CONTAINER TREE PRODUCTION

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Production of Maiden Trees. Five acres of tree stocks are planted annually. This is in a seven year rotation with strawberries. During the final year of the rotation the area is put down to a grass ley. This enables perennial weed to be selectively treated with herbicides during the year. The Westerwolth ryegrass is ploughed in as green manure after the addition of 100 tons per acre of farmyard manure in the early autumn. One acre of land is being sterilized with methyl bromide this year applied by contractors. We are attempting to reduce the problem of verticillium wilt, particularly on *Acer* trees. This occurs as a result of following strawberries in a cropping rotation.

The soil is ploughed and then worked down to a fine tilth in late autumn in readiness for planting. After this, we do not have to use a heavy tractor on the land again during the wet winter weather. Planting commences as early in the autumn as possible. This is done by using a combination of a mini-tractor and single share slitter which is very light and permits planting throughout the winter in favourable conditions.

Planting is carried out by hand in 45 ft. wide beds. This allows for efficient spraying by a Victair blast sprayer later on. Irrigation in the summer by a trolley mounted 'Rain-Gun' is also possible in this bed width. Due to the fact that trees are lifted after one year, the stocks are planted at 9 in. intervals in the row and 3 ft. between rows.

The rootstocks are all of British origin, mainly bought in. However, we supplement these with some of our own being mainly fruit and *Prunus* 'Colt' cherry rootstocks. In order to propagate the latter we use our own modified "Garner Bin" system.

Cuttings are stuck in deep plastic crates instead of the traditional bin. The crates are then stood down onto a bottom heated area in a cold, double-skinned polytunnel for the appropriate period of time. Temperature at the base of the cuttings is controlled by Nobel sensors placed in the crates. The treatment otherwise for the hardwood cuttings is standard. The advantage of this system is its flexibility, since one batch of cuttings can be removed after the necessary propagation time. They can be held until planting conditions are favourable in a cool but dry situation. The propagation area can be immediately filled by a second batch of cuttings. During the

maiden crop weed control is carried out usiiig is a mixture of Simazine and Venzar, with additional spot treatment with Paraquat or Roundup. We only use the chip budding technique, budsticks being taken from an area of mother trees which are irrigated by a low level system. We use a combination of degradable rubber strips for easily propagated subjects such as apples, pears, and *Sorbus* and 1-in. polythene tape for the more difficult *Acer*, birch, and small, budded *Prunus*.

A soil analysis is carried out prior to the commencement of the second year. Any nutritional deficiencies can be corrected at this time by the implementation of a fertilizer programme. After the heading-back of the rootstocks in February bud clips are applied on most cultivars in order to produce a straight stem and also to reduce the amount of caning necessary. We still have to cane certain genera because of the problems of blow-out of the young growth on subjects such as *Crataegus*, *Laburnum*, plums, and all weeping trees. As an aid to caning, a Kango hammer drill is used to make the hole in the ground.

During the second year routine maintenance consists of tying, trimming side shoots, weed control and irrigation. Additionally a 14 day pest and disease spray programme is carried out.

Lifting. Lifting commences about mid-November. All pruning operations necessary are carried out in the field. Bush fruit trees are tipped at 2 ft. 9 in. and the side shoots are trimmed or removed as necessary. Ornamentals are tipped at 5 ft. and the stems cleaned up to 3 ft. Undercutting is done by using the combination of a Barton winch and an Egedal plough with lifting forks. The lifted maiden trees are transported to a potting shed by means of low loading trailers drawn by Kubota mini-tractors.

Blocking-up begins at about the same time as pruning commences. This is the removal of the unsold container trees from the growing area. They are moved to a holding area with a post and wire support system and irrigation and roadways for despatch. This enables the growing areas to be cleaned and capillary lines relaid in preparation for the newly potted crop.

Potting. During potting a severe root pruning is necessary in order that the maidens can be potted into 12 litre polypots for fruit trees, and 18 litre polypots for the ornamentals. All potting is done by hand around a semi-circular bench which is fed with compost by a pivoted conveyor. This enables delivery of the compost to the front of the operator. The compost is a 75% Finnish; 25% grit mix, and 12 to 14 month Fictoe. The peat has a good structure and is generally weed-free.

