Hazelnut Field Day

Sunday 17th February, 2008

Australian Government

Rural Industries Research and Development Corporation

Introduction

This field day is being conducted in collaboration between the Rural Industries Research and Development Corporation (RIRDC), the University of Tasmania (UTas), Charles Sturt University (CSU) the Tasmanian Institute of Agricultural Research (TIAR) and the Hazelnut Growers of Australia Inc. (HGA). These notes provide a brief summary of the background of the speakers and the key aspects of their presentations.

The principal objectives of the day are to:

- Provide information on how and where hazelnuts are grown, world production and the Australian industry
- Inform people of the key outcomes of the RIRDC funded hazelnut research undertaken in Australia
- View a hazelnut orchard and the varieties being assessed in the RIRDC funded research
- Present and discuss future directions for research and development in Tasmania

There will be two main sessions, the first being a series of talks at the University of Tasmania, the second being a site inspection at Kettering. Lunch is provided at the end of the first session.

Program:

	Activity	Speakers
9.30	Registration, tea and coffee	
10.00	Welcome and Introduction	Professor David McNeil
10.05	Growing hazelnuts and the world scene	Basil Baldwin, CSU Orange
10.30	Hazelnut growing in Oregon	Diana French, Hazelnuts Tasmania
10.50	NZ industry experiences	Professor David McNeil
11.10	Morning tea	
11.30	Research results and their application	Basil Baldwin, CSU Orange
12.05	Case Study – value adding	John Zito, Kettering
12.20	The Australian Industry and the HGA Inc.	Stewart Deans, President, HGA Inc
12.30	Tasmanian situation and research needs	Dr. Sally Bound, TIAR
12.40	Lunch	
13.30	Depart for Kettering	
14.10	Field site and orchard management	John Zito, Nutpatch, Kettering
14.30	Hazelnut growth and varietal attributes	Basil Baldwin, CSU Orange
15.00	Future activities in Tasmania – discussion	
15.20	Close	Professor David McNeil

Acknowledgements:

I would like to express my sincere thanks to the Rural Industries Research and Development Corporation (RIRDC) for funding the program of research to evaluate a range of hazelnut varieties in South-eastern Australia. The funds have enabled a wide range of varieties to be evaluated over five sites, one of which is at Kettering in Tasmania. The research has provided a large amount of information, not just on the performance of the varieties but also on the potential for growing hazelnuts in Australia and the effects of environmental conditions on their growth and production. Acknowledgement is also given for the support that RIRDC has given to this field day

I would also like to express my thanks for the support given by Professor David McNeil (Acting Director of TIAR) and the University of Tasmania for making their facilities available. Also thanks to the industry speakers, John Zito, Diana & George French and Stewart Deans who have given so freely of their time and knowledge. The afternoon session is being held in the orchard of John and Connie Zito; particular thanks are given to John and Connie for supporting the research over many years and always providing great hospitality and friendship.

Finally, I would like to thank Dr Sally Bound for her presentation as well as for managing the registration.

Basil Baldwin (Convenor)

Basil Baldwin

Basil is an Adjunct Senior Lecturer at Charles Sturt University (CSU), Orange campus and an Honorary Senior Lecturer at the University of Sydney. He has been interested in hazelnut growing for many years. In 1995 he was fortunate in obtaining a research grant from the Rural Industries Research and Development Corporation (RIRDC) to undertake studies to evaluate the potential of hazelnut varieties in South-eastern Australia. These studies included two research sites in NSW, two in Victoria and one in Tasmania. He has written three reports on his research for RIRDC, the most recent was published in 2007. Basil is the author of numerous publications on hazelnuts and is a regular contributor to The Australian Nutgrower. He has presented papers at three international congresses on hazelnut production and has studied hazelnut production in Turkey, Oregon, Italy, Spain, France and the UK. He and his wife Jean live near Orange, NSW, where they farm in partnership with their daughter and son-in-law. In their farming business, Fourjay Farms, they grow hazelnuts, have a hazelnut nursery and produce a range of value-added products that they sell locally and by mail order.

Hazelnuts – An International Perspective

Hazelnut production is favoured by a climate with a cool winter and mild summer, such as is found in the coastal and upland areas of southern Australia. Hazelnut trees have a poor tolerance to heat, wind and moisture stress, but have moderate frost tolerance.

