

PROPAGATION OF EUCOMMIA ULMOIDES

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Eucommia ulmoides is a tree obtaining a final height of about 60 feet with wide spreading branches and it has been suggested as replacement of the elm. It is a very nice tree with very glossy green leaves and serrated, and shaped much like those of the elm. It is more attractive than the elm and is apparently very disease resistant. This tree is a native of central China and was introduced into the United States by the U.S.D.A. several years ago. It is dioecious (having male and female flowers on different trees) which makes it a very clean tree without any fruit. The fruit is similar to the elm being a compressed winged nutlet with the flowers being very inconspicuous. A mature tree approximately fifty years old exists on the University of Illinois campus and has brought much interest since the loss of elms. Very few nurserymen carry this tree, possibly because of its difficulty to root. There are a few mature specimens throughout the country, but these are from the original introduction from the U.S.D.A.

In the summer of 1956, Dr. J. R. Kamp and H. F. Wilkins made studies on the proper time of propagation and found that the *Eucommia ulmoides* rooted only after the new growth first reached maturity in late May or early June and propagation was impossible the other seasons of the year.

In their trials, they used Hormodin Nos. 1, 2 and 3 along with Chloromone and a new rooting compound, Geigy 416. Cuttings were taken on June 13 and placed under intermittent mist propagation in the greenhouse with five replications. The rooting media used was a coarse river sand. Records were taken on September 29. Half the cuttings were wounded and the other half unwounded and the records indicate that there was very little difference between wounded and unwounded cuttings and without rooting aids only three to four percent rooted. The only rooting compound that gave any increase over the control was Chloromone where 57 percent rooting was obtained.

In 1963, it was decided to repeat this work using various medias and only Hormodin No. 3 and Chloromone were used as rooting aids and the following medias were used: Sand, 50% sand and 50% peat by volume, 50% perlite and 50% peat by volume, peat, vermiculite, 50% calcined clay and 50% peat by volume. Calcined clay was the coarse grade being one-fourth inch in size which is a new material produced by Wyandotte Chemical Company and basically is an expanded clay. Again, cuttings were taken on May 29th when the new growth reached maturity and records were taken on September 18th. As recorded by Kamp and Wilkins, rooting was less than 5% with no treatment or when Hormodin No. 3 was used, except in the plots containing the coarse calcined clay and peat mixture where 50%

rooting was obtained. Fifty percent rooting was obtained in all other medias where Chloromone was used except in straight peat, rooting was reduced considerably even when Chloromone was used as a rooting aid. Where coarse calcined clay was used, rooting was increased when treated with Hormodin No. 3, but not significantly greater than where Chloromone was used. In addition to percent rooted, cuttings in calcined clay and peat had a heavier root system, being much thicker and coarser than in other medias. The cuttings retained their foliage longer and were much greener in this media. The leaves of the cuttings in the other medias had a tendency to turn chlorotic and drop off. The possible factors to attribute the superiority of the calcined clay and peat mixture is that this mixture had better drainage and aeration than the other medias used in these experiments. As indicated by Kamp and Wilkins, rooting percentages were decreased significantly on cuttings taken at later dates after the wood matured.

MODERATOR MCDANIEL: Thank you very much, Mr. Carbonneau. Next, we have a very interesting paper by Mr. Al Fordham, Arnold Arboretum, Jamaica Plain, Massachusetts.

AN UNUSUAL WITCHES'-BROOM ON PINUS STROBUS

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This series of slides depicts a witches' - broom development on *Pinus strobus*, located in the Berkshire Hills of western Massachusetts. It is of unusual interest for although witches'-brooms seldom produce flowers or fruits, this one bears cones containing viable seeds which have given rise to numerous dwarf plants. What appears to be two trees is actually one that divides into two parts four feet above ground and the broom comprises the entire crown of one leader. It is about ten feet tall by ten feet wide and is borne on a tree approximately eighty feet high.

A second view shows the site and gives some idea of its immediate surroundings. In the foreground, with the broom-bearing tree situated at its edge, is a fifty yard wide clearance cut through the woods to accommodate high-tension electric lines. As a result of this unnatural opening in the woods, seeds shed from the broom had a better chance of developing into plants than would be the case in natural woodland where any abnormal or slow-growing subject would be at a serious competitive disadvantage.

Herbarium specimens collected bore only female conelets and this appears to be the sex of the entire formation. Its growth is clean and apparently free from the usual witches'-broom