Volume 1 No.1

QUANDONG

April 1975

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Newsletter of WANS the West Australian Nutgrowing Society

EDITORIAL

Welcome to the first issue of QUANDONG. It is intended to issue this newsletter to the members of the West Australian Nutgrowers Society three times a year. Quandong will contain news of events in the world of nut growing, members' comments and tips, short articles on horticultural techniques applicable to nut plants, and the editor's meanderings. Do write in with your queries and experiences, we are all keen to learn from others and help others if we can.

For those unfamiliar with what a quandong is, it is one of the small number of native West Australian nut plants. Country members will be familiar with the quandong tree with its long, narrow leaves and brilliant red fruit, still used for making jam; the stone of the fruit is the characteristically pitted quandong nut depicted above, almost perfectly spherical and containing the edible kernel. Botanically the quandong is Santalum acuminatum, and is a close relative of the West Australian sandalwood (which also has edible nuts), Santalum spicatum.

A great deal of help and encouragement in the formation of the Society has been received from many individuals, and also from other nutgrowing societies and organizations. Particular mention should be made of Robert Hambleton, of the Society of Ontario Nut Growers; Mac Hornum Kaiser, of the California Macadamia Society; and Dr. David T. Funk of the Walnut Council at Illinois.

If you are not already a member, we invite you to apply now. Anyone interested in any aspect of nut plants is very welcome, whether as a home gardener who would like to grow one or two useful and decorative trees in his backyard, a professional orchardist who would consider extensive plantings, or just someone who likes eating nuts and would like to find out more about them! Nuts are fascinating little creatures and whole books have been written about them, in fact whole books have been written about just one sort of nut. The main aim of the Society will be to provide useful information to members through QUANDONG and the annual YEARBOOK.

Occasional meetings will be organized, but you will still find it useful to become a member even if you live a long way from Perth, or if you live in Perth but cannot attend meetings. We already have members as far away from each other as Geraldton, Bunbury, Bridgetown, and Kalgoorlie, and we will welcome members from the Northwest and outside Western Australia.

QUANDONG : Official Newsletter of the

WEST AUSTRALIAN NUTGROWING SOCIETY

Editor : David G. Nock

Secretary-Treasurer : Mrs Carolyn Blackwell

All correspondance to: P.O.Box 27, Subiaco,
W.A. 6008, Australia

MEMBERS' NOTES

Mrs Cherry Pearce, 469 Railway Avenue
ARMADALE 6112.

We would be interested in information on nut growing. We are moving to Roleystone, we have 7 acres there and are considering planting some nut trees.

We have been trying to get books from our local library, but no luck yet, there seems very available on the subject.

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Mr Edmund Czechowski, P.O.Box 12
WANNEROO 6065.

I wish to register my interest in the future of nut-growing in W.A. I do not own land at present but am looking for a venture with a future.

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Mr Peter Bell, P.O.Box 43
HARVEY 6220.

I am interested in nutgrowing professionally, and would appreciate any information you could supply.

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Mr D.J.Bunter, 117 Enfield Street
LATHLAIN 6100.

Would like to know how to grow nuts for back yard and commercially. Would one be able to grow nuts a short distance from the Suburban area? Would it have to be loam soil?

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Mr J.C.Serventy, P.O.Box 16
BRIDGETOWN 6255.

The notice of the formation of your Society interested me greatly. I have recently moved to the Bridgetown area, and a small nut orchard has been one of the options that I have in mind to utilise the few acres that I have at my disposal.

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Dr & Mrs Malcolm J.Washer, 8 Hurley Way
HILLARYS 6025.

We are both very interested in obtaining information about nut-growing in W.A., particularly walnuts.

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Mrs G.Davies, P.O.Box 834,
GERALDTON 6530.

We have 10 acres of citrus orchard 6 miles from Geraldton and are very interested in trying nut growing, though we have been warned it's a battle against white ants here.

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Mr Alf. C.Orton, 210 Mandurah Road
BALDIVIS 6167.

I am interested in the formation of the Society, having a location that should be suitable to grow nuts of various kinds.

Those of us who are now growing old cannot do better than leave a plantation of some kind for future generations.

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Mrs L.Cox, P.O.Box 274
BUNBURY 6230.

I have several varieties growing in my garden and would be interested to gain any literature you may have available.

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Mr Tom Speer, P.O.Box 71
BRIDGETOWN 6255.

I will be happy to join the Society. I don't think we will be growing nuts actively much longer but I am still interested in propagation. I got 100 walnut seedlings from Lucas last spring. I managed to get about 50% grafts to take by bench grafting and storing in damp sawdust till planting. I consider this encouraging. This year I have in the region of 1000 seedlings growing happily in my new nursery, some of which are well above knee high.

