

The Future of Tasmania's Once Iconic Crops;

Hop production systems and Fruit supply chain challenges

A report for



By Tom Frankcomb

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Foreword

The Scholarship was funded by Impact Fertilisers, the market leading Tasmanian owned and based manufacturer, importer and supplier of fertiliser products.

The travel and associated study undertaken as a result of the scholarship had two core themes and the findings, conclusions and recommendations from this study are presented in this report.

The two themes of study were

- To explore the latest systems in hop production around the world specifically looking at Low trellis/dwarf hop production and the opportunities for low chemical input/organic hop production in Tasmania
- To examine different fresh produce trading businesses and their structures in the UK including Farmer Controlled Businesses (FCB's) that successfully bridge the gap between the producer and the consumer with the aim of identifying a model that would help to fix the dysfunctional supply chain in Australia.

Hops are the female seed cones of the hop plant, *Humulus Lupulus*. They are harvested from the plant in the autumn, dried and used in the brewing of beer to give the beer its distinctive flavour, bitterness and aroma as well as acting as a preservative. The hop plant is a perennial rhizome that each spring climbs up a string or trellis, flowers and produces the hop before dying down again in the autumn.

The key findings of this study and the report include:

- The advancement in the breeding and technology of the low trellis hop production system is continuing, particularly in the UK such that this idea is now becoming a viable alternative to conventional high trellis production in the UK. The adoption of this system in other growing areas is going to depend on the breeding of dwarf varieties to suit different climates.
- Opportunities exist for the production of organic hops in Tasmania to meet the demands of the small but growing microbrewery market in countries such as the US and also the “organic” beer demand in Europe.
- The Australian fresh produce trading industry whether that be FCB's or other types of businesses needs to embrace the importance of all stakeholders in the whole supply

chain before we can hope to see any improvement in the inequities that currently exist in the supply chain and needs to be prepared to look outside of itself for the skills and people to help this happen.

The findings and recommendations from this report should be of interest to those involved in the horticulture sector in Tasmania. Consideration of the recommendations in this report should be taken seriously if Tasmania's once iconic crops are going to continue to contribute to the Tasmanian economy and use of its abundant resources for food production. Producers particularly need to consider the recommendations if they want to change the situation they continue to find themselves in, with the supermarkets and major processing companies controlling the food supply chain, to the detriment of the producers.

Acknowledgments

I would like to acknowledge the many people who helped me in this Nuffield Journey and the preparation of this report which outlines a small fraction of the ideas and practices I observed and learnt whilst on this study.

- My wife Ruth for her continued encouragement to get me to apply for the scholarship and for her unwavering love and support through some pretty tough times over the last few years and for holding it all together whilst I was away
- All the farmers, friends, relatives, and business people around the world who looked after me, gave up their time and their ideas to help me on my Nuffield journey
- All Nuffield scholars I have met and the support of the worldwide Nuffield organisation to help provide such a fantastic opportunity for us all and help open doors for Scholars
- Bill Casimaty for never giving up on me as a potential Nuffield Scholar and his continued support
- All the hop growers and researchers I have met around the world and their hospitality and willingness to share information and a beer
- Sion Roberts and Steve Ellwood from EFFP for helping to point me in the direction of a diverse group of UK fresh produce trading businesses
- Georg Schauer and Stefan Stanglmair from the Hallertau for giving up their time to help me and helping with the language barriers
- Harry Wooldridge in Kent for always being welcoming and helping me to understand what goes on in the UK fruit game
- My forebears in the Huon for giving me the background knowledge and history in two of Tasmania's iconic crops

Abbreviations

IHGC	International Hop Growers Congress
IMC	Integrated Mite Control
PO	Producer Organisation

Executive Summary

This Report titled, The Future of Tasmania's Once Iconic Crops; Hop production systems and fruit supply chain challenges is centred essentially around two key aims

- to investigate further the latest technology in hop growing and low trellis hop production systems and the changes in the world beer and brewing markets and the opportunities that may exist for Tasmanian producers.
- And to examine fresh produce trading businesses in the UK with the aim of finding a better model for such businesses in Australia that control the fresh produce supply chain

They objectives were;

- To make contact with and visit the researchers and growers involved in dwarf and low trellis hop production in the UK, Europe and the US by starting my hop study at the International Hop Growers Congress in Strasbourg
- Meet with hop traders, growers and the broader world hop industry to try and further understand the dynamics affecting both the demand and supply side of the world hop market
- Investigate organic hop production and the potential for the incorporation of dwarf /low trellis hops in an organic production system in Tasmania
- Explore the possibility of importing dwarf hop varieties into Australia for some trial plantings
- Meet micro brewers to understand their drivers for hop supply
- Make contact with and visit different types of produce trading businesses operating in the UK to compare them in a retail and trading system

Hops

- There is a lot of progress being made in the development of the dwarf hop production system around the world but really the leaders in this field are the English who have the only true dwarf hops that are now starting to gain some brewer acceptance.

- The continued growth in micro-breweries around the world will open up opportunities for Tasmanian hop growers in the future particularly as there is likely to be continued interest from these type of brewers for organic and low chemical input hops.
- The German hop industry continues to gain strength in the world market but it also is the centre of a lot of innovation in conventional high trellis growing systems.
- There is more to hop growing than just hops, as some of the Poperinge hop producers are also involved in the production of hop shoots in the spring in conjunction with producing hops. Hop Scheuten are used in the restaurants of Belgium and could possibly be produced in Australia for the food service industry also.

Fresh Produce Trading

The key to the successful business's in the fresh produce trading area I met was not their structure, i.e. whether they were a farmer controlled business such as a co-operative, or a marketing business hanging off the side of a PO, or a private company with no grower or farmer ownership, but rather a combination of factors including but not limited to the following:

- Supply what the customer wants and needs
- Always look to minimise the cost structures in the chain
- Facilitate a smooth transfer and flow of information through the chain from customer to producer and vice versa
- Provide the producer and customer with something unique such as access to profitable varieties that will give them a competitive advantage
- Encourage and help facilitate the adoption of new technology and growing systems
- They had mission statements and visions which were reflective of their focus upon the whole supply chain and its importance to these businesses in contrast to what exists in the Australian fresh produce supply chain.

The conclusions and recommendations in this report are targeted at the Tasmanian hop industry and also at the fresh produce supply chain businesses and farmer controlled businesses. All those individuals and businesses planning to try and bridge the gaps between the producer and the consumer may find something of interest here.

Introduction

Tasmania is an island state located to the south of the Australian mainland with a heavy reliance on primary production for its economy as well as its identity. It was known as the Apple Isle for many decades due to its renown as a major counter seasonal supplier of apples and pears to the northern hemisphere and south east Asia. It also has had a well known name for fine merino wool, vegetables, dairying, and hops. In more recent times poppies for pharmaceuticals, abalone, pyrethrum, cool climate wines and export quality cherries have also become synonymous with Tasmania.

I have grown up and been involved in the production in my family business of several of these iconic Tasmanian crops and am very aware of the issues and challenges facing the fruit industry and the hop industry. I am married to Ruth and we have three children Lachie 10, Alice 7 and Hugh 3 and have been involved in different stages of the family business since leaving college in 1990. My experiences, prior research and learning and the industry states, that are encompassed in this nuffield report and that started me down this path of looking for a better way forward for the industries are expanded in the following two sections.

Fruit Industry

The Tasmanian apple industry, which gave the state its tag the Apple Isle, has decreased in its importance since its peak in the 1970's when production peaked around 180,000 tonnes.

Production has dropped to around 50,000 tonnes and continues to drop as the industry struggles to compete in export markets with lower cost of production countries such as Chile, South Africa, New Zealand and China.

The Tasmanian industry has also been losing competitiveness and market share within the Australian market in recent years due to several factors. These include the increased cost of accessing the major markets of Sydney, Melbourne and Brisbane on the eastern seaboard of Australia and the industries traditional focus on export markets.

