Theme: Managing farm business

CLOUD BENCHMARKING FOR FARM MANAGEMENT

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CLOUD BENCHMARKING FOR FARM MANAGEMENT

Abstract

Benchmarking is used widely in farm management helping managers identify key opportunities for business improvement.

The Farmanco Profit Series is a numbered benchmarking service. Each number represents a farming business. The detail of each business can be followed on each graph, enabling detailed comparisons from capital position through to machinery investment, enterprise mix, variable costs, production and profit of each enterprise.

This benchmarking service is provided via an on-line portal to all growers in Australia, and by default has worldwide implications. This has become a new layer in BIG DATA, although the output is only available to those contributing data. A key concern with benchmarking and big data is data security, which has been addressed through client facing password protection and backend encryption.

Another key concern with benchmark data is being thoroughly checked and accurate. This portal has tolerances and flags for all measures highlighting areas that may be inaccurate or need to be checked by professional staff.

The key step-change for farm managers is that this benchmarking service is accessible from a smartphone or office computer simply by contributing data into the portal. Feedback in many forms is available on an almost instantaneous basis once data is submitted.

Keywords: Farming, Benchmarking, Profit, Big Data, Numbered Graphs, Accuracy

Introduction

About Farmanco

Farmanco has provided farm management consultancy services since its inception in Dowerin, Western Australia in 1978.

Today, the business has 25 consulting staff with service delivery in:

a) Farm Management Consulting;
b) Agronomic Consulting;
c) Grain Marketing Consulting; and
d) Precision Agriculture Services.

The business has farm management consultants servicing most states of Australia, predominantly in the mixed farming zones including irrigation and dryland farm businesses.

The Profit Series

The Farmanco 'Profit Series' is a benchmarking service that has operated for over 20 years in Australia. It has traditionally been a dryland and mixed farming benchmarking set for over 280 clients.

In our business we had a standardised analysis approach to our farming businesses where overall business performance is measured alongside each enterprise in the business down to the profit level after interest but before tax.

This has provided a powerful data set for those contributing clients but also, over time some contribution to industry level benchmarking.

The Innovative "Numbered Series"

The 'Profit Series' underwent a significant transformation through a relationship with the IFMA. Prior to the 2002 Netherlands Congress, I travelled with an IFMA friend Henning Krabbe, in Denmark and saw a benchmarking service used by piggeries where the sows were individually numbered. This was the basis for a move to a numbered benchmarking system for farms.

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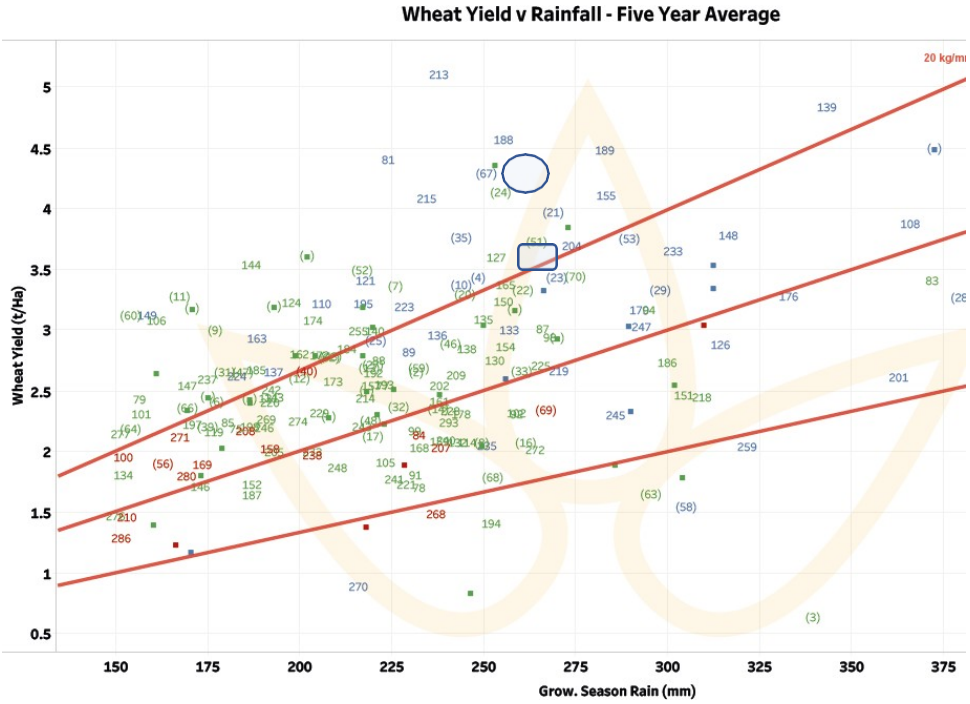
The use of a farm numbering system is a leading feature. A rank of "1" is the ranking number showing the most profitable farm on a Return on Farm Assets Managed (ROAM) basis over a five-year average.

