ECONOMIC AND FINANCIAL DECISION SUPPORT AID FOR COTTON PRODUCERS

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Abstract

This set of Windows based programs is designed to help cotton producers quickly and easily analyze the financial and economic impacts of short run changes in their cotton production systems. The programs are specifically aimed at examining changes due to varying yield potential and in-season production system alternatives, with particular attention given to supporting marketing decisions and credit acquisition requests. Funding for this project was provided by Cotton Incorporated.

Introduction

This set of Windows based (Baler, 1994) programs consists of two modules that are built on enterprise budgeting principles. These modules include: 1) a machinery inventory module, used to define machinery operations and establish variable and fixed cost charges related to machinery operations and 2) an economic and financial analysis module that integrates fixed and variable cost information with yield and financial information.

The system utilizes subjective producer input or yield projections from crop modeling systems to generate a profile of breakeven prices given a specific cost profile associated with a production system. These baseline profiles are easily updated by utilizing the calendar type user interfaces.

Discussion

The Economic and Financial Decision Support Aid (EFDSA) system is based on the foundation of enterprise budgeting. Enterprise budgeting has historically been used in farm management to refine organizational and operating structures and to test the economic and financial feasibility of alternative production technologies and management practices. These budgets are the basic information for development of farm cash flows and projected income statements. These budgets can also be used to organize information to support credit acquisition requests.

The preferred steps to follow in developing projected cost and return structures using the EFDSA system are to develop machinery cost information in the EFDSA - Machinery module, then integrate that information into the EFDSA - Cotton module.

The EFDSA - Machinery program provides a method to develop machinery operation cost estimates (both fixed costs and variable costs) that can be integrated into the EFDSA - Cotton module. This allows the user to allocate fixed costs related to machinery on a per acre basis to different crop enterprises, without having to re-enter information into separate cost structure scenarios.

The input data for these calculations of fixed and variable costs are made for implements, power units and self-propelled machinery. General information for each of these items required for cost calculations includes: 1) estimated purchase cost, 2) estimated salvage values, 3) expected life of the machine or implement and 4) expected total use per year. Operations are defined by the implement or self-propelled machine, which includes financial information and capacity measures in acres per hour. From these data, information is generated for fixed and variable costs per acre by operation. The information generated by the EFDSA - Machinery module is then available to be merged into the EFDSA - Cotton module by the user.

The EFDSA - Cotton module is much like other Windows based programs in the design of the Main menu, which is a "pull-down" type menu. The Main menu for the EFDSA - Cotton module contains File, Edit, Data, Report and Help options. The File option allows the user to clear information from all or part of the workbook and to save and retrieve information. The Edit option menu allows the user to access the Windows clipboard features from the workbook. The Data option allows the user to move to areas within the workbook to enter and/or maintain data. The Report option allows the user to generate predefined reports and to view certain sections of the worksheet.

The EFDSA - Cotton module allows the user to build production scenarios in a calendar type interface. The Machinery Operation Input Calendar is used to input the timing and number of machinery operations that have been previously defined in the EFDSA - Machinery module. These operations include the implement operations and the self-propelled machine operations that were defined in the EFDSA - Machinery module. The information regarding self propelled and implement operations are imported into the EFDSA - Cotton module by selecting the Machinery Data option from the Data option on the Main Menu. This calendar covers thirteen months from the beginning of the crop year.

The first step in building the machinery operation cost structure is to select the beginning month for the crop year using the Select Month option from the data menu. After selecting the starting month for the crop year, the user can input machinery operations (the operations requiring implements) or self propelled machinery operations, by

selecting the appropriate icon from the toolbar. After selecting the machinery operation from the dialog box, the user can then navigate using the mouse or arrow keys to the appropriate month, then enter the number of trips made with the implement or self-propelled machine. The cost structure is then built by the EFDSA - Cotton module based on the cost parameters entered in the EFDSA - Machinery module.

The second calendar utilized by the EFDSA - Cotton module allows the user to input the timing and quantities of operating inputs and custom operations. The data regarding the operating inputs may be defined on a scenario by scenario basis, using the Input List option from the Main Menu. The data regarding the custom operations may also be defined by using the Custom Operation option from the Main Menu.

The harvest cost section has been separated from the machinery operation calendar to facilitate input of costs that vary directly with the amount of cotton harvested. This separation allows each cost structure to be estimated across the simulated yield distribution. If the picking or stripping costs are entered on a per acre basis, these costs will not vary with the changes in expected yield. If the picking or stripping costs are entered on a per hundredweight (cwt) basis, then the per acre picking or stripping costs are ignored and picking or stripping costs are calculated by multiplying seed cotton yields by the cost per cwt of picking or stripping. Moduling and hauling costs are calculated by multiplying the moduling and hauling costs by the seed cotton yield (cwt). However, the charges for ginning, bagging and ties are calculated based on yield in lint pounds. The charge for ginning, bagging and ties should also include all expected dues, checkoffs and warehousing fees. The baseline lint yield and % turnout are used together to establish seed cotton yield by dividing the lint yield by the % turnout. Cotton seed yield is calculated by multiplying the baseline lint yield by the seed pound per pound of lint factor.

The budget summary requires inputs that include the baseline price for cotton lint, shares of revenue and harvest cost for shares for the landlord, if applicable. If a cash rent is specified for the scenario in the General Input section, it will override any share rent information entered and will be shown in the summary section.

Yield expectations can be generated by crop models such as the Integrated Crop Ecosystem Management Model (ICEMM) (Landivar et. al., 1991) and imported into the EFDSA - Cotton module. Alternatively, yield expectations can be entered directly into the EFDSA - Cotton module. The EFDSA - Cotton module program will sort the ICEMM yield potential data from smallest to largest yields and calculate breakeven costs and returns based on the yield distribution. Returns per acre above variable and all costs are calculated using the baseline prices for cotton lint and cotton seed. The cost structures are adjusted for harvest costs based on the yield alternatives established in the simulation.

The EFDSA - Cotton cash flow report provides monthly total and cumulative totals for the baseline cost structure. Revenue estimates for the baseline scenario are not included in the cash flow report.

Summary

This paper outlines some of the capabilities of a set of standalone Windows based programs that are designed to aid cotton producers in making economic and financial decisions. This compiled software package is structured to minimize the amount of data entry required to support the economic and financial decision making. This package has the capability to interface with crop production models, resulting in the incorporation of risk analysis using alternate weather regimes.

References

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