The Cornell Value Discovery System Model

CVDS version 1.0.6
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Users Guide

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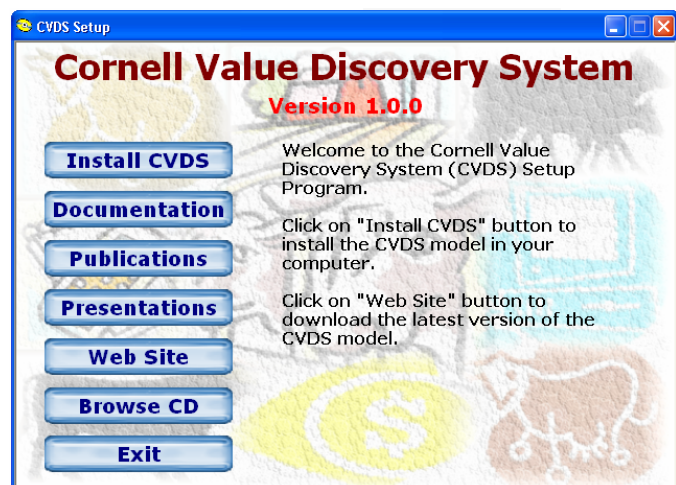# ACKNOWLEDGMENTS

SYSTEM REQUIREMENTS

The CVDS model requires the following configuration for satisfactory performance:
- A 600 Mhz Pentium-based IBM-PC compatible machine with at least 64 Mb of RAM and 50 Mb of free hard disk space,
- A CD-ROM for installation from CD media,
- An IBM-PC compatible printer for report printing capacity, and
- OS Microsoft Windows™ 98 Second Edition (or later) and Microsoft Internet Explorer™ 5.0 (or later) installed. For Import/Export functionality from/to spreadsheet, Microsoft Excel™ 9.0 (or later) is required. For advanced database manipulation, Microsoft Access™ 9.0 (or later) is recommended.

MODEL INSTALLATION

If installing from the CD, insert the CD containing the CVDS model in the CD-ROM. Your computer should automatically start the CD menu (shown below) if the auto notification is on; if it does not; execute the AutoRun.EXE program from the CD root. There are four menu options:

- The INSTALL CVDS button starts the installation of the model,
- The DOCUMENTATION button has the CVDS Manual, Tutorials, and Users Guide documents,
- The PUBLICATIONS button has supporting peer-reviewed manuscripts, and
- The PRESENTATIONS button has browser-style presentations about the model, and
- The WEB SITE button connects to http://www.cncps.cornell.edu/cvds.

If installing from the download, save the Setup.EXE file in a temporary folder and execute it after the download is completed. You may delete the Setup.EXE file after the installation is finished.

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INTRODUCTION

Individual cattle management systems (ICMS) are being developed in the beef industry to improve profitability, minimize excess fat produced, increase consistency of product, and to identify and reward individual owners for superior performance in the feedlot. In the U.S., Strategic Alliances between cow-calf, feedlot and packer segments of the industry are being established to accomplish this goal. Integrated production and marketing systems are being developed that can make Strategic Alliances work. Their objective is to market each animal at their optimum economic endpoint, considering live and carcass incremental cost of gain and carcass prices for various grades, and avoiding discounts. Additionally, programs are being developed to identify individual animals with superior feed efficiency for use in making selection decisions.

The Cornell Value Discovery System (CVDS) was developed to provide information to manage four critical control points in individual cattle management systems for growing beef cattle, including feedlot finishing of steers and heifers and post weaning feedlot evaluation of herd replacement heifers and bulls:

1. Predict optimum finished weight, incremental cost of gain and days to finish to optimize profits and marketing decisions while marketing within the window of acceptable carcass weights and composition,

2. Predict carcass composition during growth to avoid discounts for under or over weight carcasses and excess backfat,

3. Allocate feed fed to pens to individual animals for the purpose of sorting of individuals into pens by days to reach target body composition and maximum individual profitability, requiring mixed ownership of individuals in pens, determination of individual animal cost of gain for the purposes of billing feed and predicting incremental cost of gain, and providing information that can be used to select for feed efficiency and profitability, and

4. For herd replacement bulls and heifers, compute feed efficiency over the same stage of growth to provide information for use in selection decisions.

For control points 1 and 2, a dynamic iterative mechanistic (DIM) growth model uses expected feed intake, ration net energy values, body weight and expected weight at 28% fat (low choice grade) to predict accumulated weight, body composition, and feed required for each day on feed as described by Fox et al. (2001a). Accumulated weight and feed required can be used with animal, feed and non feed costs to compute break even sale price for each animal on any day. Accumulated weight and composition can be used with market prices, grade and weight discounts, and break even sale price to compute profitability each day. Predicted days to reach the target market weight can be used for risk management, and harvest and purchase scheduling. ***The DIM growth model is also used to make these projections for each pen of cattle, using pen average information.***

For control point 3, the CVDS model computes the feed required for the observed daily gain, body weight, expected 28% fat weight, and ration net energy values, using the equations described by Perry and Fox (1997) and Guiroy et al. (2001), which is used to compute costs and returns for each individual in a pen.

For control point 4, the CVDS computes the feed required for a fixed period of growth, using the DIM growth model as described by Fox et al. (2002). Because the CVDS model feed required procedure accounts for differences in the effect of body weight and composition of gain on energy requirements, animals with a lower feed to gain ratio may have had a greater intake over maintenance, a greater efficiency of use of the energy consumed, or a combination of both. In selecting for improved feed efficiency, individually fed animals that consume less than the average across a group being evaluated would have a higher efficiency of use of the feed consumed and/or a lower maintenance requirement; those with a higher intake than expected would likely have a lower efficiency of use of the feed consumed and/or a higher maintenance requirement. Residual feed intake (RFI) has been proposed as a procedure to estimate this difference by subtracting observed dry matter intake (DMI) of an individual from DMI predicted by an equation developed from the relationship between DMI, ADG and metabolic mean body weight across individually fed contemporaries (Archer et al., 1999; Carstens et al., 2002). In most progeny tests, however feed efficiency for individual animals must be estimated from information available for animals fed in pens under typical feedlot conditions. In this case, a ratio of expected feed required to the observed gain is the only practical measure of feed efficiency.

USERS GUIDE

The goal of this Users Guide is to familiarize the user with the CVDS computer program screens, inputs required, and outputs that can be obtained. Tutorials are provided to learn how to use the program. We recommend the following steps to learn how to use this program.

1. Go through the Users Guide, including opening the program to learn how to move around in it and to understand the inputs and outputs for each screen.
2. Go through the tutorial to learn how to actually input data and interpret the results.

1.   The CVDS Screens

1.1.   The Splash Screen

When the CVDS model is started, a splash screen similar to Screen 1 displays the user name, company name, license number, registration number for few seconds before the control returns to the user. The blue bar at the bottom of the splash screen is a countdown progress bar.


Registration Information
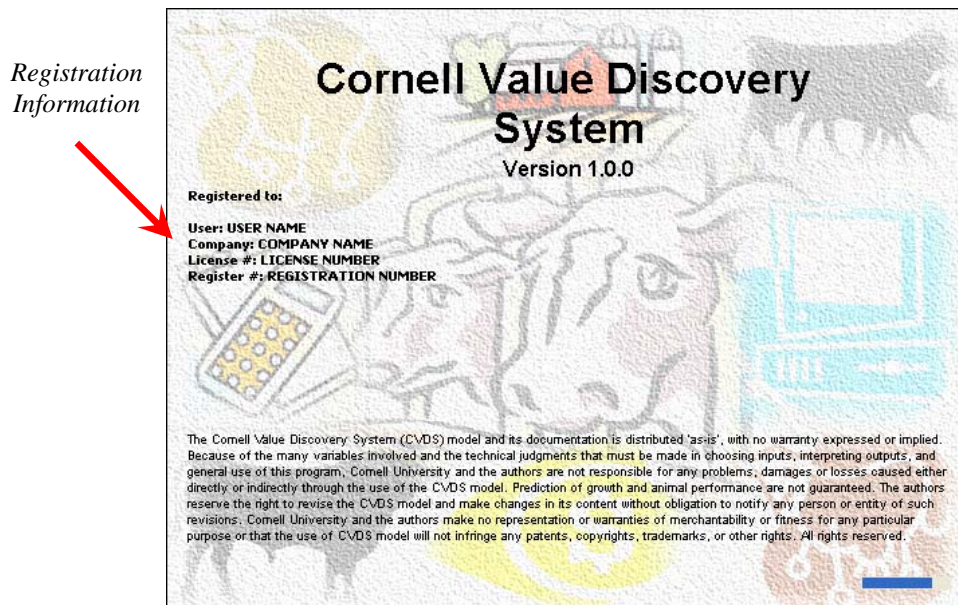
Screen 1. Splash screen of the CVDS model.

Registration. If the evaluation period has expired, the software will not work and the user will be asked to register the software in order to continue using it. Registration can be performed before the evaluation period has expired in the **HELP/REGISTRATION** menu option.

