

# *Dairy Feed Inventory Planner*

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## ***What is the Dairy Feed Inventory Planner***

The *Dairy Feed Inventory Planner* is a Microsoft® Excel (version 5.0) spreadsheet designed to:

1. Calculate the amount of feed (forages, corn, commodities) in the farm's current inventory. The *Dairy Feed Inventory Planner* handles a broad variety of feeds stored in various storage structures. The *Dairy Feed Inventory Planner*, in most cases, will automatically calculate the amounts of feeds in the current farm inventory requiring only simple measurements and requiring no references to silo charts or other reference materials. Standard silo and grain bin capacity calculations are imbedded in the program and only minimal measurements (e.g., diameter, height, etc.) of silos and bins are required as inputs.
2. Calculate the value of the farm's current feed inventory. Current values of feeds on a per unit basis are an input to the *Dairy Feed Inventory Planner*. The program provides a series of reports summarizing the value of specific inventoried feeds and the total value of classes (e.g., ensiled forages, stored dry corn, etc.) of feeds on the farm. This information can be used for a variety of purposes such as planning feed purchases, preparing financial statements or loan applications, etc.
3. Calculate the usage of feed by animals on the farm over a specified planning period. The *Dairy Feed Inventory Planner* allows specification of up to four different cow rations and three different heifer rations. The program then calculates the total animal usage of each feed over a user-specified feeding period.
4. Calculate an inventory summary based on a feeding period. The *Dairy Feed Inventory Planner* calculates the total amount and value of feeds used by animal classes (cows and heifers), the total amount and value of feed wasted, and the resulting ending feed inventory amount and value. The program also calculates the total days supply of feed on hand given the current rations being fed, ending inventory days supply, run out date for feeds totally used during the feeding period, and the amount and value of feed to purchase for feeds that run out during the feeding period.
5. Calculate a **Quick Inventory Planner** for the feeding period. The **Quick Inventory Planner** calculates total forage, corn, and 44% soybean meal needs over the feeding period. If any feeds will need to be purchased the amounts and values are also calculated.

Please note that the *Dairy Feed Inventory Planner* is written specifically for Microsoft® Excel (version 5.0). This version of Excel is three dimensional (each file, or workbook,

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consists of a series of worksheets). The *Dairy Feed Inventory Planner* may, or may not, work on other three dimensional versions of other spreadsheet programs (e. g., Quattro Pro, Lotus, etc.). Users who import the *Dairy Feed Inventory Planner* into non-Excel spreadsheet programs do so at their own risk.

## ***Loading the Dairy Feed Inventory Planner onto your computer***

1. The *Dairy Feed Inventory Planner* is on the diskette in a “self-extracting” file named: **feedinv.exe**. It is suggested that you make two directories on your computer’s hard drive (use Window’s “File Manager” program) for the *Dairy Feed Inventory Planner*. In one directory place a copy of **feedinv.exe** that will always be your master copy. In the second directory place a working copy of **feedinv.exe**.
2. The “self-extracting” file, **feedinv.exe**, contains two files: A) **feedinv.xls** which is the actual Microsoft® Excel spreadsheet containing the *Dairy Feed Inventory Planner* and B) a second Microsoft® Excel file, **dataentr.xls**, which is the spreadsheet containing the data collection forms that you may print out on your own computer and printer.
3. To extract **feedinv.xls** and **dataentr.xls** from **feedinv.exe** use the following procedure after copying **feedinv.exe** from your floppy drive to your hard drive:
  - A. In Windows 3.1 Program Manager, select Run from the File menu. In Windows 95, select Run from the Start menu.
  - B. Type in the drive, directory and the name of the self-extracting file in the Run File dialog box (ex: c:\feedinv\feedinv.exe).
  - C. Select OK and the ZIPPLUS window will appear.
  - D. Highlight the files you want to extract (**feedinv.xls** and **dataentr.xls**) and then select Extract Files from the Self-extract menu.
  - E. Select the drive and directory where you want the extracted files (**feedinv.xls** and **dataentr.xls**) to be stored (e.g., c:\feedinv\wrkgcopy\).

OR

- A. Open File Manager or Explorer and select the drive and directory where the self-extracting file (**feedinv.exe**) is located.
- B. Double-click the self-extracting file (**feedinv.exe**) and the Zip-It Plus window will appear.
- C. Follow the same instructions as above at this point.

Note: In Windows 3.1, once the operation is complete, double-click the top left corner of the DOS box to close it. Also, if you try to extract **feedinv.xls** and **dataentr.xls** from **feedinv.exe** on the program diskette in drive A (or B) you will be unable to do so, because the disk is locked to protect your version of the *Dairy Feed Inventory Planner*. You must copy **feedinv.exe** to your hard drive, drive C, before extracting **feedinv.xls** and **dataentr.xls**.

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4. To work with **feedinv.xls** start Microsoft® Excel and then use the **open** command to start **feedinv.xls**. As soon as you open **feedinv.xls** it is suggested that you use the **save as** command to save **feedinv.xls** in your working directory using a different file name (e.g., feedinv1.xls).
5. The **feedinv.xls** is a large file, over 1.3 MB, so as you work with it you will find that on 486 machines you will have to exercise some patience when opening, saving it, etc.
6. The data collection forms for the *Dairy Feed Inventory Planner* are contained in the file **dataentr.xls**. There are seven data collection forms in this file. To print these forms simply click on the **print** button on each form. All of these forms are set up to print on letter size paper. The print macros work well on HP LaserJet III, HP LaserJet IIP, and HP DeskJet 320 printers. They have not been tested on other printers! Before using the set of data collection forms provided with the program (pre-printed forms are located in APPENDIX) make sure your printer is capable of printing them. If your printer is unable to print the data collection forms properly, save the data collection forms you received with the *Dairy Feed Inventory Planner* and use a copying machine to make working copies.
7. Just a reminder! The files in the *Dairy Feed Inventory Planner* may be copied onto floppies for backup purposes. However, copying the files or documentation to give or sell to others is unethical, not to mention illegal. Be kind to software developers, if someone else likes the program, tell them where they can purchase a legal copy. You'll sleep better and your mother will not be ashamed of you.

