

Horticultural Production

in

Queensland's Southern Downs Region

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This report was commissioned by the Economic Development Unit of the Southern Downs Regional Council. Every endeavour has been made to ensure the accuracy of the data presented within the parameters of the sources available and the methods described. Use of the report and its data is encouraged, within appropriate contexts. It is anticipated that updates may be made in the future and inquiries should be made of the EDU of the Southern Downs Regional Council in the first instance.

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Executive Summary

Horticulture is a large part of the economy of the Southern Downs Region. It requires significant inputs, is labour intensive and a wide diversity of horticultural crops are grown. Accurate and current horticultural statistics are a vital tool for Regional Councils to plan and allocate resources and interact with State and Federal agencies. However, existing sources of data are not considered current or accurate.

This report details the 4,210 hectares of production by 277 horticultural producers in the Southern Downs Region that is valued at \$299.86 M at the wholesale level.

The methodology employed was a ground-up approach which included reviewing and updating historical lists of producers in conjunction with a community of local experts in each of the crops. Production data was ground truthed by interviews with producers and by reference to aerial photographs. The quantity of produce grown was calculated by multiplying known local average yields by the areas grown. The value of production was calculated by multiplying the quantity of produce grown by published price data for each crop.

The vegetable industry is the largest industry by area and value with 2,095 hectares of vegetables grown, with 85% of this area comprising brassicas, lettuce, beans, fresh cut baby leaf, tomatoes, capsicums and heavy vegetables. However other vegetable crops grown include celery, parsley, herbs, cucurbits, leeks, silverbeet, Asian greens, sweet corn, eggplant, garlic, celeriac, snow peas, radish and water cress.

There are 1,446 hectares of orchard crops grown, with the main being apples, followed by stonefruit, with some small areas of pears, persimmons, figs and olives making up the balance. As most of the tree crops are temperate the majority of production is in the higher altitude areas of the Region, centred on the Granite Belt.

Some 481 hectares of wine grapes and 23 hectares of table grapes are grown in the Region by some 97 producers. In the past 35 years the overall areas of grapes have fallen dramatically and the proportions of wine and table grapes have reversed. Many of the table grapes that are presently grown are diverted to wine production. There are over 55 cellar door wineries in the Region and all source their grapes locally, most growing the majority of their own fruit. The value of wine grape production has been calculated at \$3.3 million. However, wine grapes are processed to wine which is the product most producers sell. The value of the region's wine production is estimated at \$22M.

There are 124 hectares of berries grown in the Granite belt; mainly strawberries, and some raspberries. Both are grown for fruit production and plants harvested in the vegetative stage to supply planting material to fruit producers. Berry production is an area of current growth.

There are two specialist crops of significance grown in the Region. Mushrooms are a capital and labour intensive crop and there are two mushroom producers with output a combined annual production of approximately 1,500 tonnes and gross turnover of \$6M. The production is year-round by the shelf farming method in controlled environment structures. A medicinal weed, *Euphorbia peplus*, is being grown in the Southern Downs region. A compound extracted from the sap is targeting cancer by a novel mechanism of action. The value of production in the Region is planned to grow from currently approximately \$3 to \$5 million. The Region has one turf producer.

Hydroponic vegetable and herb growing is practiced in the southern parts of the Region. The cropping is usually not under protective plastic or glass structures. There are many small operators and the industry is characterised by changing crops and producers.

The Region's production is summer based and plays a strategic role in national production. Seasonality of supply is described and the destinations of produce outlined. There is very little export of fresh produce and marketing is mainly in Queensland (estimated 78%) with approximately 20.5% marketed in Sydney and Newcastle and just 1.5 % in Melbourne.

Crop	Previous Stanthorpe Shire	Previous Warwick Shire	Total Southern Downs Region
	Number of Producers		
Tree fruit	58	3	61
Grapes	81		81
Berries	10		10
Vegetables	110	10	120
Specialty crops	5		5
Totals	264	13	277
	Area of Crop Grown (Ha)		
Tree fruit	1,443	3	1,446
Grapes	504		504
Berries	124		124
Vegetables	1,585	510	2,095
Specialty crops	41		41
Totals	3,697	513	4,210
	Value of Production (\$M)		
Tree fruit	110.35	0.05	110.40
Grapes	3.80		3.80
Berries	15.37		15.37
Vegetables	144.80	16.5	161.30
Specialty crops	9.00		9.00
Totals	283.32	16.55	299.87

Introduction

Horticulture is a large part of the economy of the Southern Downs Region. It requires significant annual inputs and is labour intensive so there are large multiplier effects through the Regional economy from the income generated by primary producers. The Southern Down Regional Council (SDRC) recognises that it is important to have accurate and current baseline statistics on regional industries so that planning needs can be met and resource allocations made with confidence.

Because of the diversity of horticultural crops grown in the Region and the lack of central or regulated marketing of produce there are inherent difficulties in measuring the areas and production outputs in horticultural industries.

Presently the most commonly used source is the Australian Bureau of Statistics (ABS) data which has some recognised inaccuracies. ABS data has some use in putting regional production in the context of Queensland and Australian production and to reflect broad changes over time but cannot be relied upon for detailed studies.

The publishing of accurate data will allow professionals in external agencies (e.g. planners, economists, land-use experts, engineers) to properly assess and analyse the Region's food production systems and allow decision makers to arrive at informed policy decisions. Stronger arguments can be mounted to State and Federal governments by the SDRC officers on such issues as the allocation of resources, retention of rights, changes to policies and advice on proposed legislation if an accurate picture of the Region's agricultural industries is available.

There are two historical reports that documented production statistics before the improvements in agronomy and technology that have occurred in the past three decades (Wills 1976 and Ledger 1980). In 1995 a survey of horticultural production in South Queensland was done by the Department of Primary Industries (Banks, 1995). In 2001 the need for current statistics was recognised by the previous Stanthorpe Shire Council when negotiating with the Department of Natural Resources in the development of Border Rivers Water Resources Plan. A study on water use and horticultural production in the Shire was commissioned (Tancred, 2001), but this too is now out of date.

Any new published report would become a welcome current resource for a whole range of agencies and consultants conducting future investigations in the region.

At present there is a Food Security Plan being developed for the Region by the SDRC. It has been identified that this may be a lobbying tool for funding a new water storage for the southern part of the Region. Additionally a Food Security Plan will have use in submissions to legislators regarding preservation of agricultural land when there is conflicting land use from extractive industries such as coal seam gas (CSG). Likewise the retention of good quality agricultural land (GQAL) is always under pressure from rural residential land use and a Food Security Plan would make a statement about the value and importance placed on the GQAL in the Region. An integral part of a Food Security Plan is an accurate description of the Region's primary industries.

Methodology

Because existing published sources are either out of date (Banks 1995, Tancred 2001) or considered to have inaccuracies (ABS), a ground-up approach was taken when calculating the baseline data presented in this report.

The **numbers of horticultural producers** in the region was determined by using historical lists of growers in the previous Stanthorpe Shire, held by the commercial consulting firm Orchard Services as a base. These were reviewed and updated in conjunction with Department of Agriculture, Fisheries and Forestry staff (DAFF), industry grower representatives and experienced agronomists from commercial farm supply businesses. There were considerably less producers in the previous Warwick Shire and lists were developed in conjunction with DAFF staff and farm supply business agronomists.

