

# Owner's Manual

## ***Model 800RFV Relative Feed Value Testing System***



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P.O. Box 63 • 2821 Harvey Street • Hudson, WI 54016  
800-635-7468 • [www.harvesttec.com](http://www.harvesttec.com)

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## Introduction

Thank you for purchasing a Harvest Tec model 800 Relative Feed Value Testing System. This system calculates Relative Feed Value (RFV), Total Digestible Nutrients (TDN), and California 90% TDN (CA90%TDN) of the alfalfa hay on the go on an individual bale basis. This information is available to you as you bale, and is stored in the job record, and is downloadable for future use.

## Overview

The RFV program software is downloaded to the operator's 600 Series Automatic Applicator or Moisture Only System. It requires that a sample for each field is taken from random spots in the field right after the hay is cut, and sent into a lab. When the results are received from the lab, the value is entered into the RFV setup menu of the 600 Series System, accessed through the ISOBUS terminal. **Note: The more accurate the pre-baling sample is, the more accurate the results will be.**

When it's time to bale, the program uses the initial test mentioned above for a baseline, weight from the scale, the user entered values for bale dimension (Length, Height, & Width), the Baler type (3x3, 3x4, 4x4, etc.) and the moisture from the applicator system to calculate the dry matter density, giving the RFV for each and every bale. The RFV value is displayed on the monitor while baling. The average RFV, TDN, and CA 90% TDN, for the job are displayed in the Job Details. The RFV, TDN, and CA 90% TDN are stored in the job records for each individual bale as well. All of these values can also be written to an RFID tag.

## System Requirements

- Crop Saver or Thirty Plus 600 Series Preservative Applicator or 600 Series Moisture Only System.
- OEM Chute Scale
- Baler Virtual Terminal (VT). RFV system does not work with Harvest Tec Touch Screen Display.

\*System not compatible with 400 or 500 Series systems\*



**The Baler Control Module (BCM)  
Must Have Version 4.2.0.0 or Higher**



## RFV Compatible Balers

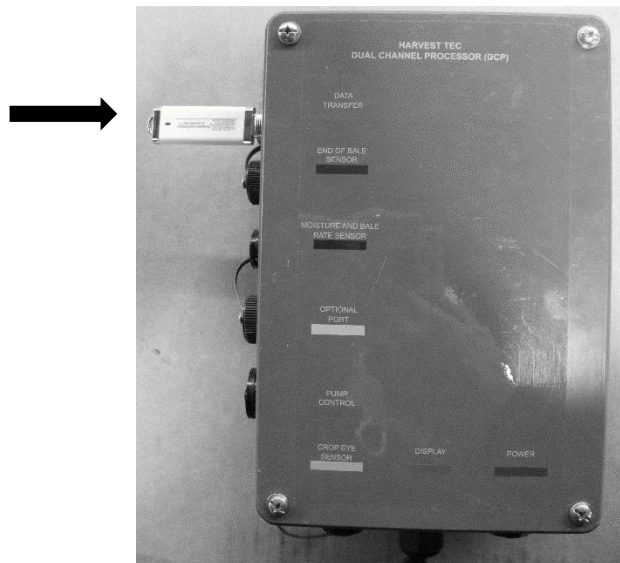
<u>New Holland</u>	<u>Case IH</u>
BB 230	LB 234
BB 330 Standard or Packer	LB 334 Standard or Packer
BB 330 Roto Cut	LB 334 Roto Cut
BB 340 Standard or Packer	LB 434 Standard or Packer
BB 340 Roto Cut	LB 434 Roto Cut