The five-year average is important because it allows a contributor to benchmark against consistent performers. A new contributor could enter five years of data or just complete the current year in which case the missing years would be allocated the dataset average until the participating business has five years of information.

ROAM allows for the inclusion of the capital value of leased properties in its return which are not accounted for in the simpler Return on Capital (ROC) measure.

One of the main reasons why the numbered system is so valued by member contributors is that it a much greater ability to compare like for like. For example:



In this yield graph, let's assume you are ranked 127 (the box). You can see that number 67 (circled) has achieved around 800kg/ha more wheat yield for the same rainfall – why? A follow up question to ask might be: "what cropping percentage is this grower compared to my farm?". To answer this, lookup the crop percentage graph and find number 67.

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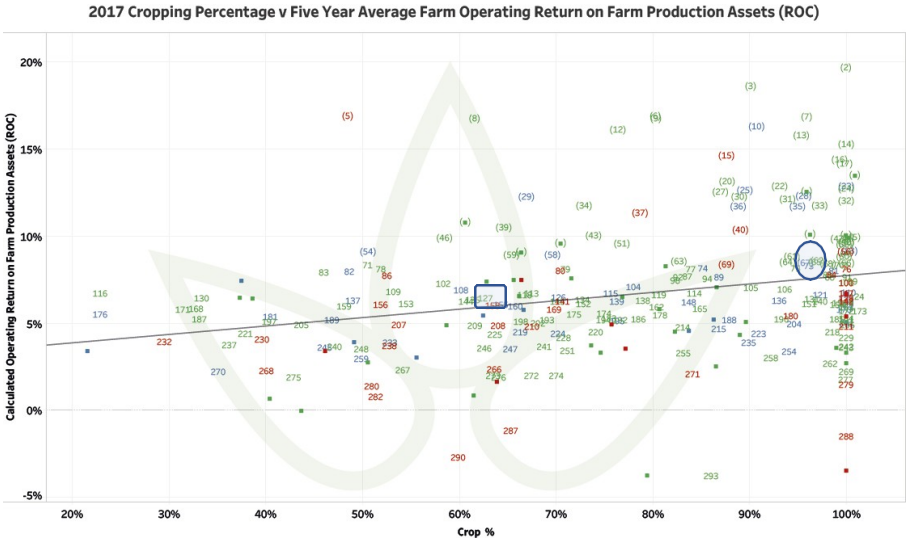

The discovery that the comparison business has a significantly different rotation may adjust your reliance on this comparison.

In the same way, you could also consider, for example, the machinery investment graph or the wheat variable cost graph as each of these layers will give an even deeper understanding of the comparability of your business to that farm. There are over 70 such layers in the annual Profit Series.

The numbered series has coloured numbers to depict rainfall zones and bracketed numbers highlight those in the top 25%. This gives contributors the ability to benchmark performance not only in their own rainfall zone but also in different rainfall zones – how effectively is water being used?