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If You are not already a member, AND
You have read this far, then PROBABLY
You already have some appreciation of the benefits of nut growing. These include the production of a high-quality, tasty food, the beautification of garden and landscape, the production of highly sought-after timber, control of soil erosion, general ecological benefits, and the satisfaction of creating something of real lasting value for the future. If you would like to find out more about this challenging and rewarding activity, which is now gathering great momentum in Western Australia, we invite you to join the WEST AUSTRALIAN NUTGROWING SOCIETY. For your annual subscription of $5 you will receive all the Society's publications for the specified year, including all issues of the newsletter 'Quandong', the authoritative 'Yearbook' of the Society, and any special publications or leaflets.

Reprinted from SONG NEWS No. 5 , Fall 1974
(Newsletter of the Society of Ontario Nut Growers)

COMMENTARY ON CHESTNUT PLANTING INSTRUCTIONS

Because chestnut seed is very susceptable to fungi, its care and planting take special effort. If walnuts are stored for eating, and later one decides to plant a portion, they may be brought out of their dormant state and planted. The trick is to soak them in chilled fresh water until their meats are swollen and plant while the ground is still cold and wet. With chestnuts this is not possible. There is a whole succession of tricks needed to keep fungi from destroying chestnuts. They could be planted crisp in the late Fall and some would come up the next Spring. However, these planting instructions are to provide maximum germination and growth.

Pick nuts as burs split. If the weather is warm and moist at harvest time, the nuts may start to get moldy. Although chestnuts with moldy outer shells will germinate and grow as long as they are stored in a crisp condition, the mold is not desirable. If there is any crack or bite thru the shell, this mold will destroy a improperly stored nut. Usually all the nuts are viable when the first nuts split. Picking is advisable when these first nuts split because squirrels are soonafter hard at work taking all the nuts they can get.

Bag and store in insulated plastic bags, adding enough peat (moss) to separate (the) nuts. Store them away at maximum crispness the same day they are gathered. Air dry peat will condense moisture. The peat's function is to transport the condensed moisture away from the nuts and store moisture as a source of vapor which maintain a one hundred percent humidity in the bag. To keep this high humidity from condensing, the plastic bag should be enclosed in other paper bags for insulation.

Do not cure (planting chestnuts) as for eating. If you have purchased chestnuts in the store, you have probably gotten nuts which have lost twenty-five percent of their moisture. They are spongy, not crisp, when squeezed or chewed. This water loss has caused some starches in the nuts to change over to sugar. Crisp nuts may be astringent. Later, with the loss of water, they become sweet like sweet corn. Under this dehydrated condition they can remain mold free. Continued dehydration will bring them to a hard condition at which time they can be milled into flour. This process is not reversible. After too much dehydration, the addition of water usually initiates molds on the kernal. If you have bought eating nuts, and wish to plant them, they should be crisp. Soft nuts can be stored away with a damper peat mixture; half the peat is air dry and the other half is wetted and rung out. Expect deminished germination from spongy nuts.

Refrigerate at close to 32° F (0° C). Temperatures in the mid and upper thirties will hold crisp chestnuts at high humidity in good condition for more than a year. The reason for going to a low thirties temperature is to keep the nuts in damp peat areas from growing.

Soak in water at close to 32°F (0°C). Water is a growth stimulant for seed and mold. For chestnuts soaking is to be done in very cold water to make the nuts swell without allowing mold to grow. Drawing off the brown water flushes away mold and, perhaps, growth inhibitors. But more important, fresh water supplies high concentrations of dissolved oxygen needed in the seeds growing process. This same high oxygen water oxidizes the microbes.

Plant 3cm into your most sandy, least organic soil. Soil which has been manured or is near a leach (weeping) field is high in microbes which attack young chestnut roots. A three year wait is to be expected before planting chestnuts in manured ground. Chestnuts are seldom found growing in dark soil. The microbes and high water table associated with dark soil are assumed to eliminate the chestnuts.

Plant as early in the Spring as the soil heats to above freezing. The roots from Fall planted chestnut seed grow thru the Winter. Early planting will approach this natural situation. A straw layer should then be applied to insulate the ground, keeping it cool and moist. The cool ground will keep the chestnut stems from emerging until frosts are no longer a problem. When stems start to emerge, remove the straw or the strawwill encourage mold and mice.

Apply a 4cm gravel mulch. A soil high in silt will saturate and frost heave. Hopefully a gravel mulch will insulate the silty soil and allow only one cycle of freezing per winter. Chinese chestnut are prone to frost heaving. They can be replanted in the Spring, but the heaving process injures them and reduces their vigor. Also gravel mulches are recommended to discourage rodent burrowing. Mice are fond of chewing on chestnut roots and the gravel falling in on them is said to keep them out.