## Enabling RFV System on Dual Channel Processor

1. Locate the Dual Channel Processor (DCP) on baler.



2. Insert Harvest Tec USB drive with RFV Software into USB port on DCP.

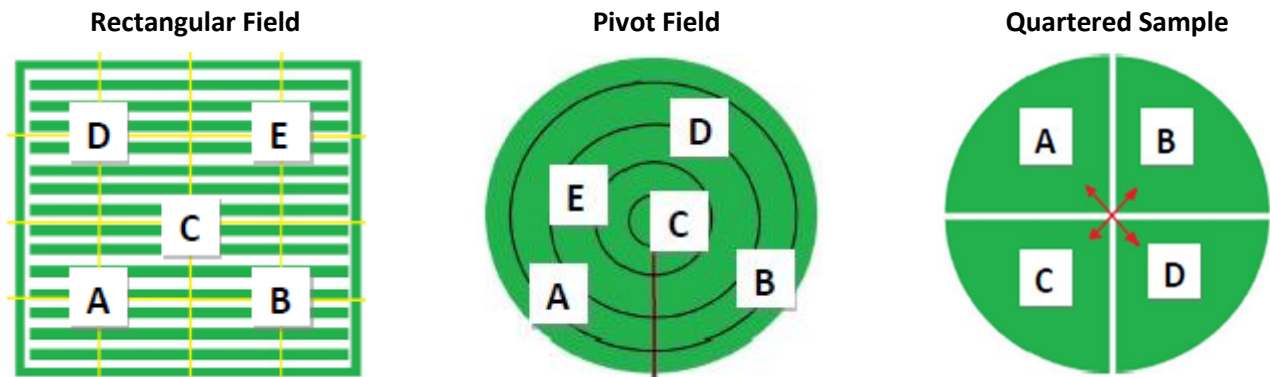


3. Turn tractor on, supplying power to the system. The DCP will automatically download the new software within 30-45 seconds, and will then display an icon in the upper left corner of the VT indicating that the new Object Pool is being stored to the VT. This process will take a few minutes to complete. Once the 600 series main menu screen is displayed, turn the tractor off and remove the USB drive.
4. With the USB drive now removed, turn the tractor back on.
5. For systems that do not have a preservative system, verify that the Pump Module is turned off (X) (Main Menu → Setup Mode → Application Setup → Verify Pump Module is turned off) before proceeding to enter values in the RFV Setup Screen.
6. The system is now RFV enabled and will display the new info on the Virtual Terminal (VT).

## Recommended Field Sampling Procedure

1. Prior to baling the field, a field sample will need to be taken for lab analysis.
  - a. Recommended to take sample from the window on the day of cutting.
  - b. Sample should be a representation of entire field. Take a small sample in various parts of the field. Filling a gallon size bag will be a sufficient amount.
2. Send sample to local lab for RFV analysis
  - a. It is recommended that the lab grind the entire sample prior to completing the lab analysis.
3. Upon receiving the analysis back, input RFV information into Harvest Tec system as shown in the Configuring the RFV System instructions below.

To obtain a representative sample, locate at least 5 locations on rectangular and pivot fields, while quartered fields will need a sample from at least 4 locations. For example, based of field shape, sample at locations A-E.



## Configuring RFV System

1. Create a new job for each field, and input a field name.
2. Enter the correct value for the Average Bale Length in the Baling Rate Setup screen. This value will remain unchanged until the operator changes it.
3. Enter the correct value for the Bale Height, Bale Width, and Baler Type in the RFV Setup screen. These values will remain unchanged until the operator changes them. Recommended height for BB230/LB 234 is 27", recommended width for all 3' balers is 35", recommended width for 4' wide balers is 47", and recommended width for all others is 31".
4. Prior to baling, a field sample will need to be taken and sent to a lab for analysis. See "Recommended Field Sample Procedure" for details.
5. Select Baler Type: BB230 / BB330 and LB 234 / BB334 models, select "3x3". BB340 / LB434 models, select "3x4".
6. Enter the value (from sample) into the RFV Field Sample section located on RFV Setup page.  
**Note: Each time a new job is created, the RFV Field Sample value will default to 0, so it is a requirement that a new field sample value must be entered each time a new job is created. If no RFV value is entered, all bales will have RFV=0, TDN=0 for that job.**

## Configuring RFV System (continued)

The sequence of screens is as follows:

- Main Menu:** Shows options like Automatic Mode, Manual Mode, Diagnostics, Setup Mode, Job Records, and a numeric keypad (1-5).
- Setup Mode:** Shows options like Bale ID Setup, Application Setup, Options, Baling Rate Setup, Yield Map Setup, and Main Menu.
- Baling Rate Setup:** Shows fields for Avg Bale Weight (lbs), Avg Bale Length (in), Time Per Bale (sec), and Knotter/Star (in). It also has checkboxes for Auto Baling Rate and Baler Sensors.
- RFV Setup:** Shows fields for Bale Height (in), Bale Width (in), RFV Field Sample, Baler Type, and RFV Range (1, 2, or 3 Stripes). An arrow points to the RFV Field Sample field with the text "Enter RFV Field Sample Value".

