Virginia Cooperative Extension
Virginia Tech • Virginia State University

EXPERT REVIEWED

AAEC-116P

Farm Financial Risk Management Series Part III:
Introduction to Farm Planning Budgets for New and Beginning Farmers

Kim Morgan, Associate Professor and Extension Agricultural Economist, University of Florida
Peter Callan, Former Extension Agent, Farm Business Management, Virginia Cooperative Extension Culpeper County Office
Allyssa Mark, Former Program Associate, Virginia Beginning Farmer & Rancher Coalition Program
Kim Niewolny, Associate Professor, Agricultural, Leadership, and Community Education, Virginia Tech
Theresa Nartea, Associate Professor, Agriculture and Natural Resources, Virginia State University
Kelli Scott, Former Extension Agent, Virginia Cooperative Extension Montgomery County Office
Jim Hilleary, Extension Agent, Virginia Cooperative Extension Loudoun County Office
Yanggu Li, Graduate Student, Agricultural and Applied Economics, Virginia Tech
John Bovay, Assistant Professor, Agricultural and Applied Economics, Virginia Tech

There are many factors to consider before starting a new farm enterprise. Financial management is an important component in the startup and decision-making processes for beginning farmers. The purpose of this series of publications is to inform Virginia agribusiness owners and managers about farm financial risk management tools, techniques, and resources available to help them prepare and use a financial systems approach for their operations.

The information provided in this publication is expected to improve manager decision-making by providing a better understanding of the value of constructing financial statements and planning budgets to help them manage risks associated with the financial aspects specific to the agriculture industry. The topics covered in this resource are not all-inclusive, but after reading this publication, beginning farmers should be prepared to move forward in planning for their farms.

The accompanying parts in the series include “Farm Financial Risk Management Series Part I: Overview of Financial Systems for New and Beginning Farmers” (Virginia Cooperative Extension publication AAEC-114P (AAEC-296P)), and “Farm Financial Risk Management Series Part II: Introduction to Farm Financial Statements” (Virginia Cooperative Extension publication AAEC-115P (AAEC-297P)). A compilation of excellent resources that includes examples, how-to videos, and training resources is included in the appendix at the end of this publication.

For questions about this or other farm startup topics, contact the local Virginia Cooperative Extension office or visit the Virginia Beginning Farmer and Rancher Coalition Program website at www.vabeginningfarmer.org.

Farm Planning Budgets

A complete farm financial system is composed of a set of financial statements and planning budgets. The four planning budgets used to record financial details are cash flow budgets, partial budgets, whole farm budgets, and enterprise budgets. Preparation of each budget requires access to detailed data on farm enterprises, production methods, sources of farm revenue, costs for each enterprise, equipment and facility conditions, inventory of supplies, sources of off-farm income, and insurance and tax records. While the effort required to compile these records might initially require several hours of time, it is important to note that this information is used to build both the financial statements and the planning budgets. This publication introduces the four planning budgets that farm managers can use to make decisions about future farm financial conditions and performance.

Farm planning budgets are created and analyzed by farm managers and owners to test out ideas on paper before making decisions to commit time and resources. Using the economic principle of opportunity costs, managers can use planning budgets to assess the potential benefits resulting from the chosen enterprise relative to the benefits represented by the next-best alternative enterprise. The purpose of farm planning budgets is to estimate the profitability of a plan and the impact of any proposed change to the plan.

Cash Flow Budget

A cash flow budget is a summary of projected inflows and outflows over a given period of time. Its purpose is to estimate the amount and timing of future borrowing needs and demonstrate the farm's ability to repay debts in a timely fashion. A key task of managing farm financial risk exposure is to plan cash flows for future accounting periods that are divided into quarterly or monthly time frames. A cash flow budget represents a projection of the future deposits and withdrawals to the farm business checking and savings accounts. Completion of the cash flow budget allows farm managers and owners to plan the dollar pathway by documenting both where and when funds need to go out to cover expenses and, funds are expected from farm sales.

Partial Budget

A partial budget is a formal and consistent method for making management decisions based on relatively small changes to an existing farm plan. Farm managers are faced with numerous decisions that have the potential to impact the profitability of the operation, such as whether to participate in government farm programs, purchase equipment or custom hire, or plant more of one crop and less of another. The purpose of the partial budget is to outline the available options by comparing the profitability of one alternative (usually the current situation) to the profitability of a proposed alternative. Construction of the partial budget allows the farm manager to assess only those factors that will be affected by the proposed change; all other unaffected factors are held constant.

Partial budgets are typically constructed on an annual basis to clarify the differences in profitability. A completed partial budget that produces a positive bottom line demonstrates that the proposed change will result in increased profit. However, it is important to consider the level of risk associated with the proposed change relative to the current scenario when making the final decision.

