



# QUANDONG

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Newsletter of WANS the West Australian Nutgrowing Society

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## WANS TO HAVE ITS OWN STAND AT GARDEN WEEK

Next year the West Australian Nutgrowing Society will again be represented at PERTH GARDEN WEEK. The expected dates for the Show are

MARCH 22-29, 1979

And as usual, the Show will be held at Perry Lakes, about 5km from the centre of Perth. Garden week is always well worth attending, and this year WANS will be mounting a double effort. First, the Society will have a display in the Horticultural Council Pavilion, along with other member societies of the Council.

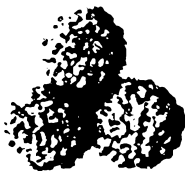
Secondly, for the first time WANS is hiring a stand of its own which it will operate in conjunction with WANSCO. Membership information will be available at the stand, together with a range of publications about nuts and related subjects. The stand will be attended at all times the Show is open (the Pavilion display will direct enquirers to the Stand).

The Co-op will be using the opportunity to sell a range of Nut Trees and related nursery items, also a range of nuts sold for refreshments will be available. The Squirrel Nutkin operation will probably be temporarily moved to the Garden Week area for the duration of the Show.

Anyone interested in taking part in this project should please contact the Secretary, who will pass information on to the Co-ordinator.

## SUBSCRIPTIONS FOR 1979 NOW DUE

Because of the increasing membership of the Society, we have been able to fight off inflation to the extent that an increase in membership subscriptions for 1979 has been avoided. However, this will probably be the last year that the \$8.00 rate can be maintained. Membership reminders will be sent out with the next issue of QUANDONG, but if your subscription is due and you wish to pay now, we will again offer a concession rate of \$7.00 for 1979 and for up to two further years if paid in advance. If you are in doubt as to when you have paid up till, your last paid subscription year should appear on the top right of the address label used for this issue.



# West Australian Nutmeg Society

**WANS**

225 Onslow Road, Shenton Park, Western Australia  
Mail Address: P.O. Box 27, Subiaco, W.A. 6008, Australia.

Phone: (09)381 8656

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**BOARD OF DIRECTORS:** Peter Good (President), 3414741;  
Paul Sinclair (Vice-President), 3866519; Carolyn Blackwell (Secretary-  
Treasurer), 3975036; David Noel (Publications Director), 3818656;  
Edmund Czechowski, 4476071.

**WANS CONVENORS:**

Cashew: Derek White, PO Box 249, Kununurra 6743;

Investment & Taxation: Edmund Czechowski

Little-known Nuts: David Noel, PO Box 27, Subiaco 6008

Marketing: John Mercer, 45 Bridgewater Drive, Kallaroo 6025, tel 4016031

Nutrition: Alex Sas, 52 Croydon Rd, Roleystone 6111, tel 3250101, ext 2155

Seed Supply: Milan Mirkovic, PO Box 69, West Perth

Tree Supply: Tim Lynn-Robinson, 1 Alice Drive, Mullaloo 6025, Tel 4011852

Walnut: Tom Speer, PO Box 71, Bridgetown 6255, Tel (097)-611713.

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**SOCIETY PUBLICATIONS:**

WANS publishes its newsletter QUANDONG 4 times a year. This is devoted to news of meetings and events, details of tree and seed sources, notes about books and pamphlets dealing with nuts, reprinted short articles, notes from members, and other items of interest. The major publication is the annual WANS YEARBOOK, which contains articles drawn from Australia and overseas, covering any aspect of nut horticulture and production, and is regarded as an important research journal in this area. Members receive one copy of each WANS publication as a subscription benefit. Yearbook Editor: Dr. B. Dell, School of Environmental & Life Sciences, Murdoch University, Murdoch, W.A. 6153.

QUANDONG Editor: David Noel, PO.Box 27, Subiaco, W.A. 6008

Back Numbers: WANS began publishing in 1975. Back numbers of publications are still available. Some issues of QUANDONG are available only in photocopy form. Cost of each Yearbook is \$6.--, cost of a 1-year set of Quandong (3 or 4 issues) is \$2.--. Contact the Secretary for back numbers.

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**MEMBERSHIP**

Any person or organization interested in the growing or production of nuts may subscribe for membership. Members are welcomed from outside Western Australia and overseas, as well as in W.A. Write to PO Box 27, Subiaco W.A. 6008. Secretary is normally in attendance at 225 Onslow Rd., Shenton Park, each Wednesday from 12 - 3 pm; phone is (09)-3818656. The current membership subscription rate, which runs for a calendar year and covers all publications issued in that year, is \$ 8.--.

