Mud to Money:
Lessons From 15 Leading
WNC Local Food Farms

FARM FINANCIALS PART I: SYSTEMS & TOOLS

How WNC farms track production and financial data for smart decision-making.

The *Mud to Money Series* by Mountain BizWorks explores farm business and financial management best practices identified from in depth interviews with 15 established WNC vegetable farmers.

Mud to Money Chapters:

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Introduction: Data is Essential for Making Smart Decisions

"Financial information is the main feedback tool for farm decision making. We're going to do sustainable agriculture, so our practices are constrained in that way, but we are not going to grow crops that don't generate their own income."

Farmers in Western North Carolina (WNC) use a variety of tools and approaches to manage and track their finances and farm records, from paper log books to smartphone apps. Similarly, the ways and the depth to which they used the data they collected differed, depending on farm size, market channels, and a given farmer's interest and time for data analysis and adopting new technology.

While the methods and tools for collecting and analyzing data varied, reliance on data as a decision-making tool was nearly universal. 14 out of the 15 farmers we talked to, ranging in gross income from under $100,000 to over $1M per year relied heavily upon financial and field data to improve their farm's productivity and performance, and keep the farm financially sound.

As one farmer put it, "Financial information is the main feedback tool for farm decision making. We're going to do sustainable agriculture, so our practices are constrained in that way, but we are not going to grow crops that don't generate their own income."

This chapter covers some of the systems and approaches that farmers are using to gather and track data about their farm's field and financial performance, and farmers' advice about setting up and using these tools and systems. In our interviews, we found that the two are so inseparable that any discussion of one inevitably ties into the other. This includes tools for harvest tracking, sales record-keeping, tax filing, and invoicing/point of sale systems.

Finally, we recognize that all the data in the world won't help anyone if they don't have the right mindset and framework to put it to use. In *Farm Financials Part II: Approaches and Lessons Learned*, we discuss specific ways and approaches that farmers are taking to use this

financial data to make better decisions on their farms, and we share some key advice that these 15 farmers, with their 223 years of collective experience, wanted to pass on to their peers.

Advice and Systems for Gathering and Analyzing Farm Data

As the table at right shows, the farmers surveyed used a diverse set of tools to gather and analyze data from their farms, including financial and sales data as well as harvest records, equipment depreciation, and crop performance.

Of the farmers surveyed…	
5 out of 15	Use spreadsheets
5 out of 15	Use an accountant or bookkeeper
6 out of 15	Use paper records
10 out of 15	Use QuickBooks
10 out of 15	Use multiple tools to gather & analyze data
12 out of 15	Track income and profitability of specific crops

This diversity was true both at the overall level, and on each farm as well; two thirds of the farmers surveyed used more than one tool to track performance, integrating these tools into a system that suited their particular operation. Every large farm used Quickbooks (though not everyone actually liked the software), while every small farm but one at least used spreadsheets to track their financial and/or crop data. The particular tool and system choices that farmers made seemed to be tied largely to farm size and the kind of markets sold into (i.e. farms that into wholesale markets need a strong recordkeeping system), as well as each farmer's appetite for technology, and the time they were willing to dedicate to data collection and analysis.

Crop Records Are Essential

Harvest and Crop Records

Twelve out of fifteen farmers interviewed kept careful records of their harvests and sales at a per-crop level, logging data on a real-time or weekly basis, and often doing a review at the end of the month. Harvest records were generally entered either in the field through paper log-books or smartphones (including field workers sending text messages to the farm manager with harvest data), or on whiteboards or digital docs when products were placed into storage.

These harvest records allowed farmers to understand productivity and profitability for each crop and to see trends over time. Some farmers even went so far as to track weather conditions over time, to see how that affected harvest numbers or labor time required per crop.