Whole Farm Budget

A whole farm budget is a summary of available resources and the planned type and volume of farm production that are under the management of the farm owner. The whole farm budget is constructed to include the expected costs, revenues, and profitability of each enterprise that compose the overall farm business. The purpose of this budget is to analyze a major change that has the potential to affect several enterprises.
A simple whole farm budget may include minimal information (e.g., list enterprises and production level) or include detailed data for each enterprise (e.g., seed and fertilizer prices and volumes, custom harvest costs, pre- and postproduction labor hours, application rates, etc.). The time period analyzed in a whole farm budget can vary depending on the needs of the farm owner or manager. For example, the current or upcoming year, a typical or an average year, or, a transitional period might be selected as the time frame of interest. Armed with a completed whole farm budget, farm managers can make informed decisions such as taking over a new farm business, adding more land to the existing farm, or taking on a partner for the existing farm business.

Enterprise Budget

A farm enterprise budget is the organization of revenues, expenses, and profit for a specific farm enterprise that is constructed on a per-unit-of-production basis (e.g., crop yield per acre, number of head of livestock, or number of trees per acre). The purpose of an enterprise budget is to demonstrate the potential profitability of each enterprise to the farm business. Enterprise budgets can be created for different levels of production (i.e., bushels per acre, pounds per square foot) or types of technology (e.g., conventional, organic, irrigated, double-cropping). A completed enterprise budget provides farm managers with a tool that includes opportunity costs that demonstrate the economic returns to the enterprise in addition to the accounting costs.

Components of an Enterprise Budget

Each enterprise budget has four sections that need to be completed using information from either existing farm records or borrowed from published budgets provided by Virginia Cooperative Extension specialists (available at https://www.dropbox.com/sh/b4v7ftzo6qdri7j/gsnqRAkZ62) that include recommended best management practices.

The first component is the title, which should include specific information about the enterprise and any distinguishing characteristics (e.g., tillage practices, machinery assumptions, etc.). For example, a hay enterprise budget title might be "Orchardgrass - Fescue Hay, Round-Baled, 4-Ton Yield."

The second component lists all expected farm revenues or sales receipts, such as quantities produced, units of measure, and market price per unit for the enterprise. Under the revenue section, all items produced by the enterprise (e.g., feeder lambs, wool, cull ewes, rams, etc.) are listed, along with market prices estimated per unit for each revenue-generating item.

The third component details all expected costs related to producing, processing, harvesting, or marketing the products. Costs listed in this section include variable costs (operating or direct costs) and can also include fixed costs (ownership or indirect costs) assigned to this enterprise.

A key financial risk management goal is to understand the economic costs of selecting a particular enterprise. Using the enterprise budget, the economic costs of selecting this enterprise can be estimated by calculating the interest on operating costs. To determine the economic costs, the manager may add all the variable costs and then multiply by the annual interest rate and the portion of the year the money will be used to operate the enterprise. The final calculation of total variable costs will include this economic cost and will represent the cost of selecting this enterprise over the next-best alternative.

Fixed costs are charged to all fixed assets, which are items that are not completely exhausted during a single production period (e.g., machinery, breeding livestock, land, buildings, facilities, fences, owner's labor and management skills, etc.). Fixed costs include charges for owner labor, a management fee, and charges that represent the enterprise share of the "DIRTI-5" (depreciation, interest, rent, taxes, and insurance). Farm owner labor can be valued at the market price for physical labor, which ranges from $8 to $12 per hour, depending on the required skill set. The management fee is typically calculated as 5 percent of gross revenues. If the farmland is rented, the rental rate can be entered; however, if the farm manager owns the land, the rental charge can be estimated by using the opportunity cost of the land (the fee that could be charged if the manager were to rent the land to someone else).

The fourth and final component is the calculation of net return to the farm enterprise, which is determined by subtracting estimated total costs from total revenues. Calculated net returns can be defined as "estimated return to profit" if the fixed cost estimate included a management opportunity cost, typically represented as a percentage of the gross revenues. This opportunity cost represents a payment to the farm manager or owner in return for the time and resources dedicated to this enterprise. If a management charge was not included in the fixed costs section, the calculated net return is labeled "estimated return to management and profit."

How do farm managers assess the information in an enterprise budget?

Farm enterprise budgets demonstrate the estimated profitability of each enterprise and may be created for different levels of production or types of technology, providing a great deal of flexibility that makes this tool valuable to farm managers by informing the planning process. Key determinants included in the enterprise budget are production levels (e.g., bushels per acre, pounds per acre, sale weight per animal, pounds of milk per cow, etc.), sales prices, and cost of production.

