PRECISION HAY PRODUCTION SYSTEMS

FOR LARGE SQUARE BALERS.

A NEW LINE OF PRECISION PRODUCTS FOR TODAY'S HAY PRODUCER.

NEW HOLLAND AGRICULTURE

Featuring the **Individual Bale Identification System** and new **CropRFV™ System**.

CropID™

CropRFV™ RELATIVE FEED VALUE

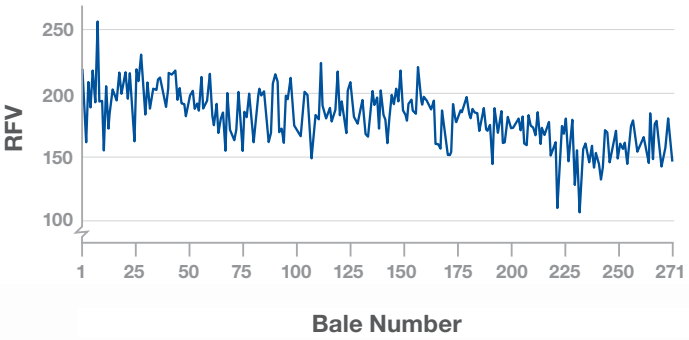
WHAT IS PRECISION?

A major challenge for today's hay producer has been to effectively identify and deal with the variations in moisture and hay quality. For the feeder of the hay, the challenge is to identify hay quality to mix accurate and balanced rations. For the producer, the challenge is maintaining consistency in quality for his customers. The precision in the production of hay and alfalfa is the ability to monitor, record and manage those variations in moisture and quality within the crop. The new precision components from New Holland can deliver that accuracy needed to become efficient and precise in today's ever-changing hay market.

VARIATIONS IN HAY QUALITY.

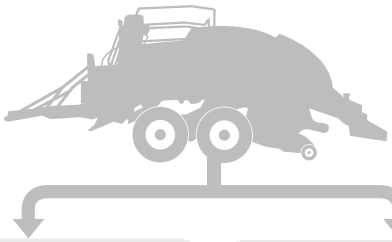
Alfalfa is a high-value crop that is an important ingredient in cattle and dairy rations. However, this crop can yield more uncertainty than any other ingredient in the ration. The reason is that the Relative Feed Value (RFV) can vary significantly, and it's not uncommon to see changes of 30 to 40 points within the same field. These wide swings can affect everything from the way the hay is marketed, to being fed, and having an accurate way to record and track these changes is the key.

Utah State University Study Showing Variation In RFV From One Field



NEW HOLLAND PRECISION COMPONENTS.

A strong line of precision components are available to today's hay producers to give them the advantage in the varying conditions. Available as a supplement to your existing CropSaver™ Applicator or 600BB Moisture Monitoring System, these components are designed to take your hay production to the next level.



600BB Moisture Only Kit

The basic kit offered by New Holland to read moisture and tonnage, and can also calculate and download individual bale records. Consisting of two star wheel sensors and Dual Channel Processor (DCP), this is the entry system to gaining a foothold on capturing precision in your hay operation.

696 Automatic Applicator

The industry leader in preservative application, the complete 696 Applicator uses star wheels to measure moisture and tonnage, and applies CropSaver Hay Preservative automatically depending on conditions. As the bale is being made, the system is gathering detailed information on moisture, weight, and preservative used, which can be downloaded as a job record.

Expanded Precision Components

CropID™ Tagger

Takes all the information from the 696 Applicator or 600BB System and places a Radio Frequency Identification (RFID) tag on each bale with the crucial information. Scan the tag and you have the ability to track and manage each bale from start to finish.

U.S. Patent 7,621,111B2
U.S. Patent 7,415,924B2

CropRFV™ System*

Calculates and records the RFV for every bale as it's being made. A new and important feature to help manage and record variations from bale to bale.

