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Rodney B. Holcomb

Oklahoma State University, rodney.holcomb@okstate.edu

Kyle Flynn

Oklahoma State University, kyle.flynn@okstate.edu

Philip Kenkel

Oklahoma State University, phil.kenkel@okstate.edu



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A Feasibility Template for Small, Multi-Species Meat Processing Plants

Rodney B. Holcomb

Professor

rodney.holcomb@okstate.edu

Kyle Flynn

OSU Meat Plant Manager

kyle.flynn@okstate.edu

Philip Kenkel

Professor

phil.kenkel@okstate.edu

Oklahoma State University

Stillwater, Oklahoma

Abstract: *This article describes a spreadsheet-based template designed to help livestock producers and others examine the feasibility of operating a small, multi-species meat processing plant. The template allows users to define plant size and capacity, including the breakdown of processing activities by species and additional revenue opportunities. The spreadsheet utilizes user-defined information on capital and operating costs to develop depreciation schedules, loan amortization schedules, 10-year profit/loss projections, cash flow projections, and various measure of return on investment. An imbedded user's guide and a companion "how to use" video helps template users examine the financial feasibility of a meat plant venture.*

Introduction

Extension specialists have often shared tips and tools for helping producers and entrepreneurs examine the feasibility of value-added ventures (e.g., Holcomb & Muske, 2000; Marshall, Bush & Hayes, 2005; Holcomb & Johnson, 2006; Hostetler, 2007). In recent years, these efforts have included assessments of opportunities associated with the local food movement (e.g., Raison, 2010; Sharp, Clark, & Davis, 2011). The local food movement,

combined with USDA's Know Your Farmer, Know Your Food program (USDA, 2011) and increased demand for organic/natural meats (FMI & AMI, 2011), has resulted in a surging demand for meat processing services. But after two decades of decline, the few existing meat processing plants have become back-logged with business. Producers trying to niche market their livestock have found themselves without timely and consistent access to slaughter facilities.

The Robert M. Kerr Food & Agricultural Products Center (FAPC) at Oklahoma State University has seen an increase in requests for assistance related to meat processing plant evaluations. Oklahoma in particular has experienced a decline in the number of small inspected plants to handle the increased demand for niche meat marketing services (Holcomb & Ward, 2002). To handle the multiple requests for assistance, the FAPC recently developed a feasibility assessment tool for small, multi-species meat processing plants.

The spreadsheet template is designed to assist livestock producers and food business entrepreneurs who may be interested in owning or operating a meat processing plant. Most do not understand the factors that impact plant operations and ownership, nor do they have the skills or experience to make sound financial decisions for a plant. Plant owners must consider the impacts of balancing a variety of potential business activities under one roof: custom packing for multiple species (cattle, hogs, sheep, goats, bison, etc.), handling wild game (e.g., deer, elk and wild hogs), and possibly operating a retail shop.

Two extremely valuable sources of information for small meat plants are the *Guide to Designing a Small Red Meat Plant* published by Iowa State University (Iowa State University, 2009) and the *Small Meat Processors Business Planning Guidebook* developed for the Niche Meat Processor Assistance Network (Gwin, Thiboumery, Garrison, & McCann, 2011). While both publications provide significant details for plant design and operations, they are also both limited by their focus on specific plant case scenarios. Neither provides a reader with tools for examining a customized operating scenario or performing a "what if" analysis. The small plant feasibility template allows users to incorporate aspects of these published guides, or information from other sources, as a starting point for a detailed financial assessment.

Features

The spreadsheet-based model, complete with an imbedded user's guide and a companion "how to use" video, help entrepreneurs develop a financial model for a customized small meat processing plant. Information and insights provided by FAPC meat processing specialists and existing Oklahoma small meat processing plants were used to create an example (or "base") scenario, which users of the template get to see and modify to fit their specific needs.

Template users provide the appropriate information in the green-shaded cells of the following template sections:

- Operating/Production Assumptions

- Plant, Property, & Equipment (PP&E)
- Personnel Expenses
- Expense Projection

This information is used for calculations and tables in the remaining template sections:

- Market Projection
- Loan Amortization
- Operations Summary
- Return on Investment

Hyperlinks allow users to easily jump from one section to another. Many of the input cells also include pop-up comments to help users better understand the information to be provided in those cells. Password protection prevents users from inadvertently altering cell formulas or jeopardizing the integrity of the various calculations.

Figure 1 shows the "Operating/Production Assumptions" portion of the template, which contains the most designated user input cells. Users identify the slaughter capacity of the facility, the breakdown of slaughter activities for three species, any additional business generated by wild game processing or "other" revenues, and estimated monthly utility rates. This section also allows users to input information on working capital (short-term borrowing), property and income tax rates, maintenance and insurance costs (as a percent of PP&E), inflation rates for both expenses and goods/services prices, and a discount rate for use in net present value calculations. Warning messages appear if the combined slaughter capacities by species exceed the stated plant capacity.

Figure 1.