John Gordon,
1385 Campbell Boulevard,
North Tonawanda, New York.
14120

SOURCES

ne of the first problems facing anyone who decides to plant some nut rees is the basic one - where to get them? Some years ago your Editor ame up against this problem. The comments which follow are largely he result of his own searchings, and do not pretend to be a complete uide. In fact, the Editor would very much like to hear from any eaders or suppliers who can add to the meagre information given here.

n Perth there is no nurserymen who has a large range of nut trees vailable in any quantity. Among the few who do have something to ffer, mention may be made of Dawsons, Hoops, and perhaps Waldecks. Of he garden centres, Highway Nurseries in Maddington has some interest n nuts, as does their neighbour Blossom Garden Centre. Lena's Nursery n Osborne Park has a few trees.

utside the metropolitan area, nut trees have been offered by Fielders urseries, Harvey; Mannings Nursery, Pemberton; Olea Nursery, Manjimup; nd Pinjarra Nurseries, Pinjarra. No details of prices etc. are availa- le. If you know of a local supplier, ask him to write in to us with etails of what is available.

wo of the advertisements appearing below are for Eastern States suppli- rs. In the Editor's opinion, the nut trees sold by Frank Lucas are the est nut tree value in Australia. However, these Eastern States urserymen are essentially wholesalers, and it is seldom worth while rying to bring in a small number of trees from them. There is a mini- um freight charge of about $6 for any rail consignment from the East, nd more important, the trees must be picked up personally at the ewdale Freight Terminal in Perth, and must also be seen through the gricultural Inspection there. This is only worth while with a large rder. Other Eastern States suppliers worth a mention are John Brunning, omerville, Vic.; Fleming's Nursery, Monbulk, Vic; (last two for almonds, alnuts); Fitzroy Nursery, Rockhampton, Qld. (tropical plants, pecan nuts, rafted macadamias); and Limberlost Nurseries, Cairns, Qld. (real ropicals, e.g. Indian almond, cashew, will not survive in Perth without pecial protection).

vital point to bear in mind is the difference between seedling and rafted trees. Every seedling is a new, untested individual, and the hances are that it will be later to bear and have poorer nuts or fruit han a grafted tree, which is essentially a copy of a tree which has lready fruited and proved to have desirable qualities, usually such hings as early to bear, large crops, and good quality nuts or fruit.

t is therefore usually best to plant grafted trees in preference to seed- ings, even if they cost more than twice as much. Exceptions are, where o grafted trees are readily available; where the trees are to be subjec- ed to harsh conditions with an expected low survival rate; where the lanter is willing to graft the surviving trees himself, once established; nd where the trees are planted mainly for their decorative value, or or timber, or for experiment. One of the articles in this issue of uandong is on grafting walnuts, and many members might like to try their and at grafting or budding techniques.

nother method of getting nut plants is, of course, to plant viable seed. his will be considered in more detail in a later issue of QUANDONG. One it which must be planted when fresh is the chestnut, which is available ist about now in the shops. This issue also contains an article on lanting chestnut seed.

Nut Trees (Seedlings) available from FRANK LUCAS
P.O.Box 5, Boronia, Vic. 3155. Ready May 1975.

CHESTNUT (Castanea sativa)	$40 per 100
WALNUT (Juglans regia)	$25 per 100
BLACK WALNUT (Juglans nigra)	$25 per 100
FILBERT (Corylus avellana)	$25 per 100
HORSE CHESTNUT (Aesculus hippocastanum)	$25 per 100
PIN OAK (Quercus palustris)	$15 per 100
SCARLET OAK (Quercus coccinea)	$15 per 100
BEECH (Fagus sylvatica) large	$1.25 each

Price List 1975 from W.A.SHEPHERD & SONS PTY LTD , Perfection Nursery, Moorooduc, Victoria 3933. Delivery June, July, August 1975. Refer to supplier for Conditions of Trading etc.

ALMONDS $1.25 each varieties:	WALNUTS (seedlings)	CHESTNUTS (seedlings)
Brandes Jordan Hatches Nonpareil I.X.L. Johnsons Prolific Chelleston Ne Plus Ultra Peerless	$1.35; $1.50; $1.75; $2.00 each according to size. (English or Persian walnut)	$1.25 to $2.00 each according to size. (Spanish or sweet chestnut)

DAVID NOEL , 98 Herbert Road, Shenton Park (Telephone 811139) has small quantities of the following nut trees. They are offerred to WANS members at the special price of $1-$2, according to size. Personal collection only, outside business hours, and phone first if you don't want to risk me being out. All seedlings.

