

## **Coordinate the collection of reliable information for industry on the economic fundamentals of growing major wildflower crops in Australia**

### **Model Flower Farm Scenario to calculate the cost of production**

#### ***Background***

This was a subproject of the RIRDC project PRJ006760 ‘Capacity Building and Communications Enhancement of the Wildflower Industry’.

It aimed to address the following project goal within the project: ‘To coordinate the collection of reliable information for industry on the economic fundamentals of growing major wildflower crops in Australia’.

This project was devised in response to the observation by many in the industry that much of the flower production is traded at costs below the cost of production. Growers also seem to feel disempowered to negotiate sustainable and profitable prices due to the fact they have not accurately costed the product from their own farm.

The purpose of this project was to calculate the cost of production of 10 common wildflower crops including both native Australian and South African species. These are a subset of the 30 most traded wildflowers. These crops cover a range of plant types, from woody shrubs like Protea, waratah and Banksia, smaller shrubs like waxflower, and more short term crops like flannel flower and kangaroo paw. The woody shrub crops generally require a longer establishment period (of 3-5 years) before significant quantities of harvestable product are available, but they tend to have a longer economically productive life. Flannel flowers and kangaroo paws are likely to yield harvestable stems more quickly (within 6 to 18 months of planting), but generally need to be replaced after 5-7 years.

There are many different scenarios for flower farms in Australia, ranging from the smallest part time operators who supply their local customers with stems from a single crop to the largest dryland based farms providing nearly year round supply of products to Australian and international markets.

#### ***Method***

The challenge with this project was to devise a standard model farm which can provide business operators with a starting point from which they can move forward to calculating their own cost of production. The model farm is defined below and all data has been adjusted to fit this scenario. The model farm aimed to define a sustainable business that would employ one person working full time to grow the crops and a part time person to carry out the administrative tasks and bookkeeping. In reality a selection of seasonal crops would need to be produced on a single property to ensure that the grower is productively employed for most of the year. If five crops were selected, then each of these crops would use on average 20% of the growers time and 20% of the cost of owning the assets and maintaining the equipment. To simplify the calculations it was decided to focus on one crop at a time for the purpose of building a model to calculate the cost of producing a stem of a particular crop.

The project used the Cut Flowers and Foliage Whole Farm Economic Decision Tool, usually known as the Cost Calculator (CC). This Excel based spreadsheet was created by Bill Johnston, Principal Agricultural Economist who works for DAFF Queensland. The spreadsheet was created for FAQI and funded by FAQI funds with a contribution from Horticulture Australia Ltd.

This is a tool that can be used to achieve many different outcomes. Examples of potential outcomes include:

Annual Production (stems)

Total annual gross revenue and per square meter

Total annual production cost and per square meter

Average production cost per stem

Average revenue per stem

Total hectares of plants

Total casual hours employed

Total FTE's (full time equivalent employees)

Like most tools we use, it is important to first decide the purpose for which the tool is to be used. For this project, the tool was used to calculate the “per stem” cost. This was derived from the “average production cost per stem”. To achieve this result, one crop, with a specific product, and shipped to a specific market was used. This scenario allowed a reasonably accurate result to be achieved. However, the tool can also be used to model a whole farm operation with a mix of crops should one wish to calculate, for example, the total FTE's required to operate the business.

The model farm was based on a 1 full time business owner who manages and maintains the farm year round, not including the harvesting workload. The size of the farm varied, depending on the location and the variety of crops selected. For the purpose of this model, it was assumed that a sufficient number of crops were selected to yield harvestable stems spread over most of the year, with no or little overlap between crops. The model farm has all the facilities that would normally be required to deliver products that meet the Australian wildflower quality specifications for these 10 products (see Table). These facilities are discussed in more detail in *Postharvest Handling of Australian Flowers from Australian Native Plants and Related Species. A Practical Manual*. Second edition by John Faragher, Bettina Gollnow and Daryl Joyce November 2010 (<https://rirdc.infoservices.com.au/items/10-027>).

