less than is normal (sometimes it is very much less). After a few years taken to settle down in their new home, the dwarf conifers will begin to increase in size, each at its own chosen rate, and that they will continue to do this steadily for a hundred years or more.

The customer buying dwarf conifers usually has a more-or-less definite idea of the size of the plant he has in mind for his particular situation, but he is willing neither to wait many years for a very slow-growing plant to mature to his chosen size nor to pay the price of a suitably ancient specimen (even if you have one on the nursery) so he is compelled to accept a compromise; he must plant a cultivar that is obtainable at a size to give an acceptable immediate effect (and at a moderate price)

and be willing to sacrifice his tree or move it elsewhere when, as is bound to happen, it outgrows its welcome in that particular spot. The point I am trying to make is that we have a duty to explain this situation to the customer. In place of the "ultimate sizes" concept, we must attempt to get him to grasp the idea that (to secure the effect he wants at that spot in his garden) he has to make use for a limited period of years of a conifer that will, inevitably, get too big for him in time. Yes, certainly he may be told that he may then move it elsewhere, but "In That Spot" it will have had a "useful life" of, say 8 to 15 years. Only by making this clear can we honestly (and in the long run profitably) continue to sell *Chamaecyparis lawsoniana* 'Ellwoodii' as a dwarf conifer.

But even when he has grasped this new principle, i.e. the connection between size and time, or as I put it the "useful life" concept, the customer still needs our guidance, and for this I believe that some acceptable form of classification in the trade is required. It is probably not of sufficient importance to justify attention by the august bodies who establish standards and codes of practice, but if some simple classification were to come into general use it would be of considerable benefit both to the nursery trade and to the general public when purchasing their dwarf conifers. There are several possibilities. Quoting an annual rate of growth is misleading, since growing conditions can vary so much. I see that Adrian Bloom in his book "Conifers for your Garden" grades the plants he describes according to their likely height after 10 years, and as a basis for adaptation, the following size and habit code has been used in my own catalogue for many years.

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| A. Slow-growing but eventually of tree height. | | F. The real pygmies. |
| B. Slow growing 10' to 15' | } After many years | V. Columnar |
| C. Slow growing 5' to 10' | | W. Pyramidal or upright. |
| D. Slow-growing 3' to 5' | | X. Globosa, rounded. |
| E. Low buns & bushes growing 3' or less. | | Y. Spreading, wider than high. |
| | | Z. Prostrate, trailing or pendulous. |

Other than this, on the subject of selection of dwarf conifers by the customer there is not much more I can say. Since it is practicable to provide pockets of modified soil or a suitable micro-climate for a small plant where it would be impossible in the case of a large tree, the customer can be told that he has more latitude with the dwarf forms, but broadly, as regards soil requirements, hardiness, etc., they follow the normal arboreal forms of their respective species and the advice the customer needs (such as that the *Juniperus* and *Taxus* are the best genera for chalk; that the golden forms need full sun, and so on, will be the same).

The selection of dwarf conifers by the nurseryman divides itself into two parts. Firstly, there is the question of how many cultivars he wishes to carry and include in his list, and since this depends entirely upon the area he is in, the type of trade he does and other local circumstances, no guidance from me is possible. Since in my own collection I have over 1000 cultivars, each of which I propagate in small numbers for my own very specialized market, there is almost unlimited scope, but most propagators will limit themselves to a very much smaller number. Fortunately, the cultivars most in popular demand are those that are most easily propagated and, unless a nursery intends to become known as a specialist in dwarf conifers, it is usually sound economics to limit the range to these forms, since in a general retail outlet the less well-known cultivars are apt to hang.

On the subject of the selection of new cultivars I would like to put in a plea for caution and restraint, since (along with roses and many other groups of garden plants) there are already many more cultivars than we have need of. Mutations turn up quite regularly in the seed-beds. Usually the slow starters are regarded as runts and are discarded, but occasionally (too often in my contention) one of them — the seedling with a difference — will be allowed to grow on and is eventually propagated and introduced as an exciting new dwarf conifer. Or a bud mutation will be noticed on an existing cultivar and be hailed in the same way. Since seedling variation invariably tends to become less as the plant matures and since bud mutation has the same tendency to disappear, we are left, in time, with far too many, much too similar cultivars. A well-known example of this would be the numerous golden named forms of Lawson cypress. No doubt, when introduced, each of these was distinctive, but now, 25-50 years later they are virtually indistinguishable. Similarly, *Thuja occidentalis* is prone to produce attractive globose plants from seed and of these there are so many well-tried cultivars with new forms that I have received from, for example, Denmark, Poland and the United States, seem unlikely in the long run to turn out adequately distinct from or improvements on the old cultivars.

A current problem arises, I believe, from the sporting habits recently developed by the popular cultivar 'Ellwoodii', although now quite old enough to know better. 'Ellwood's Gold', 'Ellwood's White' and 'Chilworth Silver' (respectively golden yellow, white variegated, and silvery-grey) are each quite distinctive, but I am dubious about the spate of allegedly blue forms that are appearing in different parts of the world.

