



Study of Techniques in Separation of Grape Seed for Mass Production of Cold Pressed Grape Seed Oil



Patrick Trainor

ISS Institute Overseas Fellowship

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ISS Institute
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Acknowledgements

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This project would not have been possible without the vision of the executive staff of the International Specialised Skills Institute Inc.

In particular the writer acknowledges:

- Sir James Gobbo AC CVO – Patron in Chief
- Ms Carolynne Bourne - Chief Executive Officer
- Mr Franco Fiorentini - Chairman
- Mr. Michael Reardon (DEST) (Selection panel member)
- Mr. David Wittner (Selection panel member)

The leadership exemplified by the ISS has enabled numerous Australian's the opportunity to further their skills and knowledge base in order that Australia might continue to be a country that both develops cutting-edge industry, whilst remembering the essential craftsmanship skills that have been successfully employed throughout time.

Awarding Body - International Specialised Skills Institute (ISS Institute)

We know that Australia's economic future is reliant upon high level skills and knowledge, underpinned by design and innovation.

Since 1989 International Specialised Skills Institute Inc (ISS Institute), an independent, national organisation, has provided opportunities for Australian industry and commerce to gain best-in-the-world skills and experience in traditional and leading-edge technology, design, innovation and management.

Carolynne Bourne AM, ISS Institute, CEO, uses her formula to illustrate the links, **skills + knowledge + good design + innovation + communication = competitive edge • good business**

Based on ISS Institute's initial market research in 1990, an important category emerged, that of 'skill deficiency'.

Skill deficiency is where a demand for labour has not been recognised and where accredited courses are not available through Australian higher education institutions. This demand is met where skills and knowledge are acquired on-the-job, gleaned from published material, or from working and/or study overseas. This is the key area targeted by ISS Institute.

Other ISS definitions are:

- **Skill shortage** is when there is an unmet and recognised demand for labour.
- **Innovation** Creating and meeting new needs with new technical and design styles. [New realities of lifestyle.]
- **Design** is problem solving. From concept to production through to recycling. Design involves every aspect from the way the receptionist answers the phone, when invoices are sent out, where a machine sits on the factory floor, what trees are grown in the forest suitable for furniture or flooring, to whether the product is orange or blue, round or square, flat packed for export, displayed in a retail outlet and the market research to target customers' needs and wants - creating products or services.

Overseas Skill Acquisition Plan (Fellowship Program)

Skill deficiencies are filled by building global partnerships through our **Overseas Skill Acquisition Plan - Fellowship Program**. Australian Fellows travel overseas, or overseas Fellows travel to Australia.

Upon their return to Australia, Fellows pass on what they have learnt through education and training activities such as workshops, conferences, lectures, forums, seminars and events developed and implemented by ISS Institute, therein ensuring that for each Fellowship, many benefit - the multiplier effect.

ISS undertakes research, marketing, policy and advocacy.

The findings from the Fellows reports and those acquired through our research and education and training activities are made available to firms, industry, commerce, learning institutions and public authorities through ISS Research Institute's consultancy services – again, the multiplier effect.

ISS Institute operations are directed towards bringing skills (traditional and leading-edge technologies) and knowledge to Australian industries, education and government and, in turn, the community in general - new ways of thinking, new ways of working so as to create innovative products and services for local and global markets.

Our holistic approach takes us to working across occupations and industry sectors

and building bridges along the way. The result has been highly effective in the creation of new business, the development of existing business and the return of lost skills and knowledge to our workforce, thus creating jobs - whereby individuals gain; industry and business gain; the Australian community gains economically, educationally and culturally.

ISS Institute
Suite 101
685 Burke Rd
Camberwell 3124 Australia

P 61 3 9882 0055
F 61 3 9882 9866
E issi.ceo@pacific.net.au
W www.issinstitute.org.au

Fellowship Sponsors

DEST - Department of Education Science and Training

DEST provides national leadership and works in collaboration with the States and Territories, industry, other agencies and the community in support of the Government's objectives. We develop and implement policies to ensure the continuing relevance of education, science and training to contemporary needs and the growing requirement for lifelong learning. We also ensure high quality and value for money in delivering Government funded programs.