Operating/Production Assumptions sheet for the Small Meat Plant Template

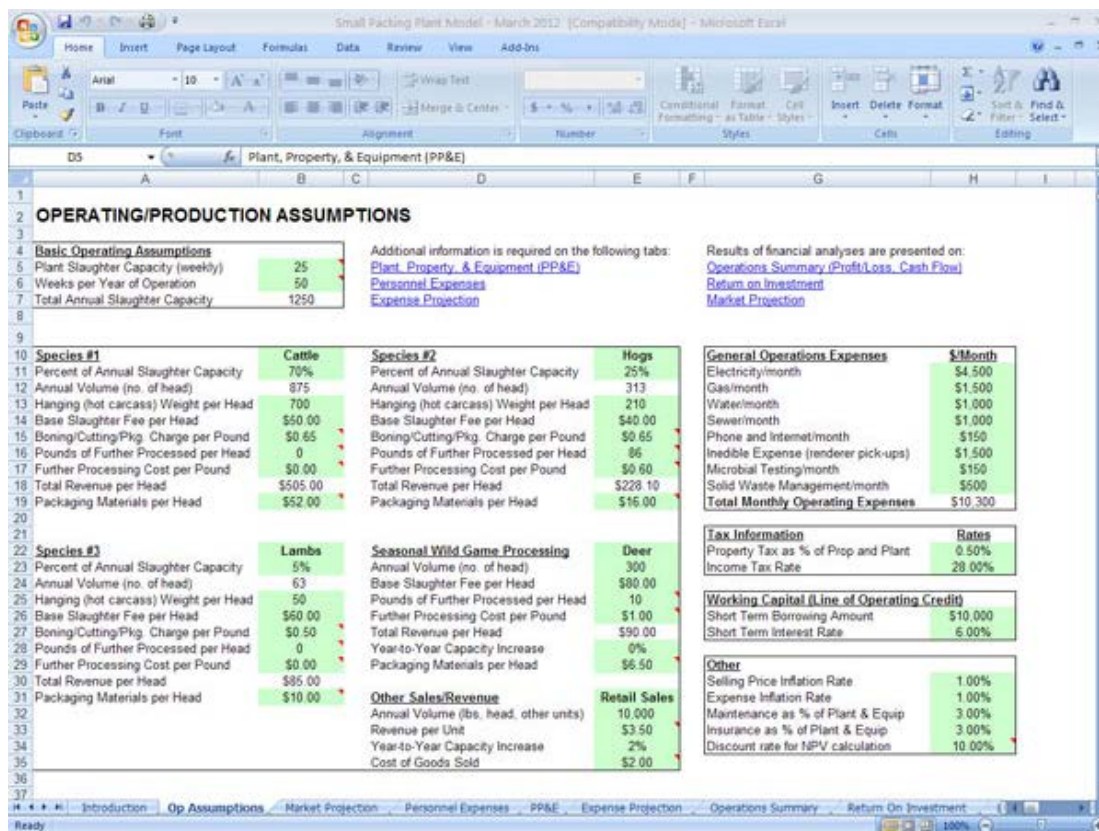
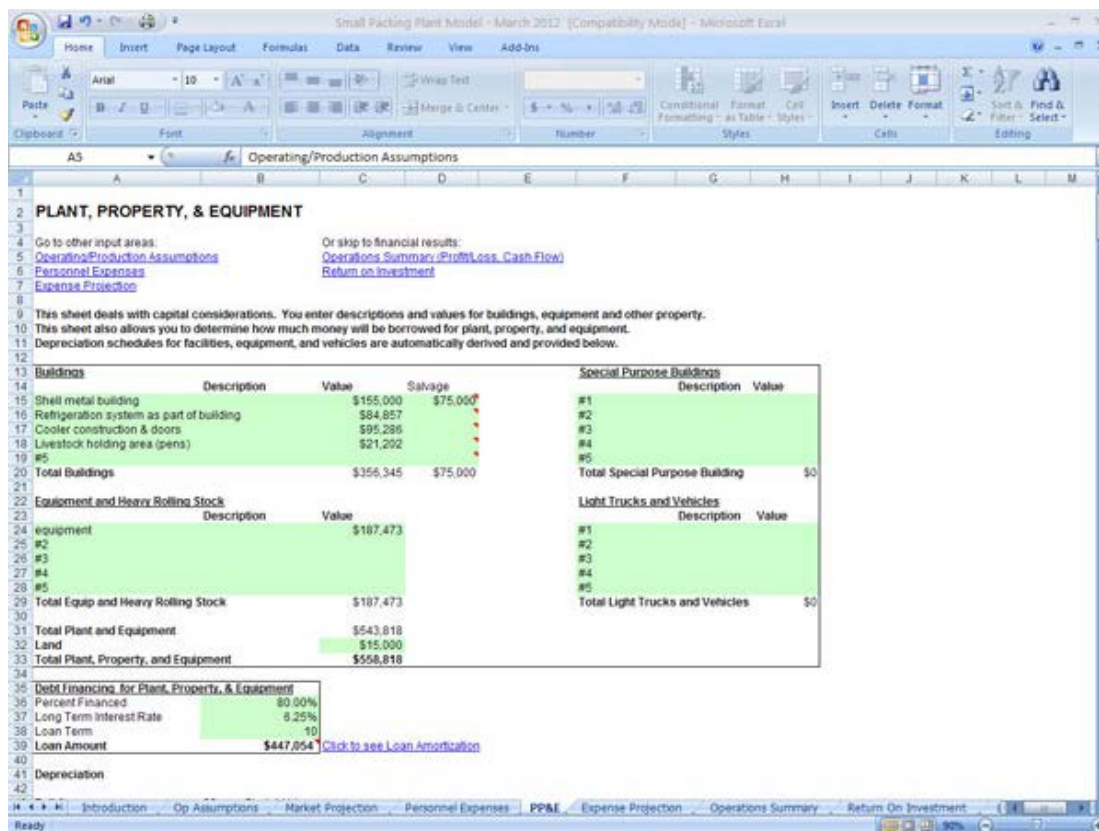