Of these, I already have 'Blue Gem', 'Blue Surprise', 'Blue de Mantes' and 'Blue Cone' and I believe there are others. Even

if we are spared 'Blue Down', 'Blue Peter' and 'Blue Funk', I am afraid we are in for problems in identification later on, since grown side by side, I find them barely distinguishable. Amongst the rarer species also, the tendency is the same. Just as every seedling could be a worthwhile new clone but every one certainly isn't, so each witch's broom discovered on a Norway spruce or a Scotch pine cannot be expected to produce a distinctive new dwarf conifer. We already have about 80 named dwarf spruces and nearly 30 dwarf pines in these particular species and — by any standard — these are enough or more than enough.

With present day techniques and equipment it is quite an easy matter to build up worthwhile commercial stocks of a new dwarf conifer before the original mother plant itself is old enough to have demonstrated its characteristics when mature — these being sometimes quite different from its behaviour as a young plant, so there is real need for restraint and patience before new forms are introduced to the trade which will add one more name to our lists but no more beauty to our gardens. If a long period of growth is considered necessary before an arboreal conifer is regarded as justifying recognition as a new cultivar (this is usually the case, since normally any selection of this kind is made from a mature tree) how much more important it must be in the introduction of supposedly new dwarf forms whose appeal lies in some deviation that may consist only of juvenile qualities that it will eventually outgrow, or a mutation that may prove to be unstable. In either such case the apparent value is misleading and premature action will only lead to confusion and trouble in the future.

On the subject of propagation I hardly think that the organizers of this conference can seriously think that I can be capable of saying anything fresh, partly because the propagation of dwarf conifers differs only in detail from the propagation of conifers in general and partly because the art of plant propagation has been exercised for so long that it is a matter of serious doubt whether (excepting only the operating instructions supplied with new technical equipment) there is anything really new on the subject that can be said. I have not seen it, but I understand that an old manual dating back to medieval times and written in Arabic, is known which deals with all phases of plant propagation in considerable detail, and relevance today, and I recently myself became possessed of a work entitled "*The Propagation and Botanical Arrangements of Plants and Trees*" by a certain John Abercrombie (described as the author of "Everyman His Own Gardener") published in 1784, which covers the ground as completely as any modern manual that I have ever seen.

I do not need to discredit the idea that dwarf conifers can be propagated from seed. Dwarf forms, being individual variants, seldom set seed, since nature preserves her species by making her freaks sterile, and if and when they do the progeny usually revert to what is normal to the species. Many customers, however, encouraged by certain operators selling conifer seeds at provincial flower shows, possess this idea and every opportunity should be taken to disabuse their minds thereof.

Although propagation by cuttings is the principal method in commercial use today, it is the method upon which I shall have the least to say, for the reason that the technique for the dwarf forms differ only marginally from the propagation of conifers of normal size. Our cuttings, rather obviously, usually are smaller than normal. Success with cuttings depends so much on the interplay of many factors that anyone attempting to lay down rules is asking to be contradicted, but I personally have never had any success with the very small cuttings that some successful plant propagators delight in. In a mixed batch, with me, invariably the large cuttings do best, so I aim to use cuttings as large as possible — subject to the selection of suitable material. I make this a strong provison, because with dwarf conifers it is a matter of vital importance. This is because the use of strong cuttings taken from leading shoots on vigorous branches will often produce coarse plants quite out of character. Cases of this kind are *Chamaecyparis pisifera* 'Squarrosa Intermedia' and *Chamaecyparis lawsoniana* 'Forsteckensis'. Such congested cultivars will only remain so if cuttings are taken from bunchy, congested side-growths and the loss of the desired dwarf characteristic is accentuated if this selection of unsuitable propagating material is continued again and again through further cutting generations.

To a greater or less extent this must be true of all the dwarf forms, so we are faced with the need for compromise here, since the two needs, the need on the one hand for producing a commercially viable produce and the need on the other hand for preserving the dwarfness that is the main attraction of the plants are opposed to each other. This becomes increasingly important the more dwarf the cultivar, until when we come to the very diminutive forms they become irreconcilable. A tiny gem of this kind is usually written off as "not a nurserymen's plant" and such are really only of interest — if worth attention at all — to the very dedicated specialist.

Grafting is another subject important in a wider context than dwarf conifers and one to which I shall return later, so here I need only make a few comments. Many of the plants of the rarer species and cultivars, particularly the dwarf pines that are produced in this way will later be grown on by the cus-

toomer, if not as Bonsai, at least as specimens in pots. This must be borne in mind, since customers for this class of tree are very choosy; the graft itself is impossible to disguise entirely but if it is unsightly the tree largely loses its appeal. I aim to make a relatively long side graft, since this gives a much stronger union in a mechanical sense during the first critical two or three years during which the graft is much weaker than it appears, and this together with careful matching of the scion and rootstock diameters and neat workmanship reduces the unsightliness of a graft to a minimum, especially if (as should always be the case) the graft is kept as low, as near the surface of the soil as is practicable. Here the size of one's fingers seems to be the limiting factor, this being obviously a case where Nature has not observed sex equality. When these points are watched the long joint-line running parallel with the trunk is not conspicuous, the scar where the rootstock has been snagged heals readily (and in many cases is hidden by foliage) and, if the base of the graft is at all unsightly, it may be dropped below the surface of the soil.

I find that very small scions seem to have, in general, less chance of success than those of normal size. Because of the small amount of annual growth made by the slower growing cultivars this necessitates the use of older wood. In any case making the graft on second year wood means not only that the maiden will have a branch structure one year older, it will start much nearer the surface of the soil, and this is regarded as a great asset for the pot culture I have mentioned. Because of the paucity of material in the very slow-growing forms this may not always be practicable.