WALNUT (Juglans regia)
BLACK WALNUT (Juglans nigra)
CHESTNUT (Castanea sativa)
BUNYA PINE (Araucaria bidwillii)
PARANA PINE (Araucaria braziliensis)
TUNG NUT (Aleurites fordii)
PECAN (Carya illinoensis)
MACADAMIA (Macadamia tetraphylla or Macadamia integrifolia)
HAZELNUT (Corylus avellana)
VAN RIEBECK ALMOND (Brabeilium stellatifolium)
MORETON BAY CHESTNUT (Castanospermum australe)
STONE PINE (Pinus pinea)
ZEN OAK (Quercus mirbeckii)
CORK OAK (Quercus suber)
BURR OAK (Quercus macrocarpa)
SCARLET OAK (Quercus coccinea)
RED OAK (Quercus rubra)
PIN OAK (Quercus palustris)
HORSE CHESTNUT (Aesculus hippocastanum)

THE SOCIETY'S BY-LAWS

The draft by-laws of the West Australian Nutgrowing Society appear on the next two pages. These by-laws are modelled closely on those of the California Macadamia Society, one of the most successful nutgrowing societies in existence. The main differences are a lower subscription to WANS ($10 for CMS, $5 for WANS), a smaller Board of Directors (CMS have 9), and special provisions in WANS so that distant members shall not be at a disadvantage. At present the Society is being run by an Interim Committee consisting of David Noel (Editor) and Carolyn Blackwell (Secretary-treasurer). If you would like to help in running the Society, or if you feel the by-laws should be changed, then let us know.

BY-LAWS OF THE WEST AUSTRALIAN NUTGROWING SOCIETY

Article 1 - NAME

The name of this Society shall be the West Australian Nutgrowing Society.

Article 2 - PURPOSE

1. The purpose of this society shall be to promote the advancement and improve the culture and production of nut plants.
2. No part of the income or funds of this Society shall inure to any individual.
3. In the event of the dissolution of the Society, any residues of funds shall be paid to the University of Western Australia for horticultural research.

Article 3 - MEMBERSHIP AND DUES

1. Any person interested in the purposes of this Society may, upon application, be elected to membership by an affirmative vote of two-thirds of the Directors present at a meeting of the Board of Directors.
2. The Secretary shall notify a member of his election and send him a copy of the by-laws.
3. The annual membership fee shall be $5.00, payable at the time application for membership is made, and thereafter shall become due on January 1 each year. Upon election the new member shall be entitled to all publications of the Society for the calendar year in which he is elected.
4. No person shall be enrolled as a member of this Society until his dues have been paid.
5. Only members in good standing, whose dues have been paid, shall be entitled to vote in elections or meetings of the Society, and only such shall be eligible to office.
6. The membership of any member may be terminated for cause by a two-thirds vote of the Board of Directors, the accused having been given opportunity for hearing before action is taken.

Article 4 - DIRECTORS AND OFFICERS

1. The Government of this Society, direction of its work and control of its property and funds shall be vested in a Board of Directors. The Board shall contain three members plus one member for each hundred members of the Society or part thereof. Each Director shall be elected for four years, except that the Directors elected in 1975 shall be elected for terms of 4, 3, 2, and 1 years respectively.
2. Shortly after each annual election, the Board of Directors shall elect from its members, a President and a Vice-President, who shall hold office for one year or until their successors are elected. At the same time they shall appoint a member (who may or may not be a Director) to serve as Secretary-Treasurer, and one to serve as Publications Editor, both of whom shall hold office during the pleasure of the Board. If a Director, the Secretary-Treasurer may use the designation Secretary-Director, and the Publications Editor the designation Publications Director.
3. The President, Vice-President, Secretary, and Publications Editor shall constitute an Executive Committee of the Board; said Committee to exercise such powers and deal with such matters as may be referred to it by the Board of Directors.
4. Meetings of the Board of Directors may be called at any time by order

of the President, or by the Vice-President acting in his absence, or shall be called on written request of five percent of the members of the Society; the time and place and purpose of such meeting to be stated in the said call. Half or more of the Board of Directors shall constitute a quorum.
5. The Board of Directors shall have power to fill any vacancy in their number provided that any person so appointed shall serve only until the next election of the Society, at which time their successors shall be elected by the membership to fill the unexpired terms.
6. The Board of Directors may award Honorary Membership to persons who have made outstanding contributions to the nut industry.