## ***Working with the Dairy Feed Inventory Planner***

1. When the *Dairy Feed Inventory Planner* is opened you will be at the **home screen**. If necessary, use the **save as** command to save a working copy of **feedinv.xls** using your working copy directory and an appropriate file name (e.g., feedinv1.xls).
2. The *Dairy Feed Inventory Planner* was designed to be used with the **formula bar** and all **toolbars** hidden. To hide the **formula bar** go to the **view** menu and turn it off. To hide any **toolbars** go to the **view** menu and select **toolbars** and turn off all **toolbars** then select **OK**.
3. From the **home screen** you can:
  - A. ***Begin Data Entry*** (click on the button one time with the mouse). This will begin the data entry process for a normal work session.
  - B. ***View Reports*** (click on the button one time with the mouse). This option will primarily be used when you are working with files after all data has been entered and you want to view the reports from this or a previous session. When this option is selected you will then move to a screen where you can point and click on the report you want to view or print. You have the option to view and print 11 reports generated by the *Dairy Feed Inventory Planner*. To return to the **home screen** click once on the button ***Go Home***.
  - C. ***Get Info on Program*** (click on the button one time with the mouse). This option sends you to a screen that provides some information on the program and how to report any errors, problems, or comments to the author. If this option is selected, click once on the button ***Resume Program*** to take you back to the **home screen**.

## ***Entering data into the Dairy Feed Inventory Planner***

- I. Fill out the *Dairy Feed Inventory Planner* input collection forms for each class of forages and concentrates:
  - A. Forages
    1. Ensiled Forages
    2. Baled Forages
    3. Misc. Forages
  - B. Concentrates:
    1. Ensiled Corn
    2. Stored Dry Corn
    3. Commodities
- II. Data entry into the *Dairy Feed Inventory Planner* spreadsheet.
  - A. **FORAGES:** At the **home screen** click once on the button *Begin Data Entry*. This will take you to the first data entry screen: **Forage Inventory-Ensiled Forages**.



## **ENSILED FORAGES**

For each **Ensiled Forage** in the feed inventory use this screen to enter the following information from your **Ensiled Forage** data collection form.

**Before entering data on this, or any, data entry screen be sure to click once on the *Clear Data* button.** Clicking once on the *Clear Data* button removes all of the information from the previous session.

Data is entered in the table provided. There are spaces for up to 20 different **Ensiled Forages**. Use the three columns and enter the appropriate information for each **Ensiled Forage**. Use the mouse or arrow keys to navigate between columns and rows. Always remember that you can get to the top of any screen by simultaneously pressing "control-home". Now enter the following data:

1. **Type of Ensiled Forage:** this will be the forage name (e. g., alfalfa haylage, corn silage, etc.). You choose the name most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.
2. **Type of Storage Structure:** there are 5 types of **Ensiled Forage** structures in the *Dairy Feed Inventory Planner*, enter the one digit code number for the type of structure:
  - 1 **Conventional Tower Silo**
  - 2 **Gas-tight Tower Silo**
  - 3 **Bag**
  - 4 **Covered Bunker Silo**
  - 5 **Uncovered Bunker Silo**
3. **Storage Structure Name:** enter a name of choice (e.g., silo 1, silo 2) that is most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.

When you have entered all three pieces of information for each **Ensiled Forage** in the feed inventory click once on the *Continue* button to proceed to the next data entry screen. If you desire to go to the **home screen** from any screen within the *Dairy Feed Inventory Planner* click once on the *Go Home* button located on each screen. When logical most screens also have a *Back One* button, click on this button once to return to the previous screen.

Clicking once on the *Continue* button now brings you to a new data entry screen for **Ensiled Forages**. First click once on the *Clear Data* button to remove old data. To access important information about **Ensiled Forages** click once on the *View Important*

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**Information** button. If you click this button you will notice that there are some important limitations concerning **Ensiled Forages** (to return to data entry click once on the button **Resume Data Entry**):

1. Only for upright silos with the following diameters: 18', 20', 22', 24', 26', 28', or 30'. (If you enter any other diameter (e. g., 17' or 19') the *Dairy Feed Inventory Planner* will not be able to calculate the amount of feed in this silo.)
2. Results most reliable if maximum silo heights do not exceed: 18'-->64', 22' to 30'-->75'. (Calculation of silo capacities uses regression equations based on ASAE silo charts. The *Dairy Feed Inventory Planner* will calculate the capacity of tower silos exceeding these heights, but it is beyond the data range of the ASAE silo charts and the accuracy is not guaranteed.)
3. Results most reliable with bunker silo widths of 20' to 100'; depths of 10' to 20'. (Again, this is the data range of the data used to construct the *Dairy Feed Inventory Planner*. The capacity of silos exceeding this range may not be entirely accurate.)
4. Silage density in bunkers varies by amount of packing, fineness of cut, moisture content, and depth of material. Research (Ruppel, et al.) found bunker silage densities ranging from approximately 16 to 61 lbs/cubic ft. Thus, specification of density will have a major impact on estimation of amount of forage--BEWARE select density CAREFULLY!
5. If silo size varies significantly from these, consult references below and enter as a misc. forage.
6. Density of haylage/corn silage in bag is approximately 12.27 lbs DM per cubic ft.

If the need arises, please consult the reference materials suggested:

- A) Brook, R. 1996. Feed capacity of upright silos. in Agricultural Engineering Series Publ. #640. Michigan State University Extension. East Lansing, MI.
- B). Bickert, W. G. (et al.). 1995. Dairy freestall housing and equipment. Midwest Plan Service Publ. #MWPS-7. Iowa State University. Ames, IA.
- C) ASAE data standard D252.1 (Dec93).
- D) Ruppel, K. A., R. E. Pitt, L. E. Chase, and D. M. Galton. 1995. Bunker silo management and its relationship to forage preservation on dairy farms. J. Dairy Sci. 78:141.

