AGCO PARTS HayBoss™ G2

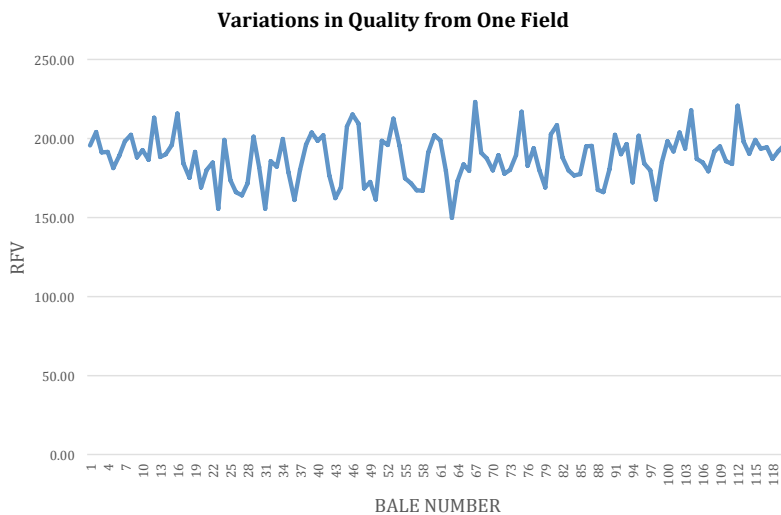# Precision in Hay Production
The Key to Quality.

Variations in moisture and hay quality are major challenges for today's hay producer.

The feeder of the hay needs to identify hay quality to mix accurate and balanced rations. Precision components from AGCO arm you with the ability to monitor, record, and manage variations in moisture and quality in the production of hay and alfalfa. That gives you the accuracy you need to become efficient and precise in today's challenging market.

Be more certain about Alfalfa's uncertainty

The importance of alfalfa in cattle and dairy rations cannot be understated. But this high-value crop can yield more uncertainty than any other ingredient in the ration, because changes of Relative Feed Value (RFV) can vary significantly. It's not uncommon to see changes of 30 to 40 points in RFV within the same field. These wide point swings can affect everything from how the hay is marketed to how it is being fed. Having an accurate way to record and track these changes is critical.

Variations in Quality from One Field

SOURCE: Utah State University

HayBoss G2

Manage those challenges with Hayboss G2 Precision Components.

A strong line of precision components is available to give hay producers an advantage in varying conditions. These precision components are designed for your existing HayBoss G2 Applicator or HT600A Moisture Monitoring System, taking your hay operation to the next level.

HT600A Moisture Only Kit

The basic kit offered by AGCO reads moisture and tonnage as well as calculates and downloads individual bale records. Consisting of two star Wheel Sensors and G2 Dual Channel Processor (G2DCP), this is the entry system to gain a foothold on capturing precision in your hay operation.

HayBoss G2 Applicator

The industry leader in preservative application, the complete G2 applicator uses Star Wheels Sensors to measure moisture and tonnage, and applies the AGCO Hay Preservative automatically, depending on conditions. As the bale is being made, the system gathers detailed information on moisture, weight, and preservative used, which can be downloaded as a job record.

EXPANDED PRECISION COMPONENTS

HayBoss G2 Tagger

A Radio Frequency Identification (RFID) tag is placed on each bale with all the crucial information taken from the HayBoss G2 Applicator or HT600A systems. Scan the tag and you have the ability to track and manage each bale from start to finish.

HayBoss G2 RFV Calculator

NEW

A new and important feature to help manage and record fluctuating variations, it calculates and records the Relative Feed Value (RFV) for every bale as it is being made.
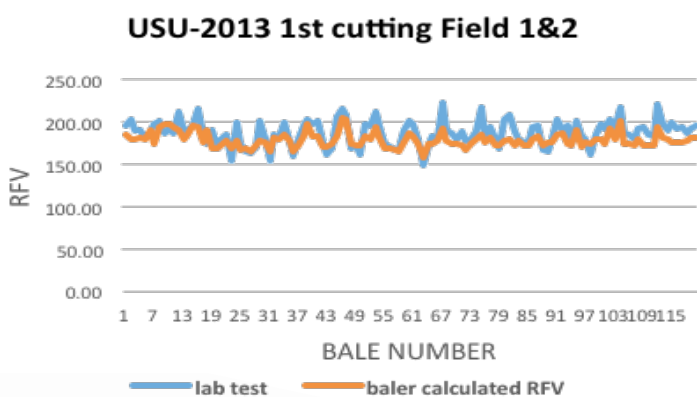
How the HayBoss G2 RFV Calculator Works

The system relies on the principle that most of the feed value is in the leaves of the plant. That means the higher the leaf content, the higher the density and quality of the bale.