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**WANS CO-OPERATIVE**

Members of the Society own a limited company, West Australian Nut Supplies Co-operative Limited, a commercial organization set up to buy and sell nuts and nut products. WANS CO operates a retail store and a wholesale business at 225 Onslow Rd, Shenton Park. The retail store, called SQUIRREL NUTKIN sells nuts, nut trees, and books about nuts, and is currently open Wednes, to Friday, 9am to 6pm, Saturday 9am to 1pm. Shares in WANS CO must be applied for on the printed form available from the Shenton Park office. Shares cost \$ 1 each; limits are currently being revised, but are expected to be restricted to 50 to 250 shares per person.

## BOOK SUPPLY SERVICE

Books on nut growing and related topics are quite expensive and hard to obtain in Australia. To relieve this situation, the Society is making a concerted effort to build up stocks of books about nuts to be sold through the SQUIRREL NUTKIN store. Prices will be kept as low as possible, and a 10% discount will be available to members. Books will also be mailed to members on request (postage extra). For example, Menniger's "Edible Nuts of the World" (reviewed in this issue) is currently on sale in Perth at \$19.30. Prices at SQUIRREL NUTKIN will be \$14.95 to the public, price to members will be \$13.45. The following books are currently in stock or on order at the SQUIRREL NUTKIN:

1. Handbook of North American Nut Trees. (Jaynes).	\$13.50
2. Nuts for the Food Gardener. (Riotte).	\$ 7.00
3. Nuts for You. (Jensen).	\$ 2.00
4. About Nuts and Dried Fruit. (Norris).	\$ 2.30
5. Nuts and Seeds. (Rodale Press Editors).	\$ 3.80
6. Filbert Nut Recipes. (Oregon Filbert Commission)	\$ 5.00 (hardback)
7. " " " " " ringfile	\$ 3.00
8. Macadamia in Cooking. (Calif. Mac. Society).	\$ 3.20
9. Commercial Almond Growing. (Dep. Agr. & Fisheries S. A.)	\$ 2.00
10. Flowering Trees of the World. (Menniger).	\$18.95
11. Fantastic Trees. (Menniger).	\$11.95
12. Palms of the World.	\$18.95
13. Permaculture. (Mollison & Holmgren).	\$ 4.95
14. Sunset Western Garden Book.	\$ 5.95
15. Thomson "Jojoba Handbook".	\$ 9.00
16. Photo-copied articles on various nuts.	from 10c to 50c
17. Black Walnut for Profit (B. Thompson) Hardcover	\$13.50
<u>A NEW EDITION OF "THE BIBLE"</u> Softcover	\$11.50

A new edition is in preparation of the 'Nutgrowers' Bible'. Many hundreds of members have bought copies of the NNGA's 'Handbook of North American Nut Trees', edited by Richard Jaynes. The new edition expected to appear sometime in 1979 will be entitled 'Nut Tree Culture in North America'. It will have the same editor, but will be a complete revision of the older work. Indicated price is around \$15 per copy but we are hoping to arrange a special price for WANS members for copies ordered before publication. Write in and order at the special price now!

## Jojoba: Temper Interest with Caution

The jojoba plant (pronounced ho-ho-bar) (*Simmondsia chinensis*) has been attracting a lot of interest lately. Seeds of the plant contain a unique liquid wax. The wax, called jojoba oil, can substitute for sperm whale oil and has potential uses in extreme pressure lubrication and the manufacture of cosmetics, soap, plastics, surface coatings and candles.

"This interest needs to be tempered with caution," said Mr. R. H. Taylor, Assistant Director-General of the Victorian Department of Agriculture.

"Many technical and economic unknowns need to be resolved if establishing, growing, harvesting and marketing of jojoba is to become commercially viable.

"Jojoba is a woody perennial shrub native to the Sonoran desert region of Mexico and south-western U.S.A. Some plants have been introduced into Australia at various times as specimens and for trial as soil-binding plants at Broken Hill where two bushes still survive. They are female plants and had not produced any seed until last year when a few seeds set after a male plant had been established nearby," explained Mr. Taylor.

"The transition of jojoba from a wild plant to a cultivated crop has been the subject of intensified research in the U.S.A. and Israel since about 1970, and more recently in Australia, after a visit by Dr. N. Vietmeyer, of the U.S.A. Academy of Sciences in 1974.