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- E) Ag-Bag Corporation, 2320 S. E. Ag-Bag Lane, Warrenton, OR 97146 phone: 503-861-1644.

Upon resuming data entry for **Ensiled Forages** you will notice that each **Ensiled Forage** entered in the last screen has its own data entry table. At the top of each table is the type of **Ensiled Forage**, the name of its storage structure, and the type of storage structure. Enter the following information for each **Ensiled Forage**:

1. **Value of Forage (\$/ton as fed):** this information is required for each **Ensiled Forage** in the current inventory.
2. **% Dry Matter:** this information is required for each **Ensiled Forage** in the current inventory.
3. **Silage Depth (ft):** only required for forages stored in bunker silos.
4. **Silo Diameter (ft):** required for forages stored in tower and bag silos.
5. **Silo Length (ft):** required for forages stored in bunker and bag silos.
6. **Silo Width (ft):** only required for forages stored in bunker silos.
7. **Silo Density (lbs/cubic ft as fed):** only required for forages stored in bunker silos.
8. **Original Fill Depth of Silage (ft):** only required for forages stored in tower silos. This number is required due to the packing that occurs in tower silos.
9. **Current Depth of Silage (ft):** required for forages stored in tower silos.

Enter the required information for each **Ensiled Forage**. Remember, use the mouse or arrow keys to navigate and you can get to the top of the screen by pressing "control-home".

When you are finished entering all of the data for **Ensiled Forages** on this screen click once on the *Continue* button to move to the next data entry screen: **Ensiled Forages Storage & Feeding Losses**. First click once on the *Clear Data* button to remove old data. To access important information about **Ensiled Forage Losses** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*). For each **Ensiled Forage** in the feed inventory use this screen to enter the following information from your **Ensiled Forage** data collection form (Type of

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Ensiled Forage, Storage Structure Type, and Storage Structure Name will already be filled in).

1. **Storage Loss:** any post-fermentation loss of DM before feeding. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).
2. **Feeding Loss:** any losses from the removal of feed from the silo through to any waste in the feed bunk. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).

When you are finished entering all of the data for **Ensiled Forages** on this screen click once on the *Continue* button to move to the next data entry screen: **Forage Inventory-Baled Forages**. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing "control-s".

## **BALED FORAGES**

You are now in the data entry area for **Baled Forages**. For each **Baled Forage** in the feed inventory use this screen to enter the following information from your **Baled Forages** data collection form.

**Before entering data on this, or any, data entry screen be sure to click once on the *Clear Data* button.** Clicking once on the *Clear Data* button removes all of the information from the previous session.

Data is entered in the table provided. There are spaces for up to 20 different **Baled Forages**. Use the three columns and enter the appropriate information for each **Baled Forage**. Use the mouse or arrow keys to navigate between columns and rows. . Always remember that to get to the top of any screen press "control-home".

1. **Type of Baled Forage:** this will be the forage name (e. g., alfalfa hay, grass hay, etc.). You choose the name most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.
2. **Type of Bale:** there are two types of bales in the *Dairy Feed Inventory Planner*, enter the one digit code number for the type of bale:
  - 1 **Square Bales**
  - 2 **Round Bales**
3. **Storage Structure Name:** enter a name of choice (e.g., hay shed 1, hay shed 2) that is most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.

When you have entered all three pieces of information for each **Baled Forage** in the feed inventory click once on the *Continue* button to proceed to the next data entry screen. If you desire to return to the **home screen** from any screen within the *Dairy Feed Inventory Planner* click once on the *Go Home* button located on each screen.

Clicking once on the *Continue* button now brings you to a new data entry screen for **Baled Forages**. First click once on the *Clear Data* button to remove old data. You will notice that each **Baled Forage** entered in the last screen has its own data entry table. At the top of each table is the type of **Baled Forage**, the type of bale, and the type of storage structure. Enter the following information for each **Baled Forage**:

1. **Value of Forage (\$/ton as fed):** this information is required for each **Baled Forage** in the current inventory.

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2. **% Dry Matter:** this information is required for each **Baled Forage** in the current inventory.
3. **Total Number of Bales:** enter the total number of bales for each **Baled Forage**.
4. **Average Weight (as fed) Per Bale (lbs):** for each **Baled Forage** enter the average as fed weight per bale in pounds.

Enter the required information for each **Baled Forage**. Remember, use the mouse or arrow keys to navigate and you can get to the top of the screen by pressing "control-home".

When you are finished entering all of the data for **Baled Forage** on this screen click once on the *Continue* button to move to the next data entry screen: **Baled Forage Storage & Feeding Losses**. First click once on the *Clear Data* button to remove old data. To access important information about **Baled Forage Losses** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*). For each **Baled Forage** in the feed inventory use this screen to enter the following information from your **Baled Forage** data collection form (Type of Baled Forage and Type of Bale will already be filled in).

1. **Storage Loss:** any storage loss before feeding. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).
2. **Feeding Loss:** any losses from the removal of feed from storage through to any waste in the feed bunk. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).

When you are finished entering all of the data for **Baled Forages** on this screen click once on the *Continue* button to move to the next data entry screen: **Forage Inventory-Misc. Forages**. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing "control-s".

## **MISC. FORAGES**

You are now in the data entry area for misc. forages. **Misc. Forages** is a "catch all" category for any forages that do not fit as **Ensiled Forages** or **Baled Forages**. Consult the reference material to calculate the amount of forage.

For each **Misc. Forage** in the feed inventory use this screen to enter the following information from your **Misc. Forages** data collection form.

**Before entering data on this, or any, data entry screen be sure to click once on the *Clear Data* button.** Clicking once on the *Clear Data* button removes all of the information from the previous session.

Data is entered in the table provided. There are spaces for up to 10 different **Misc. Forages**. Use the three columns and enter the appropriate information for each **Misc. Forage**. Use the mouse or arrow keys to navigate between columns and rows. Always remember that to get to the top of the screen by pressing "control-home".