The method chosen to determine the **crop areas grown** by each identified producer was that of harnessing the resources of a 'community of experts' involved in the respective industries. This was supplemented with personal interviews of producers to fill information gaps and ground truth the data as it was assembled. In some cases the areas of crops grown was also checked with measuring paddock sizes from aerial photographs of the properties (Google Maps).

The **quantity of produce grown** was calculated by multiplying known local average yields by the areas grown. Average yields for the production systems used in the Region are reasonably well known by agronomists and advisors working in the Region and were adjusted, if needed, after they were ground-truthed by direct interviews with larger producers and industry representatives from the major crop groups.

The **value of production** was calculated by multiplying the quantity of produce grown by published price data for each crop. Price data is that achieved at the wholesale level in calendar year 2011 at the Brisbane Wholesale Markets as collected and published by Market Information Services, who are the official reporting service and has been in operation in a commercial capacity since 1992. They state they have "a high level of confidence in the price data that we collect because of the high level of control over the collection process". Average monthly prices per tonne were used, for the months that produce from the region was marketed. Weighting was given to the months according to the expected volume of the Region's production marketed in that month. An example of the calculation of prices is given in Appendix 2.

The Horticultural Industries of the Southern Downs

Although horticultural cropping is predominantly conducted in the Granite Belt there is important production in all parts of the Region and this report will endeavour to document this.

The Region's production is mostly defined by the combinations of soil type, climate and water resources. There are two separate parts to the Region based on soil type; the higher altitude sandy soils of the Granite Belt that formed the eastern part of the previous Stanthorpe Shire and the lower altitude heavier soil types of the previous Warwick Shire in the north of the Region and the Traprock soils that were the western part of the Stanthorpe Shire.

Very little underground water is available in the Granite Belt and producers have invested significantly in on-farm and in-stream water resources to help mitigate against the climatic challenge of drought. Water is the main limiting factor affecting the expansion of horticulture production in the Granite Belt. In the production areas surrounding Warwick underground water is used.

Tree Fruit

There are 1,446 hectares of orchard crops grown, with the main being apples, followed by stonefruit, with some small areas of pears, persimmons, figs and olives making up the balance. As most of the tree crops are temperate the majority of production is in the higher altitude areas of the Region, centred on the Granite Belt.

As the level of agronomy (closer planting, dwarfing rootstocks, trickle irrigation, nutrition) and risk management (on-farm water storage, hail netting) has improved, the areas of apple orchards have decreased substantially over the past 35 years but the overall level production has been maintained or increased. Similar productivity improvements have occurred with stonefruit orchards but the areas and levels of production have decreased in more recent years due to falling profitability of stonefruit.

The area of stonefruit production has decreased from a peak in the late 1990's which was driven by the availability of many new high quality varieties, mainly bred in California. Plantings expanded in many regions of Australia, particularly in Victoria's Swan Hill region. This led to over-production and falling prices, which was exacerbated when market access to Taiwan was lost in 2006 due to fruit fly quarantine issues.

The area of pear orchards was never large in Queensland but the areas and overall production levels have progressively fallen due to falling returns for processing pears and with newer varieties of apples being more profitable than pears the switch from pears to apples was made. The Australian pear industry is now concentrated in Victoria which accounts for 85 % of Australia's production. Some 80 % being grown in the Goulburn and Murray River valleys of Northern Victoria (Shepparton, Mooroopna, Cobram, Ardmona, Kyabram).

Tree fruit growers have invested significantly in on-farm water resources and hail netting to help mitigate the two climatic challenges of drought and hail. This has greatly increased the costs of orchard establishment. Additionally the level of technology required for postharvest processes (storage, packing) has increased significantly and many farms have invested significant capital in facilities, which has in turn increased the drive to seek economies of scale by expansion of production units.

New varieties of apples and stonefruit, and improved strains of existing varieties becoming available will drive re-planting and may encourage expansion of orchard areas. For example the Queensland Department of Agriculture Fisheries and Forestry recently released a new disease resistant apple, Kalei, which was developed at the Applethorpe research station. It is being evaluated by commercial growers and if it can find broad consumer acceptance will be planted more widely.

Because the water resources of the southern part of the Region are presently fully utilised, any expansion in apple and stonefruit areas would be at the expense of other present land uses eg vegetables or grapes.

Stonefruit production is more profitable in the western and northern parts of the Region and production may expand in these areas. These locations are warmer and of a lower altitude than the traditional Granite Belt production area and harvesting is earlier than the main production areas in Australia and fills a strategic niche.

Small areas of 'newer' tree crops e.g. persimmons, figs and olives have been planted in the past 10 years based on new varieties, niche market opportunities or promotion of new industries.

Olives were well promoted in the 1990's and early 2000's as a sunrise industry for Australia as the trees could survive in drier climates than many other horticultural crops and there was great potential for import replacement. Large plantings were established around Australia, and many were funded from tax effective investment schemes. No large plantings were made in the Southern Downs Region but several were made in neighbouring Shires eg Inglewood and west of Leyburn. Unfortunately the olive industry has never reached the forecast profitability levels. In the Southern Downs region many small landholders planted trial areas of less than a hectare. One small olive producer has established a successful value-adding enterprise combined with agro-tourism.

Grapes

The Granite Belt boasted in the 1960's that it grew a sixth of Australia's table grapes. The decline to a negligible percentage of national production was caused by two factors. Firstly the redirection of large areas of South Australian and Victorian Sultana grapes from dried grapes to table grapes (due to changed export markets). Secondly improved agronomic systems that allowed early grapes to be produced in more northern and western districts (eg, St George, Chinchilla, Emerald) than the traditional temperate areas.

Some 481 hectares of wine grapes and 23 hectares of table grapes are grown in the Region by some 98 producers. In the past 35 years the overall area of grapes grown has fallen dramatically and the proportions of wine and table grapes have reversed. In 1972 some 1,123 hectares of grapes were grown - all table grapes, with approximately 8 % of lower quality fruit diverted to wine production. In the mid to late seventies the first small commercial plantings of specialist wine grape varieties were made. Much of the table grapes that are presently grown are diverted to wine production if prices are unfavourable or if quality is of a lower standard (due to damage from hail, sunburn or birds).

Local wine grape plantings peaked around 2008-2011. This reflected a period of strong development of the Queensland wine tourism industry and many years of investment in the Australian wine industry generally, based on increasing domestic wine consumption, profitable export wine markets and Australian Government investment incentives. Since then the high Australian dollar has reduced export volumes and over-production of wine has led to some local and national industry rationalisation.

The Queensland College of Wine Tourism was opened in Stanthorpe in 2007. It developed as an adjunct to the Stanthorpe State High School's agriculture section and is a joint venture between the Department of Education and the University of Southern Queensland. It is a well-respected facility offering secondary, TAFE and tertiary education options in wine making and hospitality to a Queensland wide catchment.

There are over 55 cellar door wineries in the Region and all of these source their grapes locally, most growing the majority of their own fruit. Some grape producers supply fruit (and wine) to wineries and cellar doors operating in the tourist areas north and south of Brisbane, and some production is used by wineries in the north and south Burnett regions. Many of the Southern Downs Region's wineries are small and sell most of their production at the cellar door, wine clubs or direct marketing to restaurants. A significant proportion (~25%) of the production of the eleven largest producers is sold in more volume based and wholesale channels. Although some export sales occur they are less than 1 % of the Region's production.