"In Victoria, the Department of Agriculture, the University of Melbourne and the CSIRO are carrying

out limited investigations on a collaborative basis.

"Private interests have made some trial plantings but there is no local information on productivity of jojoba under Australian conditions," said Mr. Taylor.

"Preliminary studies of growth and development patterns by the CSIRO's Division of Plant Industry at Canberra showed that, while established plants are frost hardy, flowering, which normally occurs in winter, is severely affected by frost and it is likely that seed yields would vary from year to year.

"Other problems to be resolved include:

- Sexing of plants — only female plants produce seed, but the sex cannot be determined until the plants flower. This takes three to five years. Normal seedlings produce more male than female plants, but only one male to about six female plants is needed in a plantation.
- The length of time before the plants come into full production — probably at least ten years.
- The development of harvesting techniques and equipment — the peanut-sized seed falls to the ground at maturity.
- The selection of superior strains — one strain known as "Vista" has been selected from the wild populations, but it will take many years of breeding and selection to incorporate all the characteristics needed of a cultivated plant.

- The methods of establishment and care of plantations — tubed seedlings, which are available commercially, can be transplanted and techniques for striking cuttings are known, but optimum planting patterns and management practices are not.

- The economic aspects of production including marketing arrangements — the present high price of the oil (up to \$10 per kilogram) reflects its rarity and specialist uses in cosmetics and pharmaceuticals. While the demand for these uses may not be satisfied in the foreseeable future, the price can be expected to fall substantially as production rises and market outlets for lower-priced industrial uses becomes necessary."

More information is available from Mr. Bruce Wightman, Agronomist (Oil-seeds), Department of Agriculture, 22 Lydiard Street South, Ballarat, 3350, telephone (053) 31 1733. Mr. Wightman will be keeping in close contact with local and overseas workers and with Australian scientists attending the Third International Conference on jojoba in California during September.

A man was visiting London when he saw an advertisement for a restaurant which claimed that any dish requested could be served.

The man decided to visit this restaurant in order to test the validity of their claims. When he was seated at his table he asked the waiter for elephant ears on toast. The waiter took this order calmly, and went away into the kitchens.

A few minutes later the waiter returned and said "I do apologise, sir, but we've run out of bread."

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### NEW SOUTH WALES AGRICULTURE DEPARTMENT NUT LEAFLETS

The New South Wales Department of Agriculture has issued at various times a number of very useful leaflets about nuts. Some of these are listed below. If they are still in print, you may be able to get copies direct from the Department. Alternatively we have permission to supply photocopies (10c per page) from the WANS office.

1. Almond Growing. R.Sweedman, 1976. 15 pages.
2. Chestnut Growing. R.Sweedman, 1977. 8 pages.
3. Growing Filbert Nuts. G.L.Salvestrin. 1978. 11 pages.
4. The Macadamia Nut. D.S.Leigh. 1975. 15 pages.
5. Walnut Growing. 1973. 6 pages.

## HELICOPTER HARVESTING OF HAZEL NUTS

Members will be interested in the following circular from a helicopter company in Oregon, U.S.A., which now routinely offers a harvesting service for filbert (hazel) nuts. The nuts are blown from the trees by judicious use of the wind from the helicopter rotors.

WANS has written to the company for more details of the application. These will be published in the 1978 WANS YEARBOOK, which is due for issue with the next edition of QUANDONG. (Members should note that if they joined the Society recently, they will not receive the 1978 YEARBOOK unless they subscribed for 1978).

### **Cascade Commercial Helicopters, Inc.**

Scappoose Industrial Airpark • P.O. Box R • Scappoose, Oregon 97056 • 503-226-4731

September 19, 1978

Cascade Commercial Helicopters will be available again this year to assist growers with their filbert harvest.

This year we have two helicopters exclusively for use in filbert nut shaking. These helicopters are available seven days a week as long as they are needed.

We think you'll find our rates (\$100.00 per hour) and response time very competitive. Again this year, as we have in other years, we will encourage a representative from each farm to ride with us in the helicopter to make sure that we meet each growers' special requirements.

If you have any questions about helicopter assisted filberts harvesting or if you would like to schedule a helicopter, please call us at 503-226-4731 (24 hour phone).

