11 Wettstein-Westersheim, Wolfgang von 1930 Die Zuchtung von Pappeln (Populus) Der Zuchter 2(7): 219-220
12 Wilcox, James R, and Robert E Farmer, Jr ..... Variation and inheritance of juvenile characters of eastern cottonwood Silva Genet (In press)

MODERATOR CANNON: Mr. John Roller will you come forward and speak to us on "Open Field Propagation"?

OPEN FIELD PROPAGATION

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LAND PREPARATION

The preparation of the land for open field propagation is very simple, as we practice it at Cartwrights. It consists of deep plowing, eighteen to twenty four inches deep, or sub-soiling. After this, a disc is run over the land as many times as is necessary to break up any clods and get it in good working condition. If necessary, we use a land leveler to level the field, or to give a smooth slope, but we prefer to use only a harrow as the land leveler packs the soil more than we like. After this, rows are spaced about thirty inches apart and are opened to a depth of four to six inches. The cuttings are stuck into these little furrows rather than on bedded rows.

CUTTING PREPARATION

The timing of the cuttings is governed by the weather conditions that we have that year. We like to start taking them when they are in the "summer dormancy" stage. In the Memphis area the usual starting time varies from about August 20, until early September. The cuttings planted in this type operation include all of the Pfitzer varieties, Andorra, *excelsa stricta,* Irish, *densa glauca, procumbens,* Sargents, Von Ehron and all sabinas, in fact, about any juniper that can be rooted in the greenhouse. However, *scopulorum* and most *virginiana* do not root well by this method. We think that Pfitzer juniper roots better if planted later than the other junipers and is usually the last juniper we stick. We, sometimes, delay taking part of them until we are sticking the broadleaf cuttings, which is usually mid-November. Broadleafed varieties propagated in this manner are the usual ones that are normally produced from hardwood cuttings, euonymus varieties, abelia, privet. lonicera, crape myrtle and others. We do not plant these until they have gone into dormancy, usually in November.

To take our cuttings, crews in the field use eight inch pruning shears. We like our cuttings to be about eight inches long. We start cutting at the end of the limb, trimming off the tender tip, and then cut just as far down the limb as we can

get eight inch cuttings. We do not care how large around the cuttings are. Some are as big as the thumb and have rather heavy branches.

As the cuttings are cut, they are dropped into burlap bags and as the bags are filled they are dipped in barrels of water. We try to keep them moist until they are stuck, at least we do not allow them to dry out and wilt. If they must be kept over, because of weather or week-ends, they are kept in cold storage and are watered down frequently. Most of the time it is only one or two hours from cutting time until they are stuck in the field. About sixty or seventy people are cutting the cuttings and as soon as twenty five or thirty bags are full they are brought to the field to be stuck. About fifteen people are needed to stick them.

Irrigation lines have been laid and water is run into the rows that are open four to six inches deep, and the cuttings are stuck right into the mud and water. A man with a one inch hose, under forty five to sixty pounds pressure, puts water in the furrows just ahead of the workers sticking the cuttings.

The cuttings are not stuck one at a time but are stuck by handfuls, of six to ten per handful, to a depth of about half their length, or about four to four and a half inches. There is a slight knack to this, and after a little practice the workers are able to get them distributed in the row on an average of one or one and a half inches apart without any skips or breaks in the row. This is important to us because our land is rather sloping and we do not want water washing across the rows. Immediately behind the stickers on each row, a worker with a garden rake pulls loose dirt from the side up against the cuttings and more or less forces the mud and soil into the trench as much as possible to fill in the voids. Just behind the rakes a worker with a hose really waters the cuttings and the middle of the rows, thus settling the soil down around the cuttings.

The irrigation lines are usually moved up twenty to twenty five rows at a time. As soon as the ground drys enough we use a Farmall Cub tractor to throw a small amount of dirt up to the cuttings and to give us a center furrow for drainage. As soon as enough ground is covered to permit, or a block is finished, we really soak them down, using either Rainbird 80 sprinklers, or a Raincrow, which will cover about an acre at a time. We wet the soil enough so that it will settle around the cuttings and fill all air spaces. This eliminates tromping or packing the soil around the cuttings by foot.

This completes the main part of the planting operation. All that remains is the normal cultivating practices and the watering. They are not allowed to dry out. Water is supplied as needed. We usually irrigate when the top one fourth or one half inch of soil is dry. The number of times they are irrigated of course, depends on the amount and frequency of rainfall. After the cuttings are rooted the frequency of watering can be reduced. This is usually the following June or July.

Cultivation is practiced as needed for soil aeration and weed control. We have used chemical weed control to eliminate hoeing as much as possible. We have used Treflan incorporated in the soil before sticking the cuttings. This worked out real well on a test plot. Encouraged by this we went all out and used Treflan over the entire planting. The results were not entirely satisfactory as our rooting percentages suffered somewhat. We came to the conclusion that the Treflan was incorporated into the rooting area and thus caused some losses. There was no consistent losses. Some varieties that root readily suffered as much as twenty five percent loss. Some varieties were not affected and some rooted even better than before.

However, this year we plan to wait until all cuttings are stuck and then incorporate the Treflan in the middles and throw it up to the row by means of a Lilliston rolling cultivator which does the job nicely by changing the angle of the cultivators. We have done this on field plants and it worked very satisfactorily.

For harvesting the rooted plants, we dig them with a converted potato digger. Using the potato digger replaces about fifteen or twenty workers that used to hand pull the plants after they had been undercut with a tree lifter. After digging the cuttings, they are root pruned, trimmed, and loaded into trucks to go to the field for planting.

There are many advantages to liners that have been propagated in the open field. Following are some of them.

1. Liners that are tough enough to withstand adverse weather conditions, because they are propagated in the open field.
2. Liners are heavier and stronger than those propagated by any other method. Some, when harvested, are equal to a potted liner after one year in the field, and grow into saleable plants one year earlier.
3. Free from diseases.
4. Large quantities can be produced with relatively little supervision and care.
5. The economy of production in comparison to liners produced in the greenhouse or in mist beds. The only method comparable in cost would be the Phytotektor method.
6. Rooting percentages that equal and sometimes surpass greenhouse cuttings.

MODERATOR CANNON: The last paper we have this morning will be presented by Mr. Don Nordine for Mr. Rodney Bailey of the Bailey Nursery Company of St. Paul, Minnesota.