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NOTA BOTÁNICA

OBSERVATIONS ON THE PROPAGATION OF *TAXUS GLOBOSA* SCHLTDL.

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Propagation of any economic plant species is one of the key determinants in its utilization. If plantation culture of *Taxus globosa* were ever to become a reality, effective propagation protocols would have to be in place. This note is a first attempt at those protocols.

We attempted to root 10 cuttings from 48 trees sampled from three wild populations of *Taxus globosa* (see details in Shemluck *et al.*, 2003). Fruits were also collected and seed was cleaned and given various pre-treatments prior to sowing.

Results

Cuttings.- The basal ends of cuttings from current season's growth (7-15 cm) were treated with an alcoholic solution (50% ETOH) of 10,000 ppm indolebutyric acid (IBA). The cuttings were put into a medium of coarse sand and perlite (1:1) under a clear plastic propagation tent with bottom heat (24°C) supplied by heating cables. After five months cuttings were removed from the medium and analyzed. As with taxol production (Shemluck *et al.*, 2003), wide variance was observed in the ability of the collected material to respond to the rooting conditions (table 1).

The entire trial of 48 separate plants produced an overall rooting percentage of 89.5% with an average of 11.37 roots per cutting (table 1). Both of these figures are high for a gymnosperm species but compares favorably with results from other species of *Taxus* (Shugert, 1985; Dirr and Heuser, 1987; Nicholson, 1987).

Seed.- In most situations where gymnosperms are economic species, such as *Pinus* used for forestry purposes, seed propagation is the most efficient means of propagation. However, members of the Taxaceae have complex pre-germination requirements tied to embryo after-ripening (see Dirr and Heuser, 1987).

The fleshy red aril surrounding the seed was removed and seed were divided into equal lots of 50 seeds. Three pre-germination treatments were tried prior to sowing: (a) Lot no. 1: three months of cold moist chilling (stratification) at 2°C prior to sowing; (b) Lot no. 2: insertion into a moist medium for five months at 23°C followed by three months at 2°C prior to sowing; (c) Lot no. 3: seeds received a 1 h soak in a 1000 ppm gibberellic acid (GA3) followed by three months of moist chilling at 2°C prior to sowing. Germination only occurred with seed receiving pretreatment b with a germination rate of 34%.

Recent work by Chien *et al.*(1998) shows that the gibberellic acids GA4 and GA7 were effective at promoting germination of *Taxus mairei* seed, while GA3 was not. They suggested that the strong seed dormancy of *Taxus* was caused by a high endogenous abscisic acid concentration and underdevelopment of embryos in freshly shed seed. Use of gibberellins other than GA3 may be a fruitful avenue of research for *Taxus globosa* as well.

Discussion

The vegetative propagation of *Taxus globosa* is easily accomplished with a basic propagation set-up and large numbers of clonal cuttings could be easily produced. Mexican yew has never been extensively collected and there are no reliable estimates of its abundance in the wild. Given the remoteness of many of the areas in which it grows, an accurate survey of native populations would be a difficult task. Consequently, the authors believe that the feasibility of harvesting wild *Taxus globosa* for source of taxol is also unrealistic. Nevertheless, nurseries and plantations could be established in the regions of Mexico where this yew is native or in regions of similar climate. The advantages of such plantations are significant. In addition to bringing a new cash crop to remote mountain villages, this plant is a potential substitute crop for those areas presently producing narcotics. The Mexican and American governments as well as the local farmers would react favorably to the production of a legal crop of economic significance.

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Table 1. Overall results of cutting propagation.

Site	Overall rooting (% and % range)	Mean number of roots per cutting	Number of roots (range)
No. 1 Central Nuevo León State (19 plants, 190 cuttings)	92.5 (60 - 100) [a]	10.8	5.1 - 15.1
No. 2 Southern Nuevo León State (20 plants, 200 cuttings)	90.5 (60-100) [a]	13.7	7.0 - 23.6
No. 3 Southwestern Tamaulipas State (9 plants, 90 cuttings)	75.5 (20-100)	6.9	5.5 - 8.8
Three sites combined	89.5	11.4	

[a] based on 10 groups of 10 cuttings each

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