## Additional Features

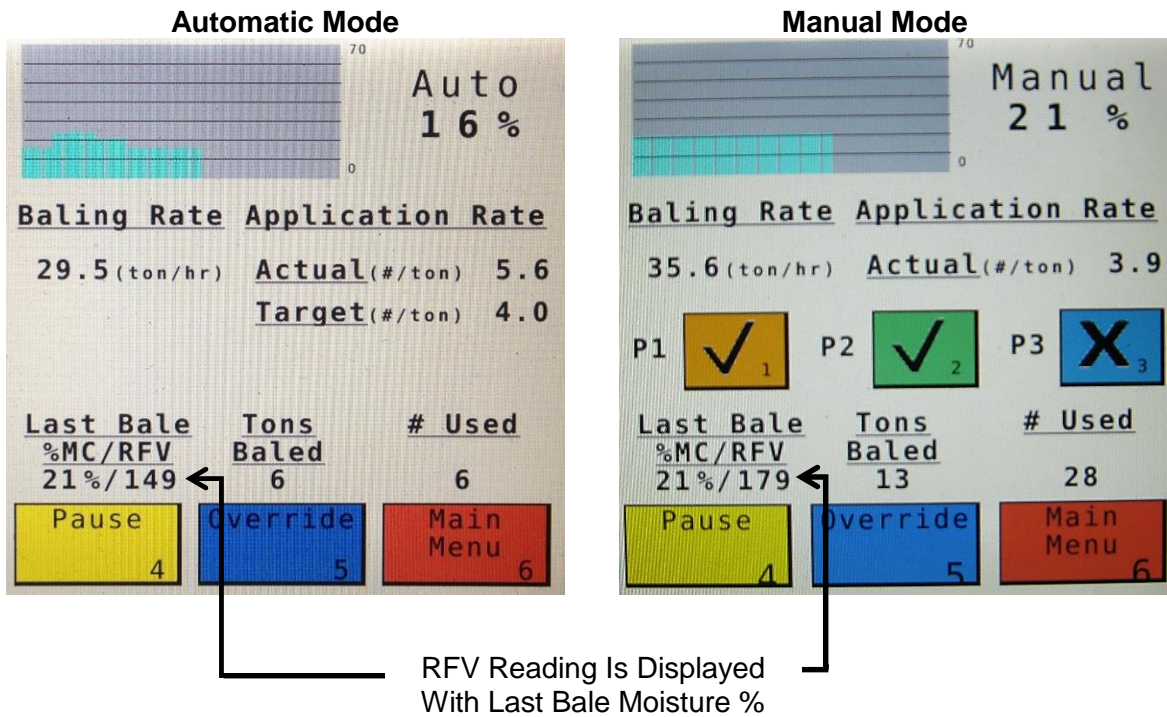
If baler is equipped with a Bale Identification System (Tagger) or RFV Dye Sprayer, these systems need to be turned on in the Bale ID Setup page. Recommended Knotter / Tagger distance for all BB / LB balers is 54". Recommended Knotter / Antenna distance for all BB / LB balers is 168". When using a Dye Sprayer, recommended distance is 110-120" for knotter/dye tip distance. \*Operator can adjust to mark in center of bale.

The sequence of screens is as follows:

- Main Menu:** Shows options like Automatic Mode, Manual Mode, Diagnostics, Setup Mode, Job Records, and a numeric keypad (1-5).
- Setup Mode:** Shows options like Bale ID Setup, Application Setup, Options, Baling Rate Setup, Yield Map Setup, and Main Menu.
- Bale ID Setup:** Shows fields for Knotter/Tagger Distance (in), Knotter/Antenna Distance (in), Tagger Module, Knotter/Dye Tip Distance (in), and Dye Sprayer Module.