Fellowship Supporters

Participating Overseas Organisations & Individuals

The learning was made possible through the establishment of crucial relationships and networks. The following is a list of the overseas organisations that, with their help and support have made this fellowship study possible.

- Fratelli Parodi
- Vino Veritas –Module
- Provence Huiles S.A
- Salute Sante

Organisations & Individuals involved in identifying specialised skills and knowledge gaps

The following individuals who assisted in identifying the skills and knowledge gaps in cold-press grape seed oil milling:

- Mr Tim Scala –Group General Manager, Elan Trading Corporation
- Mr Nick Edwards, Plant Manager, Coonawarra Gold Facilities Pty. Ltd.
- Mr Rod Zemanek, Director Predict International Pty. Ltd.
- Mr Andrea Parodi –Director Fratelli Parodi
- Mr Valentine Humer –Director Salute Sante
- Mr Maurice Aiden Provence Huiles S.A

About the Fellow

The career of Patrick Trainor has been indeed varied up to the point of accepting his current position. Through initial development as a civil engineer and through the associated memberships of the Institution of Engineers Australia and the Institution of Civil Engineers (UK), distinct analytical and problem solving skills were developed, that have since been employed in developing this burgeoning industry of cold-pressed grape seed oil.

As well over five years of employment (experience) as a Minister of Religion Trainor developed the ability to relate quickly to people quickly from diverse backgrounds. This is particularly important, as there are only a few people in Australia and the world who are the “gate-keepers” of knowledge to this industry. An ability to develop a strong rapport quickly is paramount to obtaining vital knowledge to move the industry forward.

The Graduate Diploma in Conflict Management and associated mediation training equipped Patrick with sufficient awareness to ask the appropriate questions to elicit the required information, and to methodically approach the conflicts between knowledge and skill, and production efficiency and product quality.

Description of Responsibilities:

Completion of the project management of a state-of-the-art \$5M grape marc separator-drying plant at Nuriootpa South Australia. This plant is the first of its kind in the world, and will revolutionise the way the wine industry manages its waste grape marc. I was employed by Elan Trading Corporation as the Contract Superintendent to ensure the efficient and timely delivery of this new facility.

As the General Manager of Coonawarra Gold Facilities Pty Ltd, I was also responsible for the day to day running of the company including reporting to the Board of Directors and liaising with clients and investors, and government representatives.

Position: Manager Special Projects: Elan Trading Corporation Pty Ltd.

I also project managed all infrastructure and capital works across the Elan Trading Group of Companies. I was responsible for the timely and cost effective delivery of all civil and mechanical infrastructure projects within the group. My most recent such project was the design and construction of an 830MT coconut oil storage tank in Papua New Guinea, which was completed in April 2005.

Summary Of Experience

Patrick Trainor has approximately ten years experience in Construction and Project Management. After completing his Bachelor of Engineering at the University of South Australia, Patrick began work for Civilcorp Pty Ltd a South Australian construction company in 1996.

Initially, he worked for approximately three years in marine civil works primarily in the construction of a stepped revetment at West Lakes South Australia. As the Site Engineer, he was developed in site management, quality assurance and environmental and safety management. His usual duties involved coordination of all on-site personnel, sub-contractors, plant, and materials. This involved selection and retrenchment of site personnel and subcontractors, project resource control, and responsibility for the achievement of project milestones. After approximately 12 months, he was promoted to Project Engineer. With this promotion came the additional responsibilities of preparation of all project documentation, claims, client and stakeholder liaison. He regularly represented the company at Site Meetings with the Client, and Partnering meetings with all other project stakeholders. He was also selected as the supervising engineer for the construction of the Goolwa Barrage pre-cast units. In this role, he became familiar with all aspects of pre-cast construction using sulphate resistant concrete. As the project's Quality Manager, he ensured all units were manufactured and delivered to the satisfaction of the client.