The future of the wine industry is seen as being linked to wine tourism combining the climatic, environmental and heritage features of the Region. There is an ongoing evolution of planting of varieties most suitable to the soils and climates of the Region as well as the changing palates of Australian consumers. 'Strange Bird' is the marketing name given to the Granite Belt's alternative grape varieties eg Viognier, Mourvedre, Gewurztraminer, Barbera and Tempranillo. An alternative variety trail exists with 21 participating cellar doors.

The value of wine grape production has been calculated at \$3.3 million. However, wine grapes are processed to wine which is the product most producers sell. The value of the Region's wine production is estimated at \$22M. This assumes yields of 5.5 tonnes per hectare, that 70% of the wine grapes grown in the Region are processed in the region at a conversion of 600 litres of wine per tonne of grapes and an average sale price of \$15 per bottle (750 mL). Cellar door sales attain the highest prices and export sales the lowest (under present exchange rates).

Berries

There are a total of 119 hectares of strawberries grown in the Granite belt. This consists of plants grown for fruit production and plants (runners) grown to be harvested in the vegetative stage and supplied to fruit producers to be grown on to maturity and produce fruit. There are 34 hectares of fruiting and 85 hectares of runner plants grown in the Granite Belt.

Strawberry fruit is highly perishable therefore the close proximity to Brisbane markets gives Queensland produce a shelf life advantage over the summer production competitors from Victoria. Mild summer temperatures experienced on the Granite Belt are favourable for producing good quality strawberry fruit while the southern production regions often struggle to maintain quality during summer heat waves.

Several strawberry producers from the Sunshine Coast and horticultural areas south of Brisbane have established additional properties in the Granite Belt to enable them to supply markets all year round. The trend is continuing, with two additional apple orchards having been recently sold (April 2013) to a Sunshine Coast producer and a Victorian producer. These two are included in the number of strawberry producers, but not the area or value of production as their first crops will be planted for the 2013-14 season.

This summer production in the Granite Belt has some agronomic challenges but a longer growing season enables higher overall yields and summer prices are usually higher than winter prices, which add to the improved economics. The release of some improved eating varieties has also encouraged summer production.

Strawberry runner production is ideally suited to the district and runners are supplied to strawberry fruit growers in most States and a small amount are sent overseas. Although the bulk of the runners are sent to producers on Queensland's Sunshine Coast. This close proximity to customers ensures that plant quality is maintained and plant stress is minimised which allows for greater fruit production.

Strawberry harvesting is very labour intensive and if strawberry production expands the larger producers may struggle to find sufficient workers.

Very small areas of fruiting raspberries are currently grown but approximately 4 hectares of plants are grown to produce cane stock for NSW and Victorian growers. Consumer demand is rapidly increasing which places growers on the Granite Belt in a great position to increase raspberry fruit production as they are well suited to being grown in this district and some new varieties are showing promise.

Strawberries and raspberries lend themselves to value adding by incorporation into processed products (jams, toppings, ice cream and liqueurs) and are popular for consumers interested in the pick-your-own market. Both these activities lend themselves to the agri-tourism sector.

Advances in technology, such as cheaper protected cropping structures and selection of improved varieties, may see the extension of the berry production season.

Vegetables

The vegetable industry is very diverse with 2,094 hectares of vegetables grown. Of this, 71% of the area is comprised of brassicas, lettuce, beans, fresh cut baby leaf, tomatoes and capsicums. However one of the hallmarks of the Region is the diversity of crops grown with the list of other vegetable crops grown including potatoes, onions, pumpkins, celery, parsley, garlic, herbs, zucchinis, cucumbers, leeks, silverbeet, Asian greens, sweet corn, eggplant, celeriac, snow peas, radish and water cress.

The Granite Belt district is divided into two production areas. The higher altitude areas centred on the Amiens to Pozieres ridge produce the majority of the leafy vegetables (brassicas, lettuce, celery, silverbeet and fresh cut baby leaf). The lower altitude areas produce mainly the fruiting vegetables (tomato, capsicum, beans, cucurbits, sweet corn and eggplant).

Growers in the warmer areas with heavier soils surrounding Warwick produce heavy vegetables (potatoes, onions, carrots and pumpkins), brassicas and some baby-leaf lettuce. Killarney is the major production area based on red volcanic horticultural loam soils and cooler climates in the elevated areas. Allora is the second main area based on good underground water resource and irrigation infrastructure.

The Granite Belt is mainly a summer production district as late and early frosts can cause significant production losses. Vegetable crops also grow much slower during the winter months and therefore the time from planting to harvest is increased which increases the input costs required to produce the crop when compared to summer production. For these reasons it is a more profitable use of water to produce vegetables during the summer months.

An ongoing trend is that large established producers are getting larger and are growing most of the mainstream vegetable crops and the smaller producers are specialising into niche or specialty crops.

The shortage of skilled and unskilled labour is an issue with a high dependence on casual labour that consists mainly of overseas workers (backpackers). The use of mechanisation has increased with the use of harvesters (e.g. beans and sweet corn), seedling transplanters, harvest aids, weeding machines and automated irrigation systems. This mechanisation has replaced some labour and enabled expansion.

The high incidence of hail during the summer months is a major factor that affects production on the Granite Belt with very few vegetable producers investing in hail netting because of the high capital cost.

It is predicted by climate change scientists that in the Granite Belt the average minimum temperatures will increase while the average maximums will remain unchanged. This may allow vegetable growers in the Granite Belt to extend their production season by planting their first crops for the season earlier and harvesting their last crops later. Whether this is profitable will depend on production trends and timings in competing horticultural districts.

Protected cropping may enable earlier and later cropping by allowing growers to manage the environment the crop is grown in. It may also help maximise production by reducing losses caused by the weather particularly rain e.g. strawberries where heavy losses are common for several weeks after prolonged summer rain events.

Because of the perishable nature of many vegetables the proximity of the region to the large and growing markets of south east Queensland will continue to give producers a freight cost advantage over most other production districts in Australia.

Urban expansion into horticultural producing areas adjacent to cities has reduced the areas available for growing crops and often raises conflict of land use issues. Examples of this are the urbanisation of farmland at Redland Bay and Middle Ridge in Queensland, Werribee in Victoria and Windsor in New South Wales. Ongoing reduced production in these districts will provide opportunities for Granite Belt producers to expand production (if water is available) and receive preferred marketing arrangements.

Speciality crops

Mushrooms are a capital and labour intensive crop that require controlled environments. The cooler climate of the elevated southern parts of the Region suit production and a ready labour force is available. There are two producers with a combined annual production of approximately 1,500 tonnes and gross turnover of \$6M. The production is year-round by the shelf farming method in controlled environment structures, with a reasonable water requirement. The mushrooms are predominantly marketed in Brisbane with some to Sydney and Melbourne.

A medicinal weed, *Euphorbia peplus*, also known as petty spurge, cancer weed or radium weed is being grown commercially in the Southern Downs region. The sap from *Euphorbia* is an effective treatment for human non-melanoma skin cancers and the extracted compound PEP005 is the first in a new class of investigational agents targeting cancer by a novel mechanism of action.

The former State Department of Employment, Economic Development and Innovation (DEEDI) with some funds from Rural Industries Research and Development Corporation (RIRDC) have worked closely with producers to research the new crop and develop an understanding of the required agronomy. There are presently three producers in the Region with just under 40 hectares in production. Expansion is planned in the Southern Downs Regions and in other districts (Bundaberg, Gatton, Kingaroy, Pittsworth), and the value of production in the Region is planned to grow from approximately just under \$3 to \$5 million.