The hay grower takes a windrow sample of the hay just before or after it is cut, sends it to a lab, and enters that value into the HayBoss G2 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 G2 Dual Channel Processor (G2DCP) calculates the dry matter density and RFV for each bale. The RFV is displayed on the baler screen as the baler is running, and is stored into the downloadable job records, which can be written on a tag with the HayBoss G2 Tagger.

SOURCE: Utah State University

Requirements to Measure RFV

- HayBoss G2 or HT600A Moisture Only System
- AGCO Bale Weight Kit or Accumulator Weight Kit
- HayBoss G2 RFV Calculator Software and an ISO 11783 compatible monitor

> *"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 HayBoss G2 RFV calculated values were right in the middle, only 2% difference from either lab."*
>
> *Don Leonard*
> *Brush, CO*

Accuracy

HayBoss G2 RFV Calculator studies have been conducted on multiple farms across multiple states. The results verify the accuracy of the system as compared to the conventional method of coring bales to determine feed value, as shown on the graph.

Additional studies can be found at
www.harvesttec.com/relative-feed-value
SOURCE: Utah State University

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. This is especially significant for dairy producers. Sorting and feeding hay according to quality allows them to make accurate ration adjustments, which keeps milk production consistent. The potential cost savings from accurately feeding what the cow needs increases the dairy producers bottom line.

For producers or brokers involved with selling hay, the ability to sort, stack, and ship by RFV can greatly improve their consistency to make sure each customer gets the quality level of hay they expect. From the field to the buyer to the feeder, the best way to use this new precision RFV is to affix the information to each bale, for the entire life of the bale. It can all be done using the HayBoss G2 Tagger.

Not all bales are the same.
Now you can see the differences.

Every bale is different and with the HayBoss G2 Tagger, you'll know precisely how different. Each bale's moisture, weight, preservative used, and now RFV are available with a scan of an RFID tag, which is physically attached to each bale.

Key Components of the G2 Tagger

Tagger
The HayBoss G2 Tagger mounts above the outside twine on top of the bale chute. When signaled, two feet extend and lift the twine, wrapping a vinyl Radio Frequency Identification (RFID) tag around the twine as it is released.

Star Wheel Moisture and Bale Rate Sensors
Two 7" star wheels are located directly behind the knotters. Moisture is measured by conductivity between the wheels while the rate of baling is monitored by their revolutions. Readings are accurate between 7% to 70% moisture.


G2DCP
The key component of the product line is the G2 Dual Channel Processor, or G2DCP. It gathers and stores all crucial bale information and creates a unique profile for every bale.

In-cab Monitor
The HayBoss G2 system is controlled in the tractor's cab by the C1000 display or Harvest Tec monitor. In addition to all baler functions, the operator has immediate access to: moisture; rate of baling; bale weight; preservative used; RFV; and when the tag is applied. And it's all displayed through one monitor.
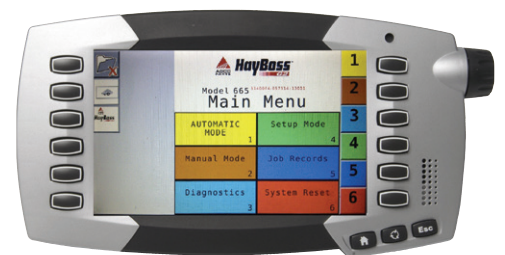
Baler Antenna
Mounted on the back of the bale chamber, the Baler Antenna writes all the information the HayBoss G2 gathers for each individual bale, sending it to the G2 tag as it passes by on the bale.

The tag that's more than just a tag.

The HayBoss G2 tag is a permanent vinyl tag wrapped around the twine on each bale. Each tag encases a Radio Frequency Identification (RFID) chip. As the tag passes under that baler antenna, a signal is radioed to the tag's chip, permanently saving that bale's specific information.

Each bale can now be identified by the following criteria:

- Bale identification number
- Field name
- Date and time of baling
- Average and High moisture of the bale

- Amount of AGCO Hay Preservative applied
- Weight of bale
- Relative Feed Value (RFV) and Total Digestible Nutrients (TDN)
- GPS data
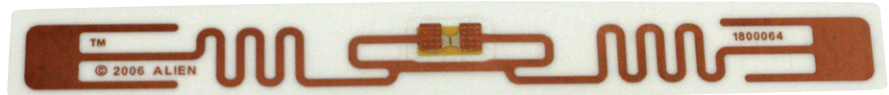
Reading the HayBoss G2 Tags

The information on the G2 tag is read with a scanning device. As the bale is handled or fed, the data on the tag provides the necessary information to best manage and feed the hay with the utmost precision. Because of its advanced technology, the tag does not even have to be seen. Scanning equipment detects it and displays it to the operators.