During 1997 he began work as the Project Engineer on a road bridge on the Mylor- Strathalbyn Road. He was responsible for all aspects of construction and Project Management including Quality Assurance, Environmental and Safety requirements.

After the completion of the bridge, he was selected to become the Quality Manager and Project Engineer on the Upgrade of Henley Beach Road. Henley Beach road is one of Adelaide's main feeder routes into the city of Adelaide. Patrick was responsible for all aspects of Quality Assurance, preparation of all project documentation, representation of the company at Site Meetings with the client and Partnering meetings/workshops with other stakeholders.

During 1999 Patrick Trainor was sought out and recruited by the Paradise Community Church in the role of Regional Pastor and later the Facilities Manager. Paradise Community Church is the second largest church in Australia and boasts a weekly congregation of some 6000 people. Patrick was responsible for the leadership and pastoral oversight of approximately one third of the adult congregation. During this time he formed Anson Civil, a small consultancy specialising in Project Management, Tendering and Estimation to supplement his income. Anson Civil grew to be a successful small business working collaboratively with local councils and other Construction companies alike. Some notable projects he was involved

in include the North Para Bridge Widening in association with Tokic Constructions and Kinhill Pty Ltd., and the design and construction of Erosion Control Structures at various locations across the Adelaide Hills in association with ID&A and SEM Civil Pty Ltd.

As the Facilities Manager at Paradise, he was responsible for the efficient management of approximately \$20m worth of assets and resources. One of the more notable projects that he was involved in was as the Project Supervisor on the recent \$0.6M facility refurbishment and power upgrade. Upon resigning from Paradise in a staff capacity, Patrick was invited on to the Board of Directors, filling one of only five congregant positions.

During 2004, Patrick sought to build on my strong blend of Project Management and interpersonal skills and was approached to become the General Manager of Coonawarra Gold Facilities Pty Ltd. He was responsible for the cost effective and timely delivery of all major infrastructure projects within the group, primarily to date consisting of a \$5M grape marc separator-drying facility at Nuriootpa South Australia and an 830MT oil storage tank in Papua New Guinea. These projects involved liaising with, and coordinating technicians from a vast array of industry sectors.

Currently Patrick is the Principal/Owner of Anson Solutions, a small consultancy specialising in civil project management and quality assurance. He consults to both state and local government, and the private construction sector.

Away from this, Patrick's interests include travel, movies and spending time with his family.

PATRICK A TRAINOR

Contact Details : Anson Solutions
 20 Glenbrae Close
 Wynn Vale SA 5127
 T 61 8 8218 4068
 F 61 8 8395 0207
 E pat@ansonsolutions.com.au

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The Fellowship Program

The purpose of the Fellowship was to undertake an overseas study program in various wine producing regions of Europe, to gain a comprehensive understanding of the different methods of cold press oil extraction with respect to obtaining knowledge about grape seed oil preparation, production and processing technologies, on a large scale.

Aim of the Fellowship

Identification of different methods of cold press oil extraction with respect to obtaining grape seed oil on a large scale with specific areas of study and development

1. What is the typical percentage of oil extracted (by weight) for each method employed?
2. Is pre-conditioning of the seed is employed prior to extraction?
3. Where are grape seeds sourced from?
4. How is a consistent supply of grape seed obtained?
5. Are there any effects from actions taken by the wine industry prior to extraction that affect the quality of the oil?
6. What is the characteristic fatty acid profile of the oil in the seed prior to extraction, and post extraction?
7. How do different climates that grapes are grown in affect the acid profile of the oil? That is Australian oil versus oil from Italy and the UK.
8. What is the difference in white grape seed oil versus red grape seed oil to the consumer?
9. What are some other methods of separating grape seeds from the marc on a large scale?