After potting, the trees are moved by means of low loading trailers to the growing areas. They are stood down at a final spacing of 2 ft. between the trees in the row and 3 ft. between the rows and the capillary lines are used as markers. In the majority of cases no permanent tree support system is used. A 7 ft cane is used for ornamentals and a 4 ft cane for bush fruit trees. These are inserted to the depth of over 2 ft. through the pot and into the underlying soil, using a Kango drill in order to make the hole. Max Tapener tying machines are used to tie the maiden trees to the canes. The strongest tape is used and this is later supplemented by a plastic "sack-tie" at the top of the tree. This prevents the head breaking away from the cane when it becomes heavy. Trees are therefore despatched complete with their canes simply by lifting the tree and cutting off the section of cane below the pot.

A small area of post and wire training system is being looked at this year, in readiness for using rigid containers. The obvious drawback is a very much higher level of investment, especially in view of the amount of space given to the trees.

We now use capillary irrigation almost entirely. It is more effective and there is a saving of water. Since there is no run off we have reduced erosion and problems of diseases spread by water splash, such as bacterial canker, are kept to a minimum. The irrigation is automatically controlled on a time clock system which gives accurate control.

Bench grafting of several genera of trees takes place during February. *Salix caprea* 'Pendula' and *Salix purpurea* 'Pendula' are whip-grafted onto 5 ft. stems of *Salix* × *smithiana*. These stocks are raised from hardwood cuttings which are inserted into 4 litre pots during the previous year. The grafts are dipped in wax and stood down under glass or in a cold polythene tunnel until about May. They are then potted on and stood down outside to be grown on until the sales period, which is from September onwards. Another tree which is grown by the same production method is *Robinia pseudoacacia* 'Frisia,' grafted onto *Robinia pseudoacacia*, as this makes a more manageable tree than a two-year tree potted as a maiden.

Weed Control. Weeds are controlled between the containers by using a mixture of Simazine and Venzar at 2 lbs. c.p. of each per acre. This mixture is applied twice during the growing season. The first time is in February or March and again in late June, while one can still walk between the rows. Spot treatment is carried out as necessary with either Paraquat or Roundup. Tenoran has been used in the past for weed control on top of the containers, however Banweed 'S' is now being used with good effect and gives considerably longer control.

Maintenance of the container trees during the summer is restricted to cleaning up the stems by about mid-May to leave approximately a 2 ft. head. If it is done at this time the shoots can be rubbed out by hand, rather than having to use secateurs later in the season. Fan training of apples, plums, and cherries takes place during the summer.

Throughout the season a regular 10/14 spray programme is maintained against scab, mildew, caterpillars, aphids, and diseases such as willow canker.

Descriptive labels are attached to the trees before dispatch during the sales period, which extends from late August until the following May.

John Gaggini to John Hedger: Would you please elaborate on the propagation of *Salix caprea* 'Pendula'. What sort of wax do you use?

Hedger: *Salix caprea* 'Pendula', we graft onto *Salix smithiantha*, and for *S. purpurea* 'Pendula' we use *S. daphnoides*. We use low melting point paraffin wax for grafting which we obtain in one kilogram packets. Great care must be taken so as not to overheat the wax and burn the plant.

John Gaggini to John Hedger. What sort of take are you obtaining?

Hedger: About 95% with good rootstocks and scion materials.

Queston to John Hedger: Do you establish the stocks in pots before grafting?

Hedger: Yes, they are established by inserting cuttings into 4 litre polypots during the previous year. They are, therefore, one year old and 6 to 7 feet high at grafting.

ANEMONE TUBER PRODUCTION IN SOUTHWEST ENGLAND

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Techniques for producing anemone tubers were developed at Rosewarne over the last 26 years in parallel with a breeding programme to produce a winter hardy strain of anemone. Since the de Caen anemone was not easy to propagate vegeta-