Hydroponic vegetable and herb growing is practiced in the southern parts of the Region. The cropping is usually not under protective plastic or glass structures that would allow production to be possible any longer than would be possible with normal in-ground production systems. It is usually done to allow ease of management, make better use of available land or limited water and to improve the quality of produce. There are many small operators and the industry is characterised by changing crops and producers. Having said that there are approximately twenty small hydroponic producers and a major crop is parsley. The areas and value of production for hydroponic crops have been incorporated into the main data.

The Granite Belt is also home to Australia's largest specialist wine vinegar maker who grows grapes specifically for boutique vinegar production and value adds to wine produced locally and from other regions.

There is a turf grower south of Stanthorpe who has 12 hectares of summer production turf. The main variety grown is kikuyu with some couch. The turf is distributed in a 200 km radius of Stanthorpe.

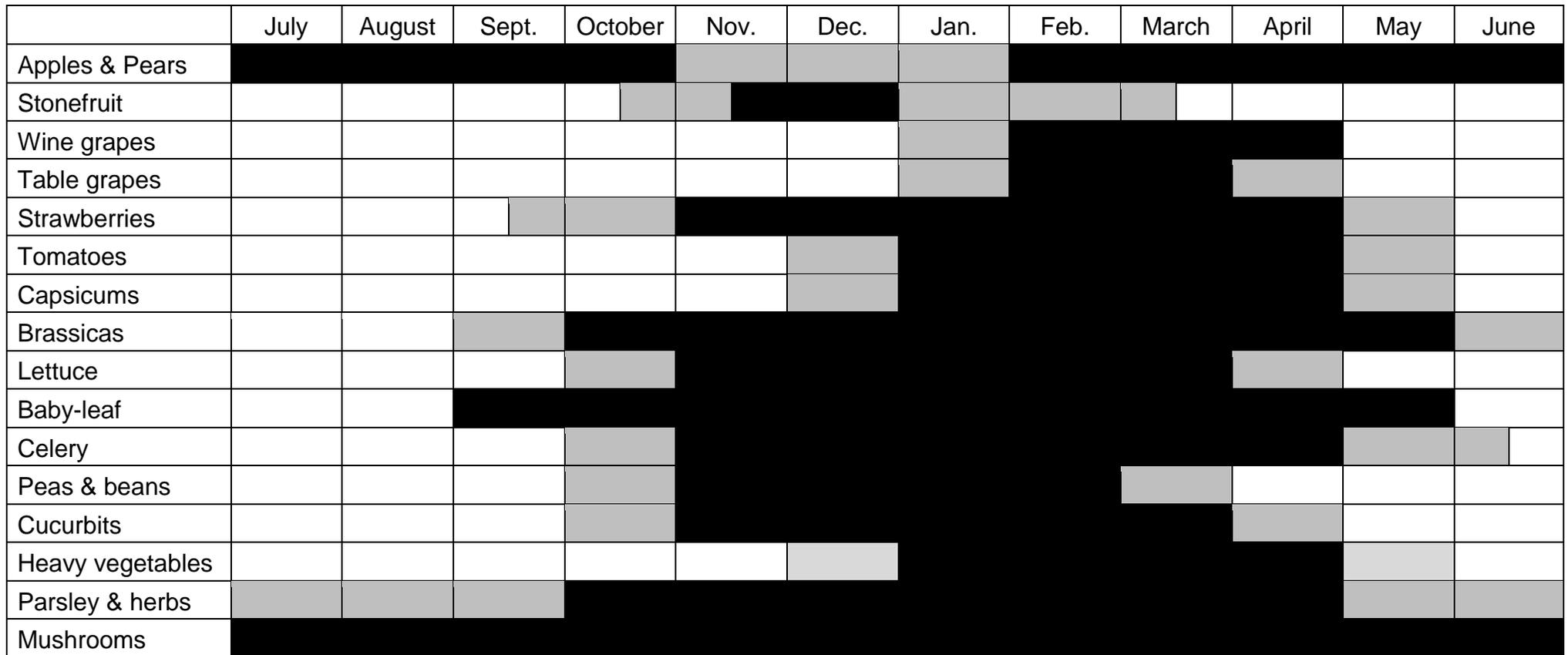
Supply Chains and Seasonality

The supply chains for fruit and vegetables have shortened over time, which has lowered some costs and enabled improved maintenance of product shelf life. However, the process has been driven by the large retailers and extra costs in the establishment and maintenance of QA systems have been introduced.

Destination	Fruit	Vegetables	Average
Brisbane	72%	64%	68%
North Qld	10%	10%	10%
Sydney & Newcastle	17%	24%	20.5%
Melbourne	1%	2%	1.5%
	100%	100%	100%

There are three main destinations for fresh produce; central wholesale markets, chain store distribution centres (DCs) and processors (eg Harvest Fresh Cuts, Mrs Crocket's Kitchen, apple juice processors). During the harvest season approximately 40 - 55 % of produce is delivered directly from farms into DCs. In the winter months when there is predominantly just apples and pears being sold from the district this proportion rises to approximately 60%.

Regional production is summer based and the seasonality chart (Figure 1) details the peak and shoulder supply periods. Apples are harvested from February to May and pears harvested January to March and both crops are marketed ex cold store in other months. All other crops are harvested and sold fresh in the months indicated.



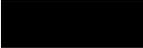
Peak supply 
Shoulder supply 

Figure 1. Crop seasonality

Numbers of Producers

For the purpose of this study each producer has only been counted once regardless of how many different crops they grow. Some producers grow several crops whilst others specialise and grow just one type of produce. Some crops fall into natural combinations e.g. tomatoes and capsicums, lettuce and celery, stonefruit and apples, and each producer has been classified according to the crop they grow the largest area of. For example; there are 28 producers that grow tomatoes but only 23 are classified as tomato growers because that is the main crop they grow. The other 5 tomato growers grow larger areas of other crops and are classified on that basis. Figure 2 shows the number of producers whose main crop is the indicated commodity group. However, Figure 5 shows the number of growers that grow any area of the separate vegetable crops.

Crop Sector	Crop	Previous Stanthorpe Shire	Previous Warwick Shire	Total Southern Downs Region		
Tree fruit	Apples	45* (49) [#]	58	3	61	
	Stonefruit	13 (37)				
	Pears	0 (14)				
	Other tree crops	0 (3)				
Grapes	Wine grapes	79 (81)	81		81	
	Table grapes	2 (17)				
Berries	Strawberries	8 (9)	10		10	
	Strwb'ry runners	2 (2)				
	Other berries	0 (3)				
Vegetables	Tomatoes	23 (28)	110	10	120	
	Capsicums	12 (26)				
	Brassicas	22 (27)				2 (3)
	Lettuce	0 (11)				
	Baby-leaf	3 (3)				1 (1)
	Celery	0 (3)				
	Peas and beans	7 (21)				
	Cucurbits	11 (21)				
	Heavy vegetables	0 (1)				7 (8)
	Parsley and herbs	21 (26)				
	Other vegetables	1 (11)				0 (2)
Specialty crops	<i>Euphorbia</i>	2 (3)	5		5	
	Mushrooms	2 (2)				
	Turf	1 (1)				
Totals			264	13	277	

the number of producers that grow the particular crop

* the number of producers who have the particular crop as their main crop

Areas of Production

The area grown on any individual property is in constant flux, depending on the supply of water, vagaries of the market and expansion/contraction trends of industries and individual producers. Hence the figures presented are a snapshot of current production. Some crops are planted multiple times on a given area of land or planted in rotation eg, lettuce, brassicas, celery and baby leaf. This has been accounted for when calculating the value of crops grown, but not the areas grown. That is a cultivated hectare is only counted once regardless of how many times it is cropped in one given year.