Farm managers who create the budget must provide documentation to justify the production levels (e.g., average county yields or previous yields achieved on a farm) and production costs (e.g., VCE budgets using current input costs) that were included in the enterprise budget. For example, details that reveal how sales prices were determined (e.g., prices paid by buyers at the local sale barn, three-year average prices as recorded by the farm manager, etc.) should be noted. Farm managers new to an enterprise are encouraged to research current market price trends to inform their decision to produce these items. In addition, it could take several years for a new farm enterprise to achieve the "average county yields" listed in VCE enterprise budgets; therefore, managers are encouraged to include 80 percent of average county yields for the projected yield estimates in the expected farm revenues component of the budget.

Because the enterprise budget calculations include opportunity costs, returns above variable and total costs can be measured to provide guidance on both short- and long-term decisions related to the enterprise. **Returns above variable costs** measure how much revenue remains after all variable costs are paid. The enterprise must generate positive returns above variable costs to operate in the short term because this indicates that revenues are sufficient to at least pay the operating costs resulting from the decision to produce that item. **Returns above total costs** measure how much revenue remains after all variable and fixed costs are paid. The enterprise must generate positive returns above total costs to operate in the long term because this indicates that revenues are sufficient to pay both variable and fixed costs.

Finally, completed enterprise budgets can be used to determine the break-even prices and yields needed to cover variable and/or fixed costs, giving the farm manager another necessary piece of information to use when making short- and long-term decisions related to specific farm enterprises. The short-run, break-even price represents the lowest price that can be accepted per unit, given a specified yield per unit, to reimburse the farmer for the variable costs incurred to produce the items. To calculate the short-run break-even price, divide variable costs by the yield per unit.

The long-run break-even price represents the lowest price that can be accepted per unit, given a specified yield per unit, to reimburse the farmer for both fixed and variable costs incurred to produce the items. To calculate the long-run break-even price, divide total costs by the yield per unit. To determine short- and long-run break-even yields, the same calculations can be used by holding prices per unit constant and allowing the yields to vary.

Additional Resources and Information

Ag Risk & Farm Management Library - https://agrisk.umn.edu/library.

Center for Farm Financial Management, University of Minnesota - https://www.cffm.umn.edu/.

Farm Finance, Safety Net and Risk Management, National Sustainable Agricultural Coalition - http://sustainableagriculture.net/our-work/issues/credit-safety-net-programs/.

Harwood, J., R. Heifner, K. Coble, J. Perry, and A. Somwaru. 1999. *Managing Risk in Farming: Concepts, Research, and Analysis*. U.S. Department of Agriculture, Economic Research Service. Agricultural Economic Report No. AER774. Washington, DC: USDA Economic Research Service.

Kay, R. D., and W. M. Edwards. 1994. Farm Management. 3rd ed. New York: McGraw-Hill.

New Farmers, U.S. Department of Agriculture - https://newfarmers.usda.gov/.

O'Brien, D., N. D. Hamilton, and R. Luedeman. 2005. "Risk Management." In *The Farmer's Legal Guide to Producer Marketing Associations*, 67-82. Des Moines, IA: Drake University Agricultural Law Center. https://nationalaglawcenter.org/wp-content/uploads/assets/articles/obrien_producermarketing_ch6.pdf.

Risk management resources, U.S. Department of Agriculture Economic Research Service - www.ers.usda.gov/topics/farm-practices-management/risk-management.aspx.

For more information about preparing and analyzing farm financial statements in Virginia, please contact John Bovay at bovay@vt.edu. For more information and resources aimed at beginning farmers, visit the Virginia Beginning Farmer and Rancher Coalition Program at www.vabeginningfarmer.org.

Acknowledgements

The Virginia Beginning Farmer and Rancher Coalition Program is a statewide, coalition-based extension program. The program is housed in Virginia Tech's Department of Agricultural, Leadership, and Community Education and is a program of Virginia Cooperative Extension. The Virginia Beginning Farmer and Rancher Coalition Program is sponsored by the Southern Extension Risk Management Education Center and the Beginning Farmer and Rancher Development Program of the USDA National Institute of Food and Agriculture, Award No. 2015-70017-22887.

SOUTHERN EXTENSION RISK MANAGEMENT EDUCATION

VIRGINIA Beginning Farmer & Rancher COALITION PROGRAM

USDA United States Department of Agriculture National Institute of Food and Agriculture

Appendix

Following is a compilation of sources, examples, documents, and how-to videos to help farm owners and managers organize farm records and complete farm financial statements and planning budgets.