Sincerely,



Betsy Johnson  
Cascade Commercial Helicopters

# NUT SOCIETIES ACTIVE . . . .

## 68<sup>th</sup> Annual Report

OF THE

### Northern Nut Growers Association

Incorporated

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Membership dues in the NNGA are \$8.00 per year. Benefits include the Annual Report and the quarterly newsletter, The Nutshell. Dues should be sent to Lois Davie, Treasurer, 3100 Kane Rd., Aliquippa, PA 15001, and articles for The Nutshell to the Secretary, Donald Ourecky, Pomology, NY State Expt. Station, Geneva, NY 14456.

# wansco supplement

ISSUED WITH "QUANDONG" Volume 4 No.4 December 1978

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## HOW IS THE CO-OP DOING THESE DAYS?

We have encouraging news for members on the progress of the Co-op. Members who studied the Accounts for 1977-78 published in the last issue of the WANSKO Supplement will know that in the financial year ending June 1978 the Company had a turnover of about \$10,000, and made a loss. The year in question was the Co-op's first full year of trading, so this result was not at all bad.

At the Annual General Meeting held at the end of December, the Directors were able to give some information on the current financial year, that ending in June 1979. In the first half only of this year, turnover was already up markedly to around \$14,000. While the first half of the year is usually better than the second (since it includes Christmas and the peak July-September tree planting season), turnover for the full year should be at least \$20,000, double the previous year, and could be even better if planned sales campaigns for Perth Garden Week and for Easter are successful.

Since expenses are not much higher for the increased turnover, it looks very likely that the Co-op will be making its first annual profit this year, a very encouraging result for a second year of trading. Most companies take far longer to become established.

## SOME PERTINENT COMMENTS FROM BRIAN COOPER

*Last June, Brian Cooper of Westralian Farmers Co-operative Ltd. gave some papers at an International Seminar of Co-operative Associations, including delegates from around Australia and many Asian countries. Your WANSKO Co-operative is a member of the Co-operative Federation of Western Australia, as is Wesfarmers, and we thought it useful to reproduce part of Brian Cooper's Report on the Seminar, circulated among the Federation members:*

Because of real or imaginary parochial interests, Co-operatives have tended to resist the opportunity to merge resources and take advantage of combined buying and marketing strengths. This generally results in a loss of competitiveness and, therefore, loss of member patronage and loyalty.

Some Co-operatives have tended to try and get their management "on the cheap" through a lack of Board appreciation of the relationship between the application of management skills to the profitability and viability of the company. The offer of peanuts is usually attractive to only "monkeys". Successful managers are skilled in the best management techniques and have little difficulty in managing a profit from an established business turnover.

Directors of Co-operatives tend not to keep abreast of developments and trends in the marketplace, as managers do. This often leaves them groping to understand what is happening or, the ramifications of what management might be proposing to them. One solution would be to encourage professional people - accountants, other managers etc. - to participate on the Board, either as shareholder Directors or, as Associate Directors serving in an advisory capacity.

Co-operatives have generally recognised that the world is in the midst of a social revolution and that there is a shortage of capital in the Western world. Therefore, what little capital exists must be rationed to essential projects. Co-operatives are reluctant to approach their shareholders for more capital, yet often the shareholder equity in the company is 20% or thereabouts. A \$10 share often represented the average wage when the company was formed, but in 1978 terms it would need to be nearer to \$200. This small equity holding usually puts the company in the hands of financial institutions and creditors, floundering to service high interest charges. At the same time, financial sources are reluctant to lend funds to companies with such a low shareholder equity.

#### Impact on Western Australian Co-operatives

Many Co-operatives in this State know at first hand the type of problems highlighted by the above summary. Galloping inflation soon turned what might have been adequate reserves into inadequate resources, at the same time drastically multiplying the funds tied up in trading stocks. It also brought a tightening of terms offered by suppliers or creditors, themselves under pressure to generate better returns for the investment of their capital. This brought a drastic reduction in liquid funds available. At the same time, cost-push pressures have eaten into gross margins to constantly erode the nett returns from doing business and providing service.

A desire by many units to minimise their tax payments by rebating most of their surplus has contributed to the reduction of shareholder equity. It is a short-sighted policy that must eventually result in too little capital with which to run the business and cater for growth. These units should embark upon a long-term objective of building up shareholder equity used in the business by retaining a bigger share of the surplus. Alternatively, these units could ask their shareholders to increase their shareholding to a figure more in keeping with current income levels.

