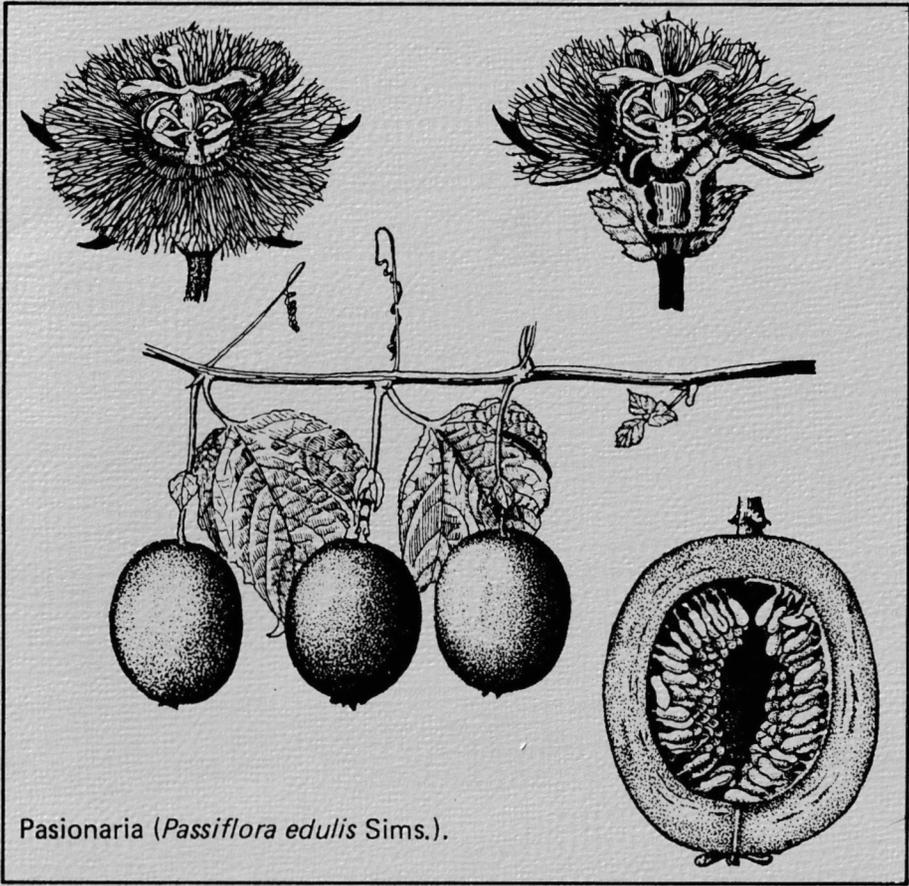


Quandong

WEST AUSTRALIAN NUT AND TREE CROP ASSOCIATION

April 1985. Vol.11 No.2 Issn 0312-8989 Pub.No. WHN 0868



Pasionaria (*Passiflora edulis* Sims.).

CONTENTS

2, 4.	'Snippets'	12.	Walnuts
3.	Passionfruit	15.	Navel Orangeworm
5.	Letters	18.	Custard Apples
8.	Hazelnuts	20.	Association Page

NEXT MEETING - JOJOBA

We have been fortunate in persuading Sandy Pate, General Manager of Jennings Jojoba plantation at Eneabba, to speak at our next meeting on Jojoba. The meeting is on: Wednesday May 1st at 7.30 pm at Naturalists Hall, 63 Meriwa Street Nedlands.

Sandy has been a member of WANATCA for some years, and is one of the most knowledgeable and experienced people around on the subject of jojoba (the 'desert nut'). He was the winner of a Churchill Fellowship which enabled him to travel to various places overseas to investigate the current world position of the jojoba.

QUANDONG EDITORSHIP

At the last Executive Committee meeting, members resolved to trial a new way of putting together 'Quandong'. All the basic material will be collected by members in time for the meeting, and the contents of the next 'Quandong' will be decided on then. The material will then be passed to a Graphic Designer, who will arrange the actual production. The Exec will always be looking out for interesting comments and notes from members, please contact any of them direct if you have something to share, or mail it to 'Quandong Editor, PO Box 565, Subiaco 6008.

WANATCA YEARBOOK

Compilation of the 1985 WANATCA Yearbook has begun, but editor David Turner is still looking for more contributors - please think about what you could do and put pen to paper NOW.

JOHN DOWELL FIELD DAY MEETING

Sorry a few of our members missed an interesting and informative field day on March 16th at Kensington. The small, in area, nursery we visited was large in the range of unusual and interesting plants being produced.

Pepino fruit was sampled by all present, and growing tips were given. Being a relative of tomatoes, too much nitrogen leads to growth at the expense of flowers. They also need spraying against a small mite which loves the foliage and affects the fruit set.

(Edna Aitken)

New vines from the old

NEVILLE PASSMORE continues his series on exotic fruit.

PASSIONFRUIT are perennial vines native to Brazil. The seedling black-purple passionfruit and the banana passionfruit are the most commonly grown varieties and can bear prodigious crops within two years of planting.

Grafted vines are available and these have advantages worth considering. Sunnypash has big black fruits and its rootstock confers good cold tolerance and wilt-disease resistance to the plants.

Two new hybrid vines now available in Perth nurseries — Lacey and Purple Gold — are the result of cross-breeding the tropical yellow fruiting variety with the black we know so well here. The fruit of both are purple-black with superior flavour.

They are grafted on to a different rootstock which, as well as being very vigorous, is resistant to Nematode attack — a frequent problem with passionfruits in sandy metropolitan soils.