1.2.   The CVDS Menus

The CVDS model has five menu options (**FILE, REPORT, TOOLS, WINDOW**, and **HELP**) similar to those shown in Screen 2.
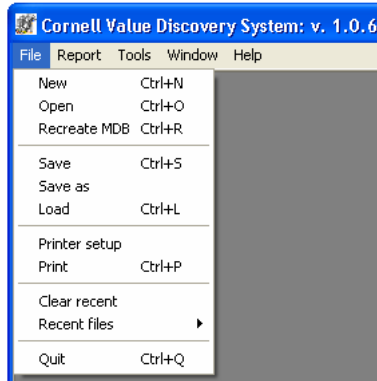
Screen 2. Options of the **FILE** menu.

Below is a brief explanation of each **FILE** menu option. The CVDS model allows the user to open or create several simulations at the same time.

FILE menu options	Description
NEW	Creates a new simulation
OPEN	Opens an existing simulation
RECREATE MDB	Create (and delete if necessary) a MDB file
SAVE	Saves the current simulation with its current name
SAVE AS	Saves the current simulation with a different name
LOAD	It is similar to FILE/OPEN, but instead of opening an existing simulation in a new window, it loads the information of an existing simulation into the current window
PRINTER SETUP	Allows the user to change printer-related information
PRINT	Prints the information being displayed for the current simulation
CLEAR RECENT	Clears the list of recent files
RECENT FILES	Allows the user to select up to nine previous simulations
QUIT	Closes the simulations and the CVDS model

The file DEFAULT.MDB, which is found in the CVDS program directory, contains all the basic information to create new Individual Management database files; therefore, it cannot be deleted or modified; otherwise the model will not work properly.

The CVDS model uses five (5) different file extensions as described below. This table emphasizes the CVDS model stores information in different files at the same time, but the .VDS file is the one that contain the necessary information to run the model.

The user-created CVDS files are saved in a folder named \CVDS\CVDS Files\ under the Personal Folder, usually C:\My Documents\ for MS Windows 95, 98, and ME or

C:\Documents and Settings\Login-name\My Documents\ for MS Windows NT, 2000, and XP operational systems.

Extensions	Description
.VDS	This is the main file that CVDS uses to save and retrieve all the information necessary to run the model. It has all the Group Management inputs, economical inputs, and the names of other file extensions that are used by the model.
.LST	These files have the CNCPS information regarding diets and animal groups used in the Group Management.
.MDB	This is a Microsoft Access database file. It contains all the information pertinent to Individual Management information.
.XLS	This is a Microsoft Excel spreadsheet file. It is used by the CVDS model to import/export data from/to an .MDB file.
.DAT	The .DAT extension is used by the CVDS model to store information regarding the environment conditions to be used in the Group or Individual Management simulations and the Settings.

The **REPORT** menu options are shown in Screens 3 and 4. It allows the user to select one of the eight reports that are generated by the CVDS model.
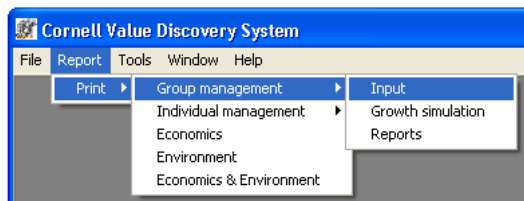
Screen 3. **REPORT** menu options for group management.
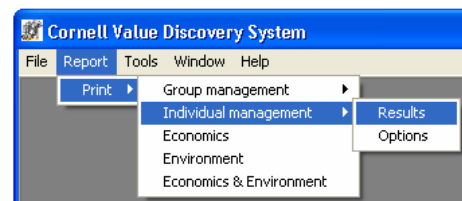
Screen 4. **REPORT** menu options for individual management.

The **TOOLS** menu, as shown in the top left part of Screen 5, allows the user to compact a database, to open a file in Microsoft Windows ™ Notepad program, create a note files, open simple text files using NotePad™, converge ME to NEm or NEg, estimate values using interpolation or linear regression, and to show the implant table and background calculations. The **COMPACT DATABASE** option repairs and compacts the Microsoft Access™ database, which is used in individual management.

The **WINDOW** menu, as shown in the bottom part of Screen 5, shows and arranges the current opened simulations in vertical, horizontal or cascade arrangements. Additionally, it has the list of all opened windows of the CVDS program environment, e.g. the *Quick Start* file.

The **HELP** menu, as shown in the top right part of Screen 5, has the following options: **HELP**, **REGISTRATION**, **WEB SITE** and **ABOUT**. The **HELP** option opens the CVDS online documentations; the **REGISTRATION** option allows the user to register their copy of the CVDS model before the expiration date or to check current registration information; the **WEB SITE** option opens the default internet browser and loads the current CVDS model web page at the address http://www.cncps.cornell.edu/cvds; and the **ABOUT** option shows the disclaimer and publications used to develop the CVDS model.
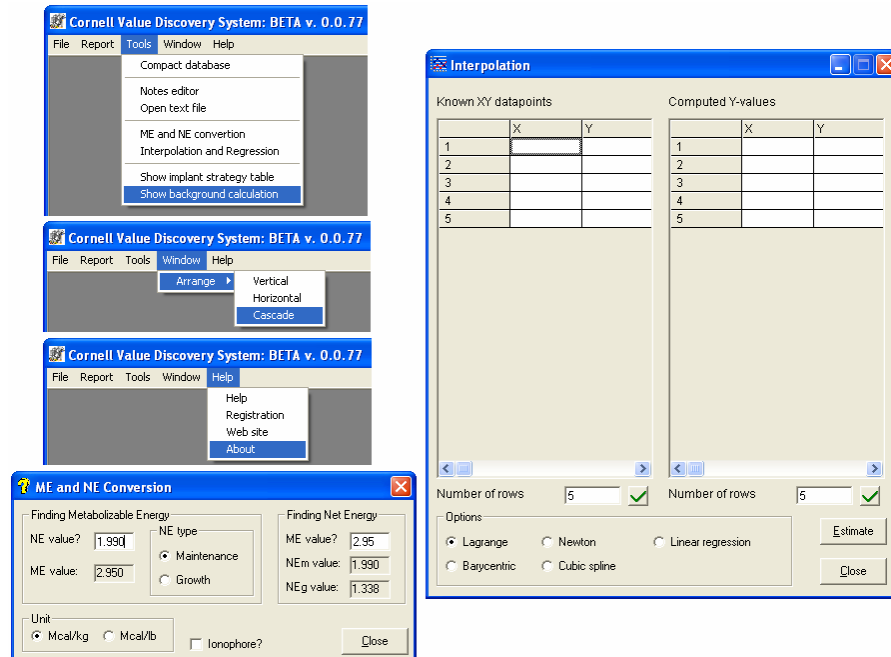
Screen 5. Options for **Tools**, **Window**, and **Help** menus.

Opening the first simulation. In order to become familiar with the model, we will open a simulation file to explore all the options of the CVDS model. *A keyboard picture will appear on the left throughout the documentation every time a user-input is required.*

Click on **File/Open** and select *Quick Start.VDS* file in the CVDS Files directory. Click on **Economics t**ab and a screen similar to that shown in Screen 6 should appear (default data are already entered).

1.3.   The Quick Task Buttons

As shown in Screen 6, at the bottom of the form, five buttons (**Load**, **Save**, **Save as**, **Print**, and **Close**) are available at any time during the simulation. These buttons have the same function as those in the **File** menu. The **Print** button, as explained above, prints the information being shown. Each screen has a specific report format; the possible reports are Group Management: (1) Inputs, (2) Simulation, and (3) Report; Individual Management: (4) Simulation Results; (5) Economics; and (6) Environment. The **Close** button closes the current simulation, but do not quit the program.

2.   The CVDS Tabs

The CVDS model has four major tabs: group management, individual management, economic information, and environment information. The first two tabs perform simulations for group or individual animals fed in groups. The economics and environment information are used by both group and individual management.

2.1. Economics Tab

The **ECONOMICS** tab has the information required to do the economic analysis of the growth simulations for both group and individual management. The purchase price, sale price, medicine and veterinary costs, and other extra costs are individually entered in the individual management simulation. This screen is sub-divided into eight frames.

Settings frame. This frame has six checkboxes that sets/changes the simulation and the report as discussed below.

(1) The checkbox *Profits/costs are on carcass basis?* indicates the values of *Select*, *low Choice*, *Yield Grade (YG)*, and *Live BW* endpoints, and *YG* and *carcass discounts* are assumed to be on a carcass basis. If not checked, these values are assumed to be on a shrunk BW basis.

(2) The checkbox *Use bias adjustment for initial EBF?* multiplies the prediction of fat in gain by 0.85 to eliminate a bias in the comparison of observed versus predicted fat composition (see Tedeschi et al., 2004). We recommend this option to be checked. This checkbox also applies for IM simulations.

Screen 6. Options for the **ECONOMICS** tab.