The European hazelnut (*Corylus avellana* L.) is a deciduous tree which is wind pollinated. The male catkins, formed during late summer and autumn, elongate in winter and shed pollen, which is carried by wind to the small female flowers. When receptive, these female flowers appear as small buds with reddish filaments (stigmas) at their tips. Pollen and female flowers can tolerate temperatures as low as -8^{o}C. Both catkins and female flowers are borne on the same plant, but hazelnuts are not self-fertile. Although pollination occurs in the winter, fertilisation does not take place until late spring, when the seed (kernel) develops within the shell. The mature nuts ripen in late summer and, in most varieties, fall from their husks to the ground during March.

The main northern hemisphere hazelnut production areas have a Mediterranean-type climate and are in the latitude range 37^{o} to 47^{o}. These areas have relatively mild winters and warm summers. Production can be adversely affected by extremes of cold in winter and excessive heat and very low humidity in summer.

Many coastal and highland areas of south-eastern Australia, including Tasmania, have climates that are suitable for hazelnut production. Generally an annual rainfall greater than 700mm is desirable but, if irrigation is available, hazelnuts may be grown in slightly drier areas. Rainfall in most areas of Australia is highly erratic, so supplementary irrigation is generally very beneficial.

Australia imports $15-20 million of hazelnuts annually, equating to 2000 tonnes, principally as kernels for the confectionery trade. Domestic production is estimated to be about 50 tonnes of nuts in-shell, which equates to about 20 tonnes of kernels. Most hazelnut orchards are relatively small, less than 5,000 trees, and these are principally situated in Victoria and New South Wales. It is considered that there is considerable opportunity to produce and market hazelnut kernels in Australia.

The world production of hazelnuts is about 750,000 tonnes. The major country of production is Turkey, on the Black Sea Coast, where about 85% of world hazelnut production is grown in a mild maritime climate. The crop is picked by hand from small trees. Other centres of production include Italy, Oregon USA, Spain and France. Hazelnuts are mechanically harvested in these countries.

Hazelnuts have high nutritive value, containing protein and mono-unsaturated fats. They are also high in calcium and Vitamin E. They are considered to be beneficial in reducing blood cholesterol levels. They can be used in a wide range of food products, not just in confectionery.

George and Dianna French

George and Diana French are farmers, agricultural spraying contractors and hazelnut orchardists and propagators. They have been farming on their property - 'Hazelbrae', Hagley for over 20 years, growing onions, carrots, grass and clover seed, running sheep for fat lamb production, growing Wasabi under shade along with propagating over 5000 hazelnut trees for their own use and for sale to new growers.

They planted their first 570 hazelnut trees in 2005 and will have just over 4000 trees planted and under irrigation by July 2008. Their aim is to plant 14,000 trees on their property 'Hazelbrae' within the next 5 years.

George and Diana have been instrumental in trying to develop a hazelnut industry in Tasmania under the name HAZELNUTS TASMANIA. They hope to build a drying and processing facility on their farm within the next 3 years to service their own needs and those of other growers.

They won a federal government grant in 2007 to further pursue their research and studies into hazelnuts. As a result, they travelled to Oregon, USA in October 2007 to see the industry first hand and to talk with some of the leading hazelnut growers and industry researchers and personnel. This experience has further heightened their realisation that the Meander Valley in Tasmania has equally the most suitable environment for growing and marketing hazelnuts in the world and every effort should be made to take advantage of the location and isolation.

Hazelnut growing in Oregon

A 20 minute PowerPoint presentation on our Oregon experience:

1. Oregon Industry background – area under hazelnuts, yields, pricing etc
2. Soils, Climate
3. Growing Hazelnuts – Varieties, Spacings, trunk height etc.
4. Management – Fertilisers, Irrigation, Pests and Diseases, Pruning
5. Harvest
6. Processing – Drying, cleaning etc
7. Summary

Professor David McNeil

Professor McNeil worked on nut crops in New Zealand for 15 years between 1986 and 2001. He has produced over 50 science and extension publications on nut crops. He spent a year in Oregon in 1997 at Oregon State University investigating commercial production of hazelnuts and their reproduction via various different traditional and tissue culture methods. In 2000 he published a compendium on nut production and research in New Zealand "Chestnuts, Walnuts and Hazelnuts: An overview of the status of their production and research in New Zealand". Since arriving in Tasmania in 2006 to take up the role of Professor of Agriculture and acting Director of TIAR he has been impressed by the possibilities for hazelnuts in Tasmania and commenced to develop with TIAR staff (S Bound), other Australian researchers and industry a research program aimed at the expansion of hazelnuts as an industry.