PLANTING AND GROWING PASSIONFRUIT: Plant when the danger of frosts is over. All passionfruit vines will establish quickly in fertile soil, so be generous with soil improvers such as peat, animal manure and compost. Good drainage is essen-

tial. Soil that is waterlogged even for short periods increases the risk of root rot.

Choose a sunny, wind-protected site. If planting on an open trellis run it north-south to maximise sunlight exposure. If growing against a fence, plant on the northern-facing side.

I have seen vines planted on a southern wall run up and over the other side to give most fruit to a neighbour. While this is good for neighbourly relations it's probably not the reason you planted a passionfruit in the first place.

TRELLISING: You need to provide strong support for your vine because it exerts considerable weight in full fruit. Passionfruit can be trained to grow up and cover a pergola or along wires attached to garden walls and fences. A single vine can easily spread to cover an area three metres long.

WATERING: In sandy soils it would be difficult to over water passion vines in summer. They need a minimum of two good soakings a week and extra during heatwaves.

One note of warning — overhead watering by sprinkler while the vine is in flower can actually

reduce fruit set by making the pollen ineffective. If you have such an overhead watering system apply the water after the sun sets in the evening. Trickle irrigation has proved to be ineffective in watering passionfruit vines.

PRUNING AND TRAINING: Young vines need a light stake to grow beside. Using your forefinger and thumb, pinch out any side shoots, leaving only the vertical top shoot to keep growing. When it reaches the height of say the first wire or the trellis, pinch out the top shoot and allow two or four side shoots to develop. These can then be trained to run along the wires as the main laterals. Where a second, higher wire exists, train one of the shoots into a vertical position and repeat the tip-pinching procedure when it grows up to reach that wire.

Mature vines should be pruned annually in late winter to promote abundant new fruiting and shoot growth. Prune back about a third of the old lateral shoots and foliage-covered shoots. Completely remove any dead growth.

The frozen pulp will keep for up to three months. You can freeze the juice in ice-block trays.

Harvest the fruit when it is just starting to wrinkle. Even though the skin continues to wrinkle after picking the fruit interior stays juicy for many days, even weeks.

Passionfruit are attractive creepers and will cover a garden fence or pergola with a mass of lustrous deep-green foliage. The mauve flowers of the black-fruiting varieties and the pink flowers of banana passionfruit are among the most intricate and attractive of blooms.

FERTILISING: Heavy cropping vines are vigorous, well-fed plants. Use a complete NPK fertiliser. You can make up your own by combining eight parts of genuine blood and bone with one part sulphate of potash. For mature vines apply half a cupful of the mix every four weeks. Sprinkle the fertiliser near the root zone, but avoid touching the trunk as this can burn the bark and encourage the entry of fungal disease spores. Always water fertilisers in thoroughly.

ENJOYING PASSIONFRUIT: Tangy passionfruit pulp is a favourite topping for icecream, cakes and pavlova and adds colour and interest to fruit drinks, yoghurt and fruit salad.

WANATACA SURVEY

We had a good response for the Membership Interests Survey, but made one bad blue with the form - no space for Name or Membership number. In many cases we were able to get this from the envelope or from subs renewls, but some beat us. Below are the difficult ones - if you recognise yours, please please let us know!

MOBART
5 FEB



LEEDERVILLE
21 FEB



WANATACA SURVEY
PO Box 565
SUBIACO
W.A.
6008

WANATACA SURVEY
PO BOX 565
SUBIACO
W.A. 6008

①

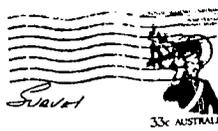
④



ROSEWORTHY
AGRICULTURAL COLLEGE
THE COLLEGE OF ADVANCED EDUCATION
IN AGRICULTURE, NATURAL RESOURCES
AND GEOLGY.

UR MAIL

BRIDGE
11 MAR
1985



⑤

BRIDGE
11 MAR

WANATACA SURVEY
PO. Box 565
SUBIACO 6008
W.A.

③

Wanataca Survey,
PO Box 565,
SUBIACO, W.A. 6008.



PERTH
5-PM
3 FEB
1985
W.A. 6000



PERTH
1 FEB

⑧

PERTH
3 FEB

⑦

WANACTA Survey
P.O. Box 565
SUBIACO 6008

LAYTONS
6 FEB



WANATACA Survey,

PO Box 565
SUBIACO. 6008.
W.A.
AUSTRALIA.

②

ABELAIDS

If not claimed within 7 days, please return to



DEPARTMENT OF
AGRICULTURE

Kyalite Pistachios,
P.O. Box 0211,
Queen Victoria Buildings,
Sydney NSW 2000.
Farm: "Rivernook"
Kyalite NSW
13 February 1985.

The Secretary,
Western Australian Nut & Tree Crop Assoc.,
P.O. Box 27,
Subiaco WA 6008.

Dear Ms Bud,

Could you please advise details of membership of your association.

For your information, Kyalite Pistachios is one of Australia's first commercial pistachio orchard with 30ha planted of an expected 100ha.

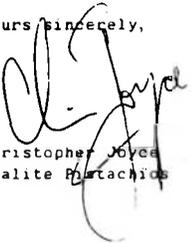
From the spring of 1985 we will have available pistachio seedlings both budded and unbudded.

I feel that some of the prices mentioned for pistachios are most unreasonable. That the farmer who reports in your 1983 Yearbook as having sold 10kg for \$8.00/kg may give potential farmers false expectations.