The Project Leader contacted various growers who volunteered their time and knowledge for each specific crop. By phone interviews, these growers provided information that allowed the spreadsheet to calculate the per stem price for the crop. The phone interview was carried out at a convenient time to allow a thorough discussion to occur covering each of the critical elements in the spreadsheet that have a significant impact on the calculation of the per stem cost. All growers provided reasonably accurate information and it was stressed by the Project Leader that the purpose of the spreadsheet and the model that was being created was to provide a starting point for other growers to calculate their own costs. This project now provides them with a reasonable basis to easily modify the model to reflect their own business. Most growers had crops that were more or less than the 1FTE size of the model farm. The critical question that needed an answer was how many plants/bushes one qualified person can maintain, not including planting, harvesting, processing, shipping and administration/bookkeeping.

The CC spreadsheet uses the following tabs or headings to organise the information:

- Property Setup
  - Total farm area
  - Plant Type
  - Cost of each plant
  - Growing Method – In-ground or in Pots or Bags
- In-Ground Establishment
  - Land Preparation
  - Planting Costs
  - Irrigation Setup

- Pot Establishment
  - Pots and Bags
  - Media
  - Irrigation Setup
  
- Up to 8 different species or 8 products from one species or a combination of both.
  - Development Profile
  - Production Parameters
  - Annual Growing Costs
  - Harvest and Packing Costs
  
- Production Summary
  - Farm Production
  - Stem Production – Export
  - Stem Production – Domestic
  - Growing Cost Summary
- Domestic Sales
  - Price Structure
  - Shipment details
  - Domestic Chain
  
- Export Sales
  - Price Structure per Stem
  - Export Details
  - Export Chain – Air Shipment Costs
  - Export Destination Costs
  
- Labour
  - On Costs (% of weekly wage)
  - Casual Employees
  - Permanent employees
  - Administration
  - Farm Manager
  
- Capital Expenses
  - Buildings and Infrastructure
  - Greenhouse Structures and Fittings
  - Vehicles and Machinery
  - Farm Irrigation – In Ground
  - Farm Irrigation – in Pots/Bags
  - Replanting ( Rootstocks and Planting Costs)
  - Other Equipment
  
- Operating Expenses
  - List of operating Expenses
  
- Summary
  - Output Summary
  - Cost structure summary
  - Economic Indicators
  
- Risk Analysis

***The Model Farm Scenario***

For this scenario, it was decided to use a paid one person (one Full Time Equivalent (FTE)) enterprise with some paid administrative assistance and sufficient casual workers to carry out the harvesting of the flowers or stems as well as their grading, bunching and packing ready for despatch to market. This is the basis for many flower industry businesses and equates to a couple who are starting on a wildflower business journey and aiming to achieve a sustainable income which will allow them to expand and employ more staff and/or contractors to take on specialist tasks (like marketing, sales, pest identification and management, etc) in the future. However, there are many businesses that are less than a FTE while others are more than one FTE.

Customers of flower growing businesses will most likely not be very concerned about the size of the business. Rather they are likely to be more concerned about the quality and presentation (such a bunching) of flowers, reliability of supply, quality of service, price, variety or range of product available from the supplier. The CC is a tool that allows a business to calculate the per stem price for a specific crop that is produced to the specification (as listed in the Appendix) that will be delivered to a specific market.

For the purpose of this model the following information is used:

#### Cost of labour and on-costs

- Owner or Farm Manager – 1 FTE
- Farm Manager Salary, based on a Certificate Level 3 Horticulturist
- Administration support - 0.1 FTE, based on a Level 3 Administrative Assistant
- There no permanent employees
- The number of casual employees is based on the workload of the number of stems per bush produced
- Labour costs are based on the casual rate
- On-costs include the following: super (9% of salary) and WorkCover (2.54% of salary)