Crop Sector	Crop	Previous Stanthorpe Shire (Ha)		Previous Warwick Shire (Ha)		Total Southern Downs Region (Ha)
Tree fruit	Apples	1,204	1,443		3	1,446
	Stonefruit	202				
	Pears	22				
	Other tree crops	15		3		
Grapes	Wine grapes	481	504			504
	Table grapes	23				
Berries	Strawberries	34	124			124
	Strwb'ry runners	85				
	Other berries	5				
Vegetables	Tomatoes	153	1,585		510	2,095
	Capsicums	168				
	Brassicas	424		102		
	Lettuce	179				
	Baby-leaf	103		20		
	Celery	39				
	Peas and beans	342				
	Cucurbits	58				
	Heavy vegetables	20		388		
	Parsley and herbs	30				
	Other vegetables	69				
Specialty crops	<i>Euphorbia</i>	29	41			41
	Mushrooms	NA				
	Turf	12				
Totals			3,697		513	4,210

Value of Production

Value of production was calculated by multiplying production (in tonnes) by prices per tonne. Prices used were wholesale market prices for calendar year 2011 at the Brisbane wholesale markets. Calendar year data spans two production seasons for most of the region's horticultural crops and using it adds some robustness to the figures by partially averaging two seasons' markets. Almost all of the Region's horticultural produce is marketed in Brisbane, Sydney and Melbourne and prices for the three centres are well linked. Short term over or under supply situations in any market are quickly corrected and prices equilibrate.

Crop Sector	Crop	Previous Stanthorpe Shire (\$M)		Previous Warwick Shire (\$M)		Total Southern Downs Region (\$M)
Tree fruit	Apples	95.8	110.35		0.05	110.4
	Stonefruit	12.3				
	Pears	1.4				
	Other tree crops	0.85		0.05		
Grapes	Wine grapes	3.3	3.8			3.8
	Table grapes	0.5				
Berries	Strawberries	3.0	15.37			15.37
	Strwb'ry runners	11.4				
	Other berries	0.97				
Vegetables	Tomatoes	33.5	144.8		16.5	161.3
	Capsicums	16.9				
	Brassicas	49.1		8.3		
	Lettuce	19.4				
	Baby-leaf	5.9		1.1		
	Celery	2.6				
	Peas and beans	9.8				
	Cucurbits	2.0				
	Heavy vegetables	0.3		7.1		
	Parsley and herbs	1.5				
	Other vegetables	3.8				
Specialty crops	<i>Euphorbia</i>	9.0	9.0			9.0
	Mushrooms					
	Turf					
Totals		283.32			16.55	299.87

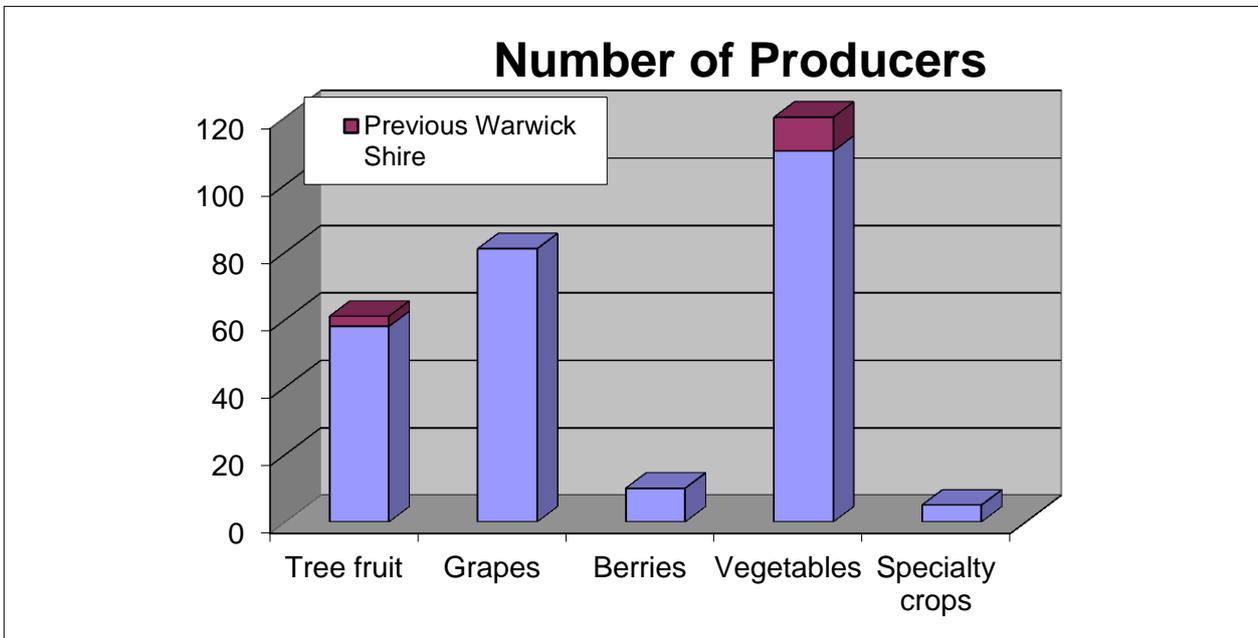


Figure 2. Number of producers of crop commodity groups.