(3) The checkbox *Summary for adjusted feed efficiency?* adds a table in the **group management REPORT** tab that shows the animal performance and feed efficiency for

both live and carcass weight basis, and daily cost at five ranges of maturity degree (50 to 60, 60 to 70, 70 to 80, 80 to 90, and 90 to 100%). This report is useful to compare animals of different final weight at the same maturity degree fed the same diet at the same time.

(4) The checkbox *Summary for each growth period?* adds tables in the **group management REPORT** tab that show the animal performance and feed efficiency for both body and carcass bases, and daily cost for each end point selected at each growth period. This report is useful to investigate the animal performance at each growth period.

(5) The checkbox *Summary for selected endpoints?* generates a summary of inputs and cost analysis for each end point selected in the **group management REPORT** tab.

(6) The checkbox *Use CI to predict EBF -> YG?* uses the inverse confidence interval to compute the lowest empty body fat (EBF) that is likely to have the YG end point selected. Three levels of probability are available: 80, 90, and 95%., greater the probability lower will be the lowest EBF, which yield a low predicted YG. This means that to attain an YG = 4, the prediction of days on feed using a probability of 80% will be greater than using 95% (Tedeschi et al., 2004). If in doubt on which to choose, using the probability of 80% gives reasonable predictions of days on feed for YG = 4. This checkbox also applies for IM simulations.

Costs frame. This frame has all the cost information. Note the units are not the same; some units are $/kg or lb of SBW (shrunk BW); $/hd, cost per head; and $/hd/d, cost per head per day. The *Expected death loss* is the percent of animals that die before some days after the beginning of the feedlot. This number of days is specified in the *Days to estimate death loss* and it affects the overall cost of the remaining animals. This checkbox also applies for IM simulations.

End point projection frame. This frame allows the user to select which end points to simulate and the Sale price associated with each end point. The following five options are available for group simulation.

(1) Carcass prices are requested in the sale price column for the *USDA Select* and *USDA low Choice* grades. The carcass weights are estimated based on the user-inputted Final SBW (FSBW) or Adjusted Final SBW (AFSBW), which are assumed to be at *USDA low Choice*. The *USDA Select* is the FSBW or AFSBW multiplied by 0.9214; Guiroy et al. (2001) found that USDA Select weight was on average 7.86% lighter than that at USDA low Choice. This checkbox also applies for IM simulations.

(2) A maximum yield grade value is requested in the value column for the price indicated in the sale price column. For example, a yield grade of 4 entered with a value of $ 120 indicates that price is valid for yield grade 4 or better. This value is applied to the *YG* end point that is estimated based on predictions from EBF using the developed equations (Tedeschi et al., 2004). This checkbox also applies for IM simulations.

(3) The *Bkgnd* (Backgrounding) end point is a user-defined number of days of simulation. For example, a value of 100 entered in the value column will result in the growth projections being done for 100 days. This checkbox also applies for IM simulations.

(4) The *Live BW* end point is a user-defined body weight at which to end the simulation. For example, a value of 1200 lb. entered in the value column will result in the growth projections being done until the animal is projected to reach 1200 lb. This checkbox also applies for IM simulations.

Carcass dressing frame. This is a user-defined carcass dressing percentage at a given end point (Select, low Choice, or Live BW) that is used to adjust the model predicted carcass dressing percentage. The difference between the predicted and the user-defined dressing percentage is added to the model predicted to compute carcass weights (Fox et al., 2001b). This checkbox also applies for IM simulations.

Sensitivity for Select and low Choice grades frame. This adds sensitivity analysis in the **REPORT** tab of the group management for ± 30 days of the end point for either/both USDA Select and USDA low Choice.

Compute yield grade discounts? Frame. This option discounts the *Sale price* by a user-defined amount ($/cwt of carcass or body weight) if the predicted YG of a specified end point is lower or greater than the user-defined limits. This checkbox also applies for IM simulations.

Compute carcass discounts? Frame. This option discounts the *Sale price* by a user-defined amount ($/cwt of carcass or body weight) if the predicted carcass weight of a specified end point is lower or greater than the user-defined limits. This checkbox also applies for IM simulations.

Breakeven analysis frame. Generates a sensitivity analysis of breakeven for both *Purchase* and *Sale prices* for a user-selected end point. This analysis is added in the **group management REPORT** tab.
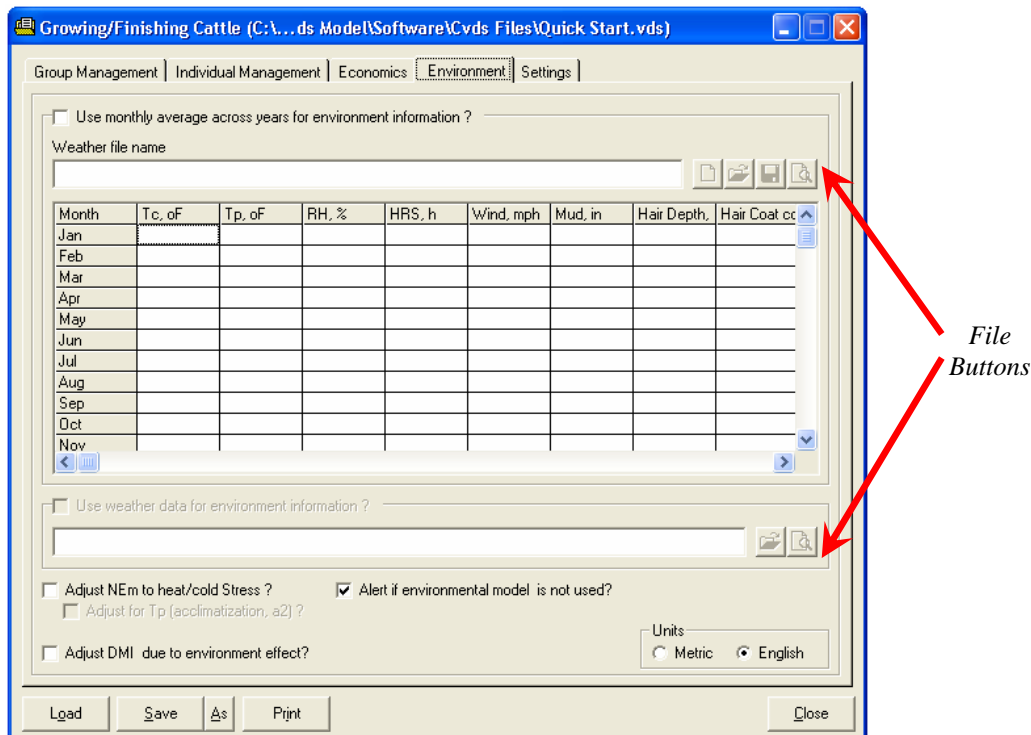
2.2. Environment Tab

⌨ Click on **ENVIRONMENT** tab; a screen similar to that shown in Screen 7 should appear.

The **ENVIRONMENT** tab allows the user to specify the environment conditions in which the animals were fed. The variables required are current temperature (Tc), previous temperature (Tp), relative humidity (RH), hours exposed to sunlight (HRS), wind speed (Wind), mud depth (Mud), hair depth, and hair coat code (1 – no mud, 2 – some mud on lower body, 3 – wet and matted, and 4 – covered with wet snow or mud; NRC, 2000). Two options are available as discussed below.

(1) *Use monthly average across years for environment information?* uses the monthly mean of the required environment variables regardless the year. Since the CVDS model simulates growth on a daily basis, it will use the monthly value for each day of that month. The buttons

on the right side of the **WEATHER FILE NAME** are used to create a new file, open an existing file, save the current information in the opened file, and view the information as text file; respectively.

Screen 7. The **ENVIRONMENT** screen.

(2) *Use current weather data for environment information?* This option allows the user to utilize a weather data file that contains the environment information by date. If a date is not specified, the model will use the last information given. The file buttons are to open an existing file and view the information as text file, respectively. ***This option is not available at this time.***

At the bottom of Screen 7, the user may choose to *Adjust NEm required for heat/cold stress?*, *Adjust for Tp (acclimatization, a2)?, Adjust DMI due to environment effect?*, and *Alert if environmental model is not used?* options. The first option will use the environment information to compute net energy required for cold or heat stress. If this option is not selected, there is no effect of the environmental conditions on NEm required for stress. The second option does not include acclimatization in the computation for energy requirement for maintenance; it can be selected only if the first one is checked. The third option will use the environment information to compute changes in the DMI due to environment effects. If this option is not selected, there is no effect of the environmental conditions on predictions of DMI. The fourth option will display an alert message if the environmental model is not being used in the calculations. Finally, the user has the choice of entering the environment information in Metric or English units.

Select the "Use monthly average…" check box. Click on Open monthly environment data file button (second button from the left), and select "T & R Environment Data.Dat" file; this file contains the average environmental conditions at the Cornell Animal Science Beef Research Center to provide an environment data file for the Users Guide example. Now that we have the Economic and Environment information set up with an example; we can proceed with the group and individual management simulations.

2.3. Settings Tab

The **SETTINGS** tab has default values for coefficients and parameters the CVDS model uses in the calculations. Screen 8 has a snapshot of this tab with the default values.