#### Crop and production system

- For each farm, a selection of crops was chosen to provide almost year round production, with no overlap between crops
- Number of bushes on the farm – 10,000 for crops like Waratah, Christmas Bush, Banksia, Protea; however, this may vary based on the experience of growers of a particular crop
- All the crops are grown in-ground in the open air and without protection, with the exception of flannel flowers
- The crop is grown to the standard identified in the relevant Australian wildflower quality specification and the post harvest manual
- The farm is operated to a standard that is recognised as Best Practice as outlined in the Best Bunch publication

#### Farm operations, assets, repairs and maintenance




- Value of assets on the farm - this generates a depreciation amount of \$10,000 p.a.
- Annual operating expenses of \$20,000
- Irrigation is supplied to the crop (T tape or drippers), allowing the crop to be irrigated from a reliable water source. The irrigation line can be used for fertigation if required
- The soil is tested annually to ensure that soil health is maintained or improved
- The water is tested annually to ensure it meets water quality specifications
- Mulch is used to suppress weeds and to provide an optimum soil environment where necessary

#### Product selection and shipping

- Product is shipped (road freight) to Sydney for sale and distribution
- A specific stem length is identified for each crop

This model does not include a market price for the product from the farm as this does not influence the production cost to a significant extent. The CC can calculate profitability were a specific business to enter sale prices for the products they produce.

**Table: Crops for which the per stem cost of production was calculated**

Flower image	Flower common name	Flower botanical name	Web address of relevant quality specification
	Flannel flower – grown under cover	<i>Actinotus helianthi</i> (Flannel flower)	<a href="https://rirdc.infoservices.com.au/items/10-028">https://rirdc.infoservices.com.au/items/10-028</a>
	Kangaroo paw	<i>Anigozanthos</i> ‘Bush Dawn’	<a href="https://rirdc.infoservices.com.au/items/10-029">https://rirdc.infoservices.com.au/items/10-029</a>
	Scarlet Banksia	<i>Banksia coccinea</i>	<a href="https://rirdc.infoservices.com.au/items/10-032">https://rirdc.infoservices.com.au/items/10-032</a>
	Christmas bush	<i>Ceratopetalum gummiferum</i> ‘Albery’s Red’	<a href="https://rirdc.infoservices.com.au/items/10-038">https://rirdc.infoservices.com.au/items/10-038</a>
	Waxflower	<i>Chamelaucium</i> ‘Purple Pride’	<a href="https://rirdc.infoservices.com.au/items/10-039">https://rirdc.infoservices.com.au/items/10-039</a>
	Safari Sunset	<i>Leucadendron</i> ‘Safari Sunset’	<a href="https://rirdc.infoservices.com.au/items/10-045">https://rirdc.infoservices.com.au/items/10-045</a>
	<i>Leucospermum</i> Example: ‘High Gold’ Or ‘Tango’	<i>Leucospermum</i> ‘High Gold’  <i>Leucospermum</i> ‘Tango’	<a href="https://rirdc.infoservices.com.au/items/10-047">https://rirdc.infoservices.com.au/items/10-047</a>  <a href="https://rirdc.infoservices.com.au/items/10-048">https://rirdc.infoservices.com.au/items/10-048</a>
	King <i>Protea</i>	<i>Protea cynaroides</i>	<a href="https://rirdc.infoservices.com.au/items/10-050">https://rirdc.infoservices.com.au/items/10-050</a>
	Waratah	<i>Telopea speciosissima</i>	<a href="https://rirdc.infoservices.com.au/items/10-056">https://rirdc.infoservices.com.au/items/10-056</a>
	Thryptomene	<i>Thryptomene calycina</i>	<a href="https://rirdc.infoservices.com.au/items/10-057">https://rirdc.infoservices.com.au/items/10-057</a>

