



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



What Should My Farm Benchmark?

Michael Langemeier

Center for Commercial Agriculture
Purdue University

September 7, 2018

farmdoc daily (8): 167

Recommended citation format: Langemeier, M. "What Should My Farm Benchmark?" *farmdoc daily* (8): 167, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 7, 2018.

Permalink: <https://farmdocdaily.illinois.edu/2018/09/what-should-my-farm-benchmark.html>

Benchmarking involves comparisons of a farm's processes and performance measures with past performance, and with best practices and performance measures of other farms. Benchmarking is an important component to a continuous improvement program. Most farms have been benchmarking production performance (i.e., crop yields and animal performance) for years. However, though extremely important to do so, it is less common for farms to compare their financial metrics with past performance and with that of farms with above average financial performance?

Many articles discuss only one or two benchmark measures without considering other measures. This may provide a slanted view of how a farm is performing. Rather than focusing on just one or two measures, this article discusses numerous key production and financial benchmarks. Though important, benchmarks involving best practice comparisons with farms that do a good job with respect to personnel management, marketing their crops, transition planning, or purchasing assets are not discussed in this article.

Benchmarking Steps

The first step when benchmarking is to determine what to benchmark. Farms should start with a relatively short list and then add to the list over time. For example, a crop farm could start by benchmarking crop yields to farms with similar land quality and benchmark the operating profit margin ratio (defined below) with past performance and with farms with above average financial performance. The next logical benchmarks would be other whole-farm benchmarks or benchmarking crop yields and enterprise profitability by field and farm.

The second step when benchmarking is to form a benchmarking team or to pick an individual that is responsible for deciding what to benchmark and making sure that benchmarks are developed in a timely fashion. Farms with multiple employees and operators need to make sure that the individual keeping records communicates with the person responsible for developing and analyzing benchmarks.

We request all readers, electronic media and others follow our citation guidelines when re-posting articles from *farmdoc daily*. Guidelines are available [here](#). The *farmdoc daily* website falls under University of Illinois copyright and intellectual property rights. For a detailed statement, please see the University of Illinois Copyright Information and Policies [here](#).

Identifying benchmarking targets is the third step. This may sound more daunting than it actually is. Most farmers know what productive land in their area is capable of producing or good animal performance levels. Financial performance metrics may not be as readily available, but data from past performance and from farm management associations is often helpful.

The fourth step is collect and analyze data. Having a good set of enterprise and whole-farm records is crucial. Without this information, it will be difficult to effectively benchmark key measures.

The fifth and sixth steps are to take action when benchmarks are not satisfactory and to review and recalibrate benchmark targets. These two steps are the most difficult steps for many farms and businesses. For example, with a good set of whole-farm financial statements (e.g., balance sheet and accrual income statement) it is very straightforward to compute the operating profit margin ratio. It is much more difficult to figure out what to do if the operating profit margin measure is not satisfactory. Profit could be lower than desired for numerous reasons including relatively low yields or prices, or relatively high production costs compared to peers. Despite the difficulty associated with taking corrective action, it is important to remember that this is why we have went to all of the work of developing benchmarks in the first place.

Benchmarking Sources and Methods

Before discussing possible sources of benchmarking data, several previous studies pertaining to benchmarking will be briefly summarized. Langemeier (2013) examined the relationship between expense ratios and economies of size. The economic total expense which includes all cash and opportunity costs, is a good measure of economies of size. The economic total expense ratio is computed by dividing accrual expenses (cash costs, accrual cost adjustments, and depreciation), the opportunity cost on operator and family labor, and opportunity charge on farm equity by value of farm production. A ratio below one would indicate that a farm is covering all accrual expenses and opportunity costs, and thus earning an economic profit.

Mugera et al. (2016) illustrate the large upward shift of the production frontier in the last few decades. Unfortunately, only a fraction of farms are driving this increase in performance. Due to the inability to keep up with farms on the frontier, many farms have seen a decline in relatively efficiency over time. This increases the importance of benchmarking.

Bradley et al. (2018) discuss the moves that have mattered to large global corporations. The authors divided performance levers into three categories: endowment; which includes size, leverage, and innovation; trends; and moves. They found that endowment explained approximately 30 percent and trends explained another 25 percent of corporate success. The important point here is that the endowment lever only explained 30 percent. This suggests that firms that are not the largest, have the most optimal debt position, or have lower levels of historical innovation, can take advantage of industry changes and big moves to improve their performance (i.e., trends). The difference in economic profit was substantial between the firms in the top 10 percent and those in the bottom and middle quintiles.

Sources of data depend on the type of benchmarking a farm is interested in. For internal benchmarking, a farm needs data for their own farm from previous years. For external benchmarking, data from farm management associations and databases (e.g., Illinois FBFM; FINBIN) can be used to benchmark with similar farms. When benchmarking externally, it is a good idea to use data from the top quartile rather than averages. Also, you will not necessarily benchmark each measure separately. Quite often, benchmark data is sorted by measure (e.g., return on assets), and then benchmarks are computed for farms in the top quartile of that measure. To motivate why a farm may want to benchmark using the top quartile of farms for a specific measure, ask yourself the following question. Is it reasonable to try to be in the top quartile with respect to corn yield or feed conversion, and return on assets? Maybe, maybe not.

Production Benchmarks

A farm could come up with numerous, detailed production benchmarks. Here, we will just mention a few of the key benchmarks. For crop farms, production benchmarks would include crop yields, seed and fertilizer use efficiency, and planting dates. Examples of livestock production benchmarks are as follows: feed conversion, average daily gain, pounds of milk per cow, weaning weight, percent calf crop, and eggs per hundred layers.