10. What are some other methods of storing grape marc prior to separation of the grape seed.
11. What are some other methods of storing grape seed.
12. Is cold-pressed Grape seed oil refined after extraction?
13. What are some methods of refining grape seed oil?
14. How is the overall business structured with respect to minimising overhead costs from sourcing the raw material to oil extraction through to bottling and/or export?
15. How much does it cost to produce cold-pressed grape seed oil per tonne per method employed?
16. How many months of the year does the business operate?
17. What does a cost-effective bottling plant look like, and how much does one cost to build/import?
18. Where are the key markets for Cold-pressed Grape Seed Oil, and what price are they prepared to pay?
19. What is the preferred method used to transport grape seed oil in bulk?

Ongoing areas for development

- Promote health properties of cold-pressed or “extra-virgin” grapeseed oil.
- Market sector education on solvent extracted oils versus the benefits of cold-pressed oils. Investigate and collate information on scientific research specific to health benefits of cold-pressed oil.
- Create marketing and promotional model that can be adopted Australia- wide.

The Skills / Knowledge Gaps

The Australian Grapeseed Oil industry is very small, in fact world-wide it is estimated that only 22,000MT of GSO are produced each year¹. Therefore, internationally the “knowledge pool” is quite small, and in Australia almost non-existent. However, countries such as France, Italy and Germany have some substantial knowledge in this niche area that could benefit Australian industry immensely. Information was sought to fill skill and knowledge gaps as follows:

1. What is the typical percentage of oil extracted (by weight) for each method employed?
2. Is pre-conditioning of the seed is employed prior to extraction?
3. Where are grape seeds sourced from?
4. How is a consistent supply of grape seed obtained?
5. Are there any effects from actions taken by the wine industry prior to extraction that affect the quality of the oil?

6. What is the characteristic fatty acid profile of the oil in the seed prior to extraction, and post extraction?
7. How do different climates that grapes are grown in affect the acid profile of the oil? i.e. Australian oil vs. Italy and UK oil.
8. What is the difference in white grape seed oil vs. red grape seed oil to the consumer?
9. What are some other methods of separating grape seeds from the marc on a large scale?
10. What are some other methods of storing grape marc prior to separation of the grape seed?
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3



The Australian Context

Nature and current situation of the industry

Background

Extraction of oil from seeds has occurred since the dawn of humankind. The production of seed oil on a large scale however, is a comparatively new industry. With the advent of industrial technology came a number of different methods for oil seed extraction. These are broadly grouped into two main categories: mechanical extraction, and chemical or solvent extraction. Mechanical extraction was the main method employed up until the last quarter of the twentieth century, when advances in chemical solvent technology made it far more cost effective to employ this method for extraction on a large scale. The advent of the information boom of the 1990's saw increases in accessible

knowledge of the health and wellness industry by western society. In particular, knowledge regarding the negative effects of long-term exposure to chemicals and synthetic foods became widely known. This produced a penchant toward organically grown foods and the production of foods and food additives that did not involve chemical processing. The production of grape seed oil is no exception. In fact, due to its inherent health properties, chemical free grape seed oil is a widely sought after food.



Dried Grape-seeds ready for crushing into oil.

Due to the vast amounts of energy required to squeeze oil from seeds, heat is created as a by-product of the mechanical extraction process. Some mechanical processes also add heat before extraction in order to reduce this heat created and also to increase the efficiency of oil extraction process. The term cold-pressed oil has numerous definitions worldwide, but it is generally accepted that this is oil produced without the addition of any heat whatsoever, and with the oil produced at a temperature not exceeding 80 degrees Celsius. Cold-pressed oil is widely sought after as this method preserves as much as possible the natural structure of the oil without residual chemicals. The term “virgin” and “extra virgin” is applied to the highest of the cold-pressed oil and designates that the oil has been made as described. Coonawarra Gold was aiming to be the largest company in the world to produce extra virgin grape seed oil in bulk quantities. However during November 2005, Coonawarra Gold went into voluntary Receivership before the any real production of cold pressed grape seed oil could be achieved. With the collapse of Coonawarra Gold, the Fellowship became even more important as knowledge in producing cold-pressed grape seed oil in an economically viable way may be the answer to this fledgling industry in Australia. This knowledge gap may lie overseas in countries such as Italy and France, and through the application of the Fellowship this missing key may be found.