1. **Type of Misc. Forage:** this will be the forage name (e. g., alfalfa hay, grass hay, etc.). You choose the name most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.
2. **Storage Structure Name:** enter a name of choice (e.g., hay shed 1, hay shed 2) that is most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.

When you have entered all three pieces of information for each **Misc. Forage** in the feed inventory click once on the *Continue* button to proceed to the next data entry screen. If you desire to return to the **home screen** from any screen within the *Dairy Feed Inventory Planner* click once on the *Go Home* button located on each screen.

Clicking once on the *Continue* button now brings you to a new data entry screen for **Misc. Forages**. First click once on the *Clear Data* button to remove old data. To access important information about **Misc. Forages** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*).

You will notice that each **Misc. Forage** entered in the last screen has its own data entry table. At the top of each table is the type of **Misc. Forage** and the storage structure name. Enter the following information for each **Misc. Forage**:

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1. **Value of Forage (\$/ton as fed):** this information is required for each **Misc. Forage** in the current inventory.
2. **% Dry Matter:** this information is required for each **Misc. Forage** in the current inventory.
3. **Total lbs. (as fed):** enter the total pounds of **Misc. Forage** on an as fed (wet) basis, or
4. **Total lbs. DM:** enter the total pounds of **Misc. Forage** on a DM basis. **ONLY MAKE ONE ENTRY, DO NOT ENTER BOTH!**

Enter the required information for each **Misc. Forage**. Remember, use the mouse or arrow keys to navigate and you can get to the top of the screen by pressing "control-home".

When you are finished entering all of the data for **Misc. Forages** on this screen click once on the *Continue* button to move to the next data entry screen: **Misc. Forages Storage & Feeding Losses**. First click once on the *Clear Data* button to remove old data. To access important information about **Misc. Forage Losses** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*). For each **Misc. Forage** in the feed inventory use this screen to enter the following information from your **Misc. Forage** data collection form (Type of Misc. Forage and Storage Structure Name will already be filled in).

1. **Storage Loss:** any storage loss before feeding. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).
2. **Feeding Loss:** any losses from the removal of feed from storage through to any waste in the feed bunk. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).

When you are finished entering all of the data for **Misc. Forages** on this screen click once on the *Continue* button to move to the next data entry screen: **Concentrate Inventory-Ensiled Corn**. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing "control-s".

- B. **CONCENTRATES:** You are now going to enter the data for the three classes of concentrates: Ensiled Corn, Stored Dry Corn, and Commodities.



## **ENSILED CORN**

For each **Ensiled Corn** in the feed inventory use this screen to enter the following information from your **Ensiled Corn** data collection form.

**Before entering data on this, or any, data entry screen be sure to click once on the *Clear Data* button.** Clicking once on the *Clear Data* button removes all of the information from the previous session.

Data is entered in the table provided. There are spaces for up to 10 different **Ensiled Corns**. Use the three columns and enter the appropriate information for each **Ensiled Corn**. Use the mouse or arrow keys to navigate between columns and rows. Always remember that to get to the top of the screen by pressing "control-home". Now enter the following data:

1. **Type of Ensiled Corn:** this will be the corn name (e. g., HMSC, HMSC grnd., HMEC grnd., etc.). You choose the name most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.
2. **Type of Storage Structure:** there are 5 types of **Ensiled Corn** structures in the *Dairy Feed Inventory Planner*, enter the one digit code number corresponding to the type of structure and TYPE OF CORN (e. g., whole shelled corn, grnd. ear corn, etc.):
  - 1 Upright Silo, whole shelled corn
  - 2 Upright Silo, grnd. shelled corn
  - 3 Bag, shelled corn
  - 4 Upright Silo, grnd. ear corn
  - 5 Bag, grnd. ear corn
3. **Storage Structure Name:** enter a name of choice (e.g., silo 1, silo 2) that is most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.

When you have entered all three pieces of information for each **Ensiled Corn** in the feed inventory click once on the *Continue* button to proceed to the next data entry screen. If you desire to return to the **home screen** from any screen within the *Dairy Feed Inventory Planner* click once on the *Go Home* button located on each screen.

Clicking once on the *Continue* button now brings you to a new data entry screen for **Ensiled Corn**. First click once on the *Clear Data* button to remove old data. To access important information about **Ensiled Corn** click once on the *View Important Information* button. If you click this button you will notice that there are some

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important limitations concerning **Ensiled Corn** (to return to data entry click once on the button *Resume Data Entry*):

1. Only for upright silos with the following diameters: 12', 14', 16', 17', 18', or 20'. (If you enter any other diameter (e. g., 15' or 19') the *Dairy Feed Inventory Planner* will not be able to calculate the amount of feed in this silo.)
2. Results most reliable if maximum silo heights do not exceed: 12' & 14'-->44', 16' to 20'-->60'. (Calculation of silo capacities uses regression equations based on ASAE silo charts. The *Dairy Feed Inventory Planner* will calculate the capacity of tower silos exceeding these heights, but it is beyond the data range of the ASAE silo charts and the accuracy is not guaranteed.)
3. If test weight is unknown enter 56 lb/bu for shelled corn and 70 lb/bu for ear corn. (The *Dairy Feed Inventory Planner* adjusts the inventory for non-standard corn test weights.)
4. If ensiled grain or structures vary significantly from these limitations /assumptions, consult references below and enter them as commodities. (Due to the before mentioned data restrictions, you may want to consult the references and enter the feed as a commodity to increase the accuracy of the inventory calculations.)
5. Density of HM shelled corn in bag is approximately 24.83 lbs DM per cubic ft, for HM grnd. ear corn approximately 20.42 lbs. DM per cubic foot.

If the need arises, please consult the reference material suggested:

1. Brook, R. 1996. Feed capacity of upright silos. in Agricultural Engineering Series Publ. #640. Michigan State University Extension. East Lansing, MI.
2. Bickert, W. G. (et al.). 1995. Dairy freestall housing and equipment. Midwest Plan Service Publ. #MWPS-7. Iowa State University. Ames, IA.
3. ASAE data standard D252.1 (Dec93).
4. Ag-Bag Corporation, 2320 S. E. Ag-Bag Lane, Warrenton, OR 97146 phone: 503-861-1644.

