In a recent report by Griffiths (2010), it is noted that there has been a shift from many small farms to fewer, larger farms. This is due to economies of scale, which describe spreading overhead (fixed) costs across additional land or vegetables produced. These overhead costs include:

- Management skill (labour)
- Marketing skill and sales costs
- Machinery ownership costs
- Accounting costs
- Insurances and rates
- Registration and licensing costs

When a vegetable farm increases the area cropped, or tonnes produced, the costs listed above do not usually increase. The result is that each tonne of product is produced slightly cheaper, and there are more tonnes to sell. This can mean more profit for the business!

In addition to this information sheet, an excel calculator tool has also been developed to help growers assess the impact to individual businesses from increasing economies of scale.

There is a carrot and a stick associated with economies of scale. The carrot is that there is an opportunity for additional profit through expansion and more efficient use of resources and fixed cost inputs. The stick is that if businesses (farms) do not expand over time, then the historical levels of production cannot generate enough profit for that family business, as the price of inputs continue to increase.

Key Messages

- The farm was big enough in the previous generation to make a living, but it can't at the moment
- The costs just keep going up and there is no more money coming in
- All the machinery is old and worn out and needs to be replaced, but I can't afford to
- The bank debt continues to rise and the equity levels are declining
- The only way we can survive is through off farm income

These statements may be symptomatic of other issues, but typically they represent a farm or vegetable business that was once appropriately scaled and profitable, but has not continued to grow and become more efficient over time to maintain an appropriate scale and profit.
Is bigger always better?

There are many examples in agriculture of large businesses that have failed. Before expanding a farm or a production system is it important that the existing farm is profitable. If an unprofitable farm is expanded, it will become more unprofitable.

Larger farms can also have more debt and be subject to new market and contractual risk. Before expanding the farm consider:

- Is my farming system profitable?
- Should I remain at the same size for a period of time and improve my profit and systems before expanding?
- How can new risks be managed with increased production?

How have other businesses improved profit with economies of scale?

It is useful to examine other businesses to see how they have improved their profitability and performance. The following examples are useful as they show how businesses have improved economies of scale to create more profit.

AJ Allan Pty Ltd – Potato merchants

AJ Allan Pty Ltd is a seed potato grower, potato storage facility and potato merchant producing approximately 11,000 tonnes each year in Scotland. The business has grown and expanded over two generations, albeit with a unique business model that captures economies of scale.

The potato production business uses long-term leases to access land for growing crops. The business has highly developed production systems, skilled staff and a good level of mechanisation, so work on the farms happens in a timely and cost effective manner.

The amount of land required to achieve the level of production required by AJ Allen is significant and also comes at a high cost due to the now expensive agricultural land in the UK. It is not possible for AJ Allen to own this area of land, but by leasing it, AJ Allen were able to achieve economies of scale across a large area and grow a significant seed crop. (half the size of the total potato seed crop in Tasmania!)

AJ Allen is able to use its machinery, production systems, management skill and marketing skill to create profit by applying these costs (and skills) to large areas and a large potato crop. The result is modest costs of production, and highly skilled staff who can manage and market the crop creating a low cost of production and high market prices for potatoes, which results in improved profit.

Tasmanian Machinery Ring Cooperative Society Ltd

The Tasmanian Machinery Ring Cooperative Society Ltd (TMR) was established in 1993 to provide access to machinery and services for 120 members. The TMR owns plant and machinery that is rented out to growers. This saves growers the cost of ownership, and repair and maintenance costs. If a grower does not have sufficient scale to require a large tractor, planter or harvester, then this large efficient technology can be accessed via rental from the TMR.

Machinery rings can have different models. Some models have the ring (entity) owning machinery, other models are where the members of the ring own various tractors and implements, and provide contract services to each other. Regardless of the specific model adopted, the purpose is to achieve economies of scale by using good efficient machinery on the largest area possible.

New tractors, harvesters, sprayers and planters have improved capacity and can cover a large area in shorter periods of time. However, new machinery comes at a significant capital cost and needs a large area of land to justify the acquisition. One way to acquire new technology and achieve the benefits of planting, harvesting or spraying more quickly is to share the equipment in a business relationship similar to a machinery ring.

The approach of using good equipment productively over a large area can reduce costs and keep cost of production down. This is possible when individual farmers do not have sufficient area to justify the acquisition of the latest technology equipment.
How can I profit from economies of scale?

In many cases increasing economies of scale leads to greater profitability. However, each business needs to understand if and where increasing scale can improve profit.

1. Understand the market

The starting point for assessment of economies of scale is to understand the market(s) for the business. What is the demand for each crop and is there opportunity to supply more product(s) into that market place? If demand exists for the produce and purchasers are willing to take additional product without significantly impacting the sale price, or purchasers are looking to buy from fewer, larger producers, then it is likely that there is a good opportunity to enhance economies of scale.

2. Review the Gross Margins

Vegetable farms in Tasmania typically produce a number of crops including onions, potatoes, vegetables, poppies, py-rethrum, cereals and livestock. The simplest and best way to understand the profit impact of economies of scale is to examine the gross margins of each crop. The gross margin business-planning tool on the ‘Wealth from Water’ web page is useful to quickly understand the opportunity to expand a crop type and achieve economies of scale.

If any of the crops have a negative gross margin, then consider ceasing that activity. Where an enterprise has a positive gross margin, then that crop may receive an advantage from increasing production over a larger area. Focus on expanding the crops with the better gross margins, however be aware that in a crop rotation system there will be a requirement to expand all the crops used in the rotation. Therefore, look at the total gross margin from that rotation.

3. Consider capacity constraints

Consider the limits of production in the existing business. What are the mechanical, labour, land or technical resources that are limiting further production? Questions that might be useful include:

- How much time is involved in selling additional crop?
- Can my grading or packing shed meet the additional throughput?
- What is the maximum area that the existing machinery can harvest or plant?
- What is the cost of growing an additional area of crop? (i.e. cashflow impacts)
- How much additional land area can my existing staff, or equipment or water entitlement service?

4. Consider additional costs

For each of the capacity constraints listed above, consider the additional cost of upgrading each item, and then what additional production can be achieved by improving those capacity constraints. Where the costs are less than the additional gross margin generated per tonne or per hectare, then expanding scale to produce more will create additional profit for the business!

References


Tools and further resources

An excel CALCULATOR has been developed to allow a rapid assessment for options to improve economies of scale. Further resources available that may be useful to consider economies of scale include:

- Collective Marketing - Selling vegetables profitably!
- Land Leasing
- A New Business Structure - The options and benefits
- Collaborative Business Models
- Legal Business Structures

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