The Tasmanian apple industry is severely hampered in its ability to remain viable and to keep up with market demands, due to the high cost supply chain that has developed that is not controlled by the producers, the very poor transfer of information through the existing supply chain about the product and the extremely slow transfer of sale data, generation of invoices

and payment. In many cases the timeframe from despatch to generation of invoices and payment can take 5 to 6 months.

There has also been a continued erosion of the percentage of the retail price that finds its way to the farm gate over recent years, a common factor that all fresh produce fruit and vegetable producers are experiencing across Australia.

One of the standout success's of the last decade in the Tasmanian fruit industry has been the rapid growth in the cherry and apricot industries such that the cherry crops value to the state will exceed the apple crop in the next few years. Cherry production has grown from only a few hundred tonnes in the early 1990's to 2500 tonnes in 2007 and the industry forward estimates are for production to reach around 7000 tonnes in 2011-2012.

The industry structures that bridge the gap between the farm gate and consumer/retailer for the rapidly growing cherry industry are similar to existing apple industry. The problems that present industry structures have helped create for the apple industry have a likelihood of creating similar issues for the cherry industry. If the producers and industry adopt by default the existing fruit industry models which are tired, broken, need some major overhauling and are not serving either the producers or consumers well, then only the business's in the middle who take very little risk but have control will continue to reap all the reward.

Dwarf /Low Trellis Hops

The Tasmanian hop industry has been associated with the state since the early 1800's when the rapidly growing Australian population needed hops to enable brewers to quench the early Australians thirst for beer. Hops were grown in and around all the major settlements but it was soon discovered that the area's most suitable for hop production were the fertile valleys of NE Victoria and Southern Tasmania. Over the last 150 years the production systems and varieties grown have continued to evolve along with all agricultural production systems. Hop production is very labour and capital intensive and the world hop market is very cyclical. This means that unless growers have efficient production systems and are producing the varieties the brewers want it is hard to ride out the cyclical nature of the market and remain viable in the long term. There has been research and trials going on with the low trellis concept of growing hops since the 1980's. The low trellis system is centred on a production system that requires less capital investment and also has less variable costs of production. The idea is to enable hops to be grown more efficiently and with less risk to the grower.

Dr Greg Lewis and the Hopunion Company did some extensive work in the late 80's early 90's in Washington State trying to grow conventional hop varieties on the low trellis. They were unable to get the results needed to make it commercial though. At the same time the Hop research team at Wye College in the UK started breeding work centred on the use of Dwarf hops for the use of these varieties in a low trellis production system. Dwarf hops are genetically different to 'normal' hops in that they have an internode length approximately half that of the conventional.

I have been watching with interest the development of the low trellis hop concept over the last 20 years and visited the Wye College team and Dr Lewis in 1992. The breeding work at Wye has now come up with some varieties that are of interest to brewers and the dwarf hop system has now become a significant part of the UK hop industry with many growers now only growing dwarf hops. There is continued interest and research being done in the northern hemisphere on low trellis and dwarf hops.

The major disease's which affect hops, downy mildew *Pseudoperonospora humuli* and powdery mildew *Podosphaera macularis* are not present in Australia. The only major pest for hops is the red spider mite *tetranychus urticae*, the same species which affect deciduous fruit trees. IMC systems which encourage the development of predatory species are successful in managing mites in fruit trees. The potential to control spider mites in Low trellis or dwarf hops in Tasmania is much greater than conventional growing systems as the majority of the plant biomass and hence insects and micro fauna is left in the field at harvest time.

The world brewing industry has been undergoing a consolidation over the last 20 years such that now the top 10 brewing companies in the world control 60.3% of world beer production (Barth Group, 2008). These major brewers are not concerned with the finer qualities or characteristics of their hops for brewing as the brewing techniques rely heavily on the use of individual hop essential oils that are used for particular styles of beer. These hop oils, the major ones known as alpha acids, but there are many other essential oils are extracted with high technology CO₂ extraction plants.

This means that a large and ever increasing percentage of the hops grown in the world are essentially supplying a commodity market for the extraction plants which in turn supply the brewers with their hop essential oils as their large factory brewing techniques require.

There is at the same time in many of the western countries with mature beer markets a growth in boutique micro or craft breweries.

Hop Study

Dwarf /Low Trellis Hops



The two pictures above explain what the idea behind trying to produce hops on a low trellis system is all about. The dwarf hops in the first picture are First Gold in the UK on a 2.8 metre high trellis and in the second picture repair work is being done after harvest to maintain the 7 metre high trellis in the Hallertau in Germany.

Low trellis hops are grown in USA, UK, China, and the Czech Republic and are being experimented with in Germany.

Wye Hops and UK

The world leader in dwarf hop research and commercialisation is still undoubtedly the UK. The dwarf hop breeding program is being run alongside a conventional hop breeding program by an industry owned company, Wye Hops Ltd. The program is run by the very passionate and knowledgeable Dr Peter Darby under the direction of the board and is based at China Farm near Canterbury.

The formerly world renowned Hop Research Institute attached to Wye College was closed down in 2008 and the all important breeding programme has been taken over by the industry owned Wye Hops Ltd. The programme has been for many years run on the 'smell of an oily rag' and would not still be in existence without the huge personal effort of a small group of growers and industry people who knew that without the continuation of a breeding programme in the UK the industry would struggle to compete with the might of the German and US production.

The breeding work that has been undertaken in the UK has allowed varieties to come into existence that meet the two needs for a dwarf hop system to succeed. These are varieties that will one, meet the agronomic and economic needs to suit the system and be viable and two, produce a hop that will brewers will want to use. There have been many varieties tested over the last 10 years that have not met either or both of these criteria that have not gone onto commercial success.

After 20 years of breeding, selection and trials the industry has several varieties now in commercial production including First Gold and Boadicea that are starting to tick the boxes. First Gold ticked the production boxes and now is starting to get some brewer acceptance and consequent demand.

The real star for the Wye Hops programme is the recent release of Boadicea. This variety ticks the production boxes but also has resistance to a major pest, the damson hop aphid. From a production viewpoint this resistance, which they are aiming to keep in the breeding lines, will have huge benefits for the UK growers and the variety also has a nice growth habit ideally suited to the low trellis.

I visited many hop growers in the Hereford and Worcester Counties as well as Kent. The UK hop industry now has several growers who only grow dwarf hops as the economics stack up for them.

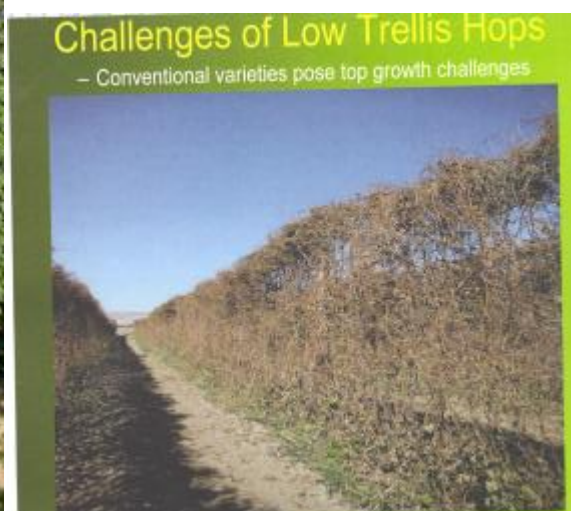
USA

The American Dwarf Hop Association (ADHA) is a group of hop growers in Washington State who have been very active in pursuing the growing of hops on low trellis. They now have 200 ha established. They have been running a multi-year trial in conjunction with the Washington State Hop Commission looking at different planting densities and the performance of conventional varieties on the low trellis as well as developing machinery to suit the low trellis. Leslie Roy gave a presentation at the IHGC in Strasbourg on the work and findings of the trials.