On the current international market, which is expected to fall over the next few years as the new Californian orchards reach full production, clean/dry, split nuts will in fact realise farmers about \$5.00/kg. The current retail price is about \$11.00 - \$12.00/kg although there are some specialty stores which can sell for \$16.00/kg.

Certainly farmers who produce a few kilograms can hand wash and sort and sell to retailers. However, any commercial grower i.e., more than a few tonnes will require large expensive hulling and grading equipment and must sell into the mainstream of the nut trade - not specialty stores.

Yours sincerely,



Christopher Jey
Kyalite Pistachios

Rare Fruit Council of Australia



XXXXXXXXXXXXXXXXXXXX

BRISBANE BRANCH

C/- Mrs. W. Higgins,
Lot 6, Hunter Road,
GREENBANK, Q. 4124

(07) 200-1272.

4/3/85.

Lorna Budd,
Secretary/Treasurer,
W.A.N.T.C.A.
Box 565, P.O.,
SUBIACO, W.A. 6008.

Dear Lorna,

Enclosed is your Fruit & Nut Tree Survey Form which we have completed. I have also enclosed a form which the R.F.C.A. Capricornia/Rockhampton Branch sent down to me in case it would help Brisbane Branch do a similar survey. I have modified it a bit for our Brisbane Branch, however I thought it may be of interest to you or other W.A.N.T.C.A. members to enable you to get a pretty good idea of what everyone is growing.

We have just sent them out to our members so hopefully when we get them back we should know what everyone has, how it is growing, what type of soil, climate, etc. I think it is the only way we can all help each other (no matter what Society) to grow better fruit and nut trees, and in future if someone says they want to grow "so and so" we can say - "....." has one of those get in touch with them and they should be able to tell you all about it.

One suggestion if you are going to change it around a bit I have found there is not enough space to write much on the different varieties, and the comments column is definately too small!! Hope it will be of use to you.

One other thing, would you mind sending me over a few membership forms, as I have been trying to recruit W.A.N.T.C.A. members over here and have run out of forms. Still have a few Granny Smith Book Lists left. The book from the Philipinnes sounds great.

P.S. Hope your wrist is better.

All the best,

Sincerely,


(Mrs.) Wendy Higgins
Secretary R.F.C.A. B'ne Bch
W.A.N.T.C.A. Member



EAT YOUR LANDSCAPING



NEW ZEALAND TREE CROPS ASSOCIATION INC.

28 Highland Road,
Mount Albert,
Auckland 3,
New Zealand.

283 280 2754
27277X
283002

February 27, 1985

Western Australian Nut & Tree Crop Association.
The Secretary,
117 Thomas Street, East Cannington.
Dear Lorna,

Please forgive the familiar use of your first name. My partner, Jerrold Drexel tells me that he has joined your Association and has just brought me the January issue of Quandong. I was pleased to see that you are giving the 1986 ACOTANC 111 some publicity. We have had a small problem here and I would like a favour from you if I may. George McKinnon has been the Conference Convenor up till now but he was caught in the Coromandel floods a couple of weeks ago. He and his wife Ann were lucky to keep their lives and they lost their car as well as other possessions. A few of us have stepped in to relieve George of the worries and that is why I am writing to you. As you know the theme will be crops for tomorrow and we will be looking for some papers from everywhere on this general subject. We have not got a budget yet, but it looks as though we will follow the same system as the Melbourne Conf. and use to best advantage those people who are coming to Conference anyway. We have shifted the date to about the middle of May to get University and Technical Institute facilities. These factors will give us a first class venue. We will pull together a team in the next few weeks and should be able to produce the "goods".

Please pass on my regards to Wally & Edna Aitken. We met at Melbourne. Also tell the Mike Shipley family that we hope they had a good trip around New Zealand and a safe journey home. I look forward to hearing from you as soon as convenient.

All the best,


Owen Long,

North Island Vice President.

GROWING HAZELNUTS - INFORMATION SHEET

VNGA HAZELNUT RESEARCH SUB-COMMITTEE

RESEARCH NOTE No. 1

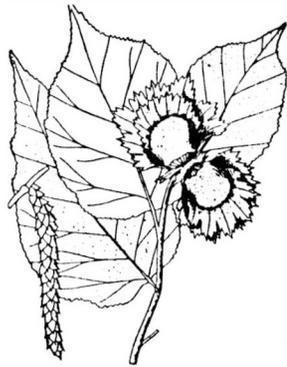
PLANTING & TREE CARE

To plant out even a small acreage of hazelnuts, the handling and setting out of several hundred small trees is involved. This is an undertaking that will amount to a reasonable investment in terms of the cost of the trees and without some effort expended in planning the work, the use of methodical methods and forethought towards the possible limiting factors, the risk of failure and cost of losses may be quite high.

The purpose of this note is to provide some hints and suggestions that intending growers may find helpful in planning their venture.



Corylus cornuta



Corylus americana

LOCATION

In most cases the intended orchard site will have been decided. Nevertheless, the characteristics of a likely good site would include a good well drained soil to a minimum of 2m depth, of medium texture and without an underlying hardpan. The pH would be desirably not less than 6.0. The climatic zone should be one that does not experience high summer temperatures, nor warm winter temperatures. The aspect of the site is not of vital importance, but a site of gentle slope would be preferred and an area of strong winds would be best avoided.

SITE PREPARATION

Preparation of the orchard site should commence one to two (2) years prior to

actual planting and in simple order, this would involve the erection of fencing to exclude grazing stock and rabbits, clearing of all competing vegetation, assurance of a water supply for irrigation and a plan of soil sampling and testing.