Interestingly, the representation of the top 25% is almost uniform across all rainfall zones, implying that rainfall is not the biggest driver of ROAM (as we all know, the biggest driver is management!).

Cloud based Portal

The step-change in this style of benchmarking is that this same benchmark data is now instantaneously available to any contributor, anywhere in the world.

At this stage, the Farmanco Portal is focussed on Australian contributions, but with our current consideration of currency exchange and imperial to metric conversion layers, this portal will be available on a world-wide basis within two years.

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With all cloud-based systems, the safety of data is a primary concern. Client access to the data that is provided, and the output, is available through cloud encryption with the only access point for individuals via their password and user name.

Ownership of data is also an issue to be considered. Data that is able to be identified as an individual is owned by the individual. Once data is combined into an average and unable to be identified as an individual's data, then this is owned by Farmanco. This is covered by a client privacy agreement prior to the start of data entry.

To this end, data can only be published by Farmanco if it is not possible to be identified back to an individual.

Contributing Data

1. Collection

The collection of data can be entered in a number of different ways:

a) A farm manager may have their own log-in and fill out the data.
b) A consulting firm can have a log-in and are able to retain the confidentiality of a group of their clients being added into the portal (Consulting Firm Client 1; Consulting Firm Client 2 etc). This enables the consultant to deliver a high-quality benchmarking service to a group of clients with the background data of the whole data set.
c) Financiers, accountants and grower groups have also shown an interest in this format outlined at b) as it enables them to deliver additional services to their members.
d) An existing client of Farmanco will feed data directly into the benchmarking service.

Support is provided by phone access to growers who are entering data. Where available, growers can pay an additional cost to be supported on farm.

While comparisons of performance at the whole business level are comparable in any location, the power of enterprise analysis comparison is only really valuable when you have a solid data set in the region in which you live. In this way it is important to encourage those businesses that you would value a comparison with, to lodge their data also so that you can influence the usefulness of the analysis for your business.

The portal is compatible with a number of software suppliers including Agrimaster and Xero but we are also working with others so that financial data can be imported directly rather than being entered manually.

The portal is designed to work in areas with poor internet speeds; many primary industry businesses operate in areas where internet coverage is patchy. The portal utilises the computers local cache which works off-line so that intermittent internet is not a problem. When the internet connection is restored the server accesses the local cache and retrieves data not previously received. This also limits data usage as the entire file is not being retrieved each time.

Where a service business provides a data set, training is also provided to assist that service business in accurate data collection.

Data Integrity

One of the biggest obstacles to detailed on-line benchmarking is data integrity, i.e. has the data been compiled the same way?

Data integrity can be broken down into two areas:

a) Is the raw data accurate? The raw data is checked for integrity on the way into the portal. During the data entry process values that are outside of an expected tolerance are highlighted, enabling the user to check and re-enter if necessary. For example, a wheat yield of 20t/ha is not yet known to be possible! Was this because the wheat area was entered wrong, or the harvested tonnes was not correct?
   When all the data is entered and the submit button is pressed, the portal will return a list with any items outside a normal range. This is broken down into two types:
   i. A fatal error - cannot submit the file. To produce an appropriate benchmark, the portal needs certain data such as a shire name, rainfall band or not have impossible outputs such as an impossible yield. This data needs to be completed or corrected before the portal will allow the data to be submitted.
   ii. Non-fatal error – can submit the file. Data may be outside a tolerance range. It is not what would be expected but the user is able to check and confirm the data is accurate and correct (i.e. interest rate at 15% might be correct even when the portal expects that it should be closer to 5%).
b) Is calculated data accurate? Some data will be entered through an API (Application Programming Interface). Has any calculated data been calculated in the same way as

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the portal? The same data integrity checks are applied to calculated data as they are to the raw data.

1. Database Analysis

Once the data is accepted into the database, then the averages for the individual measures are calculated, including the ranking numbers. The portal is available 24 hours a day 7 days a week meaning that the data set is live. So, the ranking numbers change on an ongoing basis as new contributor's log onto the system.