The US work has confirmed the cost advantage of low trellis and the potential for low trellis as an alternative production system. They have also seen the problems that happen when

trying to adapt conventional varieties to low trellis. The vigorous growth of conventional varieties causes problems managing the most important resource, light leading to poor yields. The research in Germany has uncovered the same challenge. It can be a good way to grow a lot of plant and not many hops. They have trialled several varieties and have had better results with CTZ (US high alpha), Galena and Cascade and disappointing results with Willamette and Nugget. The variety that is showing the most promise currently for low trellis is Summit. This is a newly released variety that is best described as being a semi dwarf. Summit is a high alpha variety that is also being grown on high trellis.

The problem with too much vigour increases as the hop rhizomes get older and the size of the root system increases as some of the ADHA data shows. (ADHA & Roy, 2009)



Conventional Varieties on Low Trellis and The Result – Lots of Growth and No Hops

The cost of establishment of low trellis in the US has been also documented by the ADHA at 9600 euro's – \$14,388Aud at 0.66eur/\$aud. (see appendices) (ADHA & Roy, 2009). This compares to the cost of establishment of a high trellis planting in Tasmania in 2009 of approx \$24,000.

The low trellis growing costs have been compared by the ADHA to conventional high trellis. This shows a cost of 3186 euro's compared to 5140 euro's per ha, a 38% decrease in costs per ha. (ADHA & Roy, 2009)

They have also compared the net return per acre comparing low and high trellis at varying hop prices per kg of alpha which show the advantages of low trellis when hop prices are low as they invariably are. The graph below shows that in the work done by ADHA the gross margin for low trellis is above high trellis in the area of low prices.

Assumptions:

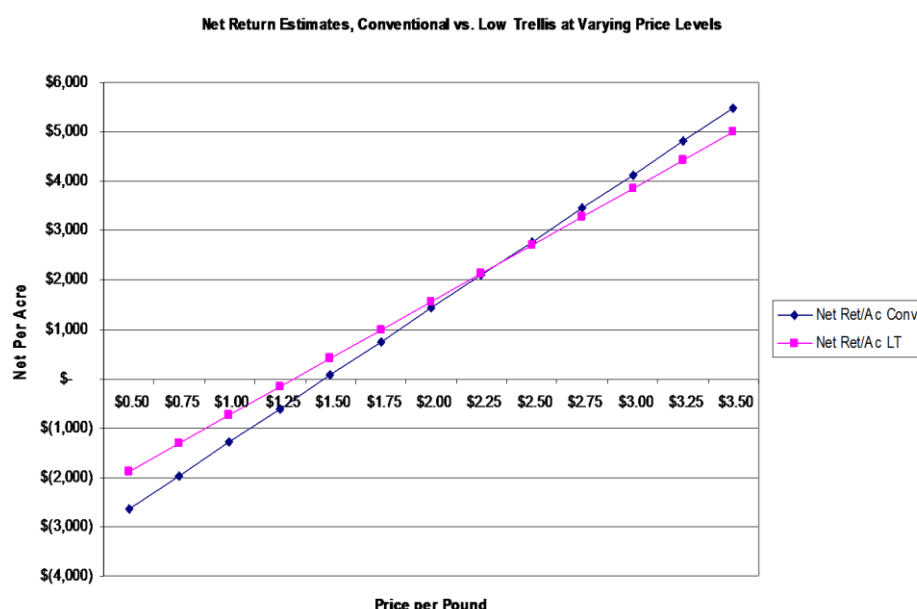
Total Cost/Acre (conv): \$4000

Total Cost/Acre (LT): \$3034

Conventional Yield: 2712 lb/acre

LT Yield: 2298 lb/acre

Remember: average price from 1991-2006=\$1.80



(ADHA & Roy, 2009)

The work in the US has also noted that there is less mite pressure in the low trellis plantings.

The ADHA have recognised that for low trellis hop growing to be successful in the long term there is a need for Dwarf hop varieties to be bred for the system. There are private breeding programs running in Washington that are now looking at and evaluating dwarf varieties as well as work through Oregon State University. Some of the dwarf breeding work in the US is focusing on continuing to breed high alpha varieties. This work as with many breeding programs is focusing on maximising the Kg of Alpha produced per Ha.

Leslie Roy stated at the IHGC in his presentation that his aim with the low trellis work is to grow the cheapest alpha per Kg through the low trellis system. All this will do is to further entrench the world alpha hop market supplying the major brewers as a commodity market dominated by those who can produce the cheapest alpha.

Hallertau Germany

The main centre of the German hop industry and indeed the world industry is the Hallertau. The Hallertau is located between the Donau and Isar Rivers between Munich and Regensburg in Bavaria (see map in appendices). According to the Barth Report ^(Barth-Hass Group, 2009) the Hallertau in 2008 /2009 had 15,678 ha or 27.3 % of the worlds acreage. The hop area has grown from around 5000 ha in 1950 to the current area. This is all located within an area with a radius of only approximately 20 Km, so it is hops everywhere as this picture helps to show.



The German industry has traditionally been dominated by small areas on each farm such that today still the average hop acreage per farm has reached approx 12 Ha.(see appendices). The number of farmers has been on a steady decline, down to around 1800, meaning the hop acreage in Germany has remained fairly constant over the last 20 years. This has been at a time when many other growing areas of the world such as the UK, Australia and Belgium have shrunk considerably.

The maintenance of the area has consequently led to the significant strength that the German industry already had being maintained or even strengthened further. These strengths include the Hop Research Centre Hull and its breeding program, the continued development of machinery and technology for more efficient production, the EU common agricultural policy and its support of all rural communities in Europe and the various hop grower representative associations.

Hop Research Centre Hull

Hull is located in the heart of the Hallertau between Wolnzach and Mainburg. The centre is run in cooperation between the Society of Hop Research (Gesellschaft für Hopfenforschung) and the Bavarian State Research Centre for Agriculture (Bayerische Landesanstalt für Landwirtschaft).

The Society of Hop Research is a private group whose membership is composed of brewers and hop growers. The society was formed in 1926 and owns all the land, buildings and facilities that constitute the Hull centre. The Bavarian government pay for the staff and all the running costs of the research centre.

Due to the high profile and vital place in the economy in the Hallertau of the hop industry the support that the government gives to the hop research still remains high.

The main research activities are

Breeding

The breeding work is run by Anton Lutz and unlike the UK they have been concentrating on breeding conventional high trellis varieties. They are aiming to breed varieties with

- excellent brewing quality
- resistance to pests and diseases
- and good agronomic characteristics

As is the case with any long term breeding work the program had limited success for many years. They have released several new aroma type hops including Saphir and Opal which have some resistance to Downy and Powdery Mildew. One recently released high alpha variety from here is having a major impact on the world hop market. This variety Herkules produces high yields, around 3000 kg/ha and high alpha acids 16-17% and has taken the total alpha acid production per ha with this variety to double its predecessor's Taurus and Magnum.

There has been some research done on low trellis at Hull and I was able to see the small experimental plot devoted to this that they have. There is a desire by the researchers to progress this as they believe the concept could lead to more efficient production but more importantly for the European industry potentially lower chemical, fertiliser and water inputs to the system. They have also recognised after many years of trials that the only way that low trellis is going to be successful is to use dwarf hops, that is, varieties specifically bred to suit the system with short internodes and dwarf growth habit. They now have one breeding line with good yields and they also have one breeding line with good alpha acids so now the breeding objective is to get both these characteristics into the one cultivar.

This will take many years of breeding to end up with a successful variety, such is the patience required with breeding. Development of a new cultivar of hop takes 15 to 20 years.

The hop breeding work that is undertaken here has a major advantage for the average German grower. The cultivars are owned by the industry through the cooperative structure of Hull. This means that all German growers have equal access to the varieties bred here. It also more importantly means that all royalties received following PBR registration and sale of these varieties go back into the further funding of Hull and the breeding program and not into profit generation as can be the case with private breeding programs in other crops. This is a major strength of the German industry.