**Patent pending*

CropRFV™ SYSTEM

The **CropRFV System** is a breakthrough concept, allowing the hay producer to view, record, and track the Relative Feed Value (RFV) for each bale that they produce. The CropRFV System is advanced software that is downloaded to your CropSaver™ Applicator or 600BB Moisture System, tied into the scale kit on the baler, and able to give the operator everything needed to manage those variations in quality.

HOW DOES IT WORK?

The system relies on the principle that most of the feed value is in the leaves of the plant. It's well known that the higher the leaf content, the higher the density and quality of the bale.

The hay grower will take a sample of the hay just before or after its cut, send it to a lab, and enter that value into the CropSaver™ System when they're ready to bale. As the baler operates, the star wheel sensors take accurate moisture readings, the scale measures the weight, and the Dual Channel Processor (DCP) calculates the dry matter density and RFV for each bale. The RFV is displayed on the baler screen as the baler is running, stored into the downloadable job records, and can be printed on a tag with the CropID™ Tagger.

Requirements to measure Relative Feed Value (RFV):

- Complete 696 Applicator or 600BB Moisture Only System
- New Holland Chute Scale
- CropRFV Software

ACCURACY

The CropRFV System is a break from the norm in the way that hay is tested, as it can be a substitute for the conventional coring of bales to determine feed value, which has been the standard for many years. The CropRFV System studies have been conducted on multiple farms across multiple states, each showing the accuracy of the system.

Additional studies can be found at www.harvesttec.com/relative-feed-value

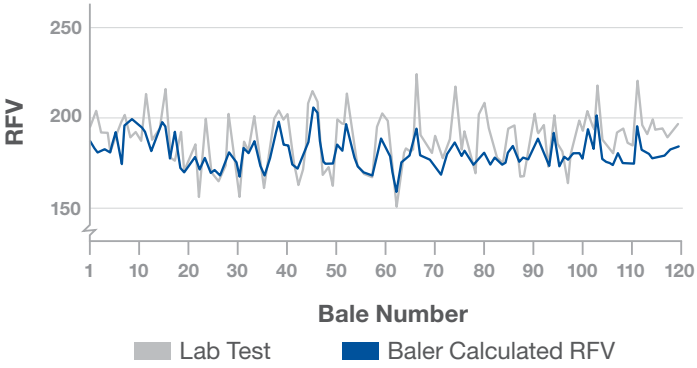
ACCOUNTABILITY

As the RFV is calculated and compiled to the job record, it is important to identify how the values of quality can impact the hay production process. The advantage of identifying RFV is significant, especially for dairy producers, as sorting and feeding hay according to quality allows for accurate ration adjustments, keeping milk production consistent. Using the CropRFV technology, the dairyman can get just that – the potential cost savings by feeding what the cow needs, can increase their bottom line.

For the producers or brokers involved with selling hay, having the ability to sort, stack, and ship by RFV can greatly improve their ability to make sure that each customer gets the quality level of hay that they expect.

The best way to use these new precision RFV values is to affix that information to each bale for the life of the bale, from the field, to the buyer, to the feeder. That can all be done using the CropID Tagger.

Representation Of Core Samples Compared To CropRFV Calculated Bales From Two Fields In 2013