Statement	Records required and resources
Balance sheet (or net worth statement)	☐ Farm assets cost and value ☐ Farm and personal asset changes; livestock, crop, and other product inventories ☐ Loan balances
	• Building Equity in Your Farm – www.extension.iastate.edu/agdm/wholefarm/html/c3-60.html • Interpreting Financial Statements and Measures – http://ifsam.cffm.umn.edu/ • Understanding Net Worth – www.extension.iastate.edu/agdm/wholefarm/html/c3-19.html • Your Net Worth Statement – www.extension.iastate.edu/agdm/wholefarm/html/c3-20.html • Financial Performance Analysis Tools – https://www.agmrc.org/business-development/business-workbench/analysis-worksheets-and-calculators/financial-performance-analysis-tools/ • Net Worth Tools – http://www.agmrc.org/business-development/business-workbench/analysis-worksheets-and-calculators/net-worth-tools/
Cash flow statements	☐ Farm income and expenses ☐ Nonfarm income and expenses ☐ Debt payments
	• Taking Control of Farm-Family Living Expenses – www.extension.purdue.edu/extmedia/id/id-238.pdf • Understanding Cash Flow Analysis – www.extension.iastate.edu/agdm/wholefarm/html/c3-14.html • Managing Farm Family Finances – www.extension.iastate.edu/agdm/wholefarm/html/c3-51.html • Cash Flow Budgeting Tools – https://www.agmrc.org/business-development/business-workbench/cash-flow-budgeting-tools
Income statements	☐ Farm income and expenses ☐ Interest payments ☐ Livestock and grain inventories ☐ Accounts payable and receivable
	• Assessing How You Stand Financially – https://dr.lib.iastate.edu/entities/publication/59e8ab95-e103-4b50-b670-10cd46ebdcd9 • Understanding Profitability – www.extension.iastate.edu/agdm/wholefarm/html/c3-24.html • Business Workbench - https://www.agmrc.org/business-development/business-workbench • Business Development - https://www.agmrc.org/business-development

Statement	Records required and resources
Enterprise analysis (planning budgets)	☐ Farm income and expenses ☐ Livestock and crop yields
	• Enterprise Budgeting Tools -https://www.agmrc.org/business-development/business-workbench/enterprise-budgeting-tools • Farm Cost and Return Tool – www.fapri.missouri.edu/projects/results.asp • Primer for Selecting New Enterprises for Your Farm - https://agecon.ca.uky.edu/files/ext2000-13.pdf • AgPlan Business Plan App – https://agplan.umn.edu/ • Twelve Steps to Cash Flow Budgeting – www.extension.iastate.edu/agdm/wholefarm/html/c3-15.html • Using Enterprise Budgets to Make Decisions - https://store.extension.iastate.edu/product/Using-Enterprise-Budgets-to-Make-Decisions • Budgeting for Agricultural Decision Making – http://extension.psu.edu/business/ag-alternatives/farm-management/budgeting-for-agricultural-decision-making • Financing Small-Scale and Part-Time Farms – http://extension.psu.edu/business/ag-alternatives/farm-management/financing-small-scale-and-part-time-farms • Budgeting tools - https://www.agmrc.org/business-development/business-workbench/budgeting-tools • VCE Budgets – https://www.dropbox.com/sh/b4v7ftzo6qdri7j/gsnqRAkZ62 • Veggie Compass – www.veggiecompass.com • FINPACK – www.cffm.umn.edu/finpack/ • Business Workbench - https://www.agmrc.org/business-development/business-workbench
Income taxes	☐ Farm income and expenses ☐ Nonfarm income and expenses ☐ Interest payments ☐ Depreciation schedule
	• IRS - Reporting Farm Income and Expenses - https://www.irs.gov/pub/irs-news/fs-07-20.pdf • Understanding Your Federal Farm Income Taxes – extension.psu.edu/business/ag-alternatives/farm-management/understanding-your-federal-farm-income-taxes • Overview of Farm and Ranch Leases – http://nationalaglawcenter.org/wp-content/uploads/2014/03/Ag-Leasing-Outline-Rincker.pdf • Financial Troubleshooting – www.extension.iastate.edu/agdm/wholefarm/html/c3-53.html • Business Development - https://www.agmrc.org/business-development

Disclaimer

Although the authors have made every effort to ensure that the referenced URL links stated in this document are correct at time of publication, the authors do not assume that the referenced URL links will remain correct over the duration of time this document is in circulation and hereby disclaim any liability to any party for any loss, damage, or disruption caused by present and future errors or omissions, whether such errors or omissions result from negligence, accident, or any other cause.

Visit our website: www.ext.vt.edu

Produced by Virginia Cooperative Extension, Virginia Tech, 2022

VT/0922/AAEC-298P