The photo shows the type of machinery used to harvest low trellis and the very poor yields of the early German low trellis cultivar when compared to the UK First Gold

Development of pest and disease control strategies

This is another very important area to the German hop industry because of the severe affect that the diseases, powdery and downy mildew, and insects, aphids and spider mite, have on hop production. It involves the screening and testing of new pesticides as well as the optimal use of existing pesticides.

The development of thresholds for integrated production and disease pressure forecasting systems are of major benefit, along with research into the optimal application techniques. This work is vitally important for the whole EU as the number of registered products for hops is being reduced dramatically at the moment.

Hop analysis and extension of research

The Hull facility evaluates grower samples for quality as an independent part of the Hop Ring sampling system to ensure all hop quality sampling is unbiased and accurate .This gives buyers and growers' confidence that the quality sampling can be relied upon.

The Bavarian government collate the relevant information from Hull and other hop research facilities into a 100 page booklet .This booklet is published annually and could be termed the 'bible ' for hop production in Germany . It contains everything that a grower needs to know about fertilisers, pesticides, agronomy and drying so that the grower can meet the environmental requirements of the EU.

Harvesting Systems

The German hop industry is at the leading edge of innovation in harvesting systems that are suited to the majority of Australia's smaller hop producers. The German industry is at a stage of development that other countries that have also been responsible for major developments already have been through.

The labour efficiency that the German grower now has at harvest due to the development of the bineloaders is a major advantage. The Soller and Lochmann bineloader systems are very similar systems and are a refinement of the Wolf (Germany) and Trumpet (UK) bineloaders. They incorporate a custom designed self unloading trailer with the bineloader.

The binel loader allows the farmer to harvest 1 Ha of hops and cart them to the picking machine per day. This can all be done with one tractor and one operator and only requires extra labour when harvesting around headlands etc where there may be trellis preventing clean and easy loading of the trailer.

The harvested bines are taken to the farm yard for harvesting, which may involve up to 4 Km travelling. Any distance over this and the system will struggle to achieve 1 ha per day as too much time is spent travelling. At the picking machine the bines are dropped from the trailer onto the ground for loading into the machine allowing the binel loader to return to the field for another load while the previous load is fed into the picking machine.

Some farmers were seen with specially modified tractors capable of doing 60Km/hr when loaded to further reduce their travelling time to the farmyard where longer distances were involved.



The Soller trailer shown above has a steerable axle for maximum manoeuvrability and movable sides that allow the operator compress the load of bines so that there is little shifting of the load in transit.

The planting spacing of the German industry is ideally suited to this type of harvesting. Most spacing are based on approx 3 metre rows with plant spacing up the row varying between 0.5 and 1.0 metres depending on the variety and the desired density per ha.

Organics - Belgium and the UK

Poperinge and Beer

The Flemish hop industry is centred around Poperinge in West Flanders, Belgium not far from the World War One western front battlefields and sites such as Ypres, Paschendale and Fromelles (France).

The Belgium brewing industry is world famous for the variety, quality and sheer number of beers and breweries. Despite the fact that it is the headquarters of the world's biggest brewer, the Anheuser-Busch-InBev group with 21.4% of the world's beer production ^(Barth Group, 2008), there are many hundreds of small low volume independent breweries such as the world famous Sint Sixtus Abbey Trappist monks in Westvleteren. The monks only produce the beer that they need to earn enough income to support the monastery. The beer has won world beer tasting awards and can only be purchased at a small cafe across the road or if you are a local by placing an order in the weekly draw to be able to buy one crate. The diversity of beers on offer in Belgium is well worth the investigation of any micro-brewery from Australia.

This brewing strength led to an equally strong reputation of the Poperinge hop industry. Some of the major technological advancements of the world hop growing industry that started in the fifties were in part helped by the small Poperinge hop industry and its machinery manufacturers. Hops picking machines found their way all over the world and led to the reduction of labour required for harvest on small hop farms. The Poperinge hop industry like so many other smaller hop producing countries is a mere shadow of its former self now.

There are several hop growers in Poperinge growing organic hops. One such grower that I spent some time with was Joris Cambie. He comes from a family with a long association with hop growing in Poperinge. He has chosen to concentrate on growing fine aroma type hops such as Kent Goldings and Saaz, as well as the high alpha bitter hops, Target and Admiral. He markets all his hops to a company in the UK where there is demand from the smaller brewers for organic hops so they can truly claim to have "organic beer".

The major problem that he and other organic hop growers face is in the control of the hop aphid which they try and control with soap sprayed on the hop plants at high volume. They also use large amounts of copper to help control the powdery and downy mildew and many other "organic" concoctions for pest and disease control. For the control and

suppression of spider mites he sprays on a brew that contains milk whey and claims it works well.

Because of the high use of copper they are unable to graze sheep in the hops in late summer for weed control as is the case in Australia and New Zealand .This is due to the toxicity of the high levels of copper. This is also the case in conventional hops all over Europe and the UK.

The amount of “organic” chemicals that go on these hops makes it hard to understand the legitimacy of the organic certification that Joris and others produce hops under and that the buyers and brewers all operate within. He has grown over the last few years his area under hops to 14 Ha, quite large by even conventional standards and has no trouble selling them.

Another hop grower in Poperinge was Eric Lagache. He is also a bit of a hop trader supplying hops to many of the smaller breweries locally such as the Sint Sixtus Trappist’s. He was very positive on the market demand that he receives for organic hops from the smaller brewers.

UK

In the UK there is a well developed demand for organic food. This has translated to the demand for organic beer and hence the need for organic hops. There are several growers filling this demand only one growing traditional high trellis and the others with Dwarf hops.

H E Hall &Son

Peter Hall is the manager of H E Hall and Son a third generation fruit and hop growing farm in the heart of the weald of Kent at Marden and is the only operation in the UK producing Target hops organically. The hops are sold to the Wychwood Brewery in Oxfordshire who also contract brew the Duchy Original Ales for the Prince of Wales’s organic Duchy label.

Peter has 1 Ha of organic hops and also uses soaps for the control of Aphids and Spider mites. The viability of this small organic block of hops is easy to see when he receives 15 Pounds per Kg for his hops as compared to 4-5 Pounds per Kg for conventional Target hops.

Peter also produces organic apples for Sainsbury's. He has one block of orchard that has been planted as a demonstration block. The orchard has been fully funded by a third party and will revert to his ownership at the end of five years. The orchard has been planted with more traditional better tasting apple varieties. There is a much longer harvest period with many varieties and the aim is to harvest, pack and move the apples into the retailer and consumer with little or no storage. Peter, Sainsbury's and a trading company Pouparts are all partners in this project to supply what they have researched that the organic consumer wants. That is to supply older varieties with better flavour but shorter shelf life that are picked and delivered fresh and are offering something different to mainstream varieties such as Gala, Fuji and Golden Delicious grown organically.

The customer specifications for organic apples are much freer than conventional both in size and blemish tolerance. Another interesting observation was that the bags for the Sainsbury's SO Organic range are translucent so that the customer can only select the bag of apples because they are organic and not pick through them all for the best "looking" apples and consequently damaging them all.

Peter's organic operation and his philosophy and observations about the economic viability of conventional food production systems were truly enlightening. He is very much an advocate of questioning the conventional wisdom and the high cost and high risk production systems that many producers appear to have locked themselves into for the benefit of everyone else in the food chain but themselves.



Translucent Organic Apple Bag 1

John Walker

In Worcestershire in the West Country in England John Walker and his brother grow dwarf hops both organically and conventionally. They no longer grow high trellis hops but concentrate entirely on dwarf hops.

