

LITERATURE CITED

1. Ball, G.J. 1975. (13th ed.) The Ball Red Book. Geo. Ball Co., West Chicago, Ill.
2. Cathey, H.M. 1965. Guidelines for using B-Nine on garden annuals. *Illinois St. Flor. Assoc. Bull.* 258:2p.
3. Cathey, H.M. 1975. Comparative plant growth-retarding activities of Ancymidol with ACPC, Phosfon, Chlormequat, and SADH on ornamental plant species. *HortScience* 10:204-16.
4. Cathey, H.M. 1976. Growth Regulators p177-189. In Mastalerz, J.W.: Bedding plants. *Pennsylvania Flw. Grow., Manual.*
5. Cochran, W.G., and G.M. Cox. 1957. Experimental designs. New York: John Wiley & Sons.
6. Cahoon, G.A., and D.O. Crummett. 1955. The potassium nutrition of stocks *Matthiola incana*. *Proc. Amer. Soc. Hort. Sci.* 66:364-73.
7. Dight, R.J.W. 1977. Nutritional requirements of bedding plants. *Exper. Hort.* 29:63-71.
8. Joiner, J.N., R.T. Poole, C.R. Johnson, and C. Ramcharam. 1978. Effects of Ancymidol and N,P,K on growth and appearance of *Dieffenbachia maculata* 'Baraquiniana.' *HortScience* 13:182-4.
9. Mastalerz, J.W. 1976. Bedding plants. A manual on the culture of bedding plants as a greenhouse crop. *Pennsylvania Flw. Grow. Manual*, 516 p.
10. Post, K. 1949. Florist crop production and marketing. Orange-Judd Publishing Co., New York.
11. Robinson, J. 1973. Trials examine basic problems as well as new techniques. *Gard Chron. & Hort. Trade J.* 174 (23):14-7.
12. Semeniuk, P. 1964. Effects of various levels of nitrogen, phosphorus and potassium on seed production and germination of *Matthiola incana*. *Bot. Gaz.* 125:62-5.
13. Semeniuk, P., and R.N. Stewart. 1965. The effect of time of changes in levels of N, P and K on seed production and germination of *Matthiola incana*. *Proc. Amer. Soc. Hort. Sci.* 86:695-700.

ONE-YEAR FRUIT TREE PRODUCTION IN THE FIELD

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My horticultural scholarship took me to Australia where I studied budding and grafting; of particular interest was the production of 1-year trees from seed which is grown from spring planting, worked or budded in early summer and cut back to inserted bud to allow growth to a required height in approximately 10 to 12 months.

First of all the budwood from selected cultivars must be first grade. Seconds cause loss and in order to obtain first grade material one either has to chase the countryside or provide a stock bed for the required needs. Healthy stock plants must be selected and planted out in prepared site with:

1. Sound drainage system.
2. Excellent windbreak, preferably disease-free.
3. Adequate irrigation, either trickle or automatic.

A high standard is a must in order to produce the first grade scion or budwood required. Maintenance is essential, e.g.:

1. Pruning programme — promotion of new growth and removal of dead or old wood.
2. Routine spray programme — a must.
3. Routine fertiliser programme — granule and liquid.

To obtain the perfect wood required is sometimes costly and time consuming but it must be done to get first grade wood.

Collection of budwood: Pick more than required. Collect in the morning, 5 to 6 am before the sun starts to affect the foliage; pick only the best growth and start at the top of the tree, selecting thin slender growth of the current season only. Place straight in drum of water or plastic bag with holes to prevent heating up and sweating. As soon as possible, run cool water through picked branches and place in shade or chilly bin with crushed ice to maintain a cool temperature so that the budwood does not desiccate or deteriorate fast. Remove leaves as soon as possible, leave leaf stalk long enough for budder to handle in his fingers after slicing off budwood stick.

Bud storage: If unable to use budwood immediately place bud sticks for storage in a roll of newspaper, spaced out in that roll with the bottom end of sticks level and at end of paper roll. Moisten paper and budwood, and place in plastic bag; seal with freezer ties and place in refrigerator. Unsealed bags dry out like cold meat not covered.

Temperature is crucial and the thermostat must be set at 32° to 35°F, no lower as fridge (bruise mark on wood) burns take place. No higher or budwood will move and the buds will swell and bust.

Peach, apricot, elm, and ash budwood will last up to 1½ months at this temperature without damage.

Do's and Dont's: Don't use fridge for anything else but budwood.

Don't open to inspect every few minutes, as warm air rushes in and cool air rushes out and buds start to move and swell.

Do provide a layer of protection between budwood and freezer

compartment as fridge burns affect top layer of budwood if not covered.

Do have a standby fridge for breakdowns.

Do have other power sources, e.g.: generator for power cuts.

Do get your fridge checked yearly before season starts. These are a must.

Plum budwood will only last up to 4 days in fridge as the water tends to get behind bud and affect the bud, e.g.: brown stain or botch, this tends to reduce viability; also leaving plum budwood in a can of water has the same effect only faster. Budwood sent through mail either turns up excellent, dried out, or a miniature compost heap, so be careful.

When ready for budding remove paper roll from fridge and roll in small sack and tie over shoulder, e.g.; like an arrow pouch, Robin Hood style. Other rolls taken out to field should be stored in chilled bin with ice packs.

