

**Nebraska Soybean Board**  
**FINAL Research Report Form**



1/13/2020

**Note: Submit this report no later than 90 days after the NSB-funded project officially terminates.**

This post-project 90-day time-frame will allow the Lead PI time to complete any final data analysis and a final technical report, plus the drafting of any articles for submission to scientific journals. Note that this completed report will be provided to the National Soybean Checkoff Research Database, (soybeanresearchdata.com).

**Project # and Title:** Cost of Production Decision Tool: Ag Budget Calculator (ABC)

**Principal Investigator:** Larry Van Tassell

**Co-PI's & Institutions:**

**Project Date (Including Extension):** 10/01/2017 **to** 09/30/2019 **(For example: mm/dd/yyyy to mm/dd/yyyy)**

**Total Budget for Project:** \$ 40,000.00

**1. Briefly State the Rational for the Research:**

While cost of production information is important to a wide range of users, for the individual farmer, having the ability to customize cost of production to his or her operation is essential for decision-making. Cost of production is necessary for estimating the economic and financial feasibility of alternative technologies and management practices, for selecting the best combination of enterprises for a farm, for determining financially efficient land lease rates, and uncovering costs that may have otherwise been overlooked. Properly developed cost of production estimates can be used to develop "what if" scenarios to see what will happen to the profitability of the operation if certain production practices or cost scenarios change. Perhaps the most important aspect of determining per unit cost of production is for the development and execution of an effective, dynamic marketing program. If producers do not know their unit cost of production, they cannot ascertain what price their product needs to be sold at to breakeven or make a profit. They are then left in a situation of waiting for the "best" price and often miss out on marketing opportunities that would provide a profit that would keep them in business.

**2. Research Objectives: (copy from project, but keep in a brief bullet format)**

The objective of this project was to develop a decision-aid program that allows the user to develop, track and analyze their production costs for each production enterprise they engage in. The program will allow the user to build estimates from scratch, or to download and modify one, or several, of the University of Nebraska's 70+ cost and return estimates.

**Nebraska Soybean Board**  
**FINAL Research Report Form**

***3. General Approach Used and (if applicable) the Nebraska Test Locations:***

Historically, enterprise budgeting software has approached the budgeting process by asking the user what inputs are used in producing the crop of interest. The UNL Ag Budget Calculator (ABC) uniquely approaches the enterprise budgeting problem by prompting the user to identify the field operations necessary to produce a crop. The machinery and equipment required to conduct the field operation is identified, along with any operating costs (seed, fertilizer, etc.) required. All information identified is stored in a database that is accessed through a menu so the user does not need to continually input this information when developing additional budgets.

The first group of programmers that were hired were creating a product that was not to the standard we desired. We had to part company with this group and eventually hired a programmer in-house. This process set us behind approximately one year. The current program is housed on a University of Nebraska-Lincoln website that is password protected. Data is stored on the “cloud” and only the user, with their unique login information, has access to the data. Users can access the program using Apple or Microsoft based technologies on a computer or smart phone.

***4. Describe Deliverables & Significance Attained for Each Research Objective:***

The cost of production budgeting tool assists the producer in determining value of production, operating costs and ownership costs for one or several enterprises the user may wish to examine simultaneously. Resulting management indicators include: operating costs per unit, net returns above operating costs, ownership costs per unit, total costs, total costs per unit, and net returns. All gross indicators can be determined not only on a cost per field basis, but also on an aggregate basis for total acres planted to that crop.

The cost of owning and operating farm equipment is determined using engineering formulas and current market costs of machinery and equipment (provided internally in the program). Using these factors, a sheet is populated with information such as purchase price, ownership period, salvage value, annual repair costs, fuel use, total annual hours used, labor costs, along with applicable taxes, housing, insurance, and licensing costs for a user specified power unit and implement. The user has the option to override any of these input values. To determine the machinery and implement costs on a per hour and/or a per acre basis, implement specific values such as field speed, width, and field efficiency are also defined. Ownership and operating costs are then determined on a per operation (e.g., disking, spraying, or combining) basis and can be combined over several field operations to determine total machinery cost per enterprise. The program determines applicable depreciation, interest, and other costs for all machinery used for that enterprise. This same methodology is used to determine the applicable costs of farm buildings and facilities for each enterprise being examined.

**Nebraska Soybean Board**  
**FINAL Research Report Form**

**4. Describe Deliverables & Significance Attained for Each Research Objective (continued)**

Subroutines allow the user to determine some of the more complex operating costs and ownership costs, such as irrigation costs. The irrigation subroutine allows producers to account for all irrigation costs, including depreciation and interest on the irrigation equipment, well, pump and power; along with the variable costs of fuel, electricity, labor, and water. The routine also allows producers to account for costs associated with soil moisture monitoring technology.

Users are also prompted to input such whole-farm overhead expenses as management, accounting, legal, and tax preparation fees, fuel and lube expenses, office expenses, shop and office utilities, phone and internet expenses, dues, and liability and causality insurance. The program allocates these expenses among the several enterprises being examined based on a percentage distribution indicated by the user. The proper share of these expenses are allocated to the proper budget enterprise worksheet.

Selected screens from the Ag Budget Calculator are appended to this report that show the program accessed on a regular monitor and a phone display.

**5. List where the Project Research Results/Findings were Publicized:**

The program was tested with a group of producers in Gage county and with Extension Educators throughout Nebraska. Continued testing will occur Spring semester 2020 with students in the Advanced Farm and Ranch Management course at the University of Nebraska-Lincoln and with several additional producers. The program was introduced during the 2019 Soybean Day programs, the Nebraska Power Show (Lincoln), the Landlord Tenant Program (Central City, Lincoln, Ithaca, and Wilber), the UNL Agronomy Club meetings, and the Women Managing Ag Land Conference (Lincoln). An on-line user manual will continue to be developed.

We will continue adding additional components (e.g., marketing planner, fertilizer decision tool, cash flow budget creator, loan repayment analyzer, sensitivity analyzer, machinery purchasing analyzer) to the program over the next year and into the future. A USDA grant has recently been obtained to continue with some of these decision-making components. Our goal is to make the program a high quality decision-making tool and not just a enterprise budget calculator.

**Note:** The above boxes will automatically accomodate for your text inputs; HOWEVER, the Final Report comprised of the above listed items must be kept to THREE PAGES. A Technical Report of no more than TEN PAGES (preferably fewer) can be appended to this report.

**Submit both reports as a single PDF with this file name format:** #XXX > FINAL > Project Title > PI last name

Please email this completed form to the Agriculture Research Division ([jmonaghan2@unl.edu](mailto:jmonaghan2@unl.edu)) based on the reporting schedule given to you. If you have any questions, please call the ARD at 2-2045 or Victor Bohuslavsky at the Nebraska Soybean Board Office at (402) 432-5720.