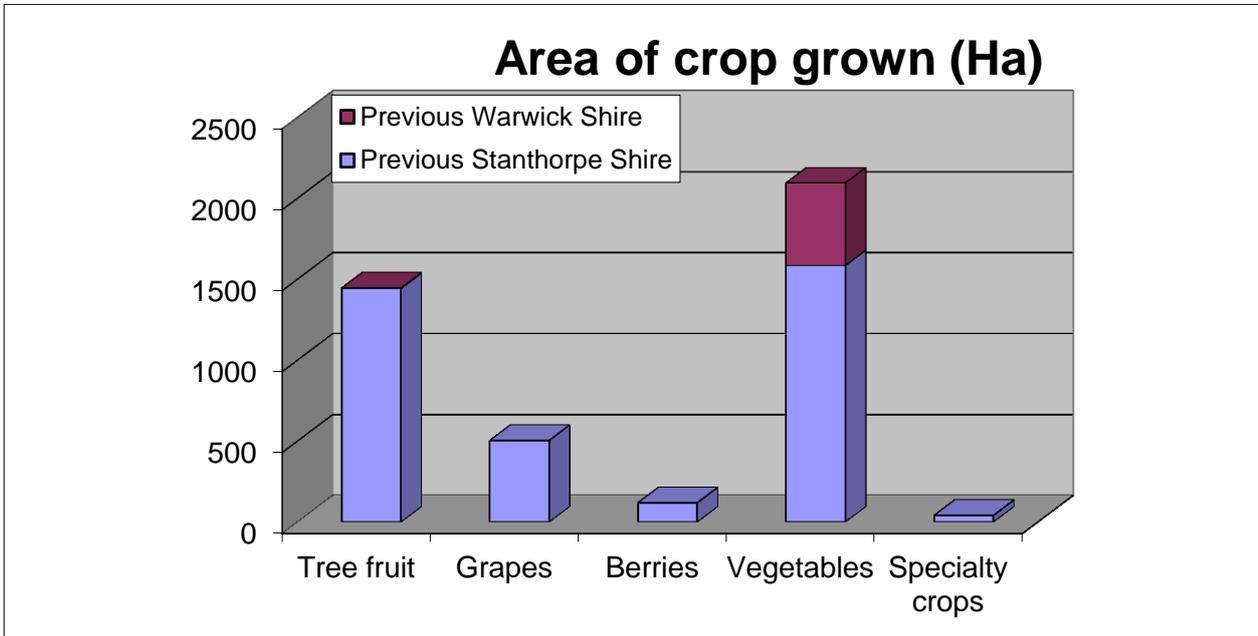


Figure 3. Hectares grown of crop commodity groups

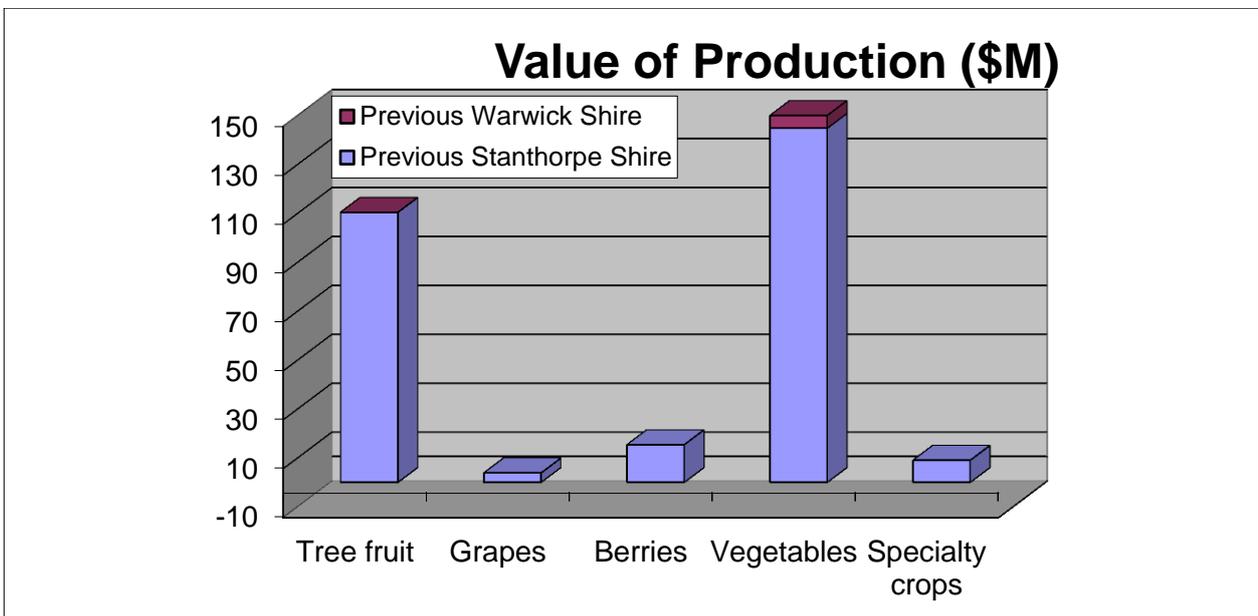


Figure 4. Wholesale value of production of crop commodity groups

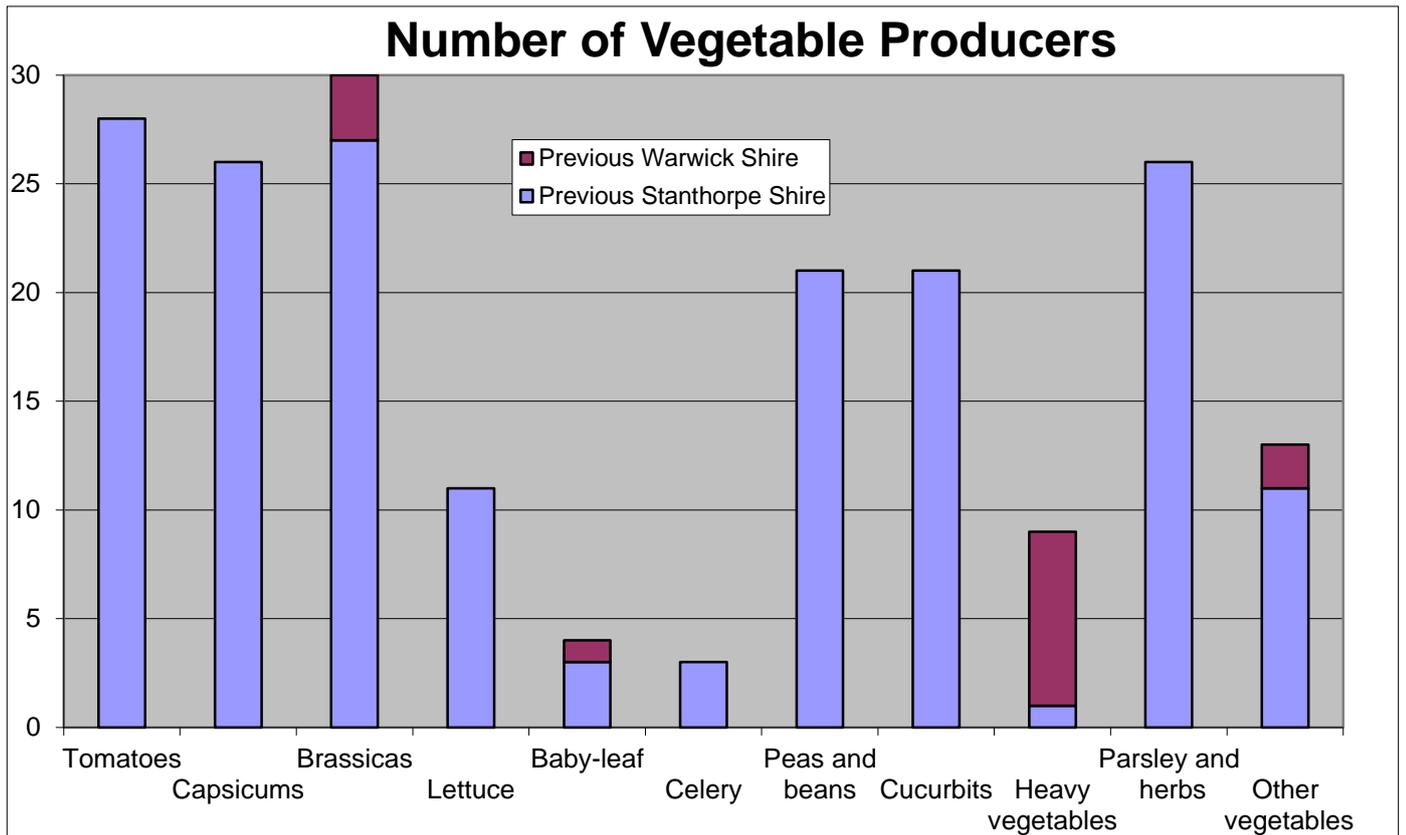


Figure 5. Number of producers of separate vegetable crops

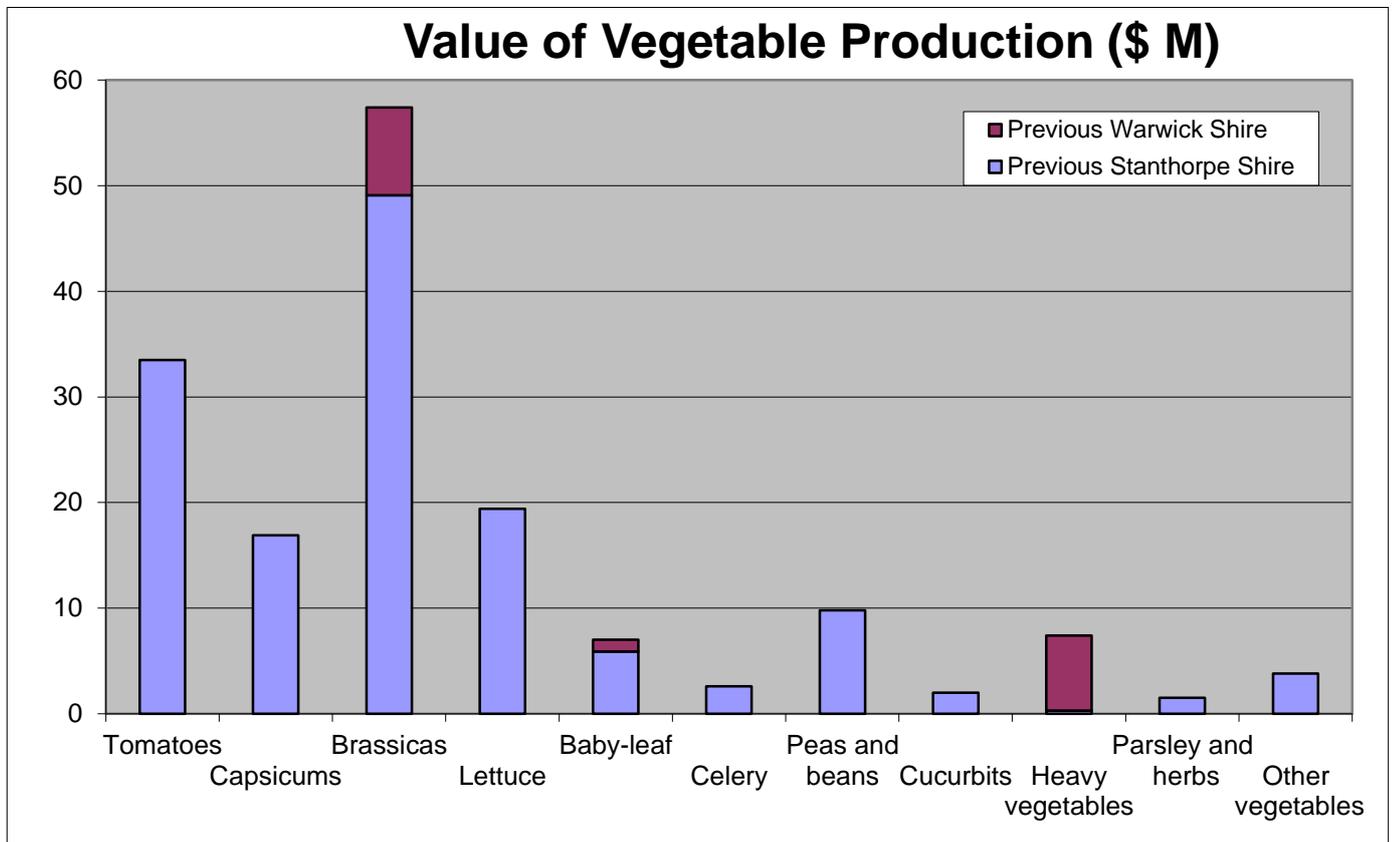


Figure 6. Value of production of separate vegetable crops

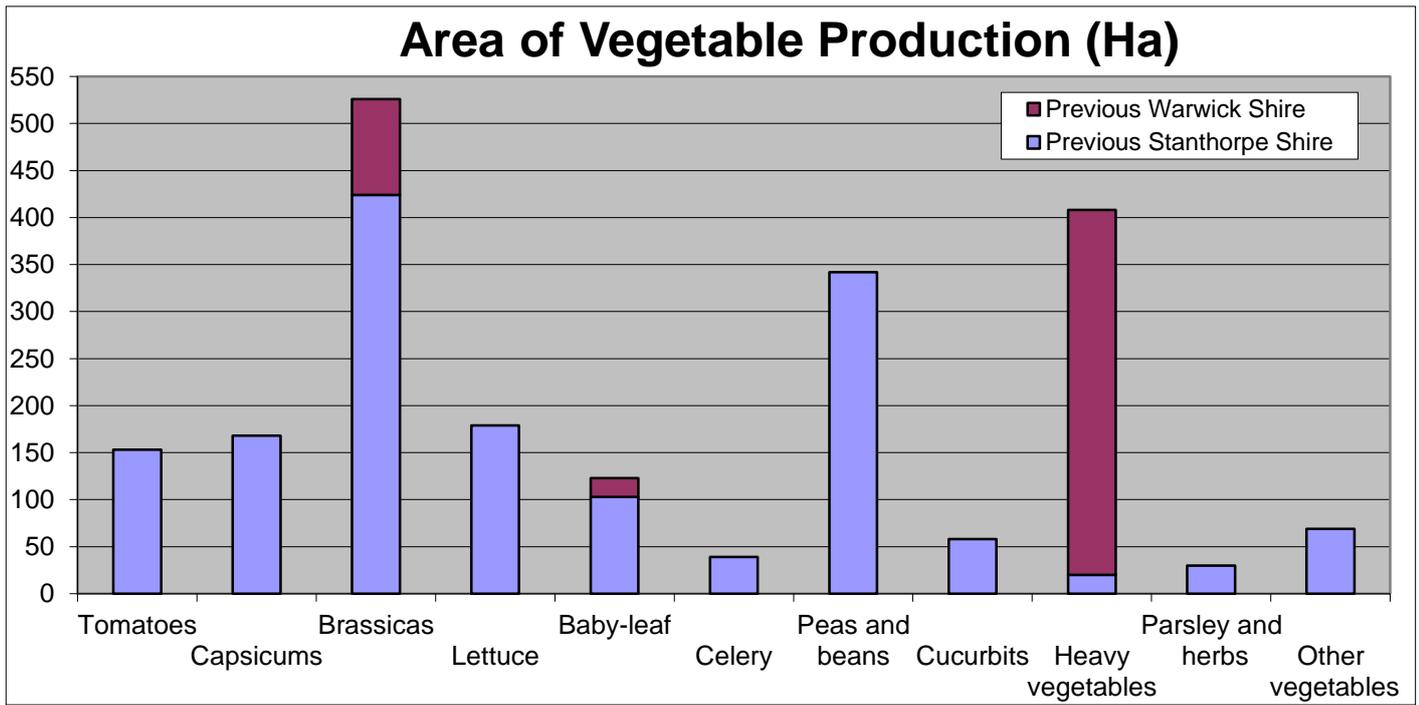


Figure 7. Value of production of separate vegetable crops

Appendix 1. List of contributing experts

Contributor	Role	Expertise
Rodney Abrahams	Granite Belt Fruit Freighters	Industry wide
Jim Barnes	President Qld Wine Industry Association Hidden Creek Winery	Wine grapes
Peter Biddulph	Agronomist with Stanthorpe Rural	Industry wide
Justin Davies	Agronomist with Landmark Applethorpe	Industry wide
Jamie Debnam	Landmark Ballandean	Stonefruit, vegetables, grapes
D'arcy Filmer	Horticultural Agronomist with Orchard Services	Industry wide
Andrew Finlay	Orchardist and board member of Summerfruit Australia	Stonefruit
Rodney Haynes	Vegetable producer	Vegetables
Damian Hannigan	Lindsay Brothers Transport	Industry wide
Ian Henderson	Assistant Chief Steward, Australian Small Winemakers Show	Grapes
Clinton McGrath	Senior Extension Officer with Department of Agriculture, Fisheries and Forestry	Industry wide
Greg Morris	Olsens Produce – Landmark, Warwick	Warwick district
Simon Organ	Horticultural Agronomist with Orchard Services	Vegetables, stonefruit
Leanne Puglisi-Gangemi	Ballandean Estate Winery Qld rep on Small Winemakers Committee of the Winemakers Federation of Australia	Grapes
Mark Rogers	Vegetable producer	Vegetables
Stephen Tancred	Senior Horticultural Consultant, Orchard Services	Industry wide
Ray Taylor	Vegetable producer	Vegetables
Rod Thomas	Manager National Farmers Warehouse Warwick	Warwick district
Craig Thompson	Produce Manager Killarney Co-op	Warwick district
Ugo Tomasel	Orchardist and board member Apple and Pear Australia Ltd	Apples and pears
Peter Watters	Wine industry consultant with Wattvine	Grapes
Ian Wallace	Olsens Produce – Landmark, Warwick	Warwick district
Davyd Westlake	Wine grape producer	Grapes

Appendix 2. Yields and calculation of average prices

For most horticultural crops there are several production systems and no readily identified 'average' yield. Larger producers tend to have better developed farms and risk management and achieve higher yields more consistently than smaller producers. However as the 80:20 rule (or greater) applies in all the crops produced in the Region any bias towards the yields of the larger producers is reflective of the true average yields.

Yields used in this report have been ground-truthed by discussions and interviews with key producers, Departmental staff, well informed suppliers of inputs and industry representatives.