Settings	ON Value	OFF Value
When using IONOPHORE, Diet NEm multiplier	1.0000	1.0000
When using IONOPHORE & calculating ADG, Diet NEm multiplier	1.1200	1.0000
When using IONOPHORE, DMI multiplier	0.9600	1.0000
When using IMPLANTS, DMI multiplier	1.0000	0.9400
When HOLSTEIN, DMI multiplier	1.0800	1.0000
Standard Reference Weight, kg	478.0000	
Efficiency for fat deposition in gain	0.7500	
Efficiency for protein deposition in gain	0.2000	
Factor: Full BW to Shrunk BW	0.9600	
Factor: Shrunk BW to Empty BW	0.8910	
Unit: pounds (lb) to kilograms (kg)	0.4536	
Unit: inches (in) to centimeters (cm)	2.5400	
Unit: miles (mi) to kilometers (km)	1.6093	

Screen 8. Snapshot of the **SETTINGS** tab.

In order to change the information on this tab, the user has to check the *Enable changes in the Settings values?* checkbox. The status of this checkbox is not saved in the CVDS file and therefore is always unchecked to protect the integrity of the default values. The other two buttons are *Apply* the changes and *Save* the changes in to *Settings.DAT* file.

Do not change the information in the **SETTINGS** tab if you are not familiar with this information.

2.4. Group Management (GM) Simulations Tab

The GM simulation is used to predict the average performance for a pen of cattle fed the same diet. The GM simulation contains three sub-tabs: *Input*, *Simulation*, and *Report*. Each one is described below.

⌨ Click on **GROUP MANAGEMENT** tab. You should obtain a screen similar to that shown in Screen 9.

Input Tab. The **INPUT** tab requests basic animal information needed to predict performance of a pen of cattle. These inputs are divided into five frames: **UNIT**, **TYPE OF ANIMAL**, **GENDER**, **GENERAL INFORMATION**, **GROWING/FINISHING INFORMATION**, and **ANIMAL & DIET INFORMATION**.

Screen 9. Options for **GROUP MANAGEMENT** tab.

The top part of the **INPUT** tab shows input information needed for the simulation, such as units (metric or English), type of animal (beef or dairy), gender, beginning date of the simulation, age, initial BW (iBW), number of growth periods to be simulated, use of implants, if the animal is Holstein (pure- or crossbred), ionophore, and if IBW is shrunk.

The upper middle part of the **INPUT** tab requests inputs for adjusted final BW (AFBW), which is the slaughter weight at 28% empty body fat, ranges of acceptable carcass weight (CW), and hip height (HH) to automatically compute AFBW.

The lower middle part of the **INPUT** tab shows the Animal & Diet information for each growth Period. In this example, in the **GENERAL INFORMATION** frame, the textbox **PERIODS** has a

value of three, which means there are three growth periods for this group simulation; that is, three different diets were used in this simulation. These three periods can be viewed/changed using the spreadsheet-like grid.

The last option allows a quick summary be shown after each calculation is performed. If the user selects the *Show quick summary after calculation?* option, some results will be shown in an Info form. The end points to be shown are the ones selected in the Economics.

In this example, these animals received a diet with an ME of 1.1 Mcal/lb @ $ 0.02/lb of DM for 14 days, another diet with an ME of 1.2 Mcal/lb @ $ 0.025/lb of DM for 200 d, and a final diet with an ME of 1.3 Mcal/lb @ $ 0.03/lb of DM from 200 days until finished (100 days are entered as the maximum number of days on this diet). In practice, you will feed the last diet until they reach the longest end point selected. Therefore the number of days for the last diet will need to be long enough to be sure the time is long enough to reach the longest endpoint selected. This is needed to set up the matrix for the DIM growth simulation model. We suggest starting with a total of 300 d, and then the simulation will tell you if it was not enough to reach the longest end point selected.

⌨ Select the *Show quick summary after calculation?* And click on Calculate button to start the simulation of the GM information. A message similar to that depicted in the top part of Screen 10 will be shown.
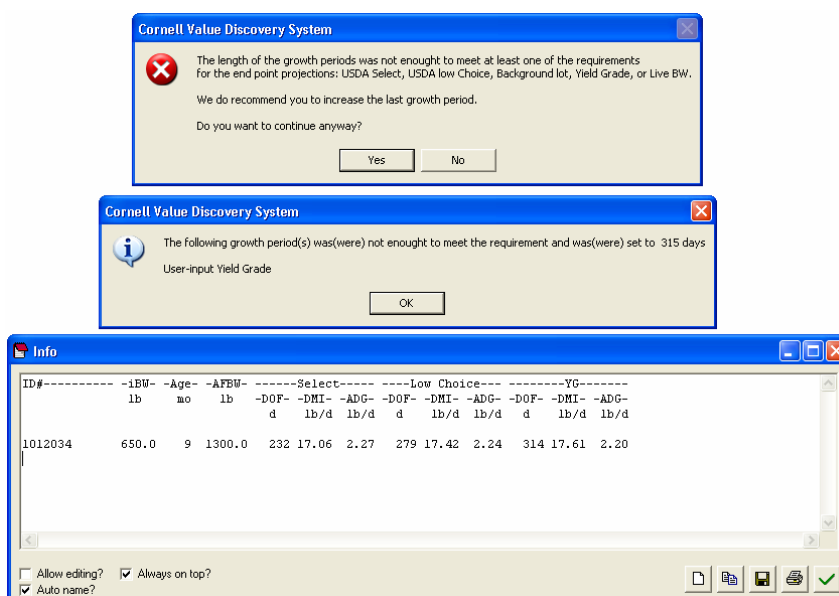
Screen 10. Message indicating the days of growth was not enough.

It indicates that some (or all) of the end-points was (were) not reached. If you decide to continue, the model will assign the last day of simulation to the end-point(s) that was (were) not reached, as shown in the middle part of Screen 10. The user also has the option to say "No" and assign longer growth periods and re-calculate the model. The bottom part of Screen 10 shows the quick summary of the calculation.

The bottom part of the **INPUT** tab shows the **RATION INGREDIENTS** button and the CNCPS rations list box. In order to enter ration ingredients information, select the period and then click the **RATION INGREDIENTS** button; you will get a screen similar to that shown in Screen 11. Up to 50 ration dietary ingredients can be imported from the CNCPS file.

The *CNCPS Rations* list box contains information generated by the CNCPS model to be used in the CVDS model. This topic is discussed with more detail at the end of the Users Guide.

Select "Yes" and "Ok" to continue with the calculation when prompted about the length of the growth periods. Once the calculation is done, the model will change to the **SIMULATION** tab automatically. Scroll the grid window to see more simulation information. Go all the way to the bottom to check if the last day of simulation is 314 days.

Screen 11. Ration ingredients.

Simulation Tab. Once all the information required has been entered, the calculation is performed by clicking the **CALCULATE** button. Screen 12 shows the growth simulations for each day, starting from the beginning date up to number of days fed for all periods (in this case 314 days).

Use the horizontal and vertical scroll bars to move around the result grid. At the bottom of the **SIMULATION** tab, find the **DAYS TO FINISH** list box that shows the days on feed (DOF) in order to achieve all five end points. In this case, 206 and 248 days are shown for USDA Select and low Choice, respectively. The option **FIX DATE COLUMN** toggles the Date column of the grid between fixed and non-fixed. The button **PLOT** generates a plot of some characteristics and the **COPY** button copies the content of the result grid into the Clipboard, so it can be transferred to another program.

Click on **REPORT** tab. Scroll the report box to see more information about the simulation. The first report should be the Growth report for each end point selected in the Economics tab, the second should be the Adjusted feed efficiency report, the third should be the Summary report, and the last one should be the sensitivity analysis for low Choice.

Report Tab. The **REPORT** tab (Screen 13) shows the partial result of the simulation at the three end points previously selected in the **ECONOMICS** tab. List 1 has the complete **REPORT** output obtained using the copy and paste by clicking on **COPY** button at the bottom of the screen. The **VIEW** button opens the Microsoft™ Notepad program with the output.

Screen 12. Simulation results for group management simulation.

Screen 13. Report results for the group management simulation.