As with all organic hops the problems with controlling aphids, spider's and the mildews make organic hop production difficult to say the least. John's organic hops were struggling as he has been battling to tread the fine balancing line with organic production with fertility and disease susceptibility. With the naturally low growth characteristics of Dwarf hops they need good soil fertility and nutrient availability to achieve their yield potential. However this level of fertility puts the dwarf hop and indeed all hops at greater susceptibility to damage from powdery and downy mildew. With low fertility the hops are clean but the yield is uneconomic. John has a new block of the aphid resistant variety Boadicea and is hopeful of a better result with this.

Hop Scheuten



(Wemaere, 2008)

Hop scheuten are a Flemish delicacy that is only available in the early spring. They are the tender young hop shoots sent up from the perennial rhizome in the spring to start the new season's growth. These shoots are harvested before they break through the soil surface and generate chlorophyll so they are white, similar to white asparagus. The hop scheuten are used in top end restaurants in Belgium.

The hop shoots are eaten in many European hop producing areas but mostly as a green shoot, not a white shoot in the same way as in Belgium. Poperinge is quite close to the sea and does not have a hard freeze of the soil in the winter and also has a slow mild start to the spring, compared to inland areas in Europe which are very cold and have a very quick transition from winter to spring. The gentle transition from winter to spring is ideal for the production of hop scheuten as the growth starts early and is slow and the soil can also be removed to harvest the shoots.

In Poperinge the hop scheuten production takes place in conjunction with commercial hop production. The harvesting of the hop scheuten can affect the strength of the hop vines growth in the spring. This is because after harvesting the rhizome will generate more hop shoots from other secondary buds. This takes more energy and resources from the semi dormant rhizome so it takes longer for the hop to get going. In Poperinge the growers who had overcut the hop scheuten from their rhizomes suffered with the yield potential of their main hop crop being lowered, and the effect was easily seen.

It is another form of income for the growers however. The average price for the hop shoots from one grower for the last 10 years was 68 euro per Kg ^(Wemaere, 2008)

The mild slow start to spring and lack of ground freeze is very similar to the start of spring in Tasmania.

Hop shoots are an interesting delicacy that could be produced in Australia as part of a commercial hop crop or as a standalone crop as the research by Maton et al. was looking into. The research was looking at producing the shoots earlier than they would be available from the hop field. An extract of this is in the appendices.



Rhizome and hop scheuten 1



Hop Scheuten Meal

Langoustines are Norway Lobsters which are giant shrimp between rock lobsters and prawns in size. There are many dishes that involve the use of Hop scheuten with seafood; unfortunately because of my trip being in the European summer and autumn I was unable to sample this delicacy.

Fresh Produce Trading in the UK

Upon arrival in the UK in an effort to try and look at different types of businesses operating in the fresh produce trading area I arranged to meet with Sion Roberts the chief executive of EFP Ltd. This is a specialist agri-food business consultancy. Their aim is to work across the whole supply chain and combine their farming knowledge with food industry expertise to address structural, commercial and relationship issues across the industry, from an objective and independent viewpoint.

Following on from this meeting I was able to arrange visits with several different types of farmer controlled and non farmer controlled produce trading business's in the UK.

They included

- a berry fruit and stone fruit marketing cooperative group KG Growers Ltd
- a private trading company Poupart who market top fruit, berry fruit, stone fruit and citrus in the UK through several different subsidiary companies
- G's marketing Ltd, an independent family business who market their own production plus other growers
- Branston, a privately owned potato company started by farmers and still owned by farmers who are all no longer potato growers
- Philip Wynn a consultant who has 35 years experience in managing and consulting to farming business's and cooperatives.
- Other fruit trading companies
- Farmers who had relationships with some of these marketing groups

KG Growers Ltd

KG Growers is based in Kent but markets soft fruit and stone fruit from growers all over the UK. It is controlled by a board of growers and the marketing activity is undertaken by their subsidiary Berry Gardens. Last year they turned over 120 million Pounds accounting for 40 % of UK production.

They are also a PO group which will be discussed further on.

The mission statement really says a lot about what the group wants to be and they are performing up to their mission.

KG Growers Mission Statement

“To be the largest, most profitable and most well-regarded soft fruit grower organisation in the UK. Through our marketing company Berry Gardens, we seek to out-serve all competition by being the most cost effective, the best value, and the most innovative growers in our market”.

Berry Gardens have a staff member embedded in one of the retailers buying groups .This means that they can always be sure that the retailer’s buyers are fully informed about the KG products. This person is part of the retailers buying team but is paid for by KG and is common among many fresh produce sectors in the UK retail environment. It also helps with a smooth and accurate information between the retailer and Berry Gardens and consequently to the grower.

Berry Gardens have one large central pack-house for fruit packing and despatch as well as grower members who pack and despatch directly from farm. The costs, primarily labour have proved harder to control at the central pack-house than at the on farm pack-houses according to the Chairman of KG, Marion Regan, who is a large grower in her own right running Hugh Lowe Farms.

The information flow through KG to the growers is good with weekly invoicing and accountability to the grower. All proceeds to the grower are paid on the Friday of the week following delivery to the customer.

One of the group’s major strengths is the partnership with the giant Californian Company Driscoll’s. Driscoll are a major marketer of US soft fruit but also are a major breeder of new varieties. This gives all KG members equal access to the Driscoll varieties so that as a group they can deliver what the customers want and also have profitable growers. They are very focused on meeting the customer needs and quality and delivery to order are critical.

The commitment from the group to their mission has meant that the growers have been very innovative in the production systems to extend the window of supply. The widespread adoption of the Haygrove poly tunnels and raised bed hydroponic production are two

examples. These systems allow much more consistent production with little or no product shortages due to weather damage. Strawberries and raspberries are the main berry crops grown under the poly tunnels.

Below is a picture of Jubilee strawberries, a Driscoll cultivar, that continuously flower and fruit for 3 months when grown under a Haygrove tunnel on raised hydroponics beds.



The raspberries below are grown also under the Haygrove tunnels and have drip line installed below the plastic mulch that is used for irrigation and fertigation to maximise the crop potential.





Poupart

Poupart is a trading company that has been operating since 1895. The company is owned and managed by the Olins family. The chairman is Laurence Olins and their head office is based in Hertfordshire close to the M25 and only 500 metres from Tesco's biggest store, one of their major customers. Poupart Ltd has no grower ownership but has very strong relationships with its grower suppliers.

There are several divisions

- Orchardworld , is a specialist in the field of procurement and marketing of topfruit from the UK as well as imports
- Berryworld is a specialist supplier of berry fruit to the major UK retailers .They are the second biggest marketer of UK soft fruit after the KG –Berry Gardens group and also import fruit to keep year round supply as much as possible
- Norton Folgate is a recently acquired (2007) company which specializes in the supply of stone fruit and cherries to the major retailers. The company sources fruit from the northern and southern hemisphere to try and maintain year round supply also
- Poupart Citrus focuses on the supply of citrus in the UK. They are a category manager for citrus for Waitrose and have a strong focus on supplying both conventional and organic citrus lines. They also have suppliers in the northern and southern hemisphere's

- Poupart Imports is different to the other subsidiaries in that its customer focus is based entirely on the non supermarket sector. It concentrates on exclusive high quality ‘branded’ products to supply to small independent retailers and food service companies as compared to ‘commodity’ products for the supermarkets. They import all types of fruit, salad and vegetables for their customers

Laurence explained they have had the experience in the past of trying to move their area of involvement vertically through the supply chain but all too often it did not work. They have had investments in and also owned pack houses and assembly depots for fruit but discovered, much like KG that the cost structure was higher than farmer owned facilities.

The group concentrates on what it is good at and looks to build strategic relationships with a small group of growers and suppliers. Unlike a cooperative or PO group they only deal with growers that they want to work with. They seem to be a well capitalised group and will enter into proper fully transparent loans and advances to their suppliers to enable them to expand and invest in their business, particularly when they are a small but very capable grower.