The type of fencing must be such as to exclude all grazing stock and vermin. The close presence of foraging animals and the establishment of an orchard are quite incompatible activities. Clearing vegetation, ploughing to lie fallow with follow up herbicides as appropriate to the local situation is ideal. At the very least, deep ripping along the planting lines should be carried out. It is highly unlikely that in southern Australia that

good commercial crops of hazelnuts can be obtained without summer irrigation. An adequate supply of water should be at hand for example, a dam of not less than 8Ml. In carrying out soil sampling and testing, the advice and assistance of specialists should be obtained. Overseas reports have mentioned that the hazel is susceptible to nitrogen and potassium deficiencies and occasionally magnesium.

TYPES OF PLANTS

There are many different varieties or cultivars of the hazelnut that are available. Of these, at the present time only very few are thought to have much commercial potential. The commercial value of the hazel is either in the in-shell market or the kernel market. A decision has to be made by the grower as to what market he wishes to enter and select the appropriate cultivar. Along with that cultivar, the appropriate pollinator must be selected also.

Plants are best purchased as two (2) year old layers, that is, offsets from the parent plant grown in the nursery row for one (1) year. Anything less than 1m high and 8mm stem thickness is likely to be lost in the field in the first year. Also, smaller trees will tend to branch out at too low a level which will be unsuitable for later mechanisation and should not be contemplated by the serious grower. Under no circumstances should seedling plants be purchased.

For some cultivars the availability of guaranteed true to type planting stock is limited. It is advisable to order from the nursery at least twelve (12) months ahead of the date that they are required for planting out.

ESTABLISHMENT

1. Layout

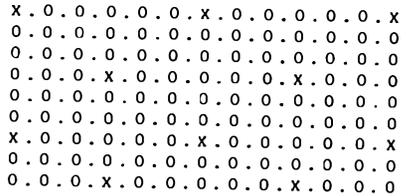
Given that the land preparation has been done, the layout of the orchard must be set out. The current trend is towards initial high density plantings, thinned out in later years. It is essential to plan the position of the pollinator at the beginning so that culling can take place at a later date. For example, 3m x 5.5m (10ft x 18ft = 242 trees/acre) rectangular at first then thinned out to 6.1m x 6.2m (20ft x 20.6ft = 125 trees/acre) triangular which maintains the highest efficiency in terms of productivity over the long term.

Another popular example is as follows :-

"Alternatively, a 16' x 16' layout could be adopted with trees planted every 8' along the rows. The pollinators are planted on the 16' x 16' layout every sixth tree for the first row commencing with a pollinator and in the fourth row commencing at the fourth tree, thereafter, the seventh row repeats the first row and the tenth row repeats the fourth row". (Fig. 1)

This alternative scheme will provide a high yield of nuts in the early years of establishment.

"Fig. 1"



Legend :- X Pollinators
 0 Cultivars
 . 8' Filler Cultivars

In setting out the orchard, sufficient room should be allowed between the fence and the outside row of trees for a windbreak if necessary. In any case, the first row should not be planted less than 7m close to the fence to allow for access and passage of machinery. The operation of pegging out the orchard requires the use of lengths of fencing wire to set out the rows.

The wire is marked at the planting interval and stretched on the ground and the planting points marked with pegs. The rows at right angles are set off by an elementary construction of a right angle, such as a, 3, 4, 5 triangle. At this stage, the drip lines for irrigation should be laid out.

2. Season for Planting

The season for planting is early winter. When carried out early the plants will be well established by mid-spring. Planting is best left until a dry spell is over and when no frosts are imminent. It is best to plant only when the soil moisture is high, i.e. after some rain, but not if the soil is too heavy.

3. Handling of Planting Stock

Hazelnut plants are purchased as bare root stock in June or July and in principle, the shorter the time between lifting in the nursery and planting in the permanent position ... the better.

On transport from the nursery the plants should be made into bundles and wrapped on moist hessian. On arrival at the site these should be opened and heeled into moist friable soil. The bare roots must never be exposed to wind, sun or frost.

During planting the plants should be carried in covered bundles or boxes holding approximately 100 plants.

4. Planting Method

On most soils the spade is the best planting tool. Post hole diggers and augers tend to glaze the sides of the hole which then forms a barrier to later growth of the root system. Any grass at the planting point should be chipped away to 45cm distance and the hole dug deep enough to ensure that when the plant is just placed it will be at a depth just slightly below that at which it was grown in the nursery. The hole must be dug large enough so that the roots are not bent or twisted. Any damaged roots may be trimmed and then the plant is set in the hole and the soil replaced and compacted with the foot or heel and then the plant is watered in to settle the soil and to exclude air pockets. An initial pruning of the top 1/3 of the plant is done with secateurs to balance the top of the plant with the root system, and except for large plants, say more than 2m height, a stake should not be necessary. Fertilizer should not be applied at this stage, unless, it is of the slow release form and then placed only at some distance (45cm) from the tree.

5. Mulching

Orchard planting should include allowance for mulching of some kind. This confers many benefits to a growing plant. Mulch can be of various forms, such as, sawdust, leaf litter, hay, sand, screenings or black plastic. The latter is very effective, easily handled and 45 cm squares can be simply prepared well in advance of the time of use. The depth of mulch to use is about 7-10 cm.

6. Protection

Newly planted trees in open ground will require protection from grazing animals and perhaps, wind. In the absence of suitable fencing each tree would require guards. Many ingenious devices and tree coatings have been tried for this purpose, but in the long term, sound orchard fencing is the simplest and most effective form of protection.