List 1. The complete report output of the group management simulation.

```
                                -*-*- GROWTH REPORT -*-*-              Sep/16/2003 16:21
Select
=================================================================================================
                            Shrunk Body Basis              Carcass Basis
                      --------------------------------  --------------------------------  Feed
Per  Days   DMI    InWeight  OutWeight  Gain   FC    InWeight  OutWeight  Gain   FC    Cost
           (lb/d)   (lb)       (lb)    (lb/d) F/G     (lb)       (lb)    (lb/d)         $/d
-------------------------------------------------------------------------------------------------
  1   15   13.73   625.85     654.17   1.89  7.27    362.22     381.52   1.29 10.67   0.04
  2  200   17.13   654.17    1114.96   2.30  7.43    381.52     695.51   1.57 10.91   0.07
  3   17   19.15  1114.96    1150.90   2.11  9.06    695.51     720.01   1.44 13.29   0.07
-------------------------------------------------------------------------------------------------
Total 232 17.06   625.85    1150.90   2.26  7.54    362.22     720.01   1.54 11.06   0.07

Low Choice
=================================================================================================
                            Shrunk Body Basis              Carcass Basis
                      --------------------------------  --------------------------------  Feed
Per  Days   DMI    InWeight  OutWeight  Gain   FC    InWeight  OutWeight  Gain   FC    Cost
           (lb/d)   (lb)       (lb)    (lb/d) F/G     (lb)       (lb)    (lb/d)         $/d
-------------------------------------------------------------------------------------------------
  1   15   13.73   625.85     654.17   1.89  7.27    362.22     381.52   1.29 10.67   0.04
  2  200   17.13   654.17    1114.96   2.30  7.43    381.52     695.51   1.57 10.91   0.07
  3   64   19.21  1114.96    1249.31   2.10  9.15    695.51     787.06   1.43 13.43   0.07
-------------------------------------------------------------------------------------------------
Total 279 17.42   625.85    1249.31   2.23  7.80    362.22     787.06   1.52 11.44   0.07

Yield grade
=================================================================================================
                            Shrunk Body Basis              Carcass Basis
                      --------------------------------  --------------------------------  Feed
Per  Days   DMI    InWeight  OutWeight  Gain   FC    InWeight  OutWeight  Gain   FC    Cost
           (lb/d)   (lb)       (lb)    (lb/d) F/G     (lb)       (lb)    (lb/d)         $/d
-------------------------------------------------------------------------------------------------
  1   15   13.73   625.85     654.17   1.89  7.27    362.22     381.52   1.29 10.67   0.04
  2  200   17.13   654.17    1114.96   2.30  7.43    381.52     695.51   1.57 10.91   0.07
  3   99   19.17  1114.96    1315.20   2.02  9.48    695.51     831.96   1.38 13.91   0.07
-------------------------------------------------------------------------------------------------
Total 314 17.61   625.85    1315.20   2.20  8.02    362.22     831.96   1.50 11.77   0.07


                   -*-*- ADJUSTED FEED EFFICIENCY REPORT -*-*-           Sep/16/2003 16:21


=================================================================================================
                            Shrunk Body Basis              Carcass Basis
                      --------------------------------  --------------------------------
Maturity Days DMI   InWeight  OutWeight  Gain   FC    InWeight  OutWeight  Gain   FC    Cost
Degree      (lb/d)   (kg)       (lb)    (lb/d) F/G     (lb)       (lb)    (lb/d)         $/d
-------------------------------------------------------------------------------------------------
 50-60%  56  14.64   625.85     750.76   2.23  6.56    362.22     447.33   1.52  9.63   0.06
 60-70%  53  16.62   750.76     875.61   2.36  7.06    447.33     532.41   1.61 10.35   0.07
 70-80%  53  18.39   875.61     999.20   2.33  7.89    532.41     616.63   1.59 11.57   0.07
 80-90%  57  19.35   999.20    1124.06   2.19  8.84    616.63     701.71   1.49 12.97   0.07
90-100%  59  19.54  1124.06    1249.31   2.12  9.20    701.71     787.06   1.45 13.51   0.07
-------------------------------------------------------------------------------------------------
Predicted lb at 50, 60, 70, 80, 90, 100% are: 624.0, 748.8, 873.6,  998.4, 1123.2, 1248.0


                              -*-*- SUMMARY REPORT -*-*-                 Sep/16/2003 16:21


=================================================================================================
                          Select      Choice-     YG: 4.0
-------------------------------------------------------------------------------------------------
***** BASIC INFORMATION *****

Purchase date                Dec/15/01  Dec/15/01  Dec/15/01
Expected sale date           Aug/04/02  Sep/20/02  Oct/25/02
Initial weight, lb              624.00     624.00     624.00
Sale weight, lb                1150.90    1249.31    1315.20
```

```
Purchase price, $/100 lb              68.00      68.00      68.00
Sale price, $/100 lb SBW              68.19      75.60      75.91
Sale price, $/100 lb carcass        109.00     120.00     120.00
Adjusted carcass dressing, %         62.56      63.00      63.26
Days on feed                        232.00     279.00     314.00
Average daily gain, lb/d              2.27       2.24       2.20
Carcass ADG, lb/d                     1.55       1.53       1.50
Total DMI, lb                      3957.22    4861.05    5529.46
Daily DMI, lb/d                      17.06      17.42      17.61
Overall feed conversion               7.51       7.77       8.00
Carcass overall feed conversion      11.02      11.41      11.74


***** COST ANALYSIS *****

Animal purchase, $/hd               424.32     424.32     424.32
Feed cost, $/hd                     123.03     151.73     172.95
In trucking cost, $/hd                7.00       7.00       7.00
In processing cost, $/hd             30.00      30.00      30.00
Yardage cost, $/hd                   92.80     111.60     125.60
Interest on animal, $/hd             24.27      29.19      32.85
Interest on feed, $/hd                3.52       5.22       6.70
Sales cost, $/hd                      7.00       7.00       7.00
Days to estimate death loss          18.00      18.00      18.00
Death loss, $/hd                     10.26      10.36      10.44
-------------------------------------------------------------------------------
Total costs, $/hd                   722.20     776.43     816.87
-------------------------------------------------------------------------------
Carcass weight discount, $/hd         0.00       0.00       0.00
Yield grade discount, $/hd            0.00       0.00       0.00
Gross sales, $/hd                   784.81     944.48     998.36
-------------------------------------------------------------------------------
Net return, $/hd                     62.60     168.05     181.49
-------------------------------------------------------------------------------
Feed cost/gain, $/lb                  0.23       0.24       0.25
Total cost/gain, $/lb                 0.57       0.56       0.57
Sale break even, $/100 lb            62.75      62.15      62.11
Purchase break even, $/100 lb        78.03      94.93      97.09
Annual margin for all costs, %       13.64      28.32      25.83
Annual turnover                       1.57       1.31       1.16
===============================================================================


***** PROFIT ANALYSIS ($/hd) FOR: Choice USDA *****
===============================================================================
Sale          --- Purchase Price ($/100 lb SBW) ---
Price    65      66      67      68      69      70      71
        -------------------------------------------------------------------
 112 |  120.93  114.69  108.45  102.21   95.97   89.73   83.49
 113 |  128.80  122.56  116.32  110.08  103.84   97.60   91.36
 114 |  136.67  130.43  124.19  117.95  111.71  105.47   99.23
 115 |  144.54  138.30  132.06  125.82  119.58  113.34  107.10
 116 |  152.41  146.17  139.93  133.69  127.45  121.21  114.97
 117 |  160.28  154.04  147.80  141.56  135.32  129.08  122.84
 118 |  168.15  161.91  155.67  149.43  143.19  136.95  130.71
 119 |  176.02  169.78  163.54  157.30  151.06  144.82  138.58
 120 |  183.89  177.65  171.41  165.17  158.93  152.69  146.45
 121 |  191.76  185.52  179.28  173.04  166.80  160.56  154.32
 122 |  199.63  193.39  187.15  180.91  174.67  168.43  162.19
 123 |  207.50  201.26  195.02  188.78  182.54  176.30  170.06
 124 |  215.37  209.13  202.89  196.65  190.41  184.17  177.93
 125 |  223.24  217.00  210.76  204.52  198.28  192.04  185.80
 126 |  231.11  224.87  218.63  212.39  206.15  199.91  193.67
 127 |  238.98  232.74  226.50  220.26  214.02  207.78  201.54
 128 |  246.85  240.61  234.37  228.13  221.89  215.65  209.41
 129 |  254.72  248.48  242.24  236.00  229.76  223.52  217.29
 130 |  262.60  256.36  250.12  243.88  237.64  231.40  225.16
 131 |  270.47  264.23  257.99  251.75  245.51  239.27  233.03
```

⌨ If you received a message that environment model was not being used, then click on
ENVIRONMENT tab and select "Adjust NEm to hear/cold stress" and " Adjust DMI due

to environment effect". Run the Group simulation again and compare the results of ADG based on environment effect. Click on **INDIVIDUAL MANAGEMENT** tab.