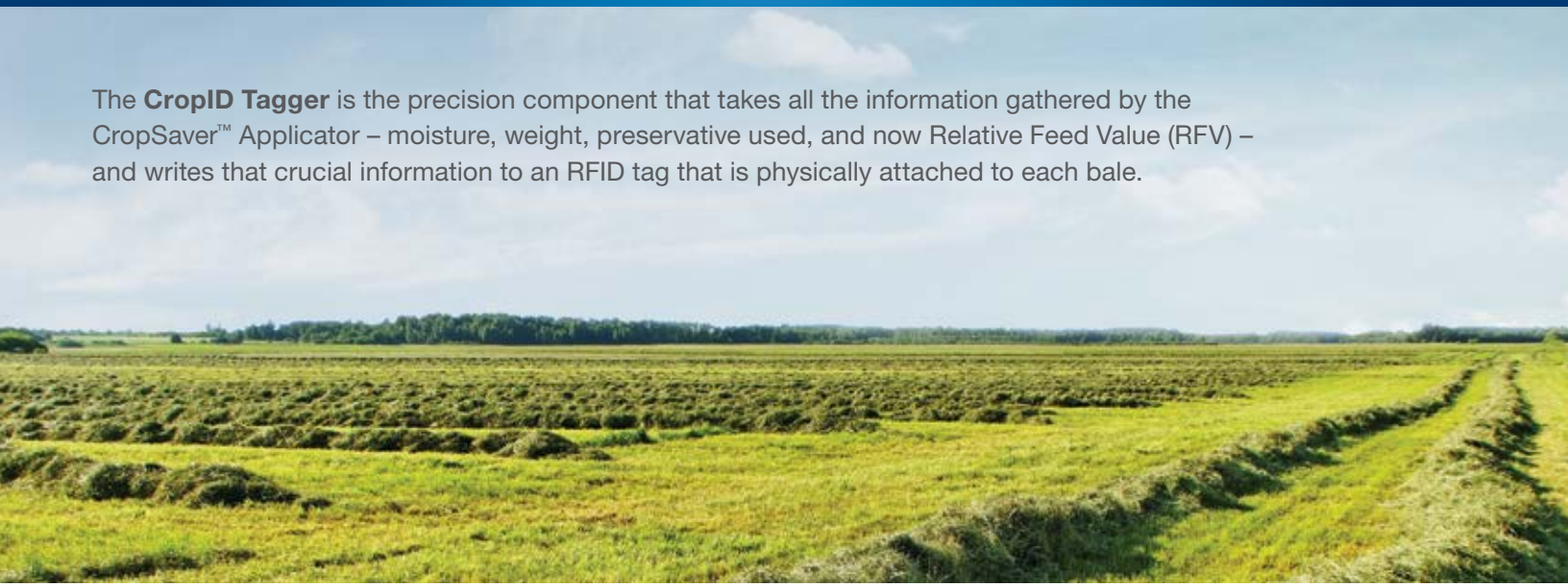


"On one field, we split the core samples from 50 bales and sent them to two different labs. The RFV levels came back from the two labs 4% apart, which isn't bad. The CropRFV-calculated values were right in the middle, only 2% difference from either lab."

– Don Leonard, Brush, Colorado

CropID™ TAGGER

The **CropID Tagger** is the precision component that takes all the information gathered by the CropSaver™ Applicator – moisture, weight, preservative used, and now Relative Feed Value (RFV) – and writes that crucial information to an RFID tag that is physically attached to each bale.



KEY COMPONENTS OF THE CropID TAGGER.

TAGGER

The CropID Tagger mounts above the outside twine on top of the bale chute. When signaled, two lift feet extend down to lift the twine, at which point a vinyl RFID tag is wrapped around the twine as it is released.

U.S. Patent 7,621,111B2
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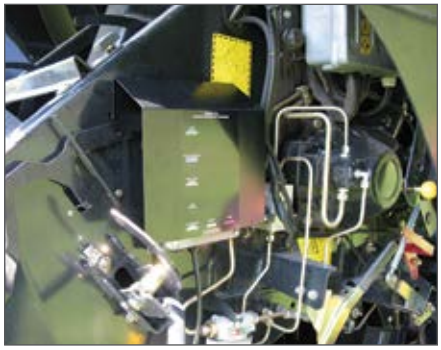
STAR WHEEL MOISTURE & BALE RATE SENSORS

Two 7" star wheels are located right behind the knotters. Moisture is measured by conductivity between the wheels and the rate of baling is monitored by the revolutions. Readings are accurate between 7% to 70% moisture.



DCP

The key component of the product line is the Dual Channel Processor, or DCP. The DCP gathers all the important bale information and stores and creates a unique profile for every bale.