7. Refilling

Although the aim is to achieve 100% success with the planting, inevitably some losses will occur during the first year, increasing with the size of the project. This may be the result of one (1) of a number of causes and plans should encompass the need for replacement (refilling) in the following winter. Follow-up orders from the nursery should be placed as a contingency.

8. Watering

Follow-up watering should be carried out during dry spells in the late winter-early spring. Periodical soaking is better than frequent light waterings to establish a good deep root system. In the dry summer months, drip irrigation should be applied to make up the soil moisture deficit.

9. Weed Control

Weeds growing in close proximity to a newly planted tree compete with it for moisture, nutrients and sunlight. In this way, they handicap rapid and successful tree establishment. Control of weeds is therefore essential and can be achieved organically by mulches or chemically by herbicides. No herbicides have been registered for use on hazelnuts in Victoria, although several types are known to be effective, including paraquat and glyphosphate types.

ROW MANAGEMENT

1. Pruning

Very little pruning is done in the early years except to select 3-5 scaffold branches. After five (5) years a regime of orchard pruning can be established.

2. Control of Suckers

Growth from the base of the tree called suckers will occur continually and if left untouched the plant will eventually grow into a multistemmed bush. Removal of suckers forms a tree with a single stem and this is best achieved by cutting out the suckers each dormant season or by direct application of suitable sprays.

3. Fertilizer

A fertilizer program needs to be conducted in subsequent years with the quantities used being based on leaf analysis. Specialist advice should be sought on these matters.

4. Irrigation

Although the hazel will bear fruit in some areas without summer watering, the yield is much reduced below that which would be obtained with irrigation. The quantity of irrigation needed each season depends entirely on local conditions and no general rules can be given. The design of irrigation systems over many areas requires the advice of specialists whose advice should be sought.

* * * * *

VNGA HAZELNUT RESEARCH SUB-COMMITTEE RESEARCH NOTE NO. 2

TRAINING & PRUNING OF HAZELNUTS

The objects of pruning and training of plants are (1) to produce a plant of most appropriate shape for all management operations and; (2) to influence growth in such a way that optimum yield, of appropriate quality can be achieved, either per plant or per unit area.

As with any other business activity, the labour of training and pruning must be reduced to the minimum necessary to optimise returns, and as labour costs and prices received vary, so management systems must be sufficiently flexible to respond to these trends.

Pruning must fit in with other management systems; to take one example, mechanical nut sweeping and collecting is far less efficient around multi-stemmed shrubs than

around single-stemmed trees. The same comment applies to all methods of weed control, with the possible exception of the hand hoe. Some authorities believe that single trunked trees out yield shrubs during the first seven (7) years, and for these reasons the single trunk is to be preferred.

To the best of our knowledge, no studies have been conducted in Australia on hazelnut pruning and training systems, and so these notes are compiled from local experience, plus overseas recommendations.

Methods more appropriate to home gardens have been ignored in favour of the most cost-effective methods.

1. Training

Our aim is to produce a system of strong scaffold limbs from a 60-75cm trunk. In the first year allow the plant to grow as a single stem which is headed back at 90-100cm at 12-24 months post-planting. Thereafter, allow three (3) to six (6) branches to develop as scaffold limbs; these can be selected soon after they start to grow and other buds and small shoots lower down the trunk rubbed off. The aim is to avoid major surgery to small plants as this will prolong the non-bearing period.

Once a vase-shaped scaffold is established, the only pruning (in the first seven (7) to ten (10) years) should be of a corrective nature - removing broken limbs, correcting earlier training errors, etc. There is no need to shorten new growth as in pruning stone fruit, except to correct mis-shapen branches.

2. Pruning

Most hazelnuts are borne on one (1) year old twigs (spurs) arising from older wood. As the tree ages, these spurs will gradually become more dense and less vigorous in their growth. It is time to prune when, despite good fertilizing and management, new growth is visibly poorer than in previous years, lichen or moss may appear on the tree, the outer rows show more vigour than the middle of the orchard, or dead twigs appear in the middle of the tree ... in other words, when the orchard "runs out of steam". This may happen in ten (10) years post-planting and it may take twice that long.

Walnut Varieties for the Future

By Lonnie C. Hendricks

The development and evaluation of new walnut varieties has been an important continuing project for the University of California for many years. Much of the breeding and selection of new varieties started many years ago with Eugene Serr and Harold Forde at U.C. Davis. The current university varieties and numbered selections are the result of thousands of controlled crosses by Serr and Forde.

The evaluation of these walnuts is continuing under the leadership of Dr. Gale McGranahan and Ben Iwakiri at Davis, and new research is underway attempting to develop improved rootstocks and possibly blackline-resistant or tolerant selections. The selection process now emphasizes late leafing with quality equal to or better than the currently planted varieties.

Economic pressures on all of agriculture dictate that farm land must not be unproductive for extended time periods. Therefore, new orchards must begin producing as early as possible. Lateral bud fruitfulness is an important characteristic for early production. A new variety must have 80 percent to 90 percent lateral fruitfulness to be competitive. It is also important that the variety be consistently fruitful, not erratic.

High productivity requires good

pollination. A few varieties shed pollen when their own flowers are receptive, but most will benefit from cross pollination. The pollination chart should be studied carefully when choosing varieties for new plantings.

The records of actual plantings are very interesting. **Hartley** continues to be the major variety planted (35 percent), even though it is somewhat slower to start bearing than many others. Its many attributes of excellent quality, good yields, freedom from many common pest and disease problems, and exceptional market acceptance, outweigh its faults such as deep bark canker and a more leisurely bearing pace.