Article 5 - DUTIES OF OFFICERS
1. The President shall preside at all meetings of the members and of the Board of Directors. In the absence of both President and Vice-President, the Board of Directors may elect one of their members to preside at that meeting. The President shall submit to members annually a report of the doings of the Board of Directors and of the affairs and operation of the Society during the preceding year.
2. The Vice-President shall, in the absence or disability of the President, perform the duties of the President.
3. The Secretary-Treasurer shall be the clerical officer of the Society and of the Board of Directors. He or she shall have charge of correspondance. He shall collect the dues of members, carefully account for the same, and shall promptly deposit them in a depository for Society funds. He shall work under the orders of the Board of Directors and in close cooperation with the President. He shall make a report of receipts and disbursements at meetings of the Board of Directors and a complete report to members annually.

Article 6 - MEETINGS
1. Meetings of the members of the Society shall be held at some convenient time and place as chosen and designated by the Board of Directors, and ample notice of meetings shall be given to all members of the Society.
2. Special meetings of the Society may be called by the President, with approval of the Board of Directors, as occasion may require.
3. Ten percent of the members shall constitute a quorum at any meeting of members for the transaction of business.

Article 7 - FINANCIAL YEAR
1. The financial year of the Society shall be the calendar year.

Article 8 - AMENDMENTS TO BY-LAWS
1. These by-laws may be changed or amended at any normal meeting of the Society by a two-thirds vote of all members present at such meeting or by a two-thirds majority of members voting in a postal referendum of members.

WANS EVENTS

FILM NIGHT. The Society has arranged to borrow a film on Almond Production in California which has been made by the California Almond Growers Exchange. Date of its arrival and showing in Perth has not yet been settled, but is likely to be in July. Details of showings will appear in the Entertainments advertisements of the "West Australian"; showings will probably be open to the public in an effort to attract new members. This is reputedly a first-class film which has been shown on over 200 television stations in the United States. We will need a competent projectionist. If you have experience or equipment, or you know someone who has, and would be willing to help, please contact David Noel. The film is probably 35mm.

GARDEN WEEK SHOW. This was held at Perry Lakes, Perth, from March 21-25, 1975. The Horticultural Council kindly allowed us to place a small exhibit in the Horticultural Societies Pavilion. This exhibit attracted a great deal of interest and gained us a number of new members. One lesson which was to be learned was that we would have had an even better response if we had been able to have someone at the display to answer questions. As it was, the display was unattended for the whole of the time.

NUT NEWS

ALMOND SHORTAGE. There is currently a world-wide shortage of almonds. This is of particular interest to us in Western Australia, because the coastal plains north of Perth are one of the most promising areas in the world for development of an important almond industry. This area is closely comparable to what is now the largest almond producing area in the world, that of California. In 1973 California had 300,000 acres under almonds, and two-thirds of these had been planted since 1960. It is no wonder that California produces over half the world's almonds, but it is surprising that there should be shortage. Almond production in Australia exists commercially only in the Adelaide Plains region of South Australia. The almond tree grows readily around Perth, all that is needed to build up a valueble food source and income earner here is someone or some organization with capital and know-how.

PEANUT GROWING. Members may have noticed newspaper reports on peanut growing trials in the Ord Irrigation Area of the Kimberleys. The peanut is one of the world's most important food crops, particularly in tropical and subtropical areas. Australia has an important peanut growing area around Kingaroy in Queensland; this is on roughly the same latitude as the Murchison in W.A. Peanuts can be grown successfully in Perth, and a crop was produced some years back at Spearwood, south of Fremantle. However the peanut is a summer crop which grows from seed to fruit in about 10 weeks, and for any commercial plantings in the south of the State, irrigation would be a must. Home gardeners can easily grow their own peanuts, planting raw peanuts sold by health food stores. The plants are quite attractive with bright green foliage and yellow flowers, they like a well-manured soil with plenty of lime.

IN A NUTSHELL

The largest seed in the world is the double coconut, the fruit of a palm (Lodoicea maldivica) which grows only in the Seychelles Islands, Indian Ocean. The nuts weigh up to 50 pounds each and take as long as 10 years after flowering to ripen.

BOOKS

The following books about NUTS are available from the Library Board of W.A. through your local public library. Call in and ask the librarian to get one or two of them. Some you may have to wait for, others may be available quickly. You can help the people in your district by asking -- if the demand for a book is heavy the Library Board tries to get extra copies and usually leaves one in the library which first asked for it.

1. SMITH, J.Russell. "Tree Crops". 1950.
2. JAYNES, R.A. "Handbook of North American Nut Trees". 1969.
3. HOWES,F.N. "Nuts". 1953.
4. BUSH,C.D."Nut growers Handbook". 1953.
5. REED,C.A. &DAVIDSON,J. "Improved Nut Trees of North America". 1954.
6. WOODRUFF,J.G. "Tree Nuts".

