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Halee Prather  
New Mexico State University, hprather@nmsu.edu

Maryfrances Miller  
New Mexico State University, franniem@nmsu.edu

Marcy Ward  
New Mexico State University, maward@nmsu.edu

Craig Gifford  
New Mexico State University, cgifford@nmsu.edu

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Using Excel to Teach Agri-Business and Financial Literacy Concepts to 4-H Youth

Halee Prather,1 Maryfrances Miller,1 Marcy Ward,1 and Craig Gifford,1

Authors: 1 New Mexico State University.

Abstract. Teaching youth agribusiness subject matter and financial literacy through 4-H livestock projects is an important task. This article discusses using Excel as a record keeping tool to expand knowledge and comprehension of financial concepts and profitability in the beef industry. A description of the Excel record book contents and parent feedback is presented. Using the Excel record book expanded conversations about the beef industry and proved to be a favorable tool for increasing youth understanding of critical agribusiness concepts.

4-H livestock programs teach youth the life skills, animal husbandry practices, and responsibility needed to be successful professionals in the livestock industry (Hieb, 2022). 4-H professionals in New Mexico created the New Mexico Youth Beef Feeder Contest (NMYBF) to focus more intently on teaching youth about the beef industry; the contest focused more on profitability and financial decisions than do most current livestock show projects. Accordingly, the contest emphasized record keeping as an important skill for effective livestock production. Traditionally, 4-H projects in New Mexico require that records are handwritten or typed on a form; in the new contest, participants instead employed an Excel-based record-keeping tool. This article describes the adoption of Excel to provide a real-world opportunity for 4-H youth to increase their understanding and awareness of financial concepts related to the beef industry.

Other 4-H projects, especially other livestock projects, could easily adapt to the use of Excel-based record books as either an optional or required component. This adaptation would accomplish several important objectives. The use of Excel-based records provides an opportunity for agribusiness Extension specialists to increase interaction and recruitment of youth into agribusiness careers. In turn, this increases youth awareness of agribusiness as one aspect of farming and of related careers. It also helps youth participants develop computer skills that increase college and career readiness. This type of record keeping also has the potential to facilitate increased fiscal prudence in livestock show projects.

The NMYBF contest was a commercial beef contest that focused on raising and slaughtering a commercial steer; scorers awarded points based on profitability. Coordinators required participants to track all input costs and the sale of the animal(s) in an Excel Record Book. Even though many of the participants had no prior experience using Excel, they were all able to finish the task on time and apply what they learned to their emerging business. Even novice competitors—those under 13 years of age—reported learning from the experience.

Suggestions for Teaching 4-H Members Excel for Livestock Records

Create a Branded Record Book Template

The first worksheet in the Excel workbook was a title page that included University and Cooperative Extension Service logos and information (Figure 1). Each page had the print area set for easy grading and review upon submission. We color-coded the cells to indicate input and key output. The completion of formulas varied based on the desired learning objectives. The first worksheets included all formulas, to introduce the functions; later worksheets required participants to enter basic formulas.
HOST ONLINE WORKSHOPS
While Covid-19 made many cherish in-person Extension programming, online workshops were beneficial for the Excel trainings. They allowed state specialists to conduct the statewide workshops. More importantly, online workshops allowed 4-H members to be active learners. Members received the record book file prior to the workshop, and during the workshop, specialists led them through the instructions for entering expenses and income. For the second year of the program, coordinators created a written manual that will be shared after the training.

PROVIDE OPPORTUNITIES FOR EXTRA LEARNING
The goal of our contest was to teach participants about the beef industry, so we included opportunities for more learning throughout the record-book. For example, the New Mexico Beef Council supported the contest; because of this, the record book included an option for participants to allot $1.00 per head to the New Mexico Beef Council. This suggestion spurred discussion of how producers contribute to the advertisement of beef to consumers. Coordinators and participants calculated income with side-by-side comparisons of revenue from live sales with grid pricing.

OFFER CONTINUOUS SUPPORT
Project coordinators held brief Q&A sessions several times throughout the project’s duration to support participants as they worked through the record book. This support was key to preventing frustration—especially among very young members and for many parents that were unfamiliar with Excel.

REWARD PARTICIPANTS
To incentivize completion and diligence, we awarded youth with scholarships and buckles; we gave out some awards specifically based on the quality of participants’ record books.

RECORD BOOK SETUP
The record book consisted of multiple worksheets focused on the categories of expenses and incomes. The first input page covered purchase expenses. We included freight costs to help participants understand additional expenses associated with their project. The second sheet covered veterinary expenses. We challenged youth to read the label on the veterinary products and record the cost per unit of medicine. One parent stated that, “Calculating the cost of one dose of wormer was an interesting lesson. We had to show our child step-by-step calculations for figuring out the dosage for their steers’ weight.” To draw attention to the real-world application of record keeping, we included a tab for labor expenses to help youth understand the value of the labor input—an aspect of total cost that is often ignored by agricultural producers. We calculated labor costs using the current state minimum wage. We also included interest expenses to increase financial literacy. Youth could enter different interest rates to analyze how
changes in rate affect overall profitability. This improved participants’ understanding of the importance of interest rates to agriculture.

**CONCLUSION**

The Excel record-keeping method was well received. Several parents noted that the experience enabled their children to better comprehend critical agribusiness concepts. One parent stated:

> The record sheets were new, so working with our students to understand how to use them was the most difficult piece, but experience that she wasn’t getting elsewhere. Learning how the spreadsheets tie to each other through pages was definitely something that our family learned from.

Another parent said:

> We obviously run our own ranch so it’s nice for our kids to get an aspect of reality . . . the financial side was more in-depth than what they have learned in the regular market steer project. They started realizing how much the vaccines and stuff like that cost because that’s usually done when we get show steers. It’s not something they’ve got to look at, they haven’t had to look at labor costs and have those kinds of talks.

Another parent agreed that the record-keeping directly contributed to their child’s increased understanding of the beef industry, stating that “After him and his dad sat down and put pen to paper to analyze the numbers of what things cost and how much it takes to gain a pound, he was able to see the overall picture.” Parents noted that the emphasis on keeping records changed the nature of the conversation. According to one parent, describing their child’s conversations with their grandfather, “Sometimes, you can ask those questions around the dinner table, but this is more about a business conversation, and she enjoyed asking questions like that.”

Improving knowledge and comprehension of agribusiness subject matter is critical to the long-term viability of the agricultural colleges and industry (Espey & Boys, 2012). Agricultural industries are having difficulty finding skilled graduates to fill employment vacancies. A drop in student enrollment in agricultural institutions may be one explanation for the national scarcity of skilled agriculture graduates (Baker et al., 2013). Improving recruiting practices is critical. 4-H programs are well positioned to assist youth with college preparation and access (Copeland et al., 2009). Adding Excel-based record books to this project allowed for increased involvement of the Agriculture Economics and Agricultural Business departments. We are exploring options for expanding the availability of these record books for use in other projects. This distribution could allow for more balanced recruiting and a broader awareness of agribusiness degree and career options for participating 4-H members.

The template used for the NMYBF project is available to interested readers through the corresponding author; please email__________.

**REFERENCES**