IN-CAB MONITOR

The CropID system is controlled by the same display that controls the CropSaver applicator in the cab of the tractor. The display gives the operator immediate access and visibility of bale moisture, the rate of baling, bale weight, preservative use, RFV, tag application and all other baler functions.

BALER ANTENNA

Mounted on the back of the bale chamber, the antenna will write all the information that the CropID gathers for each individual bale, to the tag as it passes by on the bale. (Baler antenna shown at right)

The **CropID Tag** is a permanent vinyl tag that is wrapped around the twine on each bale. Each tag encases a Radio Frequency Identification (RFID) chip with memory. As the tag passes under that baler antenna, a signal is radioed to the chip in the tag, writing that bale's specific information permanently to the tag.

Each bale can now be identified by the following criteria:

- Bale identification number
- Field name
- Date and time of baling
- GPS data
- Relative Feed Value (RFV) and Total Digestible Nutrients (TDN)
- Average and high moisture of the bale
- Amount of CropSaver™ Hay Preservative applied
- Weight of bale

READING THE CropID TAGS.

The information on the tag is read with a scanning device. As the bale is handled or fed, the data on the tag provides valuable information to manage and feed the hay with precision. The tag does not have to be seen, but scanning equipment will read it and display it to the operators handling the bales.

HAND SCANNING

The tags can be read with the hand-held scanner up to 10 feet away. The operator uses the keypad to navigate through the bale information while feeding or handling the bale.

SCANNING WHILE RETRIEVING BALES

With the scanner mounted on the retriever, the bales can be read up to 20 feet away. As the bale is approached, the operator can accept or reject based on Relative Feed Value (RFV) or other criteria. As the bales are stacked, a record of the group is recorded, listing the bales in each group and the total tonnage in the stack.

PORTAL SCANNER

Large operations can benefit from using a portal scanner, which allows a fully-loaded truck to drive under a portal with four antennas, capturing each bale and creating a detailed record of the whole load.

SCANNING WITH A HAY LOADER

Later when the hay is handled with a loader, the scanner can be mounted on the machine to provide information for sorting and controlling groups of bales. When a stack is made or a truck is loaded, the list of bales is recorded as a group.

The scanned information can be downloaded to a removable USB drive and transferred to a computer and printed out or emailed direct to the end user, giving the producer a list of bales that are in a stack, or loaded on a truck.

RETURN ON INVESTMENT WITH PRECISION.

Precision farming and its monetary benefits has been in the industry for a number of years, and now there is precision equipment available for hay production. To show an example of what level of paybacks can be attained by adding New Holland precision components to your baling operation, follow along below.

THE DAIRY FARM.

Farm Size: 800 acres
Crops: 300 Acres Alfalfa

Number of Head: 250

A dairy farm invests in New Holland CropRFV™ and CropID™ precision equipment to allow them to sort and feed according to Relative Feed Value (RFV). With a yearly cost of $3,771 in equipment for the first 5 years, $1,722 annually in tags, and ranging around $576 per year in pre-harvest sampling costs, the dairy farm is able to sort each bale by RFV, and adjust rations and feed much more accurately, giving the dairy a dramatic increase in milk output and profitability.

Equipment Costs	
Automatic Applicator	$7,920
CropID Tagger	$4,960
CropRFV Software	$500
Bale Scale Kit	$5,475
Total	$18,855

Equipment Cost over 5 Years	$3,771
Annual Cost in CropID Tags *2,570 tags x $0.67 ea.*	$1,722
Annual Cost of Pre-Sampling *(8 x 4 cuttings x $18)*	$576
Total Annual Cost	$6,069

Incremental Lbs/Milk/Day per Head	4
Total Lbs/Milk/Day (250 head)	1000
Value per Lb of Milk	$0.20
Total Value of Lbs/Milk/Day	$200

Savings by Eliminating Core Lab Tests *(1 out of 50 bales x $18)*	$882
Total Annual Profit *($200 x 365 days) + $882*	$73,882
Year 1 Total Return on Investment *($73,882 - $6,069 in equipment)*	**$67,813**

THE HAY PRODUCER.

