

# Grain Moisture Application and Advantage

## **DICKEY-john Corporation has leveled the playing field**

We have engineered a complete moisture product line that will give you the same quality analysis in the field that you get in the elevator. Your savings start by knowing when to harvest and where to move equipment. From the elevator to the field you have quality technology from DICKY-john.

### **Don't guess - TEST!**

When you think of moisture testers you think of DICKY-john Corporation. We continue to take the moisture industry to new levels and now offer a product family that ensures you have the highest quality product on the market.

Understanding when a field is ready to harvest is one of the critical components of maximizing yields. The introduction of moisture testers to farming replaced guesswork with a valuable tool that accurately measures moisture readings right in the field.

Both large and small farmers can benefit from good moisture analysis. And there are a range of different testers that can be used. This article is intended to help the reader make good decisions that depend on this analysis.

There are several detailed reasons why knowing grain moisture is important; but the main reason is to protect investment. Moisture content is almost universally used as a price determinant when trading grain. Knowing that moisture content at various stages of growth, harvest and sale can mean extra dollars for the season. For instance, grain stored too wet will spoil. If too dry, the nutritional value declines.

## **Moisture in grain**

Grain moisture can be determined in a number of ways. The official, reference method of analyzing moisture is the laboratory air-oven test. This process entails taking 2 small samples each consisting of 3 grams of ground grain. The grain is placed in 2 tin cups and weighed. The grain is then placed in a laboratory air oven for 1 hour at 130° F. The sample is again weighed and the moisture percentage is computed based on the change in weight. Obviously, this process is time consuming, taking 1 to 3 hours for each sample, using trained lab personnel.

DICKY-john Corporation has a full product line that is calibrated to the official air oven. The DICKY-john moisture tester product line offers fast, accurate analysis on moisture and test weight (bulk density) based on official references. DICKY-john products are field-proven over three decades and continue to be the "gold standard" for moisture testing.

**Don't Own a Moisture Tester?** The agriculture industry is the largest user of moisture testers. If you have never owned a moisture tester it may be because of one of the following reasons:

### ***You don't need one***

Some people can feel grain and guess pretty close to the moisture content. This can be a risk due to the fact that a ½ percentage error in moisture may cost \$10 an acre or \$50 a semi load.

- With DICKEY-john products you mitigate this risk.

### ***They cost too much***

Some may perceive that a moisture tester costs too much money and decide to wait one more year to purchase a tester.

- Moisture testers from DICKEY-john are affordable and even more important, offer a return on your investment. Knowing grain moisture and using the information to make sound decisions will ensure your investment is protected.

### ***You trust someone else's analysis***

The relationships built in buying and selling grain are important and moisture testers keep it that way. When disputes develop from moisture errors, the sample is arbitrated at a USDA/GIPSA Field Test Station.

- These field stations use a DICKEY-john GAC2100. This same technology is used throughout the GAC (Grain Analysis Computer) series of products including the mini GAC, the GAC500XT and the GAC2100 series of products.

### ***Portable Moisture Testers are Cumbersome***

Portable moisture testers have been around for over 30 years. A major complaint from users of popular moisture testers is that some portable testers have to be biased and manipulated to obtain moisture analysis. Other testers require screwing on caps and continuous fiddling with reference bias adjustments. Customers become weary with screwing on caps and dribbling grain into hand-held moisture testers – only to then find the information requires transfer to a more reliable moisture tester at the elevator.

- DICKEY-john portable testers are designed on the same science and technology the commercial analyzers use. No sample preparation or screwing on of caps is required.

### ***You Can't Trust the Data***

Typically, portable moisture testers have required referencing to a more accurate instrument. Many have the reputation of a low-cost throw-away instrument that has to be frequently biased to the elevator.

- Thousands of grain depots worldwide rely on the government certified results of DICKEY-john moisture tester. DICKEY-john utilizes the same "grain-trade" technology throughout the GAC series of products. Also, DICKEY-john offers the only U.S. manufactured, true stand-alone (no need to bias) portable moisture tester.