2.5.   Individual Management (IM) Simulations Tab

The IM simulation is used to compute the projection of growth for each animal within a pen fed the same diets. Two simulations are possible: *Performance Projection* and *Feed Required.*
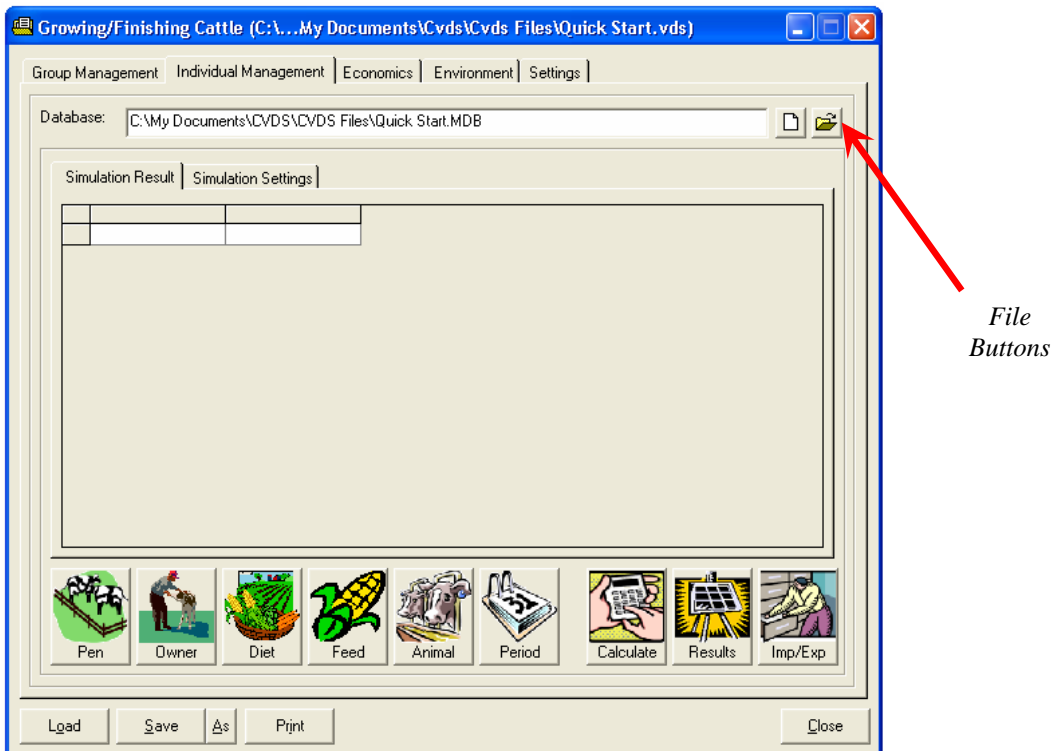
On the top of the **INDIVIDUAL MANAGEMENT** tab (Screen 14) there is a **DATABASE** textbox, which is the path and name of the Microsoft™ Access database that has the individual animal information. The two buttons on the right side of the **DATABASE** textbox are to create a new database or to open and existing one; respectively.

Click on the first button (**NEW**), type in "Quick Start.MDB" and press enter. If the file already exists, it will ask you if you want to replace it; do so. You just created an empty Microsoft™ Access database that has all the fields and queries necessary to run the IM computations. You should get a screen similar to that shown in Screen 14. Now we need to enter the data in this database.

There are three possible ways to enter the data in the IM database: (1) via Microsoft™ Access program; to do this, you will need to have Microsoft Access version 9.0 or later installed in your computer; (2) direct entry using the six buttons listed on the bottom of the IM tab, namely: **PEN**, **OWNER**, **DIET**, **FEED**, **ANIMAL**, and **PERIOD**; or (3) via **IMP/EXP** button from a Microsoft™ Excel file; to do this, you will have to have Microsoft™ Excel version 9.0 or later installed in your computer. The following gives a brief overview of each option.

(1) via Microsoft™ Access In this case you have to have Microsoft™ Access program version 9.0 or later installed in your computer. After you created a new IM database, go to Microsoft™ Access program, open the database, and enter the appropriate data in the Pen, Owner, Diet, Feed, Animal, and Period tables. DO NOT change the structure of the tables or the queries of the IM database file.

(2) via IM buttons: In this case you may enter the appropriate data in the Pen, Owner, Diet, Feed, Animal, and Period tables using the six buttons located in the bottom of the IM tab. After you choose any of those buttons, a screen containing a grid with the respective fields is shown and the database operations are similar to database manager software. Screen 15 shows the database manager form after the **ANIMAL** button was pressed. The **ADD**, **UPDATE**, **DELETE**, **REFRESH**, and **CLOSE** buttons on the bottom of the database manager allows the user to add a new record, save the information to the database, delete a record (row) from the database, refresh the grid, and close the database manager; respectively. Each individual animal is listed in each row. Every time you click on an IM button, a database manager is opened, even if you hit the same IM button; therefore, be cautious to not have more than one database manager opened for the same table.

Screen 14. The individual management tab.

(3) via Imp/Emp button: The **IMP/EMP** button, which stands for Import/Export, opens a screen similar to that showed in Screen 16. This button allows the user to import data from a Microsoft™ Excel spreadsheet and to export either to a Microsoft™ Excel spreadsheet or to a text file, simply by choosing the format to export to. You will need to have Microsoft™ Excel version 9.0 or later installed in your computer to import/export to/from Microsoft™ Excel.
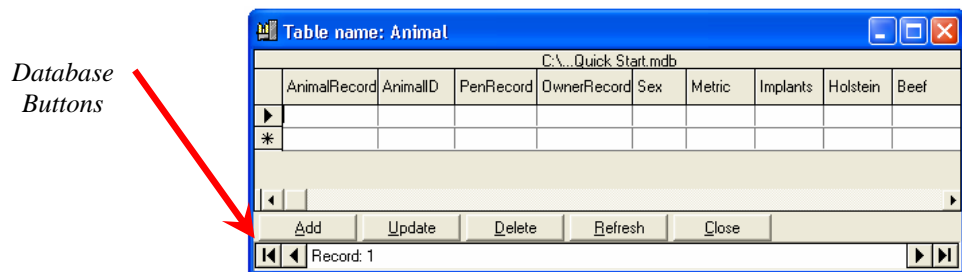
Screen 15. Animal table of the IM simulation.

To use the import feature, the data in the spreadsheet column has to be in the same order as the fields are in the database, e.g. for Animal sheet, column A has to be AnimalRecord, column B has to be AnimalID, and so forth as shown in Screen 15. The first row of the spreadsheet contains the field name (only for reference) and the data start at row 2 of the spreadsheet. The Template button creates a blank Microsoft™ Excel file with all the tables and fields in the proper order so the user can enter the data accordingly.

Under *Excel via ActiveX* option, there are four formatting options to change the appearance of the exported information and make it easier for users to add and edit information in the spreadsheet.

In the bottom of the Import/Export screen, three extra features are available to improve the use of the Import/Export feature of the model.

Show file after exporting the data will open the spreadsheet or the text file after the data is fully exported.

Export results only will export only the Simulation results. If this option is unchecked, it will export all the data in each table (Pen, Owner, Diet, Feed, Animal, and Period) and the Simulation results, if any.

Export only the database fields is useful to generate a template spreadsheet to enter data. It will create a spreadsheet or text file containing a Header with the fields required in each table (Pen, Owner, Diet, Animal, and Period).

The *Results are simulated Projection* indicates if the present simulation is a performance projection or a Feed Required simulation.
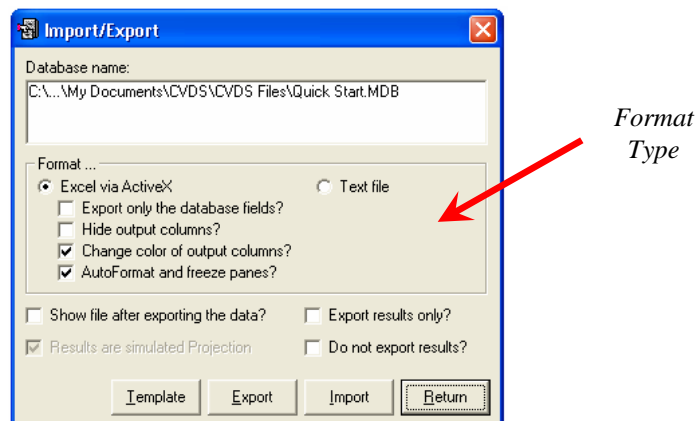
Screen 16. Import and Export data of the IM simulation.

Click on **IMP/EXP** button if you have not done so, click on the **IMPORT** button, select "Quick Start.XLS" spreadsheet file, select *Yes* for "The information in the spreadsheet will be APPENDED into the current database file. Do you want to proceed?" and "Do you want to import all tables?" questions. A progress bar is shown in the *Task status* window (Screen 17); every time a computation is being performed this window will show up.

After the data have been imported successfully, click the **RETURN** button and investigate the data using the **PEN**, **OWNER**, **DIET**, **FEED**, **ANIMAL**, and **PERIOD** buttons; **do**
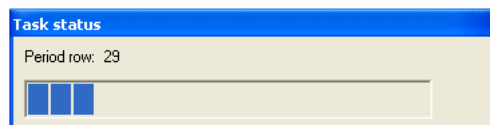
Screen 17. Task status window.

not change the data. Now, the data is now imported and we can do the simulation.

Click on **RETURN** button. Click on **SIMULATION SETTINGS** tab and a screen similar to that shown in Screen 18 is displayed. In this tab there are three sub-tabs (**TYPE**, **OUTPUT**, and **OPTIONS**), which are shown in Screen 18.

The Type Tab. In the **TYPE** tab the user selects the type of simulation: (1) Performance Projection; ADG is entirely based on prediction of DMI using the equations developed by NRC (2000) and (2) Feed Requirement, which computes the DM required for the ADG observed. At least two (2) body weights have to be provided (initial and a final BW) to compute ADG.

Screen 18. Options for the individual management simulation.