In each issue of QUANDONG we will try to review one book or other publication about nuts in some detail, and also briefly note other publications which have appeared.

book review

TREE CROPS : A permanent agriculture. By J.Russell Smith, Emeritus Professor of Economic Geography, Columbia University. Published by Devin-Adair Company, New York, 1950. 408p.

This is an absolutely fascinating book which is as easy to read as a novel. Smith travelled all over the world studying crop trees, principally nut trees, taking photographs and notes in Corsica, China, Tunisia, and many other places as well as in his native North America.

He shows how millions of acres of once-fertile land have been ruined and eroded away to nothing by unwise use of the plough; how other, more thoughtful farmers have gained better results through tree crops, which have prevented erosion and given bigger returns with less labour; how ruined land can be gradually recovered through use of trees, able to grow and produce valuable foods on steep and rocky sites ; how two- and three-storey agriculture is possible, with a ground crop, a low tree crop, and a tall tree crop all existing together.

This is the kind of inspiring book I would like to put in the hands of every one of our members of parliament and others able to influence national policies. Although a fairly old book, it loses nothing through its age. Truly Russell Smith can be considered one of the Prophets of the Environment!

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YEARBOOK

Already the Society's first YEARBOOK promises to be a very good one. Articles have been received or promised from Queensland, California, Ontario, New Guinea, and Illinois, and other contributions are hoped for from India, South Australia, and Victoria -- in addition to some home-grown ones. Nuts which will be written about include the okari, the jojoba, the black walnut and the chilghoza pine, to pick out some of the more exotic, as well as the more familiar almond, walnut, pistachio, and macadamia. Let the Editor know about anything you think should be included, or anything you would like to write about yourself -- there is no substitute for local experience.

Oregon State University
Extension Service
Corvallis, Oregon 97331

EXTENSION CIRCULAR 724
REPRINTED JANUARY 1970

Grafting Walnut Trees

ROBERT L. STEBBINS
Extension Horticulture Specialist, Oregon State University

The instructions for grafting printed in this circular were largely contributed by Scott Parrott, walnut nurseryman at Newberg, Oregon. Mr. Parrott is recognized throughout the Pacific Northwest as a successful walnut nurseryman and an exceptionally skillful walnut propagator. He has taught many persons to graft walnuts, and they have benefited greatly from his willingness to give advice and counsel.

In other areas of the world walnuts are propagated by budding, but almost all attempts at budding in Oregon have failed. For grafting, scionwood is best selected from shoot growth of the past season. It should be solid with little pith so that there will be sufficient wood contact. Shoots with long, vigorous growth usually make the best scionwood unless the distance between buds is too great. The best scionwood has buds about 3 to 4 inches apart. Usually wood from more vertical limbs is better than that from branches which hang down. Scionwood may be any diameter from one-fourth inch on up, as long as it is not too big for the rootstock. Scionwood from bearing trees may be as good as that from nonbearing trees. However, one should be certain of the variety and strain. Scionwood should be cut in February. The terminal should be removed and the ends of the sticks waxed to prevent drying. They should be kept in storage, preferably about 35° F. Enough wood may be taken out of storage for several days' grafting but it should not be replaced in cold storage.

Walnut seedlings are usually large enough to be grafted after they have grown two summers in the nursery. Walnut grafting in the nursery is usually begun about April 1 when the stocks have begun to leaf out. If the weather has been unusually cold, postpone grafting. Grafting may be continued into June.

Side Grafting

First, the rootstock should be cut off 12 to 18 inches from the ground. The stock will "bleed" because of root pressure. Bleeding is worse in the spring before walnut trees have fully leafed out. Grafts will not take if bleeding is excessive. Whenever bleeding is so bad that the stock stays wet below the graft, it is too early to graft. If the stocks are wet from bleeding at times and dry at other times, grafting may begin. A good grafting knife has a blade about 4 inches long and a stout handle which one can grip tightly. It should be razor sharp. The cuts on the scion are made downward with a slight pull and a swinging motion.

Figure 1 shows the scion cut with one straight side and one slightly concave. One side of the scion is cut wider than the other. Figure 2 shows how the cut is made at an angle and halfway through the stock. Figure 3 shows how the scion is pushed into the cut, taking care not to loosen the bark. The cambium on the thick side of the scion is aligned with that of the stock. The top of the cut on the scion is set slightly deeper than the top of the cut on the stock so that callus growth will not push the graft out. Note the position of the buds. The concave side faces away from the stock; the excessive lip is cut off for more callus. A rubber band holds the scion in tightly. Figure 4 shows that the back side of the scion is narrow, leaving bare wood. This is desirable, as it results in strong callus growth.