## Operating Screens



## Troubleshooting:

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
All bales show RFV=0	No pre-sample value entered	Enter pre-sample value
No RFV setup on screen	RFV Key did not work	Contact Harvest Tec
Bale rate displays zero	1. Bale rate sensors are reversed. 2. Short in cable. 3. Damaged sensor.	1. Switch sensors next to star wheel. 2. Replace cable. 3. Replace sensor.
Moisture reading errors (High/Low)	1. Wire disconnected or bad connection between star wheels and DCP 2. Low power supply to DCP	1. Reconnect wire 2. Check voltage at DCP. (Minimum of 12 volts required)



## Job Records

Relative Feed Value (RFV), Total Digestible Nutrients (TDN%), and California 90% TDN (CA 90% TDN) information will be added to your job records, as shown below.

\*If your baler is equipped with a Bale Identification System (Tagger), the RFV and TDN% information will also be store on the bale tag.

-----JOB DATA-----										
FIELD	JOB #	AVG MC	HI MC	# USED	BALES	TONS	RFV	TDN%	CA 90% TDN	DATE/TIME
31914	1	27	65	206	63	44	185	68.1	56.05	3/19/2015 11:16
-----BALE DATA-----										
FIELD	JOB #	AVG MC	HI MC	#/BALE	BALE ID	BALE WT	RFV	TDN%	CA 90% TDN	DATE/TIME
31914	1	15	31	1.3	1303200001	1440	185	68.13	56.07	3/19/2015 11:16
31914	1	24	31	2.7	1303200002	1440	185	68.13	56.07	3/21/2015 15:05
31914	1	26	31	3.8	1303200003	1451	182	67.82	55.82	3/21/2015 15:06
31914	1	28	32	3.7	1303200004	1349	183	67.92	55.9	3/21/2015 15:07
31914	1	23	29	3.7	1303200005	1349	170	66.48	54.71	3/21/2015 15:09
31914	1	17	27	2	1303200006	1440	181	67.71	55.73	3/21/2015 15:10
31914	1	28	32	3.7	1303200007	1440	193	68.92	56.72	3/22/2015 12:58
31914	1	29	33	3	1303200008	1470	194	69.01	56.8	3/22/2015 12:59
31914	1	27	32	3.8	1303200009	1470	198	69.38	57.1	3/22/2015 13:00
31914	1	33	38	3.2	1303200010	1380	190	68.63	56.48	3/22/2015 13:02
31914	1	30	35	3.4	1303200011	1380	197	69.29	57.03	3/22/2015 13:03
31914	1	26	35	3	1303200012	1420	179	67.5	55.55	3/22/2015 13:05

## Common Questions

- How does the RFV system calculate the value?  
The dry density of the bale is calculated based on the Harvest Tec moisture sensors, baler scale, and the dimensions of the bale entered by the operator. The density measurement is then combined with inputs for the average bale moisture, baler size/type, and the pre-harvest windrow sample to calculate the RFV & TDN of the harvested bale.
- Is the system designed only for measuring RFV in Alfalfa?  
The system is designed for measuring the RFV & TDN of Alfalfa, not grass or grass/alfalfa mixes.
- How do you adjust the system for rain or steam on the Alfalfa?  
For rained on hay, recommendation is to multiply the pre-harvest windrow sample by 0.95 before entering into the system to account for a slight reduction in quality caused by the rain. For steamed hay, recommendation is to enter in the pre-harvest field sample value into the system.
- How will grass in an Alfalfa field effect the RFV reading?  
Grass in the alfalfa field will reduce the RFV reading by lowering the dry density of the bale. Due to lowering of the dry density, the system will calculate a reduced RFV & TDN value.
- How often should I calibrate my scale to ensure accurate weights?  
Scales should be calibrated, at a minimum, once per crop. Follow the OEM recommendations for calibration of the scale.

## **Common Questions (continued)**

### 6. Is the Bale Identification System (Tagger) required to run the RFV system?

The RFV system can be operation in 3 separate ways, all of which require the baler to be equipped with a bale scale and a Harvest Tec or 600BB base system.