Different diets can be used during the simulation period. They have to be specified in the **DIET** table and in the **PERIOD** table in order to inform the CVDS model when the diet was changed and which animal received it.

The CVDS model computes the animal performance from the beginning to the end of each period, using the initial Body Weight and the Body Weight at the end of each period. Therefore, the ADG predicted will be the difference between the Body Weight at the end of each period minus the initial Body Weight.

(1) **GAIN PROJECTION**. In this option, the CVDS model uses all the information to predict animal performance. In this case, **MINIMUM SIMULATION DAYS** (see below) or **MAXDAYS** from the **PEN** table dictates the simulation length. The model will simulate the animal growth using the largest number of days of these two choices. The duration of the simulation does not affect the calculations to the specified endpoints; it affects the time spent in the simulation. If the simulation days are too short, the animal predictions may not reach the endpoints. The endpoints are determined by the final SBW of the animal. The **RELATIVE DRY MATTER INTAKE** allows the user to increase or decrease the predicted DMI of each animal relative to the average expected. To see if this is needed, divide the intake you expect, based on experience of previous groups fed, by the model predicted intake. Other options are:

   a) The user can select *Force it?* to make sure the RDMI is fixed to a user-inputted RDMI regardless any number in the **PERIOD** table,
   b) The user can select a know DMI and select the *Fixed DMI?* checkbox. The value in the **PERIOD** table in the column oDMI will be assigned. This option takes precedence over the previous one,
   c) Selecting the *Use growth days?* will use the length of the growth period in the **PERIOD** table and will ignore the **MINIMUM SIMULATION DAYS**, and
   d) The user has the option to select which end point to stop the projection.

(2) **FEED REQUIREMENT**. In this option, the CVDS model uses all the information to predict feed requirement of an animal to match the observed gain. Two methods are used to estimate feed required: (A) using mean BW and (B) convergence using the DIM growth model.

   a) Mean BW assumes a linear relationship of ADG and BW, and performs all the calculations using the average BW of each period.
   b) The DIM growth model computes the daily BW (growth) and requirements for an animal as discussed before. In this option, the RDMI of each period is proportionally changed until the ADG predicted matches the observed ADG. The **CONVERGENCE ERROR** and the **MAXIMUM ITERATIONS** dictate how much iteration is performed. Five options for **INTERPOLATION METHODS** are available for interpolating the RDMI; the **LAGRANGE** method is very reliable for this interpolation.

Interpolate BW data using cubic spline method?. As described above, the CVDS model computes a linear ADG based on two BW values. Given a sequence of BW values, it is

possible that the ADG does not represent real BW at a given time. Therefore, an interpolation may better calculate the daily BW given a set of user-input BW. Figure 1 compares two methods of interpolation (Lagrange and Cubic Spline) between ADG and BW. The Cubic Spline method may be more biologically correct in predicting the animal's growth. If this option is used, BW is interpolated rather than being calculated using ADG.

The Output Tab. This tab contains several settings that modify the output.

ADG, DMI, and Feed Eff. to same maturity degree? This option allows the user to compare ADG, DMI, and feed efficiency among animals when they are in the same range of degree of maturity. The range is specified in the two text boxes below the checkbox and it varies from 0 (birth) to 1 (mature weight). A good range would be from 0.6 to 1.0. If the animal starts the simulation after the lowest degree of maturity value, the initial BW will be used. Similarly, if the simulation finishes before the mature weight, the highest weight will be used. Therefore, selecting the appropriate range of degree of maturity is important to have accurate comparisons among animals. In this section, the model computes same range maturity degree (u) variables called SRu's variables. If you check this option, the CVDS model will compute five variables called SRu ADG, SRu Carcass ADG, SRu Feed Efficiency, SRu Carcass Feed Efficiency, and SRu Predicted DMI. This calculation is similar to that generated by the *Adjusted feed efficiency report* in the group management simulation.
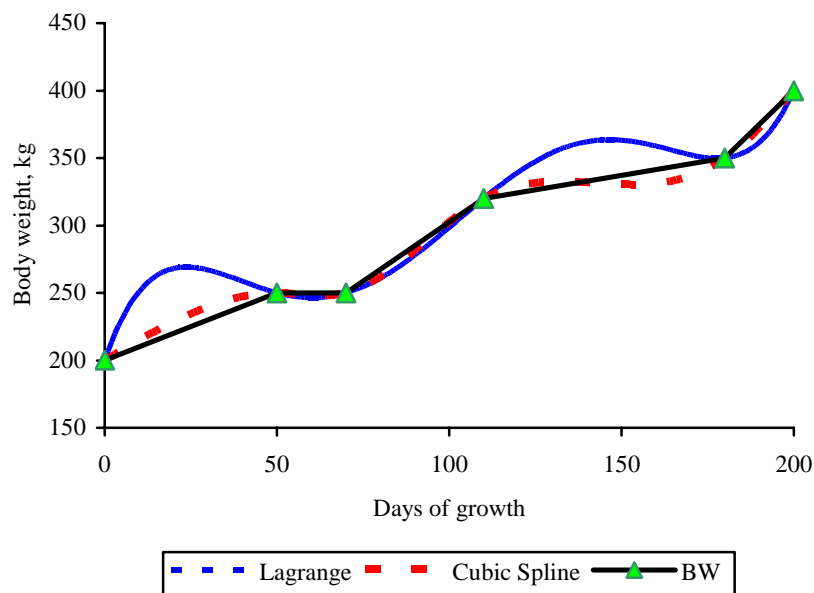

Figure 1. Comparison of two interpolation methods: Lagrange (blue solid line) and Cubic Spline (red dotted line) with linear average daily gain (ADG) of six observed body weights.

The *Ignore if not within the range and compute* checkbox computes SRu's variables even if the current animal is not within the specified range. In this case, if lower and/or higher

maturity degrees are outside the computed BW, the model uses the first or last computed BW and assigns them to the lower and/or higher BW based on maturity degree entered by the user, respectively. This option is recommended to be unchecked.

The *Maximum % to assume equal BW or CW* is the maximum difference allowed between two BW or CW values to be assumed not different.

Four options that change the results or the database handling are available:

(1) The **AUTO RESIZE COLUMNS TO FIT FIELD SIZE** checkbox resizes the column of the result grid to fit the label of each column,

(2) The **AUTO COMPACT DATABASE BEFORE CLOSING** has the same function as the **COMPACT** button, which compacts and repairs the database before closing the simulation window.

(3) The **DELETE PREVIOUS PROJECTION CALCULATION** deletes the previous projection calculation before beginning a new simulation. If the user wants to compare different projections, e.g. RDMI effects, uncheck this checkbox.

(4) The **USE SMALL FONT TO PRINT THE SIMULATION RESULTS** uses font size 8 to print the **SIMULATION RESULT** grid. If this checkbox is unchecked, the CVDS model will use font size 12 to print the results.

(5) The **SHOW TIME ELAPSED IN THE CALCULATION** will show the elapsed time after all the calculations are done.

(6) **SORT BY?** allows the user to group the results by **ANIMAL**, **PEN**, and/or **OWNER**. If the **ANIMAL** option is checked, the **PEN** and **OWNER** has no effect because grouping by animal eliminates the pen and owner grouping. That is because it cannot have the same animal in two different pens or owners at the same time.

(7) **SHOW WHAT?** shows the **SUM** or **AVERAGE** of the results. If **ANIMAL** option is checked the **SUM** and **AVERAGE** yield the same result.

The Options Tab. This tab contains settings that change the calculation of the IM.

The user has three options for determining AFSBW in the database: (1) compute it from Hip Height, (2) compute it from Carcass information as described by Guiroy et al. (2001), or (3) type in the numbers. The **COMPUTE AFSBW** button computes the AFSBW based on these options and save the computed values in the **ANIMAL** table. Note this computation is done automatically when the user click on **CALCULATE**. The table below shows the inputs required to compute AFSBW depending on each method.

Estimate Adjusted Final Shrunk Body Weight (AFSBW) from: shows these three options: (1) *Using Hip Height input?*, (2) *Using Carcass or YG inputs?*, or (3) *Using user input.*

The CVDS model computes automatically the Marbling Score (Mrb) from Marbling Class (MrbClass) and Percentiles (MrbPctl). The user can also enter the Marbling Score. The CVDS model has a database with all the information necessary to compute Mrb based on MrbClass codes (Tr, Sl, Sm, Mt, Md, Sla, Ab, and Mta) as shown in Screen 19. This table can be seen clicking on **VIEW MARBLING TABLE** button in the **SIMULATION SETTING** screen.

Method	User input	Hip Height	Carcass Traits	Yield Grade
Unit (Metric or English)	✓	✓	✓	✓
Sex (H = Heifer, S = Steer, and B = Bull)		✓		
AFSBW	✓			
Hip height		✓		
Age when hip height was measured		✓		
Hot carcass weight (HCW)			✓	✓
Fat thickness (FT) (aka backfat)			✓	
Longissimus dorsi muscle area (LMA) [a]			✓	
Marbling score (Mrb)			✓	
Empty body fat (EBF) [b]			✓	
Yield Grade (YG)				✓

[a] Rib-eye area (REA).
[b] Empty body fat is computed from HCW, FT, LMA, and Mrb and Empty body weight is computed from HCW. Then, AFSBW is estimated using the EBF and EBW relationship.

