Beds are fertilized twice from late spring to summer using 40 to 50 lb N/A applied as a band of 50% organic N 2-1-1 fertilizer. In addition, a late fall or early spring band application of an all-chemical complete fertilizer at 40 to 50 lb N is also applied. Rooted cuttings are pruned once or twice before lifting the liners during the spring of the third growing season after planting.

PROPAGATION OF TAXUS IN NORTHERN OHIO

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In looking for a simpler and more economical method of propagating taxus cuttings, we turned to ground beds in quonset type poly structures.

PROPAGATION FACILITIES

Our poly houses are 196 feet long and 16 feet wide with three beds 190 feet long, 4 feet wide, and 8 inches deep. This set-up provides us with 2280 sq ft of ground bed. Each house holds 150,000 cuttings.

Our houses are heated by 125,000 BTU Reznor natural gas hot air units controlled by a heating-ventilating thermostat. We keep a good supply of spare heater parts in our inventory. Water is supplied by outlets 50 ft from either end. With a 50 ft hose on each tap, we can cover the entire house. We also equip each house with a 220 volt electric supply and have a 15,000 watt portable generator that can supply our farm in case of a power outrage. Our water is supplied by a dual source — a well on one end and a pond on the other. If one goes out, we switch to our back-up source, or if we need a lot of water, we can use both systems simultaneously. We firmly believe it is good policy to cover all aspects in case of an emergency.

PREPARATION AND SANITATION

We fill and remove the medium from the houses by taking it out the sides, which is not only easier, but more economical. We use four different houses to alternate our crops on a 16 month basis. Therefore, we have 2 houses of cuttings and 2 houses being prepared for a new crop of cuttings at the same time.

After we clean the sand out, the side boards are brushed down. The next stop involves washing down with LF-10. Even though we are on 10 ft of gravel (with the best drainage you can possibly have), we put in about 1½ inches of pea gravel to insure even better drainage. Drainage is probably one of the most important factors for propagation in ground beds. On top of the gravel, we put 3 inches of a peat, sand, perlite mix. Next, we put in our sand which is a lake mason mixture (a fine sharp sand). We like this sand because it doesn't dry out rapidly. The medium is then watered down and tamped. Then the beds are treated with M-45.

When the beds are filled, we cover the house with plastic so we can fumigate it and to keep the weed seeds from blowing into the houses. We normally do this in late summer or early fall.

TAKING AND STICKING THE CUTTINGS

We generally start making our cuttings about December 1 and finish around February 1. The weather dictates when we go to the fields to take our cuttings. But, when we do go to the fields, we may take as many as 50,000 cuttings at a time. Special care is needed so the cuttings don't dry out. We try to take only the very best cuttings and hopefully of uniform wood.

The cuttings are cut to a length of 6½ inches except for 'Hicksi' which we cut at 7 inches. We strip the bottom 3 inches and treat with IBA dip. The cuttings are stuck 40 per row. We use two boards 1¾ inches wide to guide a trowel for cutting the sand. A block or stop on the trowel at 3 inches insures that the cuttings will be stuck at the same depth. After the row is stuck, the second board is placed against the cuttings and tamped with a hammer to firm in the cuttings securely. At noon and at the end of the day, the cuttings are watered heavily to insure a good firming of the medium. After a bed is stuck, we treat with Benlate. During the day, if the sun is not out to help heat the house, we turn the thermostat to 65°F otherwise, it is kept at 40° which is just enough to keep the houses from freezing. After the houses are filled, the thermostat is left at 40°F.

MAINTENANCE THROUGH THE YEAR

Watering is done by hand so that we may inspect the cuttings to detect any problems that might arise. In mid-February, we shade the house with a spray of old latex paint that we purchase for 50¢ to $1.00 a gallon. In mid-March, as the sun gets higher and brighter, we put 50% shade cloth on the houses. About mid-April to the first of May, we let the air off the houses, cut the plastic all along the side in strips to allow a free

movement of air yet keep the direct sun out. After the threat of frost is passed, we remove the shade cloth completely, remove the plastic, and replace the shade cloth. We feel it is most important to keep the cuttings under shade until winter.

Sometime in mid-October, we cover the houses with at least one layer of plastic and also replace the shade cloth. In late November, we remove the shade cloth and put on a second layer of plastic. We then inflate the houses, start the heaters, and again set the thermostat at 40°F.

ROOTING AND FERTILIZATION

Rooting occurs in July and August at which time we begin our liquid feed program. We liquid feed with Peters fertilizer every 10 days. By September the cuttings are well rooted. Now we give them a treatment of Osmocote, 14-14-14, at 50 oz/100 sq ft. This will take the cuttings into the winter in fine shape. With the layer of peat mix under the sand, the cutting roots will grow into this, and can take up additional nutrients. By January, they are rooted into the ground.

After we finish sticking our cuttings for the next year (around February 1), we go back into the houses, trim the tops with hedge shears, lift the cuttings with a digging fork so as not to tear the roots off, root prune them back to about 3 inches and heal them back in. Always remember to water. This insures good root contact with the medium. The cuttings will now develop another new root system that gives an extra heavy root system. Now we have a transplanted cuttings ready for planting out in the spring.