- a. The first way is by using just the integrated moisture only system, or 600BB. This system will calculate the RFV & TDN based off of the Harvest Tec sensor inputs and the bale scale. RFV is calculated and displayed for the last bale on the Harvest Tec operating screen, and RFV & TDN information are summarized in the job details screen to display the average values for RFV & TDN for that field. Additionally, the RFV & TDN is calculated for each individual bale and stored in the downloadable job record.
- b. The second way the RFV system can be configured is to use method A with the addition of a RFV Dye Marker. The RFV Dye Marker allows the user to configure 3 RFV set points that trigger the Dye Marker system to spray a line of food grade dye on the side of the bale at the time of baling. The number of lines made on the side of the bale indicate the quality (RFV & TDN) of the bale. One line on the bale indicates that the RFV is between set point #1 and #2, two lines indicate the RFV is between set point #2 and #3, while three lines indicate the RFV is above set point #3. This information is useful to the operator by allowing to visually identify bales of lower or higher quality in a field and sort accordingly.
- c. The third way the RFV system can be configured is to the use method A with the addition of the Bale Identification System (Tagger). The Tagger applies a vinyl label with an embedded RFID chip/inlay around the twine of the bale as it is being made. All information collected regarding that bale (field, serial #, average moisture, hi moisture, bale weight, date/time, RFV, TDN, and GPS coordinates for where it was made) is written to the RFID tag. That information can be read by using a hand held or loader mounted scanner, which display the information to the user. This information can be used to sort the hay out of the field based on field, moisture, or RFV/TDN into different storage locations so more consistent quality can be achieved in the storage location. The information on the tag can also be used to individually identify each bale for inventory tracking purposes. The information on the tag can also be used by the end user to identify the attributes of the bale and utilize the information to make management decisions (which group should this hay be fed to, based on the given quality what ration adjustments need to be made, etc.).

### 7. Can the RFV software be used on multiple balers?

Each RFV kit purchased can be used on only one baler. For multiple balers, the operator must purchase multiple kits. Each applicator or moisture only kit installed on a baler has its own unique serial number, which allows the operator to differentiate which bales came from each baler when using Tagging system.

### 8. How accurate can I expect the RFV and TDN calculations to be?

The RFV & TDN calculation accuracy is heavily dependent on the calibration of the bale scale being correct and the correct values for bale dimensions being entered by the operator. In addition, it is important to obtain a pre-harvest windrow sample that is representative of the entire field. Given a calibrated scale, correct bale dimension values, and a representative pre-harvest windrow sample, the operator should expect accuracy of +/-6% on individual bales and +/- 3% on average across the field.

## **WARRANTY AND LIABILITY AGREEMENT**

Harvest Tec, Inc. will repair or replace components that are found to be defective within 12 months from the date of manufacture. Under no circumstances does this warranty cover any components which in the opinion of Harvest Tec, Inc. have been subjected to negligent use, misuse, alteration, accident, or if repairs have been made with parts other than those manufactured and obtainable from Harvest Tec, Inc.

Our obligation under this warranty is limited to repairing or replacing free of charge to the original purchaser any part that in our judgment shows evidence of defective or improper workmanship, provided the part is returned to Harvest Tec, Inc. within 30 days of the failure. Parts must be returned through the selling dealer and distributor, transportation charges prepaid.

This warranty shall not be interpreted to render Harvest Tec, Inc. liable for injury or damages of any kind, direct, consequential, or contingent, to persons or property. Furthermore, this warranty does not extend to loss of crop, losses caused by delays or any expense prospective profits or for any other reason. Harvest Tec, Inc. shall not be liable for any recovery greater in amount than the cost or repair of defects in workmanship.

There are no warranties, either expressed or implied, of merchantability or fitness for particular purpose intended or fitness for any other reason.

This warranty cannot guarantee that existing conditions beyond the control of Harvest Tec, Inc. will not affect our ability to obtain materials or manufacture necessary replacement parts.

Harvest Tec, Inc. reserves the right to make design changes, improve design, or change specifications, at any time without any contingent obligation to purchasers of machines and parts previously sold.

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**HARVEST TEC, INC.**  
**P.O. BOX 63**  
**2821 HARVEY STREET**  
**HUDSON, WI 54016**  
PHONE: 715-386-9100  
1-800-635-7468  
FAX: 715-381-1792  
Email: [info@harvesttec.com](mailto:info@harvesttec.com)