NZ industry experiences

Summary of Key Research Results and Guidelines for Commercialisation

Five research sites were established with the funds provided by RIRDC. These were at Myrtleford and Toolangi in Victoria, Moss Vale and Orange in New South Wales and Kettering in Tasmania. A total of 24 varieties were evaluated, the two highest yielding varieties that were suitable for the kernel trade were Tokolyi Brownfield Cosford (TBC) and Barcelona. Two other varieties that have also performed well and show potential are Tonda di Giffoni and Lewis. The relative attributes of these varieties are given in Table 1.

Table 1. Potential kernel varieties

	Highest yielding varieties		**Potential varieties**	
	Barcelona	**TBC**	**Tonda di Giffoni**	**Lewis**
Nut yield, based on cumulative 8-year yields	Outstanding at Myrtleford, good at Toolangi and Orange, fairly good at Kettering	Fairly even across all sites, highest at Moss Vale and Kettering.	Good yields at Moss Vale, less well at other sites, favourable at Kettering.	Promising yields in Tasmania, but limited data from mainland sites where it was planted later
Average percentage kernel weight	40% Relatively thick shells	43%	44%	50% Thinner shells
Kernel defects (shrivelled and poor fill)	Tendency to poor fill and shrivel (7-15%) also some twin kernels.	Generally low proportion of shrivel or poor fill (4-12%)	Generally well filled, 7-13% poor fill	Generally well filled, but limited data
Blanching (1 excellent–7 none)	3.5	3.2	3.1	3.0
Pellicle fibre 1(low) – 5 (high)	3	2.5	2	1.8
Nut shape (length/width)	0.97	1.0	0.9 Distinct indents on the shell sides	0.97
Average kernel size	14-16 mm	14-16mm	12-14mm	12-14mm

Barcelona

This variety was the basis of the Oregon industry until the disease Eastern Filbert Blight became prevalent in the Willamette Valley. Barcelona probably originated in Spain and is synonymous with Fertile de Coutard, which is grown in France. Barcelona is a versatile variety that appears to adapt to a wide range of conditions and is possibly more heat tolerant than TBC. Its kernels have a good nutty flavour and blanch quite well. It commonly has some poorly filled kernels which generally have an off-flavour, do not blanch and need to be removed to produce a good quality product. Barcelona is well suited to the snack food market but has been used successfully in a wide range of products. It is a little large for some confectionery products, such as in chocolate. It is a variety with medium chill requirements and blooms in mid-season. Suggested pollinisers for this variety are shown in Table 2. Barcelona has moderate tolerance to Big Bud Mite.

TBC (Tokolyi / Brownfield Cosford)

The origin of this variety is unknown; it is possibly an Australian seedling, which was initially selected by Imre Tokolyi in Victoria. It was planted extensively in the Brownfield orchard at Acheron, in Victoria. It is purported that subsequent selection was made in that orchard, hence the reference to Tokolyi and Brownfield in the name.

TBC has produced moderate to good nut yields at all five sites with kernels generally being well-filled and with good blanching attributes. TBC seems to perform better than Barcelona in cooler climates. The main drawback is that it tends to fall in husk and sometimes requires some dehusking in the field. However, it is not uncommon for commercial vacuum harvesters to have in-built de-huskers. The nut is round despite the term ‘Cosford’ in its name, which suggests a long nut.

Scion wood from a TBC tree at Orange was taken to Oregon by Professor Shawn Mehlenbacher who subsequently determined its S-alleles to be 5, 23 [1] As the variety appears to produce good quantities of pollen mid-season, it is a potential polliniser for many varieties. Apart from the potential polliniser varieties shown in Table 2, observations by growers suggest that TBC is also pollinated by the Australian seedling selections known as Turkish Cosford, North-east Barcelona and Woodnut. Shawn Mehlenbacher (Pers. Comm. Oct 2006) reported moderate tolerance to Big Bud Mite.