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#### SHARE LIMIT RAISED TO 250 MAXIMUM

In response to members' requests, and in belated recognition of how low the maximum allocation of shares permitted had become in these inflated days, a resolution was passed at a Special Meeting of Shareholders last Spring to raise the maximum permitted Share Holding to 250 One-dollar shares.

WANS members who are not yet Shareholders in West Australian Nut Supplies Co-operative Limited, or existing WANSCO shareholders who would like to take the opportunity to lift their holdings above the previously-set maximum of 100 shares, can obtain a Share Application form from the WANSCO Secretary, or can use the one reproduced on the facing page.

The reverse of the Application Form summarizes the conditions for applications.



To the Directors,

APPLICATION FOR SHARES

**wansco**

# West Australian Nut Supplies

CO-OPERATIVE  
LIMITED



225 Onslow Road, Shenton Park, Western Australia.  
Mail Address: P.O. Box 27, Subiaco, W.A. 6008, Australia.

Sirs,

I request you allot to me .....

..... ordinary ..... Shares in the Company, of one dollar  
(Nominal Value)

each and I tender herewith the sum of \$ .....

..... in full ..... payment thereof.

This application is unconditional and I authorise you to register me as the holder of the above shares or any smaller number that may be allotted to me and I agree to be bound by the Memorandum and Articles of Association of the Company.

Dated at ..... this .....

day of ..... 19 .....

Signature .....

Name in full .....

Address .....

**OFFICE USE ONLY**

Agreed to allot ..... shares as per  
minute dated .....

Entered in Register of Members .....

Share Scrip Issued .....

NOTES ON APPLICATIONS FOR SHARES IN  
WEST AUSTRALIAN NUT SUPPLIES CO-OPERATIVE LIMITED

1. The Company is a limited company incorporated under the Companies (Co-operative) Act, 1943-1959.
2. Applications for shares can be accepted only on the printed share application as shown overleaf. All applications must be signed by the applicant.
3. Any person, company, or incorporated body may apply for shares.
4. The maximum number of shares which may be held by any person or corporate body is 250 (two hundred and fifty).
5. The minimum number of shares applied for will normally be 50 (fifty), at the Directors' discretion a lower minimum may be considered.
6. Applications must be for multiples of 10 (ten) shares. Shares are issued at a cost of one dollar each (\$1.00 each).
7. Payment for shares should be forwarded with applications. Successful applicants will be notified following the Directors' Meeting at which their application is considered. Share Certificates will be issued by the Secretariat as soon as possible thereafter.

## HAZEL NUTS IN NORTH AMERICA

Hazel nut growing is relatively undeveloped in Australia, although it should be well suited to areas of S.W. Australia, Victoria, Tasmania, and parts of New South Wales. The following interesting article about hazel nuts (also called cob nuts or filberts) is reproduced from SONG NEWS, the newsletter of the Society of Ontario Nut Growers. Various species of hazel nuts are native to Europe, Russia, North America, Central Asia, China, and the Himalayas, ranging from 100-foot trees to dwarf shrubs. Australian experiments to date have been limited to a single species, *Corylus avellana*, but it seems almost certain that many more useful varieties could be developed to suit the various Australian habitats.

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### THE HAZELS

....THE LITTLE NUTS WHICH GROW EVERYWHERE

R. D. Campbell  
R. R. #1  
Niagara-on-the-Lake, Ontario  
LOS 110

Of all the nut species there are none which could be claimed to be more hardy or adaptable than the hazels. Whether it's the barren, wind-swept northlands of Canada or the hot climates of the Middle East or Southern China, there is some species of the hazels which lives and thrives. These many types of hazel produce nuts of the similar type to which North Americans have become so thoroughly accustomed.

The hazels are defined by the botanical genus *Corylus* and the many species within that genus may be described briefly as follows:

#### EUROPEAN FILBERT - *Corylus avellana*

This is the major nut of commerce and is often referred to rather loosely as the *Hazelnut*. Cultivars of this species are the basis of the *filbert* industry in the Pacific Coast areas of North America. Filberts are native to parts of Central and Northern Europe. *Filbert* is the approximate German expression for "full beard" and refers to the husk which surrounds the nut. The nuts of this species are generally the largest of the genus and it's the preferred one for the North-East if the limited hardiness of the species permits. The plants grow naturally as many stemmed bushes and may reach heights of as much as 8 metres (25 feet) and produce crops as high as 5 - 10 kilograms (10-20 pounds) of nuts per bush.