Poupart’s view themselves essentially as information traders. The organisation is built around a structure and office layout that is about the smooth flow of information across the supply chain. As an example in the Berryworld office the sales and supermarket ordering team sit across the desk from the procurement team who sit next to the technical grower support team. This means that information about quality, buyer demands, product availability etc can easily flow between the supermarkets and the producers. The invoicing and payment team also sit in the same open plan office ensuring that growers are all invoiced correctly and paid within 14 days.

The Berryworld subsidiary has also established a breeding programme as well as partnering with other breeders to develop better berries that their grower suppliers will have access to.

Poupart is a company that is well regarded in the UK and highly professional in what they do, enable the smooth transfer of information through the supply chain for the benefit of everyone from the consumer to the grower.

G's Marketing Ltd

G's Marketing are a second generation family company based at Barway near Ely on the fens in Cambridgeshire. They are owned by the Shropshire family with John Shropshire the head, a son of the founder Guy Shropshire. This business supplies four core crops to the major supermarket retailers in the UK, salad lettuce, onions, beetroot and celery. They have huge production operations within the group as well as a group of 20 other grower suppliers in the UK.

The scale of the operation can be seen in the diagram below showing the areas of production of the group.

1100 Ha grower suppliers

5000 Ha UK farms

4500 Ha Spain and Czech Farms



30 % of G's Marketing turnover from outside group sources.

It also shows how the structure of the group is aiming for it to be a market led farming business rather than other way round with the production pushing the marketing.

The Spanish farms allow the group to maintain year round supply to the UK market and their specialised harvest machinery and management is relocated there for the winter production.

G's is a company that has grown rapidly in scale over the last 50 years from 120 Ha to 3700 ha in the 1990's up to 9000 ha today. Because of the land ownership and rental system in the UK large areas of farmland are rented allowing much quicker expansion when the demand required it.

They have capitalised on their unique competitive advantages to enable them to meet their customer's requirements and be profitable and be able to grow the business, whilst many other suppliers have fallen by the wayside. G's have achieved this even though they are essentially producing commodity lines of vegetables for the supermarket. The unique locations in the fenlands of East Anglia and on the Spanish Costa Calida and the efficient production systems they have developed as a result of their expertise and an empowered team of staff with a 'can do' ethic are keys to the group's success.

The fenlands are large open tracts of highly fertile land in Norfolk, Lincolnshire and Cambridgeshire in the UK that originally were peat marshes. The fens were drained in the 19th century and the high organic matter levels from the peat have helped create the regions reputation for high quality vegetable production. The Spanish Costa Calida is on the SE coast of Spain and is the only area in Europe in relatively close proximity to the major population centres that can produce vegetables in the middle of the European winter to satisfy the consumer demand.

Another of G's advantages is the relationship and trust that they appear to have built up over time with the major retailers; they now supply approx. 50 % of Tesco's salad lettuce every week.

The group's expertise and constant striving for efficient production coupled with the 'can do' attitude is their most outstanding advantage though. They have designed and allowed the operation to evolve specialised machinery for all stages in the production of their crops.

The most impressive of these are the harvesting and order assembly rigs that they have pioneered and many others have copied. These rigs have all been built in-house by G's in their on-farm workshops.



The celery harvesting rig above allows the harvesting, packaging and assembly into supermarket orders all to happen in the field. The completed pallets are then taken back to the farm in the interchangeable trailers for cooling and then despatch to the supermarket for the following morning's delivery. Orders are sent to the harvesting rigs as they are confirmed by the sales teams.

The rigs are all custom-built on caterpillar tracks with fully enclosed canopies to allow maximum flexibility with wet weather and minimum soil compaction.

G's have also developed a significant organic operation with approx. 700 ha within the group devoted to producing organic onions, vegetables and salads. Once again they have developed specialised machinery and systems to allow them to be competitive in what is 'industrial' scale organic farming. They are meeting the demand for 'organic' produce rather than being driven from the production end by the desire to be organic farmers.

Like Poupart the heart of the G's operation is built around a smooth and efficient flow of information through the organisation. The sales, production and outside procurement teams are all located in the same office space and have daily meetings to ensure the needs of the customer are being met. The sales engine room still uses simple and visual, but proven methods of order tracking such as whiteboards to allow them to keep up with the customer orders.

The group is a large family based farming business that works with a group of other farmer suppliers but is very transparent and each farm is treated as a standalone operation. All returns

flow through G's to the independent growers in the same way as they do to the groups own farms. This ensures that poor management or seasonal conditions on one farm will show in the returns. This aims to prevent that any chance of a perception being created among the supplying growers of them propping up Shropshire group farms.

Branston

Branston are another privately owned produce company that are involved in the potato business. Branstons was started by a group of farmers outside the village of Branston in Lincolnshire in 1968 and has since then grown to be one of Tesco's largest suppliers. The company is still owned by farmers and today although not all the shareholders are suppliers and also not many of the suppliers are shareholders.

Even though not all the owners are suppliers today the company is still strongly focused what and who it exists for.

Branston are focused entirely on potatoes, their customers and their suppliers.

Once again with many of these similar companies the management is there to meet the goals of the business and is at arm's length from the farmer/owners/shareholders who still guide the business at a board level.

They are committed to meeting their customer's needs and also trying to grow the customer's sales through real innovation, through new varieties, packaging ideas and new cutting edge processes. In 2005 they opened a processing factory on site to produce prepared potato products.

Branstons are also committed to strong relationships with their supplier/ growers and provide the support and personalised agronomy.

PO's and EU Funding

PO's

Producer organisations (PO's) are registered under the EU fruit and vegetable regime. They are groups of growers who market their product co-operatively. Being registered means under the present EU laws that the group must deduct 4% of the gross proceeds of the growers income and then based on this amount apply for EU funding for environmental and certain farm improvement as laid down by the regulations.

The 4% of the grower's money is doubled up by the EU and then the money can be invested by the grower. As an example for top fruit growers eligible PO funded items include trees, irrigation, cold storage construction (see appendices).

To be eligible for the EU funding a grower must be a member of a PO which essentially is a marketing organisation. The asset's that the PO group purchases technically become the property of the PO until they have been depreciated fully by the grower. This makes it difficult for growers to move the marketing of the produce between different marketing organisations as if they do they have may have a PO debt which must be repaid to the PO before they can leave.

The PO system has helped many fruit growers to upgrade their plantings to newer varieties and also things such as major upgrades of cool-stores and pack-houses to meet EU requirements.

The other thing that PO's seem to have helped create or sustain is the collaboration of large numbers of growers together for sales and marketing of their produce. Also because of the fact that it is not easy for a grower with little capital to move between groups it has created more stability and certainty in the planning and marketing of produce.

Most of the produce marketing organisations in the UK operate as an associated company of a PO of which their growers will most likely be members.

There are growers in the UK who choose not to operate within the PO system and do not get the extra EU funding for assistance in capital upgrades. These growers then have more

freedom to market their produce where and how they choose much to the annoyance of some people I met in the dominant PO based “system”.

EU Funding

In the many trips to the UK and Europe throughout 2009 I have gained a different view on the great pastime of Australian and New Zealand farmers of attacking the great EU ‘subsidy’ policy that we all disagree so much with.

The EU policies on agricultural subsidies have evolved over the last 30 years such that now the money is allocated for ‘environmental stewardship’ programs and as the single farm payment not as a direct production subsidy. They are still subsidies but now are more hidden.

The single farm pavement basically means that for every hectare of eligible arable land that a farmer has he receives a flat payment of 300 Euros per Ha per year.

The environmental stewardship payments come in a variety of ways to the farmer or landowner. They include payments for things such as the maintenance of hedgerows, the funding that goes to the PO schemes, and many similar schemes.