Tonda di Giffoni

Of Italian origin, this variety is a strong-growing tree which has relatively low chill requirements for catkins and vegetative buds and may be well suited to areas with mild winters and lower chilling hours. It has grown well at all five research sites. The kernels generally fill and blanch well and have a good nutty flavour. Nuts have a characteristic indent or groove. It has potential for the confectionery trade and in the manufacture of Nutella. It has good tolerance to Big Bud Mite.

Lewis

A variety developed by Oregon State University and released in 1997. It is earlier into bearing than Barcelona, is a smaller tree, nut fall is earlier and it has fewer kernel defects. It has moderate tolerance to Big Bud Mite.

The potential of Lewis has not been fully evaluated in the research as it was not available in the initial years of planting. However, it does seem to have potential as a kernel variety and has a useful role as a polliniser. The kernels are smaller than those of Barcelona or TBC and are of a size that makes them suitable for use in the confectionery trade. Lewis performed well at Kettering in 2007.

Polliniser varieties

Varieties selected for use as pollinisers must be genetically compatible with the trees of the main variety that is to be pollinated. The polliniser trees must shed pollen when the female flowers of the main variety are receptive and ideally have kernels that can be used in mixture with the main crop varieties. If the kernels cannot be used in mixture, then the polliniser variety needs to have nuts that can be separated from the main cropping variety by size grading. Apart from Segorbe, all the suggested polliniser varieties shown in Table 2 blanch quite well.

Table 2. Potential pollinisers for the most promising varieties in the field studies

Variety	S - alleles[1]	Early	Mid-season	Late
Barcelona	1 2	Segorbe	TBC Lewis	Hall's Giant/ Merveille de Bollwiller[2]
TBC	5 23	Barcelona	Lewis	Jemtegaard #5
Tonda di Giffoni	2 23	Barcelona Segorbe	Lewis	Hall's Giant
Lewis	3 8	Tonda di Giffoni	TBC	Hall's Giant

NOTES

[1]NB For varieties to be genetically compatible, the dominant S-allele in the pollen, which is underscored, must be different from the two S-alleles of the recipient variety. Thus Barcelona which has the dominant S-allele 1can pollinate Tonda di Giffoni 2 23, but Tonda di Giffoni is not able to pollinate Barcelona.

[2]Hall's Giant/ Merveille de Bollwiller are synonyms for the same variety.

In-shell varieties

The varieties Ennis and Royal produce large nuts best suited to the in-shell trade. The kernels of these varieties are often poorly filled and do not blanch well. Other potential in-shell varieties include Wanliss Pride and Barcelona.

Guidelines for successful hazelnut production

Based on the outcomes of the research and commercial experience, the following guidelines have been formulated to assist growers in orchard establishment. However, these guidelines will need to be adapted to suit each grower's situation.

Site selection

Select sites with deep well-drained loam soils and a cool temperate climate, ideally with an annual rainfall greater than 750mm, with a winter–spring dominance and dry autumn for harvesting. Avoid areas with high average maximum January temperatures much greater than 30^{o}C and mean July minimum temperatures above 10^{o}C.

Shelter

Select sites that are sheltered from strong winds or plant windbreak trees before planting hazelnut trees.

Pre-planting

Apply ground limestone before planting to raise soil pH to levels of 6-6.5. Deep ripping of tree rows may be beneficial on some compacted soils. Cultivate soils before planting, this might be done for a prior crop such as a cereal or legume pasture as a level surface is required for the orchard floor to facilitate mowing and nut collection.

Planting stock

Plant whips or 1 year-old trees that are well grown (4-6 cm butt circumference) with good root systems. Protect young trees from vermin, such as rabbits and hares. Select appropriate pollinisers.