Peak Organisations

Australian Federal Government,

South Australian Government,

Business: Australian Oilseeds Federation

Australian Wine Growers Federation.

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International Context

The overseas program was purposefully designed to explore the identified skills and knowledge gaps and obtain the information necessary for me to return to Australia equipped with the knowledge and ideas to enable me to advise, instruct, promote and improve the overall acceptance of grape seed oil.

Program Content

The program entailed a fleeting visit to numerous locations in Europe to observe various methods of cold-press grape seed oil production on a large scale. The places visited were namely: London, Marceilles, Vienna, Frankfurt, and San Francisco Each visit usually involved a meeting with a production supervisor or above, and a guided tour of the operation, followed up with time for additional questioning.

The following site visits and meetings proved to be the most significant in providing information and inspiration:

Name of Company	Phone	Representative
Province Huiles S.A.	+33 442468054	Maurice Aidan
TIMROTT BIOPRODUCTS	+496341/945590	Kurt Timmrott
Aarhus United	01482709271	Phil Shaw
Seatons UK	+441482 579700	Richard Eyles
Vino Veritas	+4369923075999	Peter and Herbert Morth
Salute Sante	707 251 3900	Valintine Humer

Destination

London

Seatons – Richard Eyles

Upon arriving in London, Mr Richard Eyles of Seatons (UK) was interviewed. According to Mr Eyles, there was only a very small market for cold-pressed grape seed oil. This was due mainly to the smell of the oil.

Mr Eyles stated that Refined Grape seed oil was more sought after particularly by the personal healthcare profession. ie. massage oils etc. He gave an indicative price of 1.2-1.3 per kg sold in 200kg drums. This equates to AUD\$3.00 - \$3.25 per kg.

Aarhus United –Phil Shaw

Aarhus United own one of the largest oil refineries in Europe at Hull in the UK. They typically refine 400-500,000MT per annum of vegetable oil. Of this 20,000MT per annum comprises of specialty oils such as grape seed oil. They currently only have a typical demand for cold-pressed oil of 5MT at most. Mr Shaw advised of the occasional presence of aromatic hydrocarbons in some samples of cold-pressed grape seed oil that can enter the oil when grape seeds are dried with combustion gasses.

Mr Shaw advised that he would be in a position to buy cold-pressed grape seed oil at €1300 per MT. This price is well below the manufacturing price, and could not be achieved.

Destination

France – Province Huiles –Maurice Aidan

Mr Aidan was very welcoming and gave me a full tour of his facility. His company Province Huiles produces only solvent extracted, refined grape seed oil. Mr Aidan explained that France produces probably 40% of the world's entire production of grape seed oil. All of this oil is solvent extracted. The reason for the production of solvent extracted grape seed oil is as follows:

1. Solvent Extracted and Refined Grapeseed oil is more stable oil with a longer shelf life, a better aroma and visual appeal.
2. It is easier to make a refined oil of a consistent quality if the quality of the seed is inconsistent.
3. The French Government are interested in the ethanol extraction process that occurs in the grape marc before the seeds are separated from the marc. This ethanol is used in the petroleum industry as an admixture to petrol. The process of extraction of the ethanol renders the seed unable to be classified as suitable for a cold-pressed oil.