Farmanco does, however, publish yearly a printed book for comparative purposes (available on our website Farmanco.com.au) with further editions through the year to different groups, as required.

The power and flexibility of the portal and supporting database allow for ranked benchmarks to be produced by any measure. Farmanco's benchmark ranks contributors by ROAM; the benchmark could easily be ranked on crop yield, kgs of meat produced or carbon emissions per hectare, head, dry stock equivalent or mm of rainfall.

2. Output Graphics

This is provided by a linked output graphics program so that there is no delay in providing output graphs once the data has been entered, checked and cleared.

At this stage, the output is provided in a pre-determined configuration for most measures that we think businesses would like to compare.

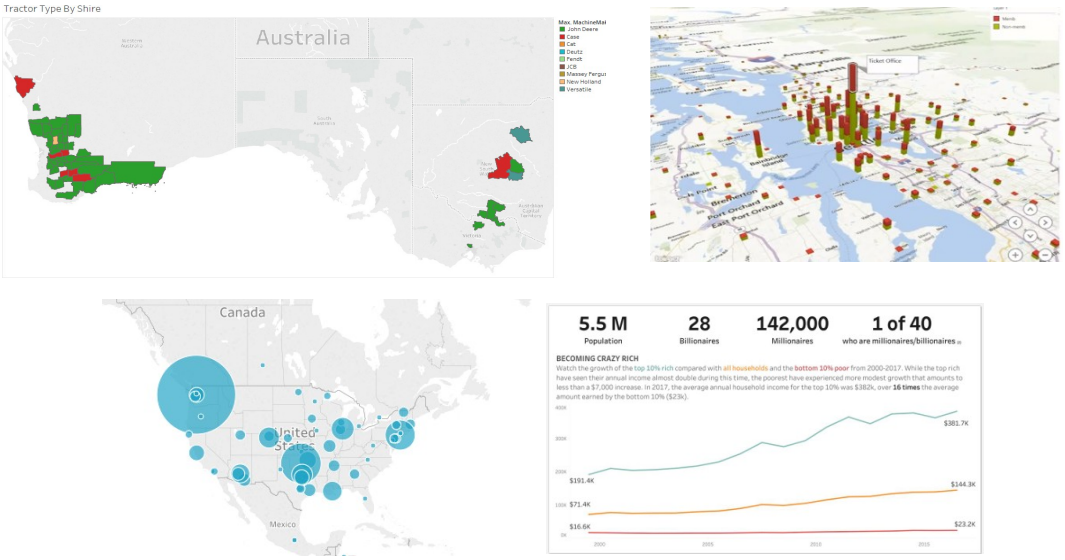
However, clearly, the data is able to be represented in an almost infinite different number of ways and special requests can be considered.

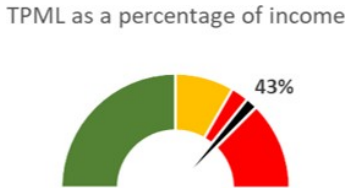
With data sets larger than 50 clients, subset graphs and reports can be provided. For example, a bank might like to compare its clients and their performance to the overall performance of businesses in their area.

Alternative Data Representations

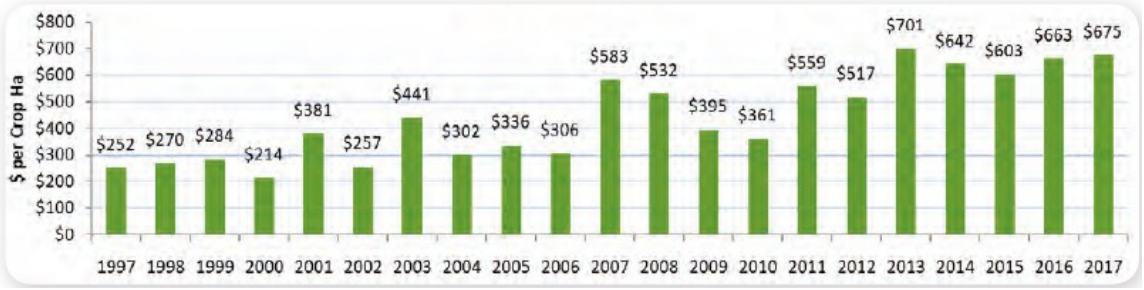
With the portal being directly linked to a visualisation software package, there are many ways that data can be represented:

Geographically:





TPML (Total Plant, Machinery & Labour) is a measure used to compare machinery and labour utilisation between 'contract' and 'owned' farm operations.



Profit Series 2017		Low Rainfall			Medium Rainfall			High Rainfall			All Clients				
Business Cost Indicators	Actuals 2017	Lower 25% 13 Clients	Average 51 Clients	Top 25% 13 Clients	Lower 25% 44 Clients	Average 176 Clients	Top 25% 44 Clients	Lower 25% 17 Clients	Average 66 Clients	Top 25% 17 Clients	Lower 25% 73 Clients	Average 293 Clients	Top 25% 74 Clients	0's	No.
As a % of Calculated Farm Income															
Crop Receipts	(%)	64%	78%	84%	81%	83%	91%	59%	71%	79%	72%	79%	88%	Y	293
Livestock Receipts	(%)	22%	14%	10%	14%	13%	6%	33%	23%	16%	20%	16%	9%	Y	293
Operating Variable Costs	(%)	**142%**	**96%**	**78%**	**66%**	**57%**	**52%**	**52%**	**52%**	**52%**	**77%**	**63%**	**54%**	Y	293
Overheads	(%)	33%	18%	13%	10%	8%	6%	11%	8%	6%	15%	10%	6%	Y	293
Personal Costs	(%)	22%	15%	14%	9%	7%	6%	8%	6%	5%	11%	9%	6%	Y	293
Machinery Capital	(%)	38%	22%	17%	12%	12%	12%	19%	13%	8%	18%	14%	12%	Y	293
Infrastructure Capital	(%)	1%	1%	2%	1%	1%	2%	1%	2%	4%	1%	1%	2%	Y	293
Operating Fixed Costs	(%)	**60%**	**37%**	**33%**	**21%**	**21%**	**19%**	**27%**	**20%**	**17%**	**30%**	**24%**	**19%**	Y	293
Finance (less wheat loan costs)	(%)	15%	10%	6%	8%	6%	3%	11%	7%	6%	10%	7%	4%	Y	293
Farm Lease	(%)	3%	4%	4%	3%	3%	5%	3%	4%	7%	3%	3%	5%	Y	293

A range of different data presentations help to more quickly identify areas of opportunity for the business to explore. It also accommodates those who learn or read differently – some people naturally identify with charts and some are better with tables.

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Conclusion

- Benchmarking is an important component of running and managing a farm business.
- In the past, benchmarking data has been slow and expensive to accumulate and often untimely with regards to useful changes to the business on a seasonal basis.
- With a cloud-based portal for benchmarking, this type of analysis is available to every farm business with a computer in Australia and the same portal format will be available on a world-wide basis.
- Importantly, the output feedback is available immediately so that actions can be taken on a seasonal basis to target strengths, weaknesses, opportunities and threats.
- Data integrity is vital, so automated error identification is a key.
- Service providers can also access the portal for a confidential group of contributors to maintain their own client confidentiality.
- Ultimately, the more successful a platform like this is, the more useful it becomes.

BIG DATA is coming quickly to agriculture. The number of platforms or layers of information is increasing. We are all concerned about data integrity.

The potential gains for the farm business however, through this knowledge are significant. This process breaks down the barriers of traditional confidentiality by providing security and safety of data but enabling you to see the true performance of other businesses, not just at the business level but also at the enterprise level.

Of course, you won't be able to identify the owners of other data sets, but you will be able to narrow down enough to know if they are a reasonable comparison to your own business.

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