Planting distances

Based on the experience gained from the research and commerce, it is suggested that commercial orchards are planted in rows 6 metres apart, to ensure there is good access for harvesting and other mechanised activities within the orchard, when the trees are well grown. On sites with deep loamy soils and good rainfall, where good vigorous tree growth is likely to be experienced, it is suggested that trees are planted at a 6 metre spacing down the rows. However, if cheap planting material is available, an initial planting of 3 metres down the row could be considered, to obtain higher early yields. At this high density planting, growers need to be prepared to either prune fairly heavily or remove alternate trees to obtain a final spacing of 6 metres down the row. On sites where less vigorous growth is expected, a final spacing of 5 metres down the rows might be more suitable.

Orchard management

Mulch young trees if possible and keep weed free. Establish an irrigation system. Control suckers and any pests or diseases.

Monitoring progress

Monitor tree growth by measuring butt circumference at 100 mm above the ground and nut yields of 20 typical plants to assess performance. Ideal targets are shown in Table 3. The first year of leaf refers to the first year of growth after planting and the butt circumferences for that year are those measured in the autumn of the year following planting, ie. about 9 months after planting.

Table 3. Typical target figures of stem (butt) circumference (cm) and nut yields (kg/tree).

	Year of leaf							
	1	2	3	4	5	6	7	8
Stem circumference (cm)	8	14	19	24	29	33	37	40
Nut yields (kg/tree)				0.5	1.5	2.5	4.0	5.0

Irrigation

Supplementary irrigation is likely to be necessary at most sites. Rainfall and soil moisture status need to be monitored so irrigation can be applied at critical stages of growth and development.

Critical periods of production are:

- November - fertilisation and early development of fruits
- December - nut growth
- January - early kernel development
- February - final kernel filling

If possible, moisture stress should be minimised during these periods through the use of supplementary irrigation to ensure good nut set, with well developed nuts and well filled kernels.

Harvesting and post harvest handling

Nuts should be harvested promptly when ripe and dry and stored under dry, vermin proof conditions. Orchards of less than 200 trees may be picked by hand. At maturity, such an orchard could produce 1tonne of nuts. Above this size, mechanical aids are recommended such as a small Facma suction harvester or a Tonnuti. As new machines may now cost up to $20,000 landed in Australia, it is probably necessary to plant 3-5ha to justify such a purchase. Sweeper machines are more expensive, but probably more efficient, a minimum orchard size of 10ha is probably required to justify one of these. Second hand machines are available as they are used in other nut crops

It is essential that the nuts be dried after harvest to ensure they keep well in storage. Sun drying on racks of woven steel mesh is adequate for small crops, but for larger crops, drying with hot air is necessary. Crops up to half a tonne can be dried on racks in an insulated shed using a domestic fan heater. It is necessary to vent off moist air.

Many growers crack and airleg separate their crops to sell kernels. This can be done on a small scale using home made equipment or on a larger scale, collectively, using more sophisticated and more efficient equipment. The largest market is the kernel market.

Potential profitability

It is difficult to be precise about the profitability of hazelnut growing as this depends on the situation in which the crop is grown, the yields obtained, the market opportunities, and the growers' management skills. However, an attempt has been made to present an approximation of the economics based on the activities carried out to establish the trial sites and commercial orchards, the typical management program used to maintain them and current costs of inputs and contractors' rates.

The approximate establishment costs are at least $6,000/ha, based on the need to apply limestone before planting to raise soil pH levels, the availability of a contractor to prepare the land, and the trees being planted by the grower. It is assumed that whips or young trees will be purchased at a cost of about $10 per tree and that the grower has a water supply and irrigation licence for the property. Irrigation costs are for materials only in the orchard and assume the grower will install the irrigation system. Irrigation costs do not include automatic timers. Costs assume a tree spacing of 6m between rows with the trees spaced 5m down the rows. The two major cost items are the purchase of the planting material and the irrigation system (Table 4).

Table 4. Estimate of approximate material costs of establishment per hectare, excluding labour.