Farm Size: 300 acres
Crops: Alfalfa

Tons per Acre: 1.5
Total Tons per Cutting: 450

A commercial hay producer has customers that want more consistent quality hay than what was made in the past, so the producer adds New Holland precision equipment to his operation to allow him to accurately track and manage variations between fields and cuttings.

The bales can now be sorted by quality and this improves the consistency of what he is selling to each customer, allowing the producer to sell his hay at a $10 premium per ton.

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Total	$18,855

Equipment Cost over 5 Years	$3,771
Annual Cost in CropID Tags *2,570 tags x $0.67 ea.*	$1,722
Annual Cost of Pre-Sampling *(8 x 4 cuttings x $18)*	$576
Total Annual Cost	$6,069

Savings by Eliminating Core Lab Tests *(1 out of 30 bales x $18)*	$1,583
Increased Value from Bales by Sorting *(1500 tons x $10/ton premium)*	$15,000
Total Annual Profit *($16,583 - $6,069 in equipment)*	**$10,514**

PRECISION COMPONENTS.

By adding some of these precision components to their baler, hay producers, operators, hay brokers and feeders are all given added benefits to improve the efficiency and accuracy of their respective operation. Such added benefits are individual bale records, efficient sorting of bales, easier inventory control, accurate feeding and rationing, and advanced bale tracking software.

HAY PRODUCER BENEFITS:

- Accurate moisture, weight, and Relative Feed Value (RFV) on the go
- Create consistent bale stacks when sorting bales by:
  - Moisture
  - RFV
  - Field location
  - Harvest date
- Accurate inventory control
- Quality control

DAIRY OPERATOR BENEFITS:

- Detailed individual bale records by moisture, RFV, etc.
- Consistent quality of hay fed to herd
- Accurate rationing and feeding, giving increased milk output per head
- Increased profitability

HAY BROKER BENEFITS:

- Know what type and quality of hay you are buying, selling, loading and shipping
- Detailed bale records that can be printed or emailed to customers
- Accurate inventory control
- Accurate quality control
- Command premium prices for increased profitability

PRECISION ACCESSORIES FOR THE CropID™ SYSTEM.

BALE SCALE

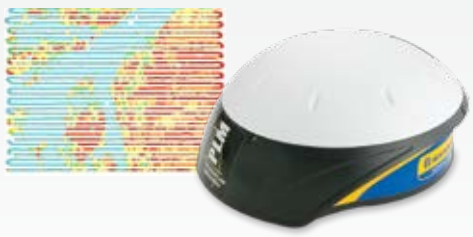
Your large square baler can now be equipped with a bale scale available from New Holland. With a bale scale, the exact bale weight will be recorded into the job records, instead of an input weight given by the operator. Used with the CropID Tagger, the system will write the average weight of the last three bales to the tag, giving the operator a close estimate of the actual weight as they scan the tag. The bale scale is also a requirement to run the CropRFV™ System, as the RFV is a calculated measure of moisture and weight.

RFV DYE MARKER KIT

An economical alternative to identifying RFV values on the bale. Consisting of a 3-gallon tank, and 3 pumps and spray nozzles, the operator inputs the RFV ranges into the CropRFV system that they want to identify. The kit sprays each bale with one, two, or three stripes of food-grade dye, showing the operator the RFV range of that bale for easy identification and sorting.

GPS AND YIELD MAPPING

An additional GPS package for your large square baler is available to take your productivity to the highest level. By incorporating the GPS into the CropID System and Tagger, the coordinates of the exact location the bale was tied off in the field will be written to the tag and saved in the job records. Using this technology, the producer now has the knowledge needed to maximize productivity and plan for future yields.



www.newholland.com/na

FOR MORE INFORMATION ON PRECISION HAY PRODUCTION SYSTEMS AND COMPONENTS, CONTACT YOUR NEW HOLLAND DEALER.

HARVEST TEC® *Equipment and Products for Quality Hay.™*

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