4. Solvent extracted grape-seed oil has a greater extraction rate of 15% by weight. (Cold-pressing typically is around 8-9%)

Mr Aidan indicated that he would be willing to accept crude grape-seed oil from Australia (to be refined) for €550 per MT CIF French port. This would mean an Australian manufacturing cost of around AUD\$900 per MT which is unrealistic at this time in Australia.

Destination

Italy – Fratelli Parodi Andrea Parodi

Fratelli Parodi operate a company similar in size to Province Huilles, but do not specialise in only one oil, but a variety of niche oils.

Mr Parodi was extremely welcoming and gave me an extensive tour of all facets of his factory, from crushing through to refining. Similar to Province Huilles; Fratelli Parodi crush and refine on-site to save on freight costs. Fratelli Parodi indicated an extraction rate of 17% for their solvent extracted oil.

They also believe that the cold pressed oil market is quite small, and therefore specialise mainly in refined oils.

Destination

Vienna –Vino Veritas –Peter and Herbert Morth

Vino Veritas have a background in extraction of juices and oils from vegetable waste. Mr Peter and Herbert Morth kindly set up a meeting with Dr Herbert Boechzelt of the Joanneum Research (Institute), which is a division of the university in Graz, Austria. Dr Boechzelt has been researching differing techniques in cold-press oil extraction from grape seeds under funding from the Austrian Government. His research was not complete when we met, but early indications showed that a piston method of extraction was preferred as less heat was generated in the process. He admitted that this would also have limitations in terms of productivity when compared with the industry standard of a cylindrical expeller.

Vino Veritas stated strongly that they could design an extraction plant in South Australia to produce cold-pressed grape seed oil. They require an initial feasibility fee of €50,000.00 (AUD\$85,000). This feasibility fee would be 'refunded' on receipt of a firm offer to construct a separating facility.

Destination

Germany –TimmRott Bioproducts

Timm Rott Bioproducts produced the highest quality grape seed oil that the writer has ever seen. This oil was cold-pressed. Timmrott achieve such a high quality of oil by a combination of the following actions:

1. Wet separation of the seed from the marc, followed by a slow drying of the seed in a adapted agricultural seed dryer. (Most other methods involve the application of direct gas-fired or biomass fired heat. These methods have been designed with production efficiency in mind, and can also increase the volume of activated hydrocarbon in the grape-seed oil). Timmrott's process preserves the integrity of the oil in the seed, but has a small production rate.
2. Further sieving of the seed after drying to remove any dust particles.
3. Pressure filtering of the oil. This filtering process is done in a sealed container, and does not allow oxygen from the air to oxidize the oil. (most other filters involve either a centrifuge, or a leaf-press filter, both of which are open to the atmospheric conditions, and hence can contribute to the degradation of the oil through oxidation.

Although the quality of the cold-pressed oil is very high, Timmrott have a very low production rate and oil sold is typically in the order of 20,000L per annum. By comparison, Australia has enough grape seed to produce around 800MT of oil per annum. Timmrott sell the oil at €29,000 per MT ex works which equates to AUD\$48,860per MT not including freight to Australia. This price would only be paid by a small amount of people and would preclude it from the bulk oil market.

Destination

San Francisco –Salute Sante –Valentine Humer

Salute Sante are involved in the retail sales of cold-pressed grape seed oil throughout the United States. On speaking with Mr Humer, he was able to elaborate on how he had spent over 16 years in educating the American market as to the benefits of cold-pressed grape-seed oil. He stated that after countless feature articles, news stories and positive media, that he was really only now beginning to make any headway in terms of highlighting the differences of cold-pressed grape seed oil to the consumer. He stated that some first-class chefs were now beginning to use grape-seed oil due to its relatively high smoke point, and anti-oxidant properties.