Upon resuming data entry for **Ensiled Corn** you will notice that each **Ensiled Corn** entered in the last screen has its own data entry table. At the top of each table is the type of **Ensiled Corn**, the name of its storage structure, and the type of storage structure. Enter the following information for each **Ensiled Corn**:

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1. **Value (\$/bushel):** this information is required for each **Ensiled Corn** in the current inventory.
2. **% Dry Matter:** this information is required for each **Ensiled Corn** in the current inventory.
3. **Shelled Corn Test Wt. (lbs/bu):** only required if the corn is whole or grnd. shelled corn, enter test weight (56 lbs/bu is standard).
4. **Ear Corn Test Wt. (lbs/bu):** only required if the corn is grnd. ear corn, enter test weight (70 lbs/bu is standard).
5. **Silo or Bag Diameter (ft):** required for corn stored in upright or bag silos.
6. **Bag Length (ft):** only required for corn stored in a bag silo.
7. **Original Fill Height of Corn (ft):** only required for corn stored in upright silos. This number is required due to the packing that occurs in upright silos.
8. **Current Depth of Corn (ft):** only required for corn stored in upright silos.

Enter the required information for each **Ensiled Corn**. Remember, use the mouse or arrow keys to navigate and you can get to the top of the screen by pressing "control-home".

When you are finished entering all of the data for **Ensiled Corn** on this screen click once on the *Continue* button to move to the next data entry screen: **Ensiled Corn Storage & Feeding Losses**. First click once on the *Clear Data* button to remove old data. To access important information about **Ensiled Corn Losses** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*). For each **Ensiled Corn** in the feed inventory use this screen and to enter the following information from your **Ensiled Corn** data collection form (Type of Ensiled Corn, Storage Structure Type, and Storage Structure Name will already be filled in).

1. **Storage Loss:** any post-fermentation loss of DM before feeding. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).
2. **Feeding Loss:** any losses from the removal of feed from the silo through to any waste in the feed bunk. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).

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When you are finished entering all of the data for **Ensiled Corn** on this screen click once on the *Continue* button to move to the next data entry screen: **Concentrates Inventory-Stored Dry Corn**. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing “control-s”.

## **STORED DRY CORN**

For each **Stored Dry Corn** in the feed inventory use this screen to enter the following information from your **Stored Dry Corn** data collection form.

**Before entering data on this, or any, data entry screen be sure to click once on the *Clear Data* button.** Clicking once on the *Clear Data* button removes all of the information from the previous session.

Data is entered in the table provided. There are spaces for up to 10 different **Stored Dry Corns**. Use the three columns and enter the appropriate information for each **Stored Dry Corn**. Use the mouse or arrow keys to navigate between columns and rows. Always remember that to get to the top of the screen by pressing "control-home". Now enter the following data:

1. **Type of Stored Dry Corn:** this will be the corn name (e. g., shelled corn, ear corn, etc.). You choose the name most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.
2. **Storage Structure Type:** there are 3 types of **Stored Dry Corn** structures in the *Dairy Feed Inventory Planner*, enter the one digit code number corresponding to the type of structure and TYPE OF CORN (e. g., dry shelled corn, dry ear corn):
  - 1 **Round Grain Bin, dry shelled corn**
  - 2 **Silo, dry shelled corn**
  - 3 **Rectangular Crib, dry ear corn**
3. **Storage Structure Name:** enter a name of choice (e.g., bin 1, silo 1, crib 1) that is most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.

When you have entered all three pieces of information for each **Stored Dry Corn** in the feed inventory click once on the *Continue* button to proceed to the next data entry screen. If you desire to return to the **home screen** from any screen within the *Dairy Feed Inventory Planner* click once on the *Go Home* button located on each screen.

Clicking once on the *Continue* button now brings you to a new data entry screen for **Stored Dry Corn**. First click once on the *Clear Data* button to remove old data. To access important information about **Stored Dry Corn** click once on the *View Important Information* button. If you click this button you will notice that there are some important limitations concerning **Stored Dry Corn** (to return to data entry click once on the button *Resume Data Entry*):

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1. For round grain bins of all diameters and heights.
2. Dry ear corn only for cob corn in rectangular cribs.
3. If test weight is unknown enter 56 lb/bu for shelled corn and 70 lb/bu for ear corn. (The *Dairy Feed Inventory Planner* adjusts the inventory for non-standard test weights.)

If the need arises, please consult the reference material suggested:

1. Brook, R. 1986. Approximate storage capacity of grain storage structures. in Agricultural Engineering Series Publ. #559. Michigan State University Extension. East Lansing, MI.
2. Bickert, W. G. (et al.). 1995. Dairy freestall housing and equipment. Midwest Plan Service Publ. #MWPS-7. Iowa State University. Ames, IA.
3. ASAE data standard D252.1 (Dec93).

Upon resuming data entry for **Stored Dry Corn** you will notice that each **Stored Dry Corn** entered in the last screen has its own data entry table. At the top of each table is the type of **Stored Corn**, the name of its storage structure, and the type of storage structure. Enter the following information for each **Stored Dry Corn**:

1. **Value (\$/bushel):** this information is required for each **Stored Dry Corn** in the current inventory.
2. **% Dry Matter:** this information is required for each **Stored Dry Corn** in the current inventory.
3. **Shelled Corn Test Wt. (lbs/bu):** only required if the corn is dry shelled corn, enter test weight (56 lbs/bu is standard). *Dairy Feed Inventory Planner* adjusts inventory amount for non-standard corn test weight.
4. **Depth (of corn in structure) (ft):** required for all structures; bins, silos, cribs.
5. **Bin or Silo Diameter (ft):** only required for corn stored in bins or silos.
6. **Ear Corn Test Wt. (lbs/bu):** only required if the corn is dry ear corn, enter test weight (70 lbs/bu is standard). *Dairy Feed Inventory Planner* adjusts inventory for non-standard corn test weight.