Item	**Aproximate cost $/ha**
Lime 5t/ha @ $65/t applied by contractor	325
Land preparation, spraying, ripping, cultivation and levelling	250
300 trees @ $10/tree (Spacing 6m x 5m)	3,000
Irrigation system - Irrigation mains, sub-mains, drip lines and 2-4 emitters/tree. Assumes water to site.	2,425
Total materials costs	**$6,000**

The data from the research sites indicates it may take from 6-10 years to achieve peak yields from an orchard. This will depend on the quality of the planting material, the site and the growers' management skills. Estimates of gross margins for orchards in full production are shown in Table 5. The major single cost item is harvesting; the cost given is based on estimates of the time taken to harvest a well-managed orchard using a manually operated vacuum harvester that is supplied by a contractor. The grower would be responsible for assisting with the harvest, carting the crop from the orchard and drying as required. Based on these assumptions, the approximate direct costs, excluding labour, are estimated to be about $2,500. These estimates are based on relatively small orchards, up to 5ha, that can be harvested with a manually operated vacuum harvester. If several growers worked in collaboration to have an aggregate area of 50–70 ha, it would be possible to justify a mechanical sweeping machine and harvesting cost could probably be reduced substantially.

Table 5. An estimate of the gross margin per hectare for a productive orchard, assuming harvesting by contractor with a suction harvester with assistance from the grower.

	Expenses ($/ha)	**Income ($/ha)**
Income		
Hazelnuts in-shell, 2 tonnes/ha @ $3.50/kg		7000
Direct costs		
Fertilisers	150	
Sucker spraying (4 times per year)	80	
Mowing (4-5 times/year)	120	
Weed control, (eg Roundup down the tree rows)	50	
Irrigation (application costs)	100	
Harvesting (suction machine @ $1/kg)	2000	
Total direct costs		2500
Gross margin ($ per hectare)		**$4500**

Two key factors influencing the profitability of hazelnut growing are the price received for the crop and the yield obtained. An analysis of the effects of grower returns and crop yields (Table 6) shows how much these can vary and the need to obtain yields of at least 1.5 t/ha and $3/kg to obtain a gross margin of $2,000/ha, based on the costs given in the gross margin analysis.

Table 6. Sensitivity analysis of gross margin ($/ha) to price received and yield (assuming direct costs are constant)

	Yield of nuts in-shell (t/ha)			
Price received ($/kg)	1.0	1.5	2.0	2.5
3.00	500	2000	3500	5000
3.50	1000	2750	4500	6250
4.00	1500	3500	5500	7500
4.50	2000	4250	6500	8750

Yields from well-managed orchards in Oregon, Italy and Spain are in the order of 1.5 – 2.5t/ha. Trees producing 5kg nuts/tree planted at a density of 300/ha would yield 1.5t/ha. Although higher planting densities are more expensive, a density of 3m down the row, with 6m between rows is considered highly desirable for most situations and likely to give higher returns in the first 20 years of the orchard. Current domestic prices for good quality nuts with a 40% crack-out are up to $4.50/kg.

John Zito

Case Study – value adding

The Australian Industry and the HGA Inc.

Stewart Deans, President of the Hazelnut Growers of Australia Ltd.

Dianne and Stewart purchased a small nut orchard on the Lake George escarpment at Bungendore (near Canberra) in late 1999. The orchard consisted of around 400 chestnut trees and 200 hazelnut trees in three areas covering around 3 Ha. The remainder of the 16 ha property is mostly steep native bush with environmental development restrictions. The nut trees were 4 to 6 years old at the time of purchase and the orchard was in poor condition as the property had been leased for the previous three years.

During the last 10 years, the weather has turned sharply drier and the Deans have had to put a lot of effort into replacing the previous manual sprinkler irrigation system with an automated pressure-compensated drip system. The area is also home to large flocks of sulphur-crested cockatoos that can devastate nut crops. Stewart and Dianne decided that the only sure way to combat the problem was netting, so they installed permanent bird netting over the main hazelnut paddock.

Around 300 – 400 kg of hazelnuts in-shell are now harvested and sold, mostly on-farm, as well as around 1 tonne of chestnuts.

Shortly after purchasing the orchard, the Deans joined the Hazelnut Growers of Australia and have attended most of the meetings and field days. As they previously knew nothing about hazelnuts and were hungry for information, they have found the HGA to be invaluable. The meetings and field days have enabled them to meet other growers and find out how their orchard compared to others. They have been able to relate to the industry in Australia and the world. They saw how others developed equipment to assist in harvesting, grading and drying and how others marketed their products and what prices they got. On joining the HGA, the Deans received a copy of the HGA Growers Manual, which detailed many of these things.