Not every farmer kept highly detailed records of every crop (i.e. exact income per bed). But even those that were a little more lax in their recordkeeping dove deep into data when a given crop seemed to be problematic, or if they wanted to see how worthwhile a crop was for the space and time required to grow and harvest it. "If there's a crop we're questioning, wondering about, then we look

at the numbers much more carefully. Doing a study right now, for example, on green beans – picking beans is very expensive from a labor perspective, but they bring a good price at market. So we can compare hours spent (labor cost) to income and space, get exact numbers on it."

Tracking harvest records is also important for helping to understand how much a given crop contributed to farm sales, and how that crop performed next to its peers. On larger farms, small differences are multiplied by scaling up; on small farms, space is always at a premium. In both cases, understanding crops' profitability and performance is key to successful farm operation. As one farmer put it,

"It's sometimes hard to balance record-keeping… But some things are key to keep track of – what you're sowing, what you're harvesting, and what you're making/earning."

Forms in the Field

Google Forms is emerging as a tool that farmers can use to track conditions and harvests in the field; this is particularly important for farmers working to keep records for their organic certification. Standardized forms allowed them to easily ensure that the necessary data was entered, in the format required, i.e., "Google Forms make it really easy to keep up w/ organic certification. We made a Google Form to make it easy for other people to do data entry."

But some farmers noted that unskilled or undertrained workers were entering data incorrectly, and that they had to default to doing it themselves. "I was catching errors from other people - things it takes experience to catch – so now I just do most of it myself."

Forms are useful for more than just organic certification, however; here is one example of how Google Forms integrates with production and harvest tracking workflows:

"We enter production and harvest data into a Google Form from whiteboards, look at input costs, then use invoice information to look at what we made on the crop. This allows us to get clear crop-by-crop comparisons of income, expenses, and labor hours. That way we can compare how a crop does square-footage-wise and labor-wise, look at what's taking way more inputs or labor or square footage than it's returning in income."

Farmers Market Sales Records – Before-and-After vs. Point of Sale

Similarly, nearly all the farms surveyed kept careful records of what went to and was sold at each market or channel. For farmers markets, the general practice was either a) to log (by count or weight) what went off the farm, and what came back from market - a "before-and-after" system, or b) to log sales at the market in real time – a "point of sale" or POS system.

Before-and-After

Every farm's processes were different, based on the people, products, and markets, but some time-tested systems stood out, like this example of a before-and-after market sales process used by a farmers market-centric farm: "As things go into the cooler, they're divided by market channel (one area per farmers market, one for the CSA, etc.). Everything that goes in goes onto a whiteboard, and that's what we took to market. When we come back, we weigh and count everything that's left, and that's how we track sales. This is really easy, takes maybe 10 minutes longer to clean up at end of market than it would otherwise. Then that info needs to get entered; we are trying to record via Google Sheets, and make something that can be smoothly copy/pasted into our database to save us data entry time."

Point of Sale (POS) Systems

Several farmers still used paper log-books to record sales at market; one market even tracked sales per customer in their paper system to better understand whether an underperforming market was worthwhile relative to a favorite market of theirs. Meanwhile, other farmers are using digital POS systems like ***Square*** to gather sales data in real time, but integrations between digital point of sale systems and financial management tools (i.e. QuickBooks) were noted as a sticking point in this process.

Recordkeeping for Wholesale Customers

Farmers who sold a significant portion of their produce into wholesale markets kept farm more extensive records, due to the detailed inventory tracking and invoice records required to service and manage wholesale accounts. Wholesale client sales also mean extended liability, and a requirement to know and be able to report back data about a given crop or shipment, in case of a food safety or quality issue. Once a farmer starts selling wholesale (especially into grocery stores or through brokers), good recordkeeping is a necessity, not a choice.