The graft and the tip of the scion should be covered with melted grafting wax, but the top of the rootstock should not be waxed, as it must be permitted to bleed. Figure 5 shows how the growth of the upper bud encourages growth on the back side to fill in better. But if the lower one grows better, use it and remove the rest. As the stock begins to die back, cut it off at the graft, leaving no overhang to interfere with good healing.

Steps in Making a Side Graft

Figure 1. Back view of cut scion.

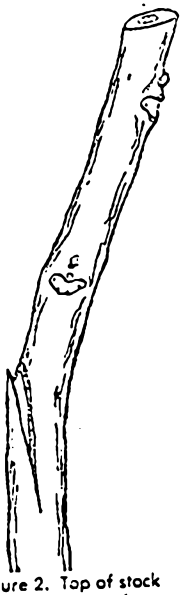

Figure 2. Top of stock is bent away from cut to allow setting of scion.

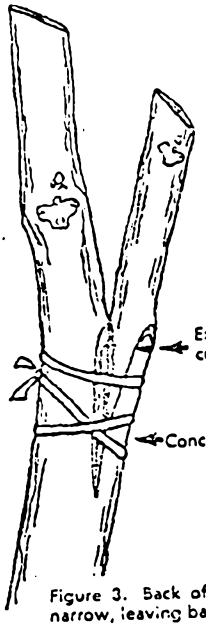

Figure 3. Back of scion is narrow, leaving bare wood. This insures strong callus.

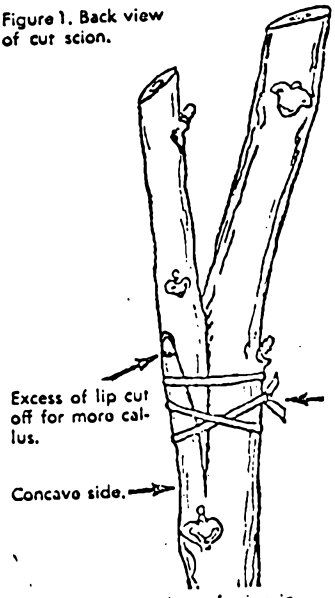

Figure 4. Front view of scion in place. Point of graft set slightly deeper.

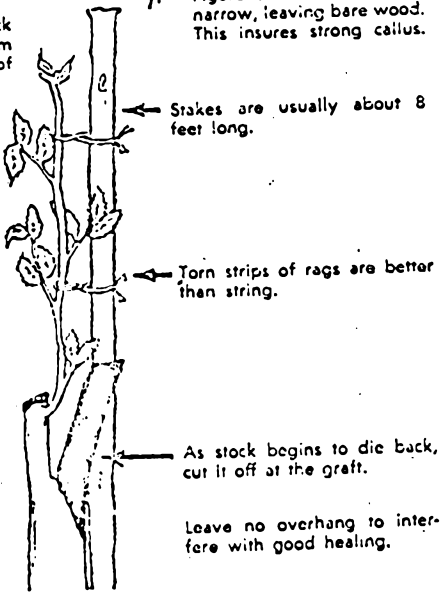

Figure 5. Method of tying to stake.

Cleft Grafting

Cleft grafting is one of the best methods of grafting large trees in the orchard. It is generally done somewhat later than nursery grafting. Either the main trunk or the branches may be grafted. If the scaffold branches of a hardy stock are large enough, it would be better to graft into them. Cutting the scaffold limbs back fairly close to the trunk will reduce the number of suckers which arise from them. The entire top of the tree should be cut off, because if part of it is left it will outgrow the scion. Figure 6 shows how the stock is sawed off and split with a knife. Figure 7 illustrates a wedge placed in the split to hold it open for the scion. Figure 8 shows how the scion is cut on two sides, one side slightly wider than the other. The scion is pushed gently into the split in the stock with the wide side facing out. The cambium of the scion is aligned with that of the stock. Then the wedge is removed, permitting the split to close and hold the scion in place.

A scion may be placed on either side. Hot grafting wax should be used to cover all cut surfaces, including the end of the scion. Paper or other foreign matter should not be placed in the split since this may result in "sour sap."