Payne continues to be the second most planted variety (18 percent). Its main attribute is consistency. Growers know what to expect and it bears well. Even though codling moth, blight and only average quality are problems with Payne, it is well proven. **Ashley** has the same problems as Payne but has about two percent more kernel and usually slightly better quality than Payne. Regardless, growers have rejected Ashley and it constitutes only about one percent

Chandler is a newcomer which has risen to third place in plantings. Chandler has all the good features: late leafing, high lateral bud fruitfulness, large nut, very light color and good yield potential. However, there has been a

question about shell strength and seal in young trees and some indication that Chandler may be slower to start bearing than some of the other varieties.

Chandler is potentially outstanding, but so was Serr when it was a young variety. Let's keep watching Chandler closely. Plant it, but don't ever commit everything to a single new, unproven variety.

Vina is fourth in plantings. It is the oldtimer of the new varieties, dating from 1949. Vina is a heavy, early producer of good quality nuts, but in some years kernels can be dark and show high offgrade. Good pruning is needed to maintain nut size.

Serr still retains five percent of the new tree plantings even though its track record can only be classified as miserable. In a good year, Serr can be a moneymaker with its high quality and large nut size. But in years like 1984, I hear only grumbles.

Chico can hardly be called a new variety since the original cross was made almost 30 years ago. Chico was originally introduced as a pollenizer for early blooming varieties and is still one of the best for the earlies. Currently it is of interest for hedgerow plantings and has performed well. Chico quality is very good, but nut size and kernel percentage are moderately low.

Howard is possibly the "sleeper" of the new varieties. It has excellent quality, early bearing, good shell seal and good nut size. Leafing and harvest are near Hartley time. Tree size is small and should be adaptable to close planting and hedgerow. Don't plant Chandler without also considering Howard.

Sunland is an excellent early blooming, mid-season harvesting variety with exceptional nut size. Quality is good but color is not as light as Howard or Chandler. Sunland should only be planted in the warmer, drier districts where Ashley or Payne can be grown. Sunland is a large tree, so give it room.

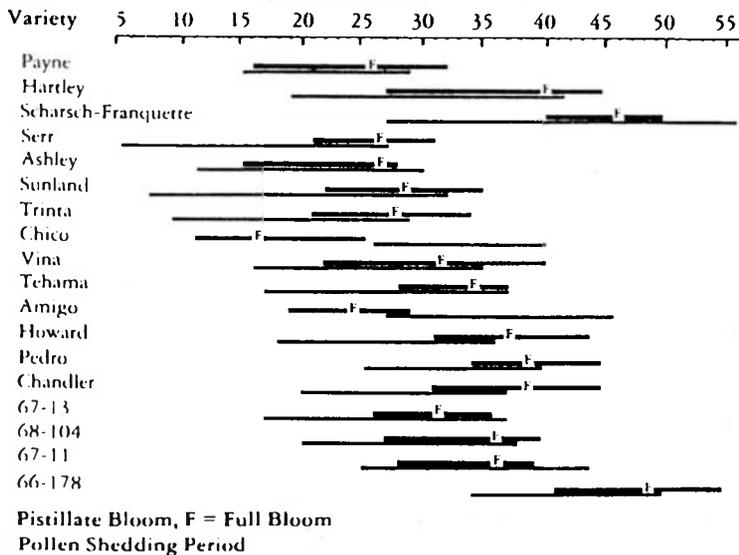
One numbered U.C. selection of interest as a pollenizer for Howard, Chandler and Hartley is UC66-178. This selection has had poor yields until the last two years, probably because there is little pollen available at this late bloom period. UC66-178 leafs a full month after Payne but has 80 percent lateral bud fruitfulness. With the correct pollenizer it should produce good yields.

The choice of a variety is always difficult and no one variety is clearly superior to all others. Characteristics can change from year to year. Lateral bud fruitfulness can vary widely in some varieties. Past records indicate that Serr has varied from 0 percent to near 100 percent lateral bud fruitfulness in different years. For this reason, the figure indicated in the table for lateral bud fruitfulness is that most often recorded, not the average of a number of years.

Variety choice is a long term commitment. Each grower planning to make this choice should study all available information carefully. Talk to growers and handlers in your district and consider your own expectations and commitment to walnut growing.

Finally, and most important, consider the future needs and desires of the industry and choose a variety combination which will best serve these future markets. □

**Relationship of Pollen Shedding Period to Time of Peak Pistillate Bloom
Of Walnut Varieties at Davis, California
Days After Payne Leafing Date
Average of 4 Years (1979-1982)**



**Comparison of Old and New Walnut Varieties
U.C. Davis Orchard¹**

Variety	Percent Nursery Sales 1982-83	Time Of Leafing Days After Payne	Lateral Buds Producing Pistillate Flowers(%) ²	Average Kernel Weight (grams)	Average Kernel Percent	Percent Light Kernels	Shell Seal Grade ^h	Crop Estimate ^c	Harvest Date (1982)
Old Varieties									
Payne	18	0	80	5.2	48	50	2.0	3.0	9/20
Hartley	35	16	5	5.9	45	90	2.2	2.4	9/21
Franquette	3	31	0	5.2	46	70	2.0	2.0	10/6
New Varieties									
Serr	5	-1	50	7.6	58	60	2.2	2.1	9/18
Ashley	1	-1	90	5.3	50	50	2.0	2.7	9/20
Chico	4	2	90	5.0	47	70	2.0	3.8	9/18
Sunland	2	2	80	9.9	59	60	1.8	2.7	10/2
Vina	12	7	90	5.6	48	60	2.3	3.2	9/19
Tehama	1	11	80	6.7	50	70	2.2	1.6	9/19
Amigo	*1	12	80	6.0	52	90	2.0	3.3	9/19
Pedro	*1	18	80	6.5	48	50	2.4	2.3	9/19
Howard	*1	15	80	6.5	50	90	2.2	3.6	9/19
Chandler	15	19	80	6.3	49	90	2.6	3.3	9/23
66-178	-	31	80	6.6	47	60	2.0	1.2	10/6
68-104	-	13	80	6.6	56	80	2.2	2.7	9/21
67-11	-	20	80	7.3	54	80	2.4	3.1	9/24
63-378	-	9	80	7.0	53	50	2.1	3.5	9/20

¹Five year averages based on 10 nut or 4 tree sample each year.