After a farm has established the key production measures to benchmark, it should make sure that it benchmarks both production and financial measures (discussed below). The reasons for this are obvious. Relatively high production may correspond to relatively high per unit cost. A farm needs to make sure that both production and financial measures are reaching their targets.

Financial Benchmarks

Financial management categories include liquidity, solvency, profitability, financial efficiency, and repayment capacity. The financial guidelines for agriculture published by the Farm Financial Standards Council lists and describes 21 financial ratios that can be used to measure financial position and financial performance.

Our experience suggests that liquidity, solvency, and repayment capacity measures should be benchmarked internally. We will briefly describe at least one measure that can be used for each of these financial criteria. The current ratio is a commonly used liquidity measure. To compute the current ratio divide current assets by current liabilities. The debt to asset ratio is a commonly used solvency measure. The debt to asset ratio is computed by dividing total debt by total assets. Repayment capacity measures include the capital debt repayment capacity, capital debt repayment margin, replacement margin, term debt and capital lease coverage ratio, and replacement margin coverage ratio. Capital debt repayment capacity, capital debt repayment margin, and the term debt and capital lease coverage ratio address a farm's ability to repay operating loans and to cover the current portion of principal and interest due on noncurrent loans such as a machinery, building, or land loan. The replacement margin and replacement margin coverage ratio enable borrowers and lenders to evaluate whether a farm has sufficient funds to repay debt and replace assets. For a farm to grow, it is essential that the replacement margin be large enough to repay debt, replace assets, and purchase new assets. Thus, we recommend that this measure be computed at least annually and monitored over time.

Profitability and financial efficiency measures should be benchmarked internally and externally. Profitability measures include return on assets, return on equity, operating profit margin ratio, net farm income, and earnings before depreciation, interest, and amortization. Financial efficiency measures include the asset turnover ratio, expense ratios, and the net farm income ratio. We typically recommend that farms focus on the operating profit margin ratio (see Langemeier, 2016a; and Langemeier and Yeager, 2018), the asset turnover ratio (see Langemeier, 2016b), and the economic total expense ratio (see Langemeier, 2013). Return on assets can be computed by multiplying the operating profit margin ratio by the asset turnover ratio. Thus, return assets can be improved by increasing the profit margin on each unit sold or by more effectively using a farm's assets.

After benchmarking whole-farm performance, it is logical to benchmark individual farm or field performance. What is the breakeven price and profitability of each crop grown or each pen or group of livestock? If breakeven prices are relatively high and profitability is relatively low, what is holding back performance (e.g., animal health and performance, crop yields, field drainage, resistant weeds, etc.)?

Improving Production and Financial Performance

Successful businesses and managers do not just do one thing better than their peers. Rather, they tend to perform better along several dimensions. This emphasizes the importance of details. This also points to the importance of using multiple production and financial metrics when benchmarks.

In their study of large corporations, Bradley et al. (2018) identified five critical moves that businesses have used recently to enhance profitability. We will briefly discuss all five moves, even though some of these moves may be less relevant to family owned businesses, such as farms. The first move is programmatic mergers and acquisitions. How does your farm evaluate expansion options? Which options are on and off the table? The second move is dynamic reallocation of resources. Are resources such as management time and capital allocated to the most profitable enterprises? Is sufficient time and capital being allocated to new endeavors? The third move is strong capital expenditure. Does your farm routinely evaluate new technology and search for assets for which the benefits outweigh the costs? The fourth move is the strength of your productivity program. Are you measuring labor efficiency and productivity? In particular, how will new technologies impact your labor efficiency and productivity? The fifth move improvements in differentiation. How are differentiating what you produce from that being produced by other farms? Do you need to spend more time examining new methods and products?

Concluding Thoughts

Benchmarking key production and financial metrics has always been important. However, given the changing landscape of production agriculture, which will likely involve further farm consolidation and major technological breakthroughs (Langemeier and Boehlje, 2016), it is imperative that farms benchmark their past performance and evaluate where they stand with regard to top farms in their industry.

This article was written to emphasize the importance of benchmarking. More details regarding benchmarking can be found in the citations below. Also, a series of future articles will examine key financial management, management practice, personnel management, procurement and marketing, production management, relationship management, risk management, and strategic positioning skills. Self-assessment of key skills and the strengths and weaknesses of individual employees and operators can be very effective methods on the path to improving performance.

References

- Bradley, C., M. Hirt, and S. Smit. "Strategy to Beat the Odds," *McKinsey Quarterly*, February 2018. <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/strategy-to-beat-the-odds>
- Farm Financial Standards Council. "Financial Guidelines for Agriculture", January 2017.
- Langemeier, M. "Measuring Economies of Size with Expense Ratios." *Journal of Farm Managers and Rural Appraisers*. 76(2013):222-235.
- Langemeier, M. "[Measuring Farm Profitability](#)." *farmdoc daily* (6):63, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 1, 2016a.
- Langemeier, M. "[Measuring Efficiency of Farm Asset Utilization](#)." *farmdoc daily* (6):68, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 8, 2016b.
- Langemeier, M. and M. Boehlje. "Drivers of Consolidation and Structural Change in Production Agriculture." *Economic Review*, Kansas City Federal Reserve Bank of Kansas City, Special Issue, 2017, pages 5-23.
- Langemeier, M. and E. Yeager. "[Operating Profit Margin Benchmarks](#)." *farmdoc daily* (8):159, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 24, 2018.
- Mugera, A.W., M.R. Langemeier, and A. Ojede. "Do Productivity and Relative Price Changes Contribute to Profitability Change?" *American Journal of Agricultural Economics*. 98(July 2016):1210-1229.