Hand Scanning

The tags can be read with the hand-held scanner up to 10 feet away. The keypad allows the operator 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 the bale based on RFV or other criteria. As the bales are stacked, a record of the group is recorded, listing its number of bales and the total tonnage in the stack.

Scanning with a Hay Loader

Later, when the hay is handled with a loader, the scanner can be mounted on the loader to provide information for sorting and controlling different 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 USB drive and transferred to a computer and printed or emailed directly to the end user. This gives the producer a list of bales that are in a stack, or loaded on a truck.

Portal Scanner

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

Return On Investment with Precision

Precision farming and its monetary benefits has been in the industry for a number of years, but precision in hay production is relatively new. To show an example of what level of payback can be attained by adding AGCO precision components to your baling operation and sorting hay by RFV, follow along below.

THE DAIRY FARM:
Farm Size: 800 acres / Crops: 300 acres alfalfa / Number of Head: 250

EQUIPMENT COSTS:

HayBoss G2 Applicator.	$7,920
G2 Tagger Bundle	$8,256
G2 RFV Calculator	$500
Bale Weight Kit	$2,400
Total	**$19,076**
Annual Equipment Cost over 5 Years: . .	$3,815
Annual Cost in G2 Tags:	$1,722
(2,570 tags x $0.67 ea	
Annual Cost of Pre-Sampling:	$576
(8 cores x 4 cuttings x $18)	
Total Annual Cost	**$6,113**

A dairy farm invests in HayBoss G2 precision equipment to allow them to sort and feed according to RFV. With an annual cost of $3,815 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.

ANNUAL RETURN WITH PRECISION

Incremental Lbs/Milk/Day per Head	.4
SOURCE: Utah State University	
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 . . .	$882
(1 out of 50 bales x $18)	
Total Annual Profit	$73,882
($200 x 365 days)+ $882	
Year 1 Total Return on Investment . .	**$67,769**
($73,882 - $6,113 in equipment)	

THE HAY PRODUCER
Farm Size: 300 acres / Crops: Alfalfa / Tons per Acre per Cutting: 1.5 / Total Tons per Cutting: 450

EQUIPMENT COSTS:

HayBoss G2 Applicator.	$7,920
G2 Tagger Bundle	$8,256
G2 RFV Calculator	$500
Bale Weight Kit	$2,400
Total	**$19,076**
Annual Equipment Cost over 5 Years: . .	$3,815
Annual Cost in G2 Tags:	$1,722
(2,570 tags x $0.67 ea	
Annual Cost of Pre-Sampling:	$576
(8 cores x 4 cuttings x $18)	
Total Annual Cost	**$6,113**

A commercial hay producer has customers that want more consistent quality hay than what he has made in the past, so the producer adds HayBoss G2 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.

ANNUAL RETURN WITH PRECISION

Savings by eliminating core lab tests (1 out of 50 bales x $18)	$882
Total Annual Profit (1,500 tons x $10/ton premium)	$15,000
Year 1 Total Return on Investment ($15,000 + $882) - $6,113 in equipment)	**$9,769**

Benefits Provided by Precision Components

Adding some of these precision components to their baler gives hay producers, operators, hay brokers, and feeders 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.

Benefits for the Hay Producer

- 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

Benefits for the Dairy Operator

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

Benefits for the Hay Broker

- Detailed individual bale records by moisture, RFV, etc., so you 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

Precision Accessories for the HayBoss G2 System

Bale Weight Kit

Your large square baler can now be equipped with a bale weight kit available from AGCO. Used with the G2 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. With this kit, the bale weight will be recorded into the job records, instead of an input weight given by the operator. The bale weight kit is a requirement to run the HayBoss G2 RFV Calculator, as the RFV is a calculated measure of moisture and weight.

GPS and Yield Mapping

Take your productivity to the highest level with the additional GPS package for your large square baler. By incorporating the GPS into the HayBoss G2 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. With this technology, the producer has the knowledge needed to maximize productivity and plan for future yields.

G2 RFV Dye Marker Kit

An economical alternative to identifying RFV values on the bale. Consisting of a 3 gallon tank, 3 pumps and spray nozzles, the operator inputs the RFV ranges into the HayBoss G2 system that they want to identify. The kit then 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.

Representative of how G2 RFV Dye Marker Kit would mark bales.