²Shell Seal = (1) very well sealed (2) well sealed (3) moderately well sealed (4) poor (5) very poor.

* Less than one percent.

^cCrop Estimate = (1) poor (2) fair (3) good (4) heavy (5) very heavy.

^hPercentage most often observed. May vary considerably from year to year.



COMMONWEALTH DEPARTMENT OF HEALTH
PLANT QUARANTINE LEAFLET NO. 41

NAVEL ORANGEWORM

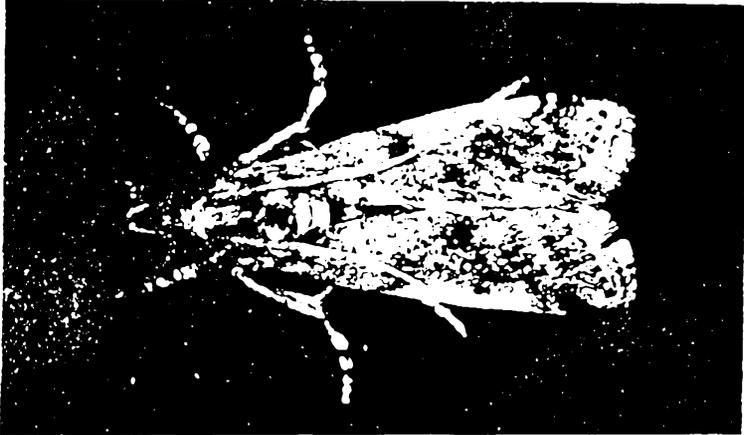
Paramyelois transitella (Walker)
Lepidoptera: Phycitidae

The navel orangeworm is a very serious pest of walnuts and almonds. In California, heavy losses to nut crops occur every year, both in the field and in storage. Infestation of crops occurs during the hullsplit period of development and can reach levels of 30 to 40 per cent.



Distribution: Navel orangeworm is present in Mexico and parts of the United States. It was first recorded in the United States in Arizona during the 1920s and since then has spread to Oklahoma, Georgia and California. In California its spread has been rapid and it is now recorded from most of the nut and fruit producing areas.

Navel orangeworm is a destructive pest of fruit and nut crops, particularly almonds and walnuts. In California annual losses to growers and processors amount to tens of millions of dollars. The insect is difficult to control and requires the application of insecticides and cultural control methods to minimise damage. Nuts taken into storage require to be fumigated. Should these treatments be required in Australia they would lead to increases in production costs of nut crops. In addition to the damage to nuts and larvae produce copious quantities of webbing and frass which can make products made from infested consignments unsuitable for human consumption.



Navel orangeworm moth

The navel orangeworm overwinters primarily in the larval stage in mummified almonds that remain on the tree or on the ground after harvest. In the spring the moths emerge and lay eggs on mummified nuts on the tree. These nuts provide the principal food source of the first generation larvae. Moths of this generation emerge during autumn to infest the current year's almond crop at the stage when the hulls of the nut begin to split. Developing larvae pass through a number of instars which vary between 5 and 7 depending on conditions. Fully grown larvae are 13–19mm long and during development change in colour from reddish-orange to white-pink.

Larva of navel orangeworm



Pupa of navel orangeworm



Mature larvae pupate in the shell or hull after making an exit hole so the adult moth can leave freely. The pupae are dark brown in colour and from 7 to 12 mm long. Adult moths are silver-grey with irregular black patches on the forewing. The wing span is about 20 mm. Mating normally occurs within a day of emergence. Eggs are deposited in groups of up to 30 anywhere on the mature nut or on twigs close to nuts. Females can live for up to 12 days and are capable of producing up to 245 eggs.

The life cycle of the navel orangeworm can be completed in as little as 28-30 days during midsummer in California.

Walnuts, almonds and pistachios are the most severely attacked nut crops.

Other hosts include figs, dates and a range of other dried fruits and nuts as well as rotting or mummified fruits of citrus, pears, apples and stone fruits.

Importation of infested walnuts, almonds and pistachios is the most likely way by which the navel orangeworm could be introduced into Australia.

Because of the risk of introducing this and other pests, all consignments of nuts imported into Australia must be fumigated.



Damage to walnuts by navel orangeworm

AG. DEPT. FIELD DAY - Stoneville (Fruit) Research Station, Anketell Road, Stoneville. Sat. May 11, guided tours from 8.30am to 8.30pm. Queries, ring Doug Johnson, Manager.

LAND FOR SALE for organic farming, Porongorups, 260 acres. Details: Patric Sturgeon, (098) 532085

Taste of these apples lingers on

NEVILLE PASSMORE continues his series on exotic fruit.

CUSTARD apples are an unusual fruit, which once tasted will always be pleasantly remembered.

The big green-skinned fruit, about the size of a grapefruit, looks anything but appealing.