In Germany the hop growers co-operative HVG have recently secured funding to help pay for the instillation of subsurface drip systems for its members. The growers receive 2000 Euros per ha towards the cost. ^(Preparing for climate change Adolf Schapfl, 2008/2009) These systems are setup for irrigation and fertigation and will allow the German growers to stay at the top of the heap.

The EU funding is going to have a much longer term effect on the social fabric of Europe that can only be to the advantage for the EU in the future. The funding from its different sources is helping to keep more farmers in production and more people in the rural areas than otherwise might happen without the subsidies.

This has the effect of giving farmers and food production much more political voice and vote pulling power than in our own country.

It is also helping to maintain the Human capital in European food production .Over time I believe this will lead to innovation continuing in European agriculture. Innovation is by definition the implementation of an idea. Ideas are generated by people and also implemented

by people so in a simple way over time with more people involved; innovation has more of a chance of continuing.

Contrast this with the continual drop in the number of people involved in food production and living in rural areas in Australia. This has led to the continuing drive for efficiency in labour in Australian food production. Australian farmers have been very innovative over the last 30 years and are amongst the most efficient in the world but I now believe this can-not continue as it has as we are losing too much human capital from food production.

Conclusions

Over the Nuffield journey many of the people I visited and the many things I observed helped to answer some questions about the future directions for Tasmania and some of its iconic crops, and also create many more.

It became obvious throughout my travels that only way to make money in production agriculture today is to have a competitive advantage over everyone else in the particular market you are in or wanting to be in. If you are in commodity based production the only way to survive and make a profit is to have the cheapest cost to the market of everyone else who is producing the same commodity. If you are not able to compete in the commodity sector of the market then you need to identify competitive advantages that you have in smaller market segments and target these markets.

The vast majority of farmers and food producers in this country are not targeting their product to a market but are just producing and leaving the rest to someone else and wondering why the returns are not meeting their expectations.

Hops

The world hop market is becoming more and more a commodity market as the effects of hop extraction, brewing technology and the consolidation of brewery ownership continues into companies run by bean counters not brewers.

The commodity market is centred around the production of hops essentially for the production of Alpha acids for the cheapest possible price that the large brewers can get them for. German and US industries have an advantage in this market .The German industry structure and support from the government with the breeding program is an advantage in allowing them to continue to produce cheap alpha for this market. The US production has large economies of scale to allow them to lower the unit cost of alpha and it is clear that the Low Trellis research going on in the US is about being able to produce cheaper alpha.

The alpha production side of the world market is not a segment that I believe the small Australian hop industry can hope to compete in.

The other much smaller side of the world hop market is about supplying mainly aroma type hops to smaller brewers who are more interested in the provenance and quality of the hop and are not just buying alpha to run a giant factory brewing operation as with the large brewers. The growth in the world craft and small brewing market has the potential to create opportunities for Tasmanian hop producers to supply hops to these brewers who are prepared to target this market in the future.

As David Lipman the publisher of Beer and Brewer magazine was quoted in the Australian recently

‘Beer is the new wine. We’re seeing a huge growth in craft brewing because consumers are becoming more educated and they’re recognising there are beers with flavour in them ‘ (Speedy)

The Dwarf Hop system has great potential for adaption in Tasmania as in other areas of the world. The problem for adoption in Tasmania in the short term is the lack of dwarf varieties more suited to our latitude and climate. The need for continued breeding work to develop more dwarf varieties is recognised right across the hop world by all involved in dwarf/low trellis growing.

There is great interest among growers and merchants that I met about the market demand for true organic hops as compared to Northern Hemisphere organic hops which still get a lot of ‘organic ‘chemical applications such as copper. The use of ‘Organic’ methods of controlling spider mite would allow the production of organic hops in Tasmania .The ability to move to a fully organic hop production system in Tasmania is likely to be easier with dwarfs than with high trellis hops as they are doing in New Zealand.

Fresh produce

From my study and observation of the various fresh produce trading business’s and producers that I met in the UK it is clear that while the system is also not perfect there it has much that could be applied to the Australian fresh produce system that would improve the outcome for the two parts of the chain that really matter, the producer and the end consumer. The increased number of retailers is continuing to create more competition in the UK at the retail level.

The EU’s PO scheme has helped in a small way to encourage farmers to market their produce more cooperatively than compared to Australia.

Amongst all the produce trading business’s or grower groups I visited there is an awareness that they are there to perform several key roles

- Supply what the customer wants and needs, and with most of their customers being major supermarkets this keeps them on their toes
- Always looking to minimise the cost structures in the chain
- Facilitate a smooth transfer and flow of information through the chain from customer to producer and vice versa
- Provide the producer and customer with something unique such as access to profitable varieties that will give them a competitive advantage
- Encourage and help facilitate the adoption of new technology and growing systems.

It also clear that in the running of farmer controlled business's in the supply chain that the business must have an independence of management for the daily running separate from the shareholders or owners if these are also suppliers. Philip Wynn commented that farmers don't always make the best directors of these businesses. There is a need for a breadth of skills and knowledge to ensure that any FCB can deliver everything its shareholders, the farmers, expects and need.

At Poupart's Laurence Olins explained the company's policy of employing their staff based on their skills and then teaching them about fruit. This is not how people have traditionally entered these roles in the UK as in Australia. The progress and innovation of these businesses, and ultimately the fate of the producer, has been hampered in the past by the preference to employ people with industry experience rather than based on their skill set. This obviously requires more coaching and mentoring of these staff early on but it pays off in the long run with more skills and ideas brought in.

One common theme echoed by most of the people leading the most successful businesses that I visited was that for any business aiming to pull farmers together and keep them together in a unified way to develop a marketing strategy for the benefit of all concerned there needs to be something unique about the business, cooperative etc for it to work long term. Whatever those things are the business needs to identify them so that all the stakeholders will remain committed to the trading business.

The factors that draw various stakeholders to the business long term will obviously be different. For many of the growers I met for example it was about good payment terms, good access to profitable varieties, ability to move the entire product at peak times. From the

customers viewpoint it is about delivering what they want, when they want it and for the right price.

During the writing of this report another interesting factor common to the businesses that I met in the UK also revealed itself. There is a very strong customer focus at the same time as having a strong understanding of the importance of the producer and the sustainability of the whole supply chain. Their mission statements, corporate visions etc all talk about their commitments to other things as well as their customers and it seems to be flowing through the organisations.

Australian primary production is littered with failed cooperatives and now it is being characterised with dysfunctional supply chains and I would suggest for similar reasons. The cooperatives because of their formation and ownership etc were very focused on the stakeholder – farmer with little regard for the other parts of the chain and indeed the consumer.

I spent half a day surfing and looked at the websites of many companies working across the supply chain such as Moraitis, Costa, SPC, Montague Fresh, and Harvest Moon. All of the mission statements, corporate visions etc that I looked at all mention their slavish attention to their customers but there was little mention of other stakeholders, the environment, people , their commitments to the whole supply chain efficiency and wellbeing etc., generally just about themselves and their customers.

I went away looking for a better business model or structures for businesses that bridge the gap between the consumer and the retailer.

Needless to say I didn't find such a thing, it doesn't exist.

The key to the successful business's in the fresh produce trading area I met was not their structure, i.e. whether they were a farmer controlled business such as a co-operative, or a marketing business hanging of the side of a PO, or a private company with no grower or farmer ownership, but rather the factors mentioned above.