Screen 19. Marbling score information table.

⚠ **Do not** change the information in the Marbling Table; this is a reference table for the model. The MrbClassCode and MrbScore fields are used to compute the Marbling score; therefore any change in these fields may cause the program not work properly. If these values have been accidentally modified, the user will have to use MS Access™ to copy this table from another unchanged database. Marbling scores are computed from IMF (IOWA) using the following equation: $Mrb = (769.7 + 56.69 \times IMF(IOWA)) \times 0.01 - 5$.

Always compute diet cost from feed costs? Computes the diet cost based on its ingredients specified in the **FEED** table.

Simulate last period only? The CVDS model computes all the information for each period separately. If this option is selected, the CVDS model will show only the longest period computed, which is the last period calculated (from the beginning until the last day of information).

Feed efficiency as Output to Input ratio format? Feed efficiency can be shown in two ways: (1) DMI/ADG or (2) ADG/DMI. The first one is expressed as kg/kg (or lb/lb) whereas the second one is expressed as g/kg.

Adjust economical analysis after allocation of feeds? will recomputed the costs of growth for each animal in the database based on the new allocation of the feeds after the feed share has been computed for each animal. The user should use this option if he/she wants to match total amount spent in the farm with feed fed.

Minimum simulation days is the minimum days to be simulated regardless of the **MAXDAYS** values entered in the **DIET** table. The Gain projection simulation will use this number to perform the simulations. The default is 500 days.

Always compute initial EBF from EBW? will discard the iEBF value from the **ANIMAL** table and will compute iEBF. Use this option if iEBF is not known.

Always compute feed fed for each pen? will compute the amount of feed fed for each pen based on As-fed intake, dry matter content, number of animals in each diet, and period length.

Use composition of gain to compute diet [NE$_g$] will iteratively change the NE$_g$ of the diet accordingly to the composition of the gain. The option *REp = exp. decay eq.* uses the exponential decay equation to compute retained energy as protein and then compute k$_g$ whereas the *REp = f(RE, PIG)* computes protein in gain, then computes retained energy as protein, and finally computes the k$_g$.

The IM buttons:

The **SUMMARY** button will show how many records exist in each table of the current opened database (**ANIMALS, PERIODS, FEEDS, DIETS, OWNERS, AND PEN**) similar to that shown in Screen 20.

Cornell Value Discovery System

The following database contains:
C:\Documents and Settings\Luis Tedeschi\My Documents\CVDS\CVDS Files\Quick Start.MDB

Animals: 10
Periods: 10
Feeds: 0
Diets: 1
Owners: 1
Pens: 1

OK
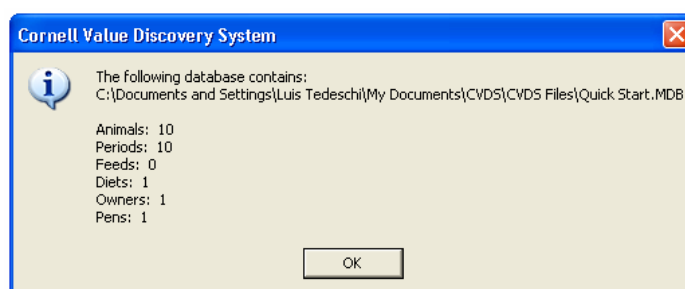
Screen 20. Number of records in each table of the database.

The **EXTRA CALCULUS** button will shown additional calculation done by the model as a report. A screen similar to shown in Screen 21.

The **COMPACT DATABASE** button compacts and repairs the database. However, this option works only before any calculation is done by the model. This is similar to **TOOLS/COMPACT DATABASE** menu option.

The **CALCULATE** button performs the simulation calculation and it should be used if the user changes any information in the **SIMULATION TYPE** frame, modifies the **MINIMUM SIMULATION DAYS** value, and/or changes the state of **ESTIMATE AFBW FROM CARCASS INFORMATION** or **DELETE PREVIOUS PROJECTION CALCULATION** checkboxes.
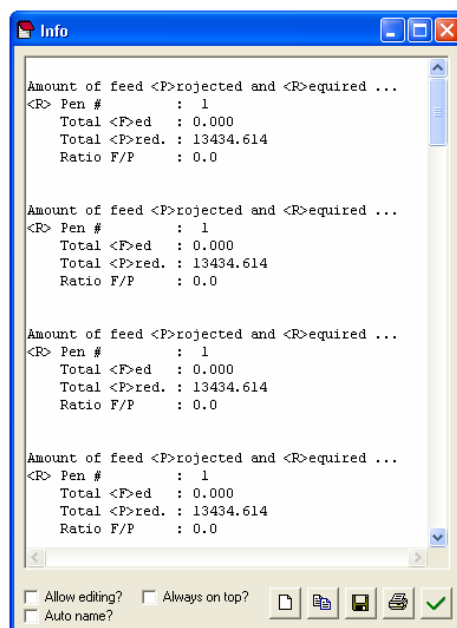
Screen 21. Extra calculus.

The **RESULTS** button refreshes the information in the **SIMULATION RESULT** grid. This is used mostly when the user changes the **SORT BY?** and/or the **SHOW WHAT?** information.

Click on the **CALCULATE** button to start simulating the **GAIN PROJECTION**. After a series of computations, the model changes to the **SIMULATION RESULT** tab, this displays the results shown in Screen 22.

Screen 22. Simulation results for Individual Management simulation.

3.   Working with the CNCPS Model

The CVDS model can obtain ration information by reading a file created by the CNCPS model, including ration ingredients and animal description of the groups in the CNCPS simulation file. This information may be copied into a growth period of the group management simulation.

Click on the **GROUP MANAGEMENT** tab, then click on **INPUTS** tab, then on the right side of the CNCPS information box click on the icon button *Open CNCPS information file*, and select *Quick Start.LST* file. A screen similar to that shown in Screen 23 should be displayed.

Screen 23 shows three simulations from the CNCPS information file, which were named Ration 1, Ration 2, and Ration 3. The first button opens a CNCPS information file, the second button copies the selected CNCPS ration to the select growth period, and the third button shows the information for the selected CNCPS ration.

Click on the second CNCPS ration (*Ration 2*) and press the **VIEW BUTTON**; a screen similar to Screen 24 is displayed showing the information embedded in the CNCPS Ration 2. Click the Ok button to close the information screen. Click on any column of Period 2 in the **ANIMAL & DIET INFORMATION** grid, click on the second button of the CNCPS Rations (Copy), and respond *Yes* for the question "Do you want to copy the CNCPS information of 'Ration 2' to Period '2' ?". Note the information for Period 2 is now modified to that of the CNCPS Ration 2.

CNCPS Information Buttons
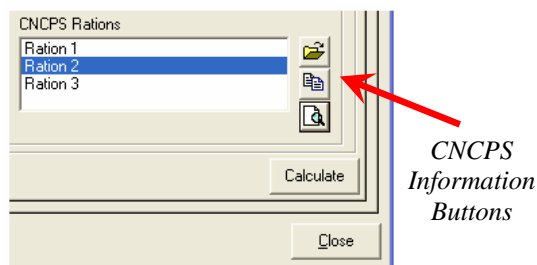
Screen 23. CNCPS rations list box in the **INPUT** tab of the **GROUP MANAGEMENT** tab.
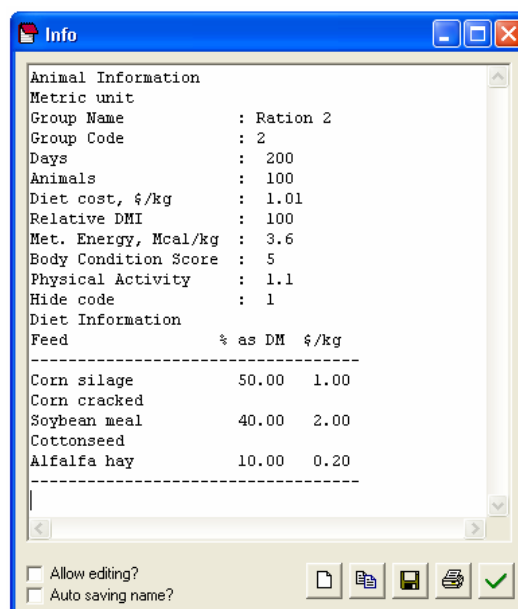
Screen 24. Information of CNCPS Ration 2.

Click on the **CLOSE** button, respond *Yes* for the question "*Do you want to quit this simulation?*", and a message saying: "*Database compacted successfully*" is shown.

This last message indicates the database used in the individual management simulation was compacted; but it is only used if the IM database was used and if the option **AUTO COMPACT DATABASE BEFORE CLOSING** is checked.

Note that you may close the CVDS model without closing all the opened simulations. The CVDS model will close one by one automatically.

This is the end of the Users Guide.

4. References

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