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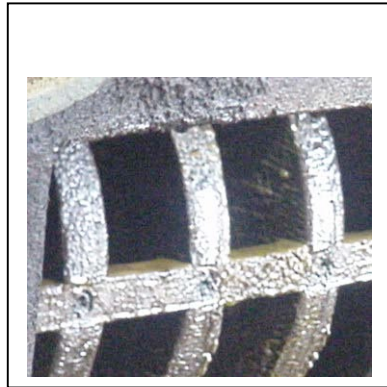
Findings

Key Issues

- Market Sector education is hindering the acceptance of grape seed oil here in Australia compared to Europe. That is, the average consumer does not understand the difference between solvent extracted oil and cold-pressed oil. Similarly, the consumer does not know how to distinguish between these oils from looking at the packaging on the shelf.
- Australia's burgeoning wine industry generates enough raw marc for a grape seed oil production facility to be viable, however cooperation from wineries in the way that they treat the marc before disposal to produce grape seed oil will enhance the quality of the final product.
- A mobile or on-site attachment to existing winery production may be a more cost-effective way of separating seed from marc, and should be investigated.

Options

- A tax incentive should be introduced to enable wineries to better re-use their waste product before disposal. That is to separate the grape seeds before disposal to ethanol extraction that can damage the quality of the grape seed oil. This "tax" incentive may take the form of a one-off grant to wineries to build a separator/dryer to separate the grape seeds from the marc at the site of the winery, and then ship only the marc for ethanol extraction.
- Introduce an additional grant to create a mobile plant that will travel to the major wine regions of Australia to separate and crush oil on-site.



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Recommendations

The following are recommendations to Government, Industry, the Business Sector, Professional Associations, Education and Training Providers, our Community and the ISS Institute.

Key recommendations

- To encourage wineries to re-use its waste marc with the introduction of tax incentives
- To expand on Grant funding for biodiesel plants to also incorporate a refinery for grape seed oil.
- Increase funding into research into production of grape seed oil methods.
- Government to investigate introduction of legislation to mandate wineries to re-use their waste products.

Professional Associations

That Professional Associations of the Australian Wine Industry encourage the wine industry to investigate the feasibility of extracting grape seeds directly from fresh grapes as a measure of recouping financial losses due to the current over supply of grapes. The method of turning post winemaking grape skins and seeds into animal food and grape seed oil is readily adaptable to turning fresh grape skins and seeds into the same products. In fact, there is a direct correlation between fresh grape-seeds and high quality oil. That is, the fresher the grape-seed, the better the quality of oil that comes from that seed. It may be possible to produce extra-virgin grape-seed oil direct from 'over-supply' grapes that are not suitable for producing wine in the current economic climate. By extracting seeds before winemaking and ethanol extraction, the seeds remain unheated, which in turn produces higher quality oil. The oil produced would be expensive, but also potentially of the highest quality. A feasibility study should be conducted to determine if

this avenue could be added as an on or off-site process to current wine making facilities.

Industry

To encourage wineries to install a wet separation plant at the winery in order to separate seeds directly after crushing, and before ethanol extraction. These seeds could then be on sold to a crushing facility. If seed colours could be separated white seeds could be sold overseas directly for the antioxidant properties. As white grapes are usually harvested first in Australia, separation of seed colour should be quite easy to achieve if the industry planned for this to occur. There are already markets in Europe interested in Australian white grape-seeds as the anti-oxidant is the easiest to extract from these seeds. White seeds could be sold direct to those markets. With some further research and development, methods of extracting anti-oxidant from red grape-seeds are also within reach. By wet-separating seeds from marc at the winery, many costs benefits are achieved. Firstly, the wet separation does not elevate the temperature of the oil inside the seed, and thus preserves the quality of the oil for extraction. Secondly, the removing the seed from the ethanol extraction process also preserves the quality of the oil inside the seed. Should wineries choose to separate seed on-site, they would then be able to better control the use of their end product and increase 'triple bottom line' margins. That is, they could sell white seeds direct, or extract anti-oxidant first then crush for oil, sell red seeds for crushing, and sell marc for ethanol extraction and animal food. The effect would be good for the environment, good for business, and good for the community.