Many hazelnut growers in Australia belong to the HGA. As an association, resources can be pooled and access obtained to additional funding from government through Horticulture Australia Limited (HAL) and Rural Industry Research and Development Corporation (RIRDC) for research activities that would not be available to an individual.

The HGA is also represented on the Australian Nut Industry Council (ANIC), an organisation that represents all major nut associations in Australia. This enables hazelnut growers to participate in activities such as publishing in the Australian Nutgrower, which all members receive quarterly, and have an involvement in the ANIC biennial Conference. These activities would be beyond the resources of the HGA alone. As a member of ANIC, the HGA can participate as a member of other organisations such as:

- Nuts For Life (N4L) that promotes the benefits of nut consumption to health professionals and others;
- Plant Health Australia (PHA) that manages emergency plant pest incursion responses;
- Horticulture Australia Council (HAC) that represents horticultural interests to government in issues such as the China Free Trade Agreement.
- Horticulture Australia Ltd (HAL) also looks after issues of obtaining special permits that allow nut growers to legally use a range of chemicals in their orchards, such as Roundup for weed control and copper oxy-chloride for bacterial blight.

Tasmania could become the primary hazelnut-producing region in Australia. One of the best ways to encourage and assist that development is to join the Hazelnut Growers of Australia Inc., to share ideas with others, to learn what other growers are doing and to pool resources in order to achieve more than can be achieved as individuals.

Dr Sally Bound, Tasmanian Institute of Agricultural Research

Sally has been undertaking research in the area of crop management for over 25 years, and is recognised within the international research community as a leading researcher in the field of pome fruit crop regulation. She has worked on a range of perennial tree crops, including apples, pears, apricots, nectarines, plums, cherries, and more recently hazelnuts, and is also experienced in propagation techniques for perennial trees.

During the past 18 years, Sally has developed and managed externally funded projects, both at a state and national level, in a range of areas within the perennial crop portfolio, including crop regulation; spray technology; fruit quality issues; pollination; pesticide reduction; orchard floor management; and canopy manipulation. She also provides technical information and advice to orchardists and industry groups and conducts workshops and seminars throughout Australia, and has developed training courses for consultants and growers to ensure adoption of her work. She collaborates closely with researchers and industry groups across Australia, and with international researchers and organisations.

Tasmania – Research needs

This session will give a brief overview of the research needs in hazelnuts. For the hazelnut industry to develop rapidly, four distinct phases have been identified:

1. propagation and supply of high quality trees
2. rapid establishment of orchards
3. management of established orchards
4. processing and marketing

Research needs can be divided into short and long term. Short term needs include:

1. Tree cost and establishment
2. Once trees are available, rapid establishment is important to ensure high yielding orchards in a minimum time frame. Nut yield up to full canopy is related to trunk cross-sectional area (TCSA). So enhancement of early growth to minimise the time between planting and full canopy is important in reaching full production in the shortest possible time frame. Issues that impact on tree growth include wind damage; pruning and canopy management; irrigation; fertiliser requirements; and orchard floor management

Longer term research needs that will also need consideration are:

1. canopy management in established orchards;
2. biennial bearing;
3. plant spacing; and
4. further evaluation of new and promising varieties, including development of a breeding program.

While there is some information available from overseas on propagation methods and orchard establishment, this is not always directly transferable to Australian conditions.

Further information on hazelnut growing:

Hazelnut Variety Assessment for South-Eastern Australia, Basil Baldwin, Karilyn Gilchrist and Lester Snare 2007, RIRDC Publication no.07/062 available from www.rirdc.gov.au/full reports/index.html or purchase at www.rirdc.gov.au/eshop

Hazelnut Growers Handbook, Hazelnut Growers of Australia Inc. 1999 available to all new members of the HGA

The Australian Nutgrower (a quarterly journal) Ed Jennifer Wilkinson, Published by the Australian Nut Industry Council

The Identification of Hazelnut Clonal Material, Basil Baldwin, 2007. Horticulture Australia Ltd.

Pest and diseases analysis of hazelnuts, Lester Snare, Horticulture Australia Ltd

HGA Inc web site www.hazelnuts.org.au

Nut Grower's Guide. The complete handbook for producers and hobbyists (2005) by Jennifer Wilkinson. Published by Landlinks Press (http//www.landlinks.com)