#### AMERICAN HAZEL - *Corylus americana*

This is one of the native hazels of the northern parts of North America and is common in Ontario and even as far west as Saskatchewan. In most characteristics such as bush and nut size etc., the American hazel is smaller than the European filbert. However the thickness of the shell is somewhat heavier. Its value for nut production is evident in those areas where limits of hardiness restrict the growth of the European filbert. The American hazel readily receives the pollen of the European filbert thereby producing hybrids which may combine the desirable characteristics of good nut size, productivity and superior hardiness of the bushes and catkins. These hybrids are often called *Hazelfilberts*.

The European filbert does not readily receive the pollen of the American hazel; however when such union does take place the resulting seedling is called a *Filhazel*.

### BEAKED HAZEL - *Corylus cornuta*

This plant is a low growing shrub to about 3 metres (9 feet) but in many instances it never gets much above 1.2 metres (3 - 4 feet). These shrubs are found on a native basis as far north as Labrador, the James Bay area and northern Saskatchewan. The bristly husk of the smallish nut make it rather difficult to extract. The breeding potential of the beaked hazel to produce extremely hardy hybrids with the better European types has never been adequately explored. Many fascinating horizons await the breeders who may want to take up this most interesting challenge.

### TURKISH TREE HAZEL - *Corylus colurna*

This species is notable for its single stem trunks which allow for easier culture when compared with the many stemmed types. Trees may reach 50 - 60 feet in height and are highly regarded for their narrowly pyramidal silouettes and other ornamental values. Nuts are rather smallish in size and the shells rather hard but the kernel qualities are generally good. The husks tend to stick rather tightly to the nuts.

### MISCELLANEOUS

Several other species have been catalogued but little is known of their range of characteristics or potential worth as breeding partners with the currently identified superior cultivars.

Chinese Hazel.....*Corylus chinensis*  
Tibetan Hazel.....*Corylus tibetica*  
Japanese Hazel....*Corylus sieboldiana*

There are a number of characteristics which make the hazels very attractive selections for nut growers. These may be summarized:

- (a) Adaptability to most any climate.
- (b) Tolerant of a wide range of soil types.
- (c) Easy to transplant.
- (d) Fast growing.
- (e) Produces good quantities of nuts of universally acceptable quality.
- (f) Precocious - some hazels produce crops in as little as four years from seed.
- (g) Nuts ripen reliably even in relatively short growing seasons.
- (h) Kernels are among the easiest to extract from the shells of all the nut species.
- (i) Relatively few pests or diseases under Ontario conditions.

Evaluations of numerous hazels have been completed for several harvest seasons. The *CENTS* evaluation procedures have been used to rank the overall qualities of the nuts in order of decreasing merit. The calculation of the overall scores requires the evaluation of the seven specific traits as follows:

- (1) k Kernel Percentage
- (2) K Kernel Size
- (3) C Crackability
- (4) Q Eating Quality
- (5) A<sub>1</sub> Appearance of the Nuts in the Shell
- (6) A<sub>2</sub> Appearance of the Kernels (Freedom from Fibrous Pellicle etc.)
- (7) S Storage Characteristics (Keeping Qualities)

The evaluation of the individual characteristics and the overall ON RATINGS are reported in the following forms:

- 4 Excellent
- 3 Above Average; An Attractive Level of Quality
- 2 Average; General Acceptability
- 1 Below Average; Marginal Acceptability
- 0 Unacceptable.

The key to interpreting the CN RAW SCORES is as follows:

<u>(CN) Raw Score Range</u>	<u>Simplified (CN) Rating</u>	<u>Interpretation</u>
0 - 10	0	Nut is not worthy of consideration.
11 - 100	1	Nut has some curiosity value and minor practical uses.
101 - 300	2	Minimum level of general acceptability.
301 - 1000	3	An attractive level of quality....a suggested minimum objective for the <u>private grower</u> .
1001 - 1120	4	Outstanding quality....virtual perfection.

The raw scores for (k) kernel percentage (% by weight of nut in the shell) and (K), Kernel Size (kernels per kilogram) are given for items (1) and (2) in addition to the simplified scores.

The (CN) RATINGS are the overall estimates of nut quality. Note that the (CN) Ratings do not include consideration of productivity factors. Further details of the CENTS procedures are contained in the 1976 Annual Report of the Northern Nut Growers Association.