Figure 2 shows the "Plant, Property, & Equipment" (PP&E) section of the template. This section provides users the ability to input cost information on building, equipment, land, and even company vehicles. Users then identify the percent of the total PP&E costs to be debt financed and the terms for the loan, with principal and interest calculations derived on the "Loan Amortization" portion of the template. Depreciation is also estimated in the PP&E section, using straight-line depreciation for the facilities and MACRS depreciation schedules for equipment, special purpose buildings, and vehicles.

Figure 2.

Plant, Property, & Equipment sheet for the Small Meat Plant Template



Additional information for employees ("Personnel Expenses") and supplies/miscellaneous expenses ("Expense Projection") complete the user-provided information for the template. "Market Projections" estimates the annual sales and direct production expenses for each business activity, and all income and expenses projections for a 10-year timeframe are presented in the "Operations Summary" portion of the template (Figure 3).

Figure 3.

Operations Summary sheet for the Small Meat Plant Template

The screenshot displays an Excel spreadsheet with the following content:

OPERATIONS SUMMARY: PROFIT/LOSS & CASH FLOW PROJECTIONS

Go back to input areas: [Operating/Production Assumptions](#) Or go to ROI calculations: [Return on Investment](#)

[Personnel Expenses](#)

[Plant, Property, & Equipment \(PP&E\)](#)

[Expense Projection](#)

This sheet summaries income, expenses and net profit. There are no inputs on this sheet

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Gross Sales										
Cattle	\$0	\$441,875	\$446,294	\$450,757	\$455,264	\$459,817	\$464,415	\$469,059	\$473,750	\$478,488
Hogs	\$0	\$71,281	\$71,994	\$72,714	\$73,441	\$74,176	\$74,917	\$75,666	\$76,423	\$77,187
Lambs	\$0	\$5,313	\$5,366	\$5,419	\$5,473	\$5,526	\$5,583	\$5,639	\$5,696	\$5,753
Deer	\$0	\$24,000	\$24,240	\$24,482	\$24,727	\$24,974	\$25,224	\$25,476	\$25,731	\$25,988
Retail Sales	\$0	\$35,000	\$36,057	\$37,146	\$38,268	\$39,423	\$40,614	\$41,841	\$43,104	\$44,404
Total	\$0	\$577,469	\$583,950	\$590,518	\$597,174	\$603,919	\$610,754	\$617,682	\$624,704	\$631,833
Expenses										
Variable	\$0	\$363,846	\$367,888	\$371,983	\$376,132	\$380,335	\$384,593	\$388,908	\$393,280	\$397,711
Fixed	\$0	\$74,039	\$91,181	\$75,948	\$64,326	\$55,258	\$52,689	\$49,991	\$39,719	\$27,222
Other	\$0	\$17,160	\$17,332	\$17,505	\$17,680	\$17,857	\$18,035	\$18,216	\$18,398	\$18,582
Total Expenses	\$0	\$455,044	\$476,401	\$465,436	\$458,138	\$453,449	\$455,317	\$457,115	\$450,397	\$443,515
Before Tax Profit	\$0	\$122,424	\$107,550	\$125,082	\$139,036	\$150,469	\$155,437	\$160,567	\$174,307	\$188,282
Tax	\$0	\$34,279	\$30,114	\$35,023	\$38,930	\$42,131	\$43,522	\$44,959	\$48,806	\$52,767

The "Return on Investment" section of the template provides a variety of return measures based on these 10-year projections: net present value (NPV), internal rate of return (IRR), present value cost/benefit ratio, return on assets (ROA), return on beginning owners' equity, and payback period. The profit/loss, cash flow, and return on investment measures automatically update with a change in any user-defined cell, allowing users to easily observe the sensitivity of results to changes in a given revenue or expense factor.

Summary

The Small Multi-Species Meat Plant template can help Extension educators, agricultural producers, and entrepreneurs decide if building and operating a USDA-inspected meat processing facility is financially viable under a variety of operating scenarios. Links to the template and the companion video are available at www.fapc.biz. The template can be downloaded from http://www.fapc.biz/files/smallmeatplant_feasability.xls. The YouTube link for the companion video is <http://www.youtube.com/watch?v=hJcnL0KY864&feature=related>.

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