Steps in Making a Cleft Graft

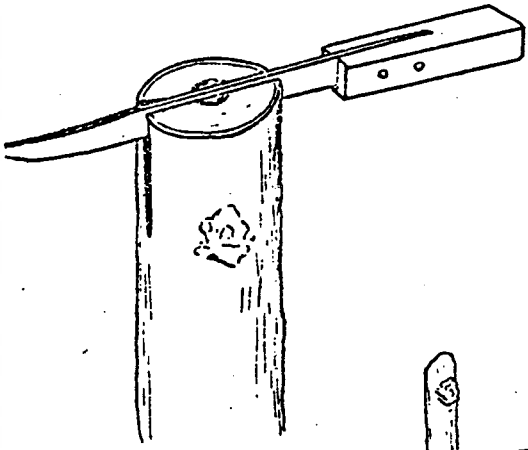

Figure 6. How the stock is sawed off and split with a knife.

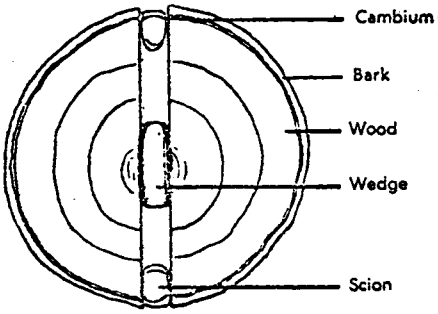

Figure 7. How the wedge is placed in the split.

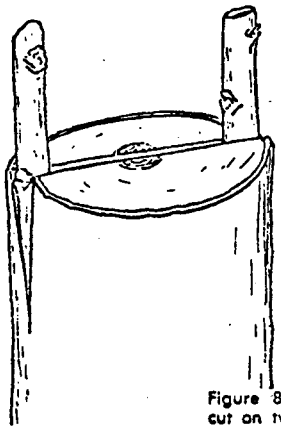

Figure 8. How the scion is cut on two sides.

Care of Grafts

The following is the formula for Scott Parrott's grafting wax: 2 pounds of clean, clear beeswax, 3 pounds of rosin, and 4 ounces of powdered wood charcoal. Melt the beeswax and rosin together and stir in the charcoal; then pour this mixture into shallow pans or containers where it will not become too thick and hard to break. When applying the wax, be careful not to heat it so hot that it is thin and runny. If it is too thin when growth starts, it will crack and break instead of stretching. As soon as the graft is completed, cover it with a new paper bag and tie it with string. A small amount of foliage should be allowed to grow on the top of the stocks. Then, if the graft does not survive, the stock can be regrafted in the same year or the following year. By the first of June, the scions either ought to be growing or nearly dead. If the weather becomes hot after the grafts have been made and bagged, it is best to remove the bags; otherwise bags should not be removed until there is an inch of growth on the scions. White casein paint rather than bags should be used for protection from sunburn in June. All of the stocks and scions should be painted.

A strong 8-foot stake of wood or heavy bamboo is required to support a grafted nursery tree. Small nut growths may arise on the growing scion; these should be pinched off as they will retard growth. Cleft grafts on older trees will require support also. Torn strips of cloth are better than string for tying the scions to the stakes. It is important to remove unwanted growth below the grafts, as this growth may compete and interfere with the growth of the scions.

The drawings of side grafting were made by the late D. Herbert Thatcher from observations of the work of Scott Parrott, walnut nurseryman.

Cooperative Extension work in Agriculture and Home Economics, Gene M. Lear, director, Oregon State University and the United States Department of Agriculture cooperating. Printed and distributed in furtherance of Acts of Congress of May 8 and June 30, 1914.

IN A NUTSHELL

Those who have lived in Europe tend to think of the Oak as the stereotype of a temperate-climate tree. In fact the English Oak is but one among 700 different oak species, most of which are concentrated in South-East Asia and Central America. The nut of the oak, called an acorn, is not always bitter and fit only for animals as is the English acorn. Some species have sweet acorns as good to eat as the chestnut.

If you would like to join the West Australian Nutgrowing Society, send your name, address, and remittance of $5 to the Society, c/o P.O.Box 27, Subiaco, W.A. 6008. Membership is available to individuals, organizations, and nominated persons such as 'The Librarian' of an organization. If you wish, use the slip printed below.

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To: West Australian Nutgrowing Society, P.O.Box 27, Subiaco, W.A. 6008.

Please enrol me as a member for the calendar year 197 . I enclose a remittance of $5.00, which entitles me to all the Society's publications for this year.

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Probably the oldest nutgrowing society still in existence is the Northern Nutgrowers Association, founded in New York in 1910 and still going strong. The N.N.G.A. started off with 12 members, so we are off to at least as good a beginning. Sixty-five years later, they now have over a thousand members, scattered all over North America, and in Brazil, Japan, Hong Kong, Spain, England, Germany, New Zealand, and in Italy. There are more members in Australia than in any other country outside North America!

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