In calculating yields an allowance has also been made for produce that is grown and harvested and is rejected in the post-harvest preparation for market. Yields shown are for produce sold from each hectare.

Prices used are the wholesale prices from calendar year 2011 at the Brisbane Wholesale Markets as collected and published by Market Information Services, which is the official reporting service. The average monthly prices per tonne were used, for the months that produce from the region was marketed. Weighting was given to the months according to the expected volume of the Region's production marketed in that month.

Prices for horticultural produce respond readily to over-supply and under-supply situations which are usually brought about by weather events within a production district or in a competing district (e.g. drought, hail, early frosts, excessive rainfall). Seasons tend to be typified as good, average or bad price years for different crops.

Thus the figures reported here are merely a snapshot using the best available information during the report preparation. As time progresses more current prices can be used to update the crop value estimates.

The 2010-2011 summer was a very wet year and prices for some fruiting vegetables were higher than average eg tomatoes and capsicums. Prices for other vegetables were not considered unusually high in 2011. Apple prices in 2011 were considered slightly higher than average, but this may be in contrast to the 2012 apple prices which were markedly below average.

There is a processing market for some produce e.g. apples for juice, capsicums for pre-mix salads and catering, lettuce for the fast food chains. The prices received from these markets are lower than received from the wholesale markets. An estimate of the percentage of produce that reaches these markets was made and the average price adjusted downwards accordingly.

For example the calculation of the apple price was; a price of \$2,511 per tonne was calculated based on 2011 wholesale prices weighted for the volumes marketed from the Region each month. This was adjusted down by 5 % to \$2,385/t to allow for the smaller fruit that is marketed in pre-packs and punnets that doesn't reach wholesale markets and wouldn't be reflected in reported prices. Additionally, when calculating the gross value of production the price of \$165/t was used for the estimated 20% of production that is sold to apple juice processors. 1,204 hectares of apples with an average yield of 41 t/ha = 49,364 tonnes total production, with 80 % sold at \$2,385/t and 20 % sold at \$165/t for a gross value of production of \$95.8M.

Fruit trees and grape vines have several years after planting before they come into production and achieve maximum sustainable yields and this has been allowed for in calculation of average yields.