Farmers managing wholesale accounts really appreciated ***invoicing software***, especially email invoicing; as one farmer noted, "It's great to send invoices via email; you know when a buyer has clicked on it, can do automated reminders, compile customer invoices to say how much they owe, et cetera"

With that said, not all email invoices are made equal. Square invoices in particular were problematic: "The issue with Square is that their invoices are pretty ugly right now. I would love for it to replace QuickBooks invoicing to be our single system of recording income and managing invoices." On the other hand, ***Wave*** is a software that some farmers really liked for invoicing, but those same farmers noted that while Wave's invoices were good, Wave's reporting was lacking at the crop and product

level, that their accounting software wasn't up to par with QuickBooks, and that their data was hard to export.

Wintertime Deep Dives and Crop Planning

11 out of the 15 farmers interviewed analyze their sales records and farm records at least on a monthly basis. However, much of the deeper analysis for all but the most data-centric farms needs to "wait until December", when things slow down and there's time to do a deep dive into the books and do crop planning. As one put it, "For me, I usually don't have all my info caught up until at least November, when things slow down. Then I can go back, enter the info that's been missing, and start making decisions for next year."

Many farmers do their deep dives at the same time as (or soon after) doing their taxes, whether that's through software like TurboTax or an accountant. ***QuickBooks*** and the ***Veggie Compass*** system are two of the core tools that farmers are using for this longer-term analysis and crop planning.

QuickBooks is the Software Used by Large Farms. But it's Not Built for Diverse Mountain Farms.

Every large farm surveyed (8 farms, with large farms defined as those with over 12 acres in vegetable production) uses QuickBooks as their core financial management tool, especially for wholesale accounts. Only two of the small farms (under 12 acres) surveyed use QuickBooks with all but one of the small farms relying on spreadsheets (e.g., MS Excel, Google Sheets). Few farmers seemed to really like QuickBooks as a software, but most who used it concluded that it was pretty much the only game in town, despite its shortcomings.

Areas for improvement included:

- How it handles unemployment insurance regulations for farmers in NC
- Being better suited to highly diverse farms; it's adaptable, but not designed for farmers
- An agriculturally-focused software is needed – "QuickBooks doesn't understand agriculture"

Six out of seven small farmers used spreadsheets (Microsoft Excel, Google Sheets, or similar) to track field and/or financial data; they are the predominant tool used by small farms.

In terms of alternative bookkeeping software, some farmers are experimenting with a software called Wave as an option, but initial reports from farmers surveyed seemed to imply that its accounting functionality still leaves things to be desired.

Veggie Compass – a Useful, if Time-Consuming Tool

Farmers who have used the ***Veggie Compass*** tool did seem to really appreciate the insights it gave them, but the time it takes to fill out seems to prevent most farmers from using it regularly.

"We did fill out Veggie Compass once, and it would be a good exercise to do so again. Veggie Compass helps us understand deep levels of production cost and market pricing, and helps us understand if it's worthwhile to drive to Market A vs. Market B, et cetera. Our first time using it was helpful, and inspired us to change some pricing."

"We use a series of Veggie Compass-type spreadsheets to track cost per crop per year carefully. Thanks to those, it's pretty easy to understand the cost to grow and harvest an acre of crop. We don't allocate overhead per crop, but could do so easily thanks to our chart of accounts in QuickBooks."

TurboTax or an Accountant?

Farmers with a head for software and numbers largely seemed to really like TurboTax, despite its occasional imperfections. "Software-wise, TurboTax does a pretty good job. There are a few questions it doesn't really answer, but it's a huge cost savings over a CPA.''

However, other farmers noted that it was just easier to hire a local accountant once their numbers were together. The level of analysis they did made it quick and cheap for an accountant to get them over the finish line: "We have an accountant for the farm business taxes. The key is to have numbers so laid out that it's easy for him to do them." "Our taxes are done by a local accountant – we do all the work for her, and then she does the final version."

Other Tools and Resources

Smartphones in the Field

Smartphones (and the apps that run on them) are increasingly being used by farmers to collect data in the field, market the farm, and even to make sales and take orders while a crop is being harvested.