#### EVALUATION OF THE HAZELS

<u>Identity</u>	<u>Year</u>	<u>Locality</u>	<u>k</u>	<u>K</u>	<u>C</u>	<u>Q</u>	<u>A<sub>1</sub></u>	<u>A<sub>2</sub></u>	<u>S</u>	<u>(CN) RAW SCORE</u>	<u>(CN) RATING</u>
<u>THE FILBERTS</u>											
WHES-301	1974	Niagara Region Ontario	3 (37.5)	2 (693)	4	3	3	3	3	342	3
Comet	1973	Westbank British Columbia	3 (44.9)	2 (769)	4	2	2	3	2	226	2
Craig	1973	Westbank British Columbia	3 (42.8)	2 (666)	4	2	3	2	2	226	2
Duchilly	1975	Adams Co. Penna.	3 (45.3)	2 (769)	4	2	2	2	3	226	2
<u>THE FILBERTS (continued)</u>											
Barcelona	1975	Niagara Region Ontario	3 (40.7)	2 (625)	4	2	2	1	3	220	2
Royal	1975	Adams Co. Penna.	3 (34.6)	2 (556)	4	2	3	1	1	214	2
Longfellow	1975	Franklin Co. Penna.	3 (34.8)	2 (625)	4	2	2	1	2	210	2
WHES-302	1975	Niagara Region Ontario	3 (33.1)	2 (800)	4	2	2	1	2	210	2
Churoka	1973	Westbank British Columbia	3 (31.0)	1 (1113)	3	2	3	2	2	106	2
Longfellow	1975	Adams Co. Penna.	2 (22.9)	1 (1250)	4	2	2	1	1	76	1

EVALUATION OF THE HAZELS (CONTINUED)

Identity	Year	Locality	k	K	C	Q	A <sub>1</sub>	A <sub>2</sub>	S	(CN) FAW SCORE	(CN) RATING
<u>THE HAZELBERTS</u>											
NY 398	1974	Ontario Co. New York	3 (42.4)	2 (800)	4	3	2	3	2	322	3
NY 555	1974	Ontario Co. New York	3 (45.7)	2 (849)	4	3	3	2	2	322	3
Potomac	1975	St. Clair Co. Illinois	3 (45.0)	2 (746)	4	3	2	2	3	322	3
Reed	1975	Adams Co. Penna.	3 (35.5)	2 (909)	4	3	2	2	3	322	3
Gordon C-1	1974	Erie Co. New York	3 (42.0)	2 (690)	4	3	2	2	2	312	3
NY 200	1974	Ontario Co. New York	3 (41.7)	2 (606)	4	3	2	2	2	312	3
Gordon C-2	1974	Erie Co. New York	3 (46.2)	2 (714)	4	3	2	1	2	306	3
Gordon C-4	1974	Erie Co. New York	3 (43.6)	2 (587)	4	2	3	2	2	226	2
<u>THE TREE HAZELS (TRAZELS)</u>											
SE-4	1973	Westbank British Columbia	3 (50.0)	2 (714)	4	3	2	3	2	322	3
Chinoka	1973	Westbank British Columbia	2 (30.0)	1 (1111)	3	2	3	3	2	92	1
Winkler	1974	Ontario Co. New York	2 (29.8)	1 (1430)	4	2	2	2	2	88	1
A Seedling	1974	Ontario Co. New York	2 (27.4)	1 (1430)	3	2	2	2	2	72	1
<u>FILHAZEL</u>											
Petoka	1973	Westbank British Columbia	3 (51.9)	2 (712)	4	2	2	2	2	216	2

COMMENTS

A good many of the currently available hazels are of acceptable or better quality.

The specific origins of the Tree Hazels discussed in this article are not known to the author at the time of this writing. Many of the characteristics of the Tree Hazels are rather similar and the exact species identity may not be critical for most growers. All the Tree Hazels will give a single stem tree form as opposed to the multi-stem bushes of the other types.

Many of the bush form hazels will produce their first harvests of a few nuts in as little as 5 - 6 growing seasons from seed. Some of the transplanted cultivars may be even more precocious. The tree hazels are generally somewhat slower in producing their first nut crops...possibly as long as 15 - 20 years. All hazels will respond noticeably to soil improvement actions such as the addition of organic matter and balanced fertilizers. Hazels respond rather dramatically to high nitrogen fertilizers but care must be used to ensure that the bushes do not grow too late in the fall so that winter injury may occur. In dry seasons the addition of irrigation water will improve the thriftiness of the plants. The bush form hazels are relatively shallow rooted and will feel the effect of a prolonged drought.