Always label the budwood both inside paper roll and outside. Time and money are wasted in carelessness.

Stock: 'Golden Queen' peaches from seed are easy to collect from local canning factories. Seedlings are mostly virus-free. Melbourne has block of virus-free budwood and Monash University supplies stones from virus-free trees.

Sacks of seed are soaked in water for 24 hrs then placed in cool store for stratification for approximately 100 days. Dormant embryos respond to chilling after the peach flesh is removed. Never allow peach stones to sweat in full sun as reduction in viability takes place. After 100 days stratification plant out in open ground rows mid-winter.

Ground Preparation: Basic fertiliser is added at planting of the stones, using a light application only. Six weeks after germination start a fertiliser programme, using every eight weeks a light application of 11-27-11 N.P.K. Nitroform and Newfrocote slow release fertilisers may be added.

An irrigation programme is essential. Once the plant starts growing don't stop sap flow, as a stop in sap flow will delay growth up to 3 to 4 weeks.

Start a spray programme; spray with a boom sprayer every 10 to 15 days. This is most important. Budding can commence from late November to the 1st week December (late spring) and can usually continue till 3rd week January — *no later*, as the essential growth will not be obtained if it is done later in the season. Remember you are aiming for 5 ft to 6 ft growth during the summer.

Cut buds from budwood stick and look quickly for bud swelling or damage to bud. Discard if this is the case.

Make a "T" cut into stock and insert bud. Height of "T" cut is three to four inches above ground. Do not remove bottom foliage as these nourish the dormant bud.

Tie with rubber strips (perishable rubbers of German origin perish in 10 days). After 3 days remove tops of stock by $\frac{1}{3}$ leaving $\frac{2}{3}$ growth. This activates lower regions of plant in all dormant bud areas.

After 15 to 17 days, cut back to top of "T" cut leaving bottom foliage alone. Growth is really active in lower branches and these should be lightly trimmed back to just below inserted bud. Inserted bud should have started growth by now; when shoot growth from the bud is at secetuer length remove all lower branches.

The spray, water and fertiliser programmes are a must. Clean up understock as usual.

These procedures will produce a one-year peach, apricot, plum and ornamental rod (whip) to a height of 5 to 6 feet if the proper timing of the spray, irrigation and fertiliser programme is strictly followed. A take of 98% can be obtained but allow 10% loss for carelessness.

Some peach cultivars are slower in growth than others. With Red Haven and J.H. Hale being the slower of the cultivars these should be budded onto Golden Queen stock first to give a more extended period.

Advantages:

1. A rod (whip) is more easily handled, packed, with less freight costs.
2. Smaller root system, less transplanting shock.
3. Rod-like 2-year trees can be cut back and allow for easier training for the future framework.
4. In most cases the trees will fruit on next year's growth.
5. Fast, easy and lower retail/wholesale price.

Disadvantages:

1. Objection from customer on smaller size.
2. Production costs are 30% above normal.
3. More labour intensive in 4 months than in whole year.

Golden ash (*Fraxinus excelsior* 'Aurea'), *F.* 'Variegata', *F. oxycarpa* 'Raywoodi', *Betula pendula* 'Purpurea', *B. pendula* 'Youngii', *Ulmus procerea* 'Aurea', and *U. glabra* 'Variegata' propagated in this manner also produced excellent growth.

The temperature in Australia where I worked was 35°C day and 22°C night with snow and frost in winter. A warm tempera-

ture is essential but, most of all, correct timing of operations and procedures must be strictly followed.

THE RE-DEFINITION OF BOTANICAL NOMENCLATURE OF PALMS

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Since the 1800's misspellings and confusion among genera and species has led to confusion in the culture of palms. I think it is important that these corrections are noted in New Zealand as many seedlings are now being raised, especially in the Auckland region. Firstly, I will summarize the genera and then the species with corrections as necessary.

Archontophoenix. A comparatively fast growing palm of which both species are fairly hardy. This genus bears some broad resemblance to *Veitchia*, *Ptychosperma*, and *Dictyosperma*. *A. alexandrae* has leaflets which will help to distinguish it from these genera; *A. cunninghamiana* does not have this distinguishing feature.

A. alexandrae — King palm or bangalow palm. Origin Australia. The trunk grows to a height of 60 to 70 feet, with a 6" crown shaft. It has often been confused with *Seaforthia elegans* which now is an obsolete genus.

A. cunninghamiana — Magestic palm — Origin Australia. Similar to *A. alexandrae* except for these differences. The trunk is not swollen at the base and can be subject to individual variations.

Areca. Most *Areca* palms have multiple trunks, but the best known one, *A. cathecu*, the betel nut palm, has a tall, thin solitary stem.

A. cathecu (sometimes spelled *catechu*).

Betel palm — Origin Malaya.

Usually the trunk grows to 30 ft high and is 2" to 5" thick. The name *Areca* has been much used in error. Many nurseries incorrectly speak of *Chrysalidocarpus luscens* as the areca palm. There are many other species of *Areca* that are not cultivated widely and are little known in New Zealand.

Arecastrum. Known in many places and for many years as *Cocos plumosa*, this palm is an example of true confusion of nomenclature. In 1823 this palm was discovered and was named

¹ Horticultural Consultant.