Recommendations

- The pursuit of the production of hops in Tasmania purely for the production of alpha will only continue the low hop price trend of the last decade into the next decade now that the spike in the prices of 2008 has passed
- Dwarf/low trellis hop production in Tasmania has the ability to reduce the inputs required and lead to an organic production system easier than conventional high trellis production
- The possibility of importing dwarf hop varieties to Tasmania needs to be followed up with AQIS and the owners of the cultivars
- The most appropriate strategy for hop producers in Tasmania is to produce hops for a particular brewer or market segment such as the small but rapidly growing micro breweries
- There is potential for the production of 'true' organic hops in Tasmania for the Northern Hemisphere brewers demanding organic hops
- The market receptiveness in Australia to and the production potential of hop scheuten should be explored
- The fresh produce industry in Australia needs to get clear thinking, independent people as a significant % of boards and representative bodies membership, based on skills not just industry membership, if it is to move forward and try to change the current problems
- Any Farmer controlled business, private trading business etc needs to be able to offer long term advantages and access to unique tangible or intangible benefits for ALL stakeholders in order to build long term trust and support from all the stakeholders and not just think about the customer
- Farmer controlled businesses in the fresh produce industry in Australia need to aim to work across the whole chain to the retailer to capture and manage the information and money flows
- There needs to be a major change in the focus on food production related education and interest in Australia, as the ability of the sector to continue to innovate and grow with the population, as it needs to, will diminish as the % of the population associated with it declines. An idea only becomes an innovation when it is implemented and you need people for ideas and implementation.

Appendices

Hallertau Location

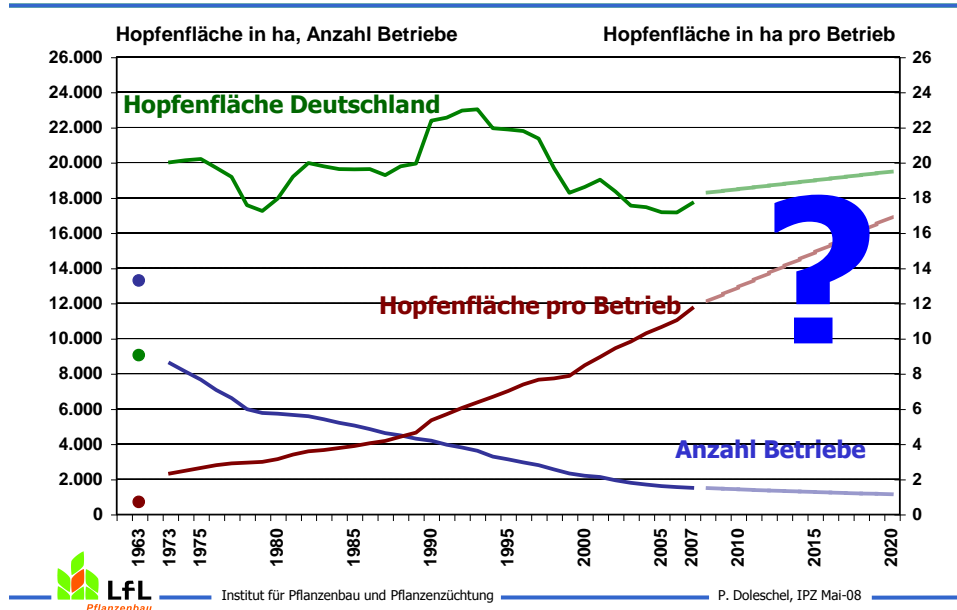
Hopfenbau in Deutschland - Heute



¹ (Bayerische Landesanstalt für Landwirtschaft)

German Hop Area

Strukturentwicklung im Deutschen Hopfenbau



Hopfenfläche Deutschland----- hop area in Germany

Hopfenfläche pro Betrieb-----hop area per farmer

Anzahl Betriebe-----total number of growers

ADHA establishment costs low trellis

LOW TRELLIS ESTABLISHMENT COST PER ha (2.75M)		
Exchange rate of 0.65 euros per \$		
Item	Comment	€ / ha
Poles	400 at 32.9 E /pole	2,290 €
Top cable	4116 M	602 €
Bottom wire	4116 M	161 €
Top staple	432 (top) 432 (bottom)	26 €
Cable clamps	37	8 €
Anchors	€75 (steel, cable, concrete, labor)- 11/ ha	145 €
Netting	3640 m per ha	1,574 €
TOTAL MATERIALS		4,805 €
Ground prep		201 €
Potted plants	0.42 € / plant / 3,986 pots per ha @ 0.9 m	1,686 €
Irrigation		1,606 €
Fuel		32 €
Labor		1,322 €
TOTAL ESTABLISHMENT COST PER ha		9,653 €

(ADHA & Roy, 2009)

Hop scheuten Out of season production trials

This an abstract from a piece of research done in Belgium looking at the possibility of dedicated production of hop shoots for the Christmas market in Belgium

“Hop shoots, known as a delicacy since Roman times, have only a short harvest season, from mid-March to early April, in the hop garden. Trials on commercial winter production were carried out under a plastic tunnel and in a witloof forcing shed. Sets, planted at the end of November, were covered with leaf mould or soil, and watered. For a December harvest soil heating at 15°C was required. High quality shoots, 5 g/set, were obtained after 2-3 weeks. With up to 300 plants/m², yields of 1.5 kg/m² could be obtained. When the plants were forced a second time, yields were low. Without soil heating a first harvest of about 5 g/set was obtained about 80 days after planting (around mid-February) and a second harvest of similar yield 30 days later, in the plastic tunnel or the forcing shed. The labour requirements (1 h 20

minutes/kg) were lower and working conditions easier than in a hop garden. Demand for hop shoots is particularly high at Christmas and New Year.” (Maton, 2009)

PO Funding Items UK fruit growing

PO funded items
1.1 Technical Advice/Crop Monitoring
1.2 Assured Produce
1.3 Sprayers & Spray Monitoring, Weedkillers
2.1 Waste Handling- Compactors, Agric-Cycle fee
3.1 Plant Health & soil Testing
4.1 Residue Testing
5.1 Quality Assurance - Audit fees i.e BRC
6.1 Trees & Stakes
6.2 Fruit Handling- Bins, Picking Trains
6.3 Crop Protection Tunnels, Hail Netting
6.4 Irrigation
7.1 Nitrogen Generating, service, equipment
7.2 Storage Equipment- Scrubbers etc
7.3 Gas Testing
7.4 Store Refurbishment
7.5 Cold Storage
7.6 Improvement in Packhouse facilities
7.7 In store Monitoring
7.1 Bramley Campaign (taken 2007 figure)
8.2 EAP Membership
9 Training
10 Other Measures to be considered (give brief description)
Making up .5% commission with collets (approx guide)
Administration/Consultancy (annually) .5% of net turnover

8% of net turnover

Estimated Spend

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Plain English Compendium Summary

Project Title:	The Future of Tasmania's Once Iconic Crops; Hop production systems and Fruit supply chain challenges
Nuffield Australia Project No.:	0913
Scholar:	Tom Frankcomb
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Objectives	The objectives of the study were firstly to look at dwarf/low trellis hop production systems and their potential for use to produce low chemical input hops in Tasmania and secondly to look at fresh produce trading businesses to look for better models than what currently exist in Australia.
Background	Tom Frankcomb has a background in the fruit and hop industries in Tasmania. He has been interested in the development of low trellis hops and the place they would have in a low chemical/organic input production system for hops and the market demand for such hops. He has also experienced the inequities that exist in the fresh fruit supply chain in Australia and was looking for a better model.
Research	The research involved travelling to the main hop production areas of the Northern Hemisphere to visit and meet with researchers and growers involved in low trellis hop production , organic hop growers and small "craft " brewers. The fresh produce research involved meeting as many different types of fresh produce trading structures from farmer co-operatives to private trading businesses as well as producers supplying fresh produce to retailers in the UK.
Outcomes	<p>The dwarf low trellis hop growing concept has potential for use in the Tasmanian hop production industry. The use of this system would involve the trialling of northern hemisphere bred varieties to assess suitability to our climate and most likely would require breeding to produce dwarf varieties suitable to our climate. The potential for organic hop production exists in Tasmania with or without the introduction of low trellis production systems.</p> <p>The fresh produce trading businesses i visited in the UK have many common threads which if implemented into Australia have the potential to produce better outcomes for producers.</p>