### 1 FTE Model Flower Farm Scenario to help to calculate the cost of Production - Summary of main cost items

ID	Crop	State	Property Setup			Production Rate	Production potential	Main Production Costs (AUD)									Average Prodn Cost
			Number of plants	Cropping area Ha	Growing system			Total FTE's	Av. stems per plant per year	# of seasons	Crop establishment costs per stem	Growing costs per stem	Harvest & pack.	Freight and market	Labour	Fuel, oil, repairs & maintenance	
1	Banksia coccinea	VIC	15000	4.5	In open field	3	15	6	\$0.03	\$0.07	\$0.17	\$0.01	\$0.26	\$0.02	\$0.10	\$0.17	\$0.83
2	Waxflower - Purple Pride	VIC	15000	7.88	In open field	5	71	3	<\$0.01	\$0.01	\$0.10	\$0.01	\$0.05	<\$0.01	\$0.01	\$0.02	\$0.20
3	Kangaroo Paw - Bush Dawn	QLD	15000	4.5	In open field	6	24	3	\$0.01	\$0.10	\$0.38	\$0.04	\$0.16	\$0.01	\$0.06	\$0.07	\$0.83
4	Christmas Bush - Albery's Red	NSW	10000	6	In open field	7	24	3	\$0.02	\$0.07	\$0.78	\$0.01	\$0.24	\$0.01	\$0.03	\$0.08	\$1.24
5	Waratah	NSW	10000	6	In open field	3	6	3	\$0.15	\$1.23	\$0.46	\$0.07	\$1.02	\$0.06	\$0.22	\$0.59	\$3.80
6	Leucodendron - Safari Sunset	WA	15000	12	In open field	5	71	3	\$0.01	\$0.01	\$0.12	\$0.04	\$0.05	<\$0.01	\$0.01	\$0.02	\$0.26
7	King Protea	NSW	10000	3	In open field	3	5	4	\$0.13	\$0.15	\$0.69	\$0.04	\$1.14	\$0.07	\$0.44	\$0.73	\$3.39
8	Leucospermum	WA	15000	7.2	In open field	7	25	5	\$0.03	\$0.24	\$0.46	\$0.03	\$0.15	\$0.01	\$0.04	\$0.13	\$1.09
9	Flannel Flower	NSW	20000	0.25	In pots under cover	3	12	2	\$0.02	<\$0.01	\$0.11	\$0.01	\$0.24	\$0.01	\$0.06	\$0.12	\$0.57
10	Thryptomene	VIC	15000	6.3	In open field	4	43	3	<\$0.01	\$0.01	\$0.11	\$0.01	\$0.09	<\$0.01	\$0.02	\$0.02	\$0.26

### ***Recommended reading***

'Getting Started in Wildflower production – how to grow Australian and South African species for the cut flower market', by Bettina Gollnow, with contributions from industry experts Ross Worrall, Jonathan Lidbetter, Len Tesoriero, David Wood and Bill Yiasoumi. 155 pages. RIRDC publication (2013). See <https://rirdc.infoservices.com.au/items/12-090>

'Wildflower Irrigation Handbook', Denyse Corner. 92 pages.  
See <https://rirdc.infoservices.com.au/items/12-015>

'Growing Flannel flowers for the cut flower market', by Ross Worrall. 58 pages. See <https://rirdc.infoservices.com.au/items/12-088>

'Growing Christmas bush for cut flowers', by Ross Worrall and Paul Dalley. 73 pages. See <https://rirdc.infoservices.com.au/items/12-089>

'Growing Christmas bush for cut flowers', by Ross Worrall and Paul Dalley. 73 pages. See <https://rirdc.infoservices.com.au/items/12-089>

'Growing Waratahs for cut flowers', by Ross Worrall and Bettina Gollnow. 87 pages. See <https://rirdc.infoservices.com.au/items/12-087>

'The cut flowers best practice guide' (also known as the 'best bunch' program) - Flower Association of Queensland Inc publication (2011). See <http://www.flowersqueensland.asn.au/index.php?>

'Postharvest Handling of Australian Flowers from Australian Native Plants and Related Species - A Practical Manual' [2nd edition 2010]. John Faragher, Bettina Gollnow and Daryl Joyce.  
See: <https://rirdc.infoservices.com.au/items/10-027>

'The cost and profit calculator for cut flower growers', Flower Association of Queensland Inc. (2009).  
See <http://www.flowersqueensland.asn.au/index.php?>