Business

That the Australian Grape Seed oil Industry initiate and have an approved a Cold-pressed Grape Seed Oil Specification with the Australian Oilseeds Federation. As the Australian climate is different to that in Europe, the nature of the oil produced by Australian grape-seeds is also different. At the moment, the Codex Alimentarius Oilseed Specification from Italy is used as the 'measuring stick' for our oils. Although, it is possible for Australian grape-seed oil to meet the requirements of this Specification on most occasions, Australia needs its own Specification that can be achieved by seeds from any Australian climate. A suggested Specification is attached for comment. To date the Australian Oilseeds Federation does not have a Specification for Australian Grape-seed Oil. It is a further recommendation of the writer that a Specification be agreed to and listed.

The grape seed oil industry in Australia is a fledgling industry indeed. Yet, existing in parallel and in comparison is the Australian olive oil industry. With worldwide olive oil consumption increasing more than five times in the

last few years, a further suggestion for the industry is for the Australian Grape-seed oil industry to ride the ‘olive oil’ wave and offer grape-seed oil as a healthier alternative to olive oil. Furthermore, that the industry looks at utilizing grape-seed oil as a blending oil in processed foods. For example, grape-seed oil margarine, spray-on grape-seed oil for BBQ cooking (taking advantage of the higher smoke point of GSO), and as a mixture of olive oil and grape-seed oil.

Education and Training

That the by products of wine making are featured as part of a sustainable industry, and that this knowledge is included in all relevant training courses. There are many courses in TAFE colleges and universities that focus on wine making and wine marketing, but none that focus on re-use of wine industry products. It is the recommendation of this writer that courses in wine making and wine marketing also include training on what waste products are produced by this growing industry, and what solutions are currently available to re-use this waste. As current wine makers and wine marketers may become future wine industry executives, it is important that this information be incorporated during their training in order that they are equipped to appropriately shape the industry’s future. As more and more countries begin to produce low cost wine, such as Chile and Argentina, the Australian wine industry will need to continue to implement cost saving measures. As Chile and Argentina are at the early stages of producing grape seed oil, the Australian Wine industry will also need to follow suit in order to remain cost competitive.



Community

That the health benefits of grape seed oil are more widely promoted to the general community and therefore buying public. The community continues to remain unaware of the health properties of cold-pressed grape-seed oil. In fact, the average consumer does not understand the difference between solvent extracted oil and cold-pressed oil. Similarly, the consumer does not know how to distinguish between these oils from looking at the packaging on the shelf. With obesity and cardiovascular illness high on the nations health agenda, it would seem appropriate for a community awareness campaign to rate vegetable oils from least healthy to most healthy as a simple way of illustrating where cold-

pressed grape-seed oil lies in relation to other oils. The community should also be educated about what currently happens to wine industry waste, and what could happen in the future if the right impetus was created, to create a useful and sustainable product.

ISS Institute

The International Specialised Skills Institute has the potential to utilize its many contacts to attract funding and work with TAFE Institutions and Certification groups to assist the growth of the Grape-seed Oil industry. In most cases, the lack of funding is the main obstacle that needs to be overcome, along with lack of knowledge about the grape seed oil industry. Once these goals are reached then the appropriate courses can be developed. In order to achieve this ISS Institute can assist by running seminars, workshops and discussion groups with the fellow and interested stakeholders.



Oil Seed Crushing Mill Further Skill Gaps

- A cost feasibility study for the production of grape-seed oil and animal food direct from fresh grapes
- A cost feasibility study of the Australian Government mandating ethanol extraction from all wine waste, and using ethanol produced to bolster petrol supplies
- A study of the cost feasibility of wet-separation versus dry separation of grape-seeds from marc.



Attachments

Suggested Cold-pressed Grape-seed Oil Specification for Australian Grape-seed oil Industry