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7. **Length of Crib (ft):** only required for dry ear corn stored in cribs.
8. **Width of Crib (ft):** only required for dry ear corn stored in cribs.

Enter the required information for each **Stored Dry Corn**. Remember, use the mouse or arrow keys to navigate and you can get to the top of the screen by pressing "control-home".

When you are finished entering all of the data for **Stored Dry Corn** on this screen click once on the *Continue* button to move to the next data entry screen: **Stored Dry Corn Storage & Feeding Losses**. First click once on the *Clear Data* button to remove old data. To access important information about **Stored Dry Corn Losses** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*). For each **Stored Dry Corn** in the feed inventory use this screen to enter the following information from your **Stored Dry Corn** data collection form (Type of Stored Dry Corn, Storage Structure Type, and Storage Structure Name will already be filled in).

1. **Storage Loss:** any storage losses of DM before feeding. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).
2. **Feeding Loss:** any losses from the removal of feed from storage through to any waste in the feed bunk. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).

When you are finished entering all of the data for **Stored Dry Corn** on this screen click once on the *Continue* button to move to the next data entry screen: **Concentrates Inventory-Commodities**. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing "control-s".

## **COMMODITIES**

You are now in the data entry area for **Commodities**. **Commodities** is a "catch all" category for any concentrates that do not fit as **Ensiled Corn** or **Stored Dry Corn**. Consult the reference material to calculate the amount of **Commodities** or rely on farmer invoices, etc.

For each **Commodity** in the feed inventory use this screen to enter the following information from your **Commodities** data collection form.

**Before entering data on this, or any, data entry screen be sure to click once on the *Clear Data* button.** Clicking once on the *Clear Data* button removes all of the information from the previous session.

Data is entered in the table provided. There are spaces for up to 20 different **Commodities**. Use the two columns and enter the appropriate information for each **Commodity**. Use the mouse or arrow keys to navigate between columns and rows. Always remember that you can get to the top of the screen by pressing "control-home".

1. **Type of Commodity:** this will be the **Commodity** name (e. g., wh. cottonseed, soy hulls, corn glut feed, etc.). You choose the name most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.
2. **Storage Structure Name:** enter a name of choice (e.g., commod bay 1, commod bay 2) that is most meaningful to you. Limit the choice of name to 15 letters, numbers, and spaces.

When you have entered all three pieces of information for each **Commodity** in the feed inventory click once on the *Continue* button to proceed to the next data entry screen. If you desire to return to the **home screen** from any screen within the *Dairy Feed Inventory Planner* click once on the *Go Home* button located on each screen.

Clicking once on the *Continue* button now brings you to a new data entry screen for **Commodities**. First click once on the *Clear Data* button to remove old data. To access important information about **Commodities** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*).



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You will notice that each **Commodity** entered in the last screen has its own data entry table. At the top of each table is the type of **Commodity** and the storage structure name. Enter the following information for each **Commodity**:

1. **Value (\$/ton as fed):** this information is required for each **Commodity** in the current inventory.
2. **% Dry Matter:** this information is required for each **Commodity** in the current inventory.
3. **Total lbs. (as fed):** enter the total pounds of **Commodity** on an as fed (wet) basis, or
4. **Total lbs. DM:** enter the total pounds of **Commodity** on a DM basis. **ONLY MAKE ONE ENTRY, DO NOT ENTER BOTH!**

Enter the required information for each **Commodity**. Remember, use the mouse or arrow keys to navigate and you can get to the top of the screen by pressing "control-home".

When you are finished entering all of the data for **Commodities** on this screen click once on the *Continue* button to move to the next data entry screen: **Commodities Storage & Feeding Losses**. First click once on the *Clear Data* button to remove old data. To access important information about **Commodities Losses** click once on the *View Important Information* button (to return to data entry click once on the button *Resume Data Entry*). For each **Commodity** in the feed inventory use this screen to enter the following information from your **Commodities** data collection form (Type of Commodity and Storage Structure Name will already be filled in).

1. **Storage Loss:** any storage loss before feeding. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).
2. **Feeding Loss:** any losses from the removal of feed from storage through to any waste in the feed bunk. Enter loss as a percentage of DM (e. g., to enter 2.00% enter .02).

When you are finished entering all of the data for **Commodities** on this screen click once on the *Continue* button to move to the next data entry screen: **Basic Herd Data and Purchase Prices for Replacement Feeds**. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing "control-s".

## ***Basic Herd Data and Purchase Prices for Replacement Feeds***

This section requires data entry concerning the dairy herd that is going to be fed the feed inventory just entered. First click once on the ***Clear Data*** button to remove old data. Now enter the following data (use arrow keys, scroll bars, and/or mouse to navigate):

1. **First Day of Planning Period:** below this caption enter the date of the first day in the planning period. Example of entry format is: 9-16-96.
2. **Ave. Lbs. Milk Sold per cow/yr:** below this caption enter the herd average pounds of milk sold per cow per year.
3. **Number of Days in Current Feeding Period:** below this caption enter the total number of days you want to use for your current feed planning period.
4. **Total Number of Cows in Herd:** below this caption enter the total number of milking and dry cows in the herd.
5. **Total Number of Heifers:** below this caption enter the total number of heifers that will be fed during the planning period.
6. **QP Forage Cost \$/ton DM:** the *Dairy Feed Inventory Planner* gives two inventory and planning summaries. The **Quick Report (QP)** requires a general price for any forage that needs to be purchased in the planning period.
7. **QP Corn Cost \$/bu:** the *Dairy Feed Inventory Planner* gives two inventory and planning summaries. The **Quick Report (QP)** requires a general price for any corn that needs to be purchased in the planning period.
8. **QP 44% SBM Cost \$/ton:** the *Dairy Feed Inventory Planner* gives two inventory and planning summaries. The **Quick Report (QP)** requires a general price for 44% soybean meal (as fed price) that needs to be purchased in the planning period.
9. **Group Name:** below the caption enter the group name for each of the four cow groups and the three heifer groups. Limit name to 10 total spaces.
10. **Milking (M) or Dry (D):** below the caption, for cow groups, enter an M if the group is a milking group, D if the group is a dry group. Cow Group 4 is always a dry group.