"Smartphones have tremendously increased productivity for us. They can look things up in the field, make sales on the go, and write up an invoice on the fly. We can also get emails, texts, and Instagram messages in the middle of harvesting and have the crop sold by the time the harvest is done."

They are also important for farmer-to-farmer networking. "Instagram is all about farmer networking for me. I don't care if someone from Iowa follows me, but I can look at farms all over the US and get ideas, see what they're doing."

With that said, legacy applications like Microsoft Access, which some farmers built their data collection around in the days of specialized farm apps, have some struggles working with newer technology. "Making Access communicate with smartphones has been difficult; it just really doesn't really want to integrate though it's something we'd love to solve. We're now trying to record via Google Sheets and make something that can be copy/pasted into Access to save on data entry time."

Sometimes, farms are using even simpler systems, like text messaging from field workers to farm managers, to get data in from the fields. However it is done, the ability to collect data in real time and get information from workers to farm management is very important, and points to just how critical cellular and broadband coverage is for modern American farmers.

Paying for Financial Oversight

Four of the eight large farms surveyed had a bookkeeper or an accountant they worked with to run the numbers for their operations and keep their finances in order. A small farm we spoke with also recently hired a bookkeeper who has experience working with farms in the region. They are excited to work with that bookkeeper to ease the burden of their annual wintertime data crunch.

Farm Business Training and Professional Development

Two farmers noted that Holistic Farm Business Management classes were really helpful. As one of them noted, "We got a lot out of the Holistic Farm Finances 2-day course that we took from Organic Growers School in January. It was a little too late for us to implement then, but it did encourage us to get a bookkeeper to do monthly statements; and ideally, the long-term goal would be to have a multi-dimensional cash flow forecast that we could compare actuals to every month."

"We're so diversified, have so many enterprises, that it takes a long time to get something like that set up. So that didn't get implemented this year, but it was a really great training and we would like to take it again to get a little deeper."

What Are Farmers Looking For In Their Software?

As farmers talked about the tools they use to collect and analyze data from the farm, we gathered a few key elements of what farmers are looking like in their "Dream System(s)"

- An online pre-order and order system that generates invoices, with data that's easy to export.
- Something that can integrate across expenses, sales tracking, and profit. Also relies on newer technology, but easy to use, and something that can be implemented as you go.
- QuickBooks (or equivalent) designed ***for*** smaller-scale farming and agriculture. This means designed for diverse farms, often combining vegetable and animal agriculture, potentially some row crops or forage crops as well.
- Point of Sale software with beautiful, elegant invoicing and detailed info on sales by market channel, vendor, item, etc. – well integrated into financial analysis software
- Automated importing of data from field (i.e. Google Forms) into databases

Conclusion – No Single "Right Way", but Lots of Good Advice and Opportunities

Looking back over all of these practices and tools, there are no blanket answers for "what's the best way to collect and use farm data?" The right answer will always be a little different, based on the styles, reasons, businesses, and goals of each farm. With that said, there are lots of lessons that can be learned from the farms in our area, and systems or tools that could help farmers struggling with a specific issue overcome that problem by seeing how farmers in similar situations are making things work.

Beyond sharing these lessons and tools from area farmers – in workshops, 1:1's and online platforms all over WNC and beyond – it seems as though there are some specific areas of training that could help farmers make the best use of the tools that they do have available to them. These include Point-of-Sale + QuickBooks integrations, Veggie Compass workshops that detail out how to implement it in a manageable way, and more Holistic Farm Business Management classes, as well as trainings on using Google Forms or Microsoft Access on the farm.

And there are some specific ways in which digital tools could be improved; something along the lines of a "Quickbooks for Small Farms" was asked for repeatedly. And an improved farm-friendly point-of-sale software that integrates well with QuickBooks or its successors seems like a common need. Both of these have the potential to help nearly all of WNC's vegetable farmers, as well as numerous other small farms across the country, grow and succeed.