However, any initial disappointment is quickly forgotten when you dip into the fine custard-like sweet flesh.

The fruit is virtually unknown in Perth markets – most people who have tried it have done so on trips through South-East Asia.

Commercial plantings of custard apples have now taken place in Queensland, northern NSW and Carnarvon in WA.

CLIMATE:

Custard apples originated in the cool mountainous areas of South America and are now grown throughout the tropical areas of the world.

They can succeed very well in Perth's metropolitan area, where a fairly controlled microclimate exists.

In particular, they need

to be protected from drying easterly winds – probably the greatest requirement for growth and fruit set.

They enjoy a high level of humidity and this can be achieved in a small garden with plenty of summer moisture, especially from overhead sprinklers, and heavy mulching with organic material.

Custard apples also need protection from frosts, particularly while they are young. Mature trees can stand temperatures down to around minus 3C, but a heavy frost can kill a young tree.

I've seen a young, four-metre-high tree in the Perth suburb of Kensington with a crop of about 30 fruits.

Custard apples are normally semi-deciduous, meaning that they usually lose their foliage in the early spring before flowering.

In cooler situations, in certain backyards, they can lose all their leaves throughout winter.

CUSTARD APPLE VARIETIES:

Seedling custard ap-

ples do not produce satisfactory fruit and take many years to produce any fruit at all. As such they are an unreliable proposition for the home gardener and the commercial grower.

Grafted trees bear within about three years from planting and the fruit is much superior to that of the seedlings.

There are two main varieties – African Pride and Pinks Mammoth.

African Pride is a compact tree, will bear in its third year after planting, is more tolerant of the cold and crops during autumn.

Pinks Mammoth is a big open tree and takes up to six or seven years to produce a full fruit set. The fruits are bigger and more irregular in shape than African Pride and the quality is clearly superior.

PLANTING:

Position is most important. Custard apples need to be planted in a sheltered position facing north to north-west to maximise winter sunshine. You can plant your tree near a cluster of other trees for protec-

tion, not only from wind, but also frost.

Soil preparation is essential, particularly for our sandy soils. Custard apple trees need generous quantities of well-rotted animal manure such as chicken, cow or sheep incorporated into the planting hole.

Mulching is essential, to not only improve the humidity situation, but also to insulate the plant from rapid changes in moisture and root temperature.

Irrigation in summer is particularly critical. The trees should never dry out and need to be watered, even when established, at least twice a week. During very hot weather, when the temperature reaches 40C, they need watering daily.

FERTILISING:

It is recommended that you don't apply any fertilisers to your new plant till it shows signs of a successful take. This usually occurs two to three weeks after planting, depending on the season.

The recommended feeding is at six to eight-week intervals during the growing season from September to April with Nurserymen's brand General Purpose Garden Fertiliser or NPK Blue - both have a balance of major nutrients required for growing and successful fruiting.

AFTER CARE:

It is important to prune young custard apple trees to form a vase

shape. Their natural tendency is to produce a strong leader and a conical shape.

When buying your custard apple choose a plant with two strong shoots. Once these have reached 60 to 70cm in length take out the tip of each shoot with a pair of secateurs. Continue to

take out these tips on subsequent growths when they reach that size.

This will result in an open, spreading frame for your tree, enable it to support a big crop and allow light into the centre of the tree to mature the fruit.

Mature trees should be pruned lightly in December to promote young flowering growth. Custard apples will fruit on old as well as new wood.

HARVESTING:

Fruits take up to six months to mature on the tree after setting. Choosing the correct moment to harvest the fruits requires some experience. However, one thing to look for is the skin between the main segments of the fruit, which changes from a green to a cream colour.

Cut the fruit stem with a pair of secateurs, leaving a 3 to 5cm stub of stem on the fruit. This helps to prevent the entry of disease spores. The fruit now needs to be left for a couple of days at room temperature to soften before it is ready to eat.

WHAT CAN GO WRONG:

A low fruit set in hot dry conditions: You can overcome this problem by hand pollinating individual blooms. Use a small paint brush to transfer the golden grains of pollen from the male part of the flower to the sticky receptive female parts of the flower.

Scale insect infestation: This is quickly picked up by the presence of a black sooty mould on your tree. This particular mould is attracted by the exudation of the Scale insect. Spray your plant on a cool day with Malascale, which is a mixture of malathion and white oil. It is important to follow up this initial spray ten days later with a second application.

Collar rot: It is important to avoid this problem early by planting your custard apple at the same height in its new soil as it was in the pot. Burying it deeper can cause a ring of bark around the bottom of the trunk to set off rot. It is also recommended that you keep mulch away from the trunk.



Custard apples

West Australian Nut & Tree Crop Association.

PO Box 565, Subiaco

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CALENDAR OF EVENTS 1985

(General Meetings are held quarterly at the Naturalists' Hall, No. 23 Meriwa Street, Nedlands, at 7.30 pm on Wednesdays)

MAY 1	Wed	General Meeting (Sandy Pate JOJOBA)
JUN 25	Tue	Executive Committee
AUG 7	Wed	General Meeting (Mark Quenby : NUTRITION OF NUT & FRUIT TREES)
SEP 24	Tue	Executive Committee
OCT 20	Sat	Field Day (Murray Raynes' PECAN PLANTATION, HARVEY)
NOV 6	Wed	Annual General Meeting
DEC 17	Tue	Executive Committee

Members wishing any matter to be considered at an Executive Committee meeting should contact the Secretary by 2 days before the meeting.

Current Subscription Rate : \$20.00 per year (includes all publications); Students \$10.00.