Some vegetable land is cropped more than once each season. Usually in rotations of different crop type. The practice is more common when land is limited and short-lived crops are grown. This has been allowed for in calculating the yield of brassicas, celery, lettuce, baby leaf, celery, silverbeet and Asian greens.

For example the calculation of the total lettuce production was; there are 179 hectares which lettuce is grown on, but growers will crop lettuce ground 1.5 to 2.5 times a season, so although the average yield of each crop is 35 tonnes per hectare, when the gross value of production was calculated the total production was 12,530 tonnes (179 X 2 X 35).

The average price for lettuce for calendar year 2011 was \$1,609/tonne. However this varied from \$1,293 in June to \$2,457 in February. A weighting for the volume of the district's lettuce marketed each month was used to calculate a weighted mean price of \$1,723/tonne. This was discounted by 10% to allow for processing lettuce that sells for a lower price and isn't marketed via the wholesale markets so is not reflected in reported prices, thus a price of \$1,551/t is used to value the 12,530 tonne lettuce crop at \$19.4M.

	Price \$/t	Percent of district lettuce marketed each month
January	2189	15
February	2457	15
March	1861	14
April	1510	12
May	1276	5
June	1293	0
July	1556	0
August	1600	0
September	1517	0
October	1460	8
November	1259	14
December	1336	17

The average yields and prices used for some key crops are shown below. The price used for brassicas was further adjusted to reflect the proportion of each commodity grown in the Region, within the brassica group (broccoli, broccolini, cabbage, cauliflower and Chinese cabbage). Likewise stonefruit prices were adjusted for apricots, nectarines, peaches and plums.

Crop	Average Yield * (t/ha)	Price \$/t #
Apples	41	2,385
Stonefruit	24	3,129
Pears	50	1,704
Wine grapes	5.5	1,250
Table grapes	10	2,000
Tomatoes	62	3,533
Capsicums	35	2,866
Brassicas	28	2,069
Lettuce	35	1,551
Baby-leaf	4.5	6,354
Celery	30	1,123
Beans	7	4,103
Cucurbits	15	2,281
Potatoes	8	1,213
Parsley	6	8,389
Strawberries	10	9,360

* crop grown, harvested and sold

after adjustment for proportion sent to processing or secondary markets.

Appendix 3. References

Banks, A. (1995) Survey of Horticultural Production in South Queensland. Qld Department of Primary Industries, Applethorpe.

Ledger, S. N. (1980) Horticulture in the Granite Belt. July-August Queensland Agricultural Journal.

Market Information Services (2011) Prices and Throughput for the Brisbane Market 2011.
www.marketinfo.com.au.

Tancred, S. J. (2001) Horticultural Production and Water Use in the Stanthorpe Shire. Orchard Services.

Wills, A. K. (1976) The Granite and Traprock Area of South-East Queensland – A Land Inventory and Land Utilisation Study, Division of Land Utilisation, Technical Bulletin No. 13, QDPI, Brisbane.