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11. **Ave. Lbs. Milk/Cow:** below the caption enter the group average milk production (lbs per cow per day). Cow Group 4 is locked at 0 lbs. because it is a dry group.
12. **Ave. Body Wt.:** below caption enter average body weight for each cow and heifer group.
13. **No. Animals:** below caption enter number of animals in each cow and heifer group. Press F9. If the word ERROR! appears at the bottom of this column the numbers you entered here do not match those entered in steps 4 and 5. Re-enter the numbers until no error message appears. Be sure to press F9 after each entry.
14. For each forage (Ensiled, Baled, Misc.) and each concentrate (Ensiled Corn, Stored Dry Corn, and Commodities) the feeds in your current inventory will appear in a series of columns and rows under the heading **Replacement Prices for Feeds**. Enter the **Replacement Price** for each feed in the appropriate cell. The **Replacement Price** is what you will have to pay for this feed if you run out during the planning period.

After entering all of the **Replacement Prices**, press control-home to return to the top of the screen. Click on the *Continue* button. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing "control-s".

## *Cow and Heifer Groups*

You are now on a new series of data entry screens where you will enter the daily dry matter intake of each feed in the feed inventory for each cow and heifer group. The first data entry screen is for **Cow Group 1**. All feeds in the current feed inventory appear on each screen with an adjacent column for entering the daily amount fed (as fed basis). Adjacent to the column for entering the daily amount fed (as fed basis) is a column that automatically (press F9) calculates what the amount fed is in terms of dry matter fed. If a group is not fed a particular feed you do not have to enter a 0, just make no entry.

After entering the daily amounts fed (as fed basis) for all feeds press F9. Press control-home and then scroll down to the area under **Ensiled Forages** and **Baled Forages**. Notice that the *Dairy Feed Inventory Planner* calculates:

1. **Total Forage DM (lbs)**
2. **Total Concentrate DM (lbs)**
3. **Forage:Concentrate Ratio**
4. **Total Ration DMI (lbs)**
5. **Predicted DMI (lbs)**
6. **Actual DMI too high or too low?** (This gives you a warning if the DMI you entered is out of line with what would be predicted by the NRC table shown in the footnote. The Predicted DMI is for only one class of animals from the NRC tables and contains a +/- 10% leeway. Use it only as a rough guideline.)

When you are finished entering and viewing data, return to the top of the screen and click once on *Continue* to proceed to the next cow or heifer group. Repeat the same data entry procedure for all four cow groups and three heifer groups. Be sure to periodically save your work by selecting **save** from the **file** menu or by pressing "control-s".

## ***Viewing and Printing Reports in the Dairy Feed Inventory Planner***

The *Dairy Feed Inventory Planner* produces 11 different reports that can be viewed and printed. After entering data in **Heifer Group 3** clicking on *Continue* automatically takes you to **Report #1**. Below is a list of the **Reports** by number. Also listed is the information provided by each report. By clicking on *Continue* in each report you automatically proceed to the next report.

If desired, at anytime you may click on *Go Home* to go to the **Home screen**. At the **Home screen** you can click on **View Reports** where there is a button for each report. Clicking once on the report's button takes you directly to the report. Within each report click on the **Print** button(s) to print the report, or appropriate section of the report, desired. All **Print** macros have been tested on a HP DeskJet 320 and a HP LaserJet IIP, other printers are not guaranteed to print the reports properly. A sample copy of each report follows this section. The 11 reports provided are:

**1. *Current Inventory of Ensiled Forages***

**provides a table listing:**

- A. Type of Ensiled Forage,
- B. Storage Location,
- C. Tons (as fed),
- D. Tons (DM),
- E. Value.

**2. *Current Inventory of Baled Forages***

**provides a table listing:**

- A. Type of Baled Forage,
- B. Storage Location,
- C. Tons (as fed),
- D. Tons (DM),
- E. Value.

**3. *Current Inventory of Misc. Forages***

provides a table listing:

- A. Type of Misc. Forage,
- B. Storage Location,
- C. Tons (as fed),
- D. Tons (DM),
- E. Value.

**4. *Current Inventory of Ensiled Corn***

**provides a table listing:**

- A. Type of Ensiled Corn,
- B. Storage Location,
- C. Tons (as fed),
- D. Tons (DM),
- E. Total Bushels (corrected for DM and test weight),
- F. Value.

**5. *Current Inventory of Stored Dry Corn***

**provides a table listing:**

- A. Type of Stored Dry Corn,
- B. Storage Location,
- C. Tons (as fed),
- D. Tons (DM),
- E. Total Bushels (corrected for DM and test weight),
- F. Value.

**6. *Current Inventory of Commodities***

**provides a table listing:**

- A. Type of Commodity,
- B. Storage Location,
- C. Tons (as fed),
- D. Tons (DM),
- E. Value.

**7. *Animal Forage Usage: Tons Fed***

- A. Group,
- B. Group Name,
- C. Number of Animals,
- D. Days in Feeding Period,
- E. Tons DM: tons DM of each forage consumed by each group.

(Information for each class of forages (Ensiled, Baled, Misc.) may be printed separately.)

**8. *Animal Concentrate Usage: Tons Fed***

- A. Group,
- B. Group Name,
- C. Number of Animals,
- D. Days in Feeding Period,
- E. Tons DM: tons DM of each concentrate consumed by each group.

(Information for each class of forages (Ensiled Corn, Stored Dry Corn, Commodities) may be printed separately.)