All of the hazels require cross pollination to produce good crops of nuts. Often best results are obtained if there are four or more different cultivars or seedlings planted in close formation. The catkins (male flowers) tend to be the "weak link" in the production cycle of the hazels...they tend to freeze out in the extreme dry-cold periods of winter. Where climates tend to be particularly dry, cold and windy in the winter, the hazels may be planted in the lee of tall woods or hedgerow areas. The bush type hazels make excellent low level hedges in themselves. They provide the functional screening effect of an ornamental hedge and produce a very worthwhile nut crop as well. The female flowers of the hazels look like minute purple hairs which extend out of the apex of the winter buds in the February to April period. The female bloom following pollination is hardy to temperatures as low as  $-12^{\circ}\text{C}$  ( $10^{\circ}\text{F}$ )!

Sometimes there are noticeable differences in the performance of a cultivar or selection from one location to another. Observe the difference in the performance of the cultivar *Longfellow* at the two locations described in the tabular data. Attention to minimum cultural requirements is necessary for all kinds of nut trees for best harvest results.

Crops from the hazels should be dried for a short period after harvesting if the nuts are to be used for human consumption. There is generally a considerable amount of slack between the kernel and the shell if the nuts are properly dried.... about 50% slack volume.

Approximately 15 - 20 years ago John Gordon of Clarence, New York planted seed from select *Hazelbert* sources and produced a number of second generation *Hazelbert* seedlings...about 40 bushes. Several selections from the planting have proven to be of competitive merit. Note how well some of these selected seedlings compare with the cultivars.

The pruning of the hazels consists mostly of confining the bush forms to no more than 8 - 10 main stems per bush. Occasionally in advanced years some of the senile stems may have to be removed to allow for more vigorous growth. The tree form hazels require little pruning and often achieve perfectly symmetrical, upright forms without any pruning whatsoever.

The hazels are remarkably healthy and ornamental in appearance. They require little disease or insect protection in Ontario. Occasionally plant bugs may attack the leaves and nuts. Thiodan or possibly malathion are useful in combatting this pest. But mite is not common in Ontario and the chances of introducing this pest are eliminated if bushes are grown directly from seed at the planting site or if the plants are purchased from a pest-free location. Thiodan is also effective against bud mite. Blight of hazels is not common at all in Ontario but the control is simply to rogue out the infested canes which show the characteristic fungus growth. If scale insects are a problem, control may be attempted with malathion when the insects are in the crawler stage. Malathion is also effective against aphids although it is seldom that they are of any consequence on hazels in Ontario.

Seedlings of many of the cultivars and selections described in this article have been subject to trial observations for several years at Queenston, Ontario. WHES 301 and Potomac seedlings are some of the most interesting. The WHES 301 seedlings are vigorous and are noticeably precocious in setting the first catkin and female bloom...in as little as four years from seed. The Potomac seedlings are some of the most uniformly hardy and fast growing of any observed to this date.

One of the cultural bottlenecks in producing hazel seedlings is to get satisfactory germination of seed nuts. Ideally hazel seed should be planted out in the fall the same day that the nuts drop from the parent trees. Seed may be planted about 2 inches deep in nursery rows and protected with mulch until mid to late spring the following year. Seedlings will emerge during the first part of June. Similarly hazel seed can be picked up in the fall and immediately "layered" by placing the nut in damp peat and storing in the crisper of a refrigerator at temperatures of 2 - 4°C (35 - 40°F). Layered seed may be planted outside in nursery rows the following spring after frost has been out of the ground for about a week...approximately early April in Southern Ontario. If seed is stored in a dry condition over winter the nuts should be cracked (*carefully*) and soaked in well aerated water for 7 - 10 days. Then the seed may be planted outside in nursery rows as early in the spring as the soil can be worked. The efficiency of this latter approach may be improved by adding Gibberlic acid to the soaking water in concentrations of approximately 50 parts per million. Germination rates by any of the methods described above are never entirely predictable but will often range from 10 - 60%.

SUMMARY

The hazels are sufficiently hardy and adaptable that one or more of the species are satisfactorily productive at most any location in Ontario. Many opportunities exist for Ontario nut growers to experience the rewards of growing the currently available selections of the hazels. Also, attractive breeding opportunities exist for those who wish to continue the development of the hardy, big nut, productive types for the far north.

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