**9. *Forage Inventory and Purchase Summary***

- A. Forage type,
- B. Beginning Inventory (tons DM),
- C. Feed Needed For Cows (tons DM),
- D. Feed Needed For Heifers (tons DM),
- E. Total Feed Wasted (tons DM),
- G. Total Feed Used (tons DM): equals Total Feed Needed For Cows + Total Feed Needed For Heifers + Total Feed Wasted. Total Feed Used may exceed Beginning Inventory.
- H. Ending Inventory (tons DM): equals total feed taken from current inventory, it may be less than Total Feed Used.
- I. Value of Beginning Inventory,
- J. Value of Feed Needed For Cows,
- K. Value of Feed Needed For Heifers,
- L. Value of Feed Wasted,
- L. Total Value of Feed Used: equals Value of Feed Needed For Cows + Value of Feed Needed For Heifers + Total Value of Feed Wasted. Total Value of Feed Used may exceed Value of Beginning Inventory.
- M. Total Value of Inventory Used: equals total dollar value of current inventory used, it may be less than Total Value of Feed Used.
- N. Beginning Inventory Days Supply: number of days current inventory is projected to last given current feeding levels (number of days rounded back to nearest whole day),

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- O. Ending Inventory Days Supply: number of days ending inventory (blank if no ending inventory) is projected to last given current feeding levels (number of days rounded back to nearest whole day),
- P. Beginning Inventory Run Out Date: if beginning inventory will be totally consumed, this is the date it will run out,
- Q. Days Supply Purchased to Complete Feeding Period: if beginning inventory runs out this is how many days' supply of this feed will have to be purchased to complete the feeding period.,
- R. Tons DM to Purchase to Complete Feeding Period: if beginning inventory runs out this is how many tons of DM of this feed that will have to be purchased to complete the feeding period,
- S. Cost of Purchases to Complete Feeding Period: if beginning inventory runs out this is the value of this feed that will have to be purchased to complete the feeding period.

**10. Concentrate Inventory and Purchase Summary**

- A. Corn/Commodity type,
- B. Beginning Inventory (tons DM),
- C. Feed Needed For Cows (tons DM),
- D. Feed Needed For Heifers (tons DM),
- E. Total Feed Wasted (tons DM),
- G. Total Feed Used (tons DM): equals Total Feed Needed For Cows + Total Feed Needed For Heifers + Total Feed Wasted. Total Feed Used may exceed Beginning Inventory.
- H. Ending Inventory (tons DM): equals total feed taken from current inventory, it may be less than Total Feed Used.
- I. Value of Beginning Inventory,
- J. Value of Feed Needed For Cows,
- K. Value of Feed Needed For Heifers,
- L. Value of Feed Wasted,
- L. Total Value of Feed Used: equals Value of Feed Needed For Cows + Value of Feed Needed For Heifers + Total Value of Feed Wasted. Total Value of Feed Used may exceed Value of Beginning Inventory.
- M. Total Value of Inventory Used: equals total dollar value of current inventory used, it may be less than Total Value of Feed Used.
- N. Beginning Inventory Days Supply: number of days current inventory is projected to last given current feeding levels (number of days rounded back to nearest whole day),
- O. Ending Inventory Days Supply: number of days ending inventory (blank if no ending inventory) is projected to last given current feeding levels (number of days rounded back to nearest whole day),



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- P. Beginning Inventory Run Out Date: if beginning inventory will be totally consumed, this is the date it will run out,
- Q. Days Supply Purchased to Complete Feeding Period: if beginning inventory runs out this is how many days' supply of this feed will have to be purchased to complete the feeding period.,
- R. Bu Dry Shelled Corn Purchased to Complete Feeding Period or Tons DM to Purchase to Complete Feeding Period: if beginning inventory runs out this is how many bushels of dry shelled corn or tons of commodity DM of this feed that will have to be purchased to complete the feeding period,
- S. Cost of Purchases to Complete Feeding Period: if beginning inventory runs out this is the value of this feed that will have to be purchased to complete the feeding period.

#### **11. Quick Inventory Planner**

- A. Number of Animals: number of cows and heifers fed during the planning period,
- B. Tons Forage DM Needed Per Month: tons of forage DM needed to support cows and heifers per month,
- C. Lbs. Grain Needed Per Month: total lbs. of grain needed by cows and heifers per month,
- D. Percentage of Grain Equals Corn: percentage of Lbs. Grain Needed Per Month that equals shelled corn,
- E. Beginning Forage Inventory (tons DM): equals total forage DM in beginning inventory,
- F. Ending Forage Inventory (tons DM): equals total forage DM inventory remaining at end of feeding period,
- G. Tons Forage DM Needed to Purchase: if beginning forage inventory is completely consumed forage will have to be purchased,
- H. Cost of Purchased Forage: cost of any forage purchased due to inventory run out,
- I. Beginning Corn Inventory (tons DM): equals total corn DM in beginning inventory,
- J. Ending Corn Inventory (tons DM): equals total corn DM inventory remaining at end of feeding period,
- K. Bushels of Shelled Corn Needed to Purchase: if beginning corn inventory is completely consumed corn will have to be purchased,
- L. Cost of Purchased Shelled Corn: cost of any shelled corn purchased due to inventory run out,
- M. Tons 44% Soybean Meal Needed: rough estimate of protein supplement needs during planning period (considers forages to be average quality and does not consider any feeds in commodity inventory),

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N. Cost of Purchased Soybean Meal: rough estimate of protein costs over planning period.

(Consult reference in the Appendix for the concepts underlying the calculations in the Quick Inventory Planner. The reference is: Shaltry, J. R. 1992. Estimating the feed needs for one cow. Michigan State Univ. Ext., East Lansing, MI.)

*Sample Reports*

## ***APPENDIX***

1. Data collection forms
2. Brooks, R. C. 1996. Feed capacity of upright silos. *in* Agricultural Engineering Series Publ. #640. Michigan State University Extension. East Lansing, MI.
3. Brooks, R. C. 1986. Approximate storage capacity of grain storage structures. *in* Agricultural Engineering Series Publ. #559. Michigan State University Extension. East Lansing, MI.
4. Shaltry, J. (undated) Estimating feed needs of one cow. Michigan State University Extension, East Lansing, MI.