## Who uses moisture testers?

Seasonal Usage	<p>DICKEY-john Corporation moisture testers are built to provide reliable service. For seasonal use (1 to 2 months a year) the mini GAC portable can be stored in its convenient carrying case. Another fine choice would be the GAC500XT that could be easily moved to a place of storage for those off-season periods. For the ability to run continuous samples, a bench top unit such as the GAC2100Agri, GAC2100G or the GAC2100b is an ideal choice.</p>
Portable moving from Field to Field	<p>For true portability, the mini GAC or the GAC500XT is the best choice. These units can be easily transported and provide consistent analysis for both moisture and test weight.</p>
Commercial Application-Elevator	<p>For continuous use in an environment that requires multi-tasking, the correct choice is the GAC2100b. The GAC2100b is certified in several countries including the United States as the standard by which others are measured. This unit is field-proven with years of reliable operation running tens of thousands of samples around the globe.</p>
Harsh Environment-Feed Mill or Livestock Operation	<p>DICKEY-john moisture testers are all designed for harsh environments. For inbound grain applications, the GAC2100b provides automatic, one-button testing with no sample preparation. This unit can also be used in a process control area for feed mixing. Special calibration options on the GAC2100b allow for transfer to portable units providing the flexibility to move data to offsite locations.</p>

<p>Grain Elevators - Scale House Operator- Commercial Elevator</p>	<p>DICKEY-john offers a complete moisture tester line that ensures continuity to the USDA's moisture meter of choice. The GAC2100b is the federal standard for moisture in the United States. For commercial operation, choose the GAC2100b. This unit offers NTEP certification and is the federal standard for moisture in the U.S. It is also widely accepted as the industry standard around the world. It is fully automatic with no sample weighing involved. Just pour the grain in the hopper and press the button to analyze for moisture and test weight. It is compatible with data collection systems and scale interface.</p>
<p>Farmers</p>	<p>Farmers can determine the moisture in crops that will provide information concerning when to harvest. Harvesting grain that is too wet can cost the farmer money in drying charges at the elevator. Wet grain incurs penalties that erode profitability. A farmer can also lose grain through spoilage by storing grain that is too wet.</p> <p>Grain harvested wet and dried too dry can add unneeded costs to this process. If it is too dry, it also degrades the nutrient value of the grain.</p> <p>When harvesting, grain kernels can get shattered by the combine if too dry. If the grain is too wet, it will not separate properly. The farm industry has evolved with technology and expects more accurate results from moisture testers. A farmer could potentially have a need for multiple testers. A portable M-3G or mini GAC is convenient in the combine cab and in the truck cab of a semi, enabling instantaneous, accurate, and consistent readings anywhere. Choose the GAC500XT for added value, including power source versatility and a convenient sample drawer.</p>
<p>Seed Companies</p>	<p>Seed companies need moisture testers to be assured their product will stand the test of long-term storage. Seed companies have product specifications that include a narrow moisture range. Accuracy is critical in this industry.</p> <p>Testing moisture level before packaging seed is crucial to assuring a premium, quality seed is supplied to the market for the end user. Growing and harvesting seed corn, seed beans and other such seeds, requires the versatility of accurate moisture and test weight on the go. The mini GAC meets these requirements. The mini GAC uses the grain constants that have been developed for specialty products including hybrid seeds.</p>
<p>Feed Processors</p>	<p>Feed processors use moisture testers to control the milling process. Moisture maintenance is important on the inbound raw product to limit wear and maintenance on machinery. Proper moisture levels provide lubrication to the mill. If these levels fall below process specifications, excessive wear of the mill results. Analyzing moisture assures machinery is set up based on facts, not guesswork.</p> <p>Optimal moisture levels also preserve valuable nutrients.</p>

<p>Custom Harvesters</p>	<p>Custom harvesters use moisture testers to make factual decisions.</p> <p>Knowing if a field is too wet or too dry is important information to a dispatcher allowing site prioritization on where to harvest first. If time is spent moving massive machinery to a location that is too wet, it can cost dockage penalties in drying charges. A typical example would be; 400 acres of corn at 1% over the elevator's limit at 180 bushels an acre with a dockage fee of 10¢. This costs the owner over \$7,000. Contract harvesters do not have time to wait days for crops to dry. With accurate moisture testers these areas can be sampled before moving costs are incurred. Prioritization of harvest locations can be based on facts and not guesswork.</p>
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## When is moisture testing most important?

<p>Harvest</p>	<p>Moisture testing provides the knowledge to make informed decisions. Using a moisture tester onsite can facilitate the prioritization of where to harvest. An error of 1% moisture in a 100 acre field = \$2,000. Know when to move equipment. Plan harvesting by location and moisture. If you spend 1/2 day moving equipment to the wrong field it can easily cost \$300 to \$400 in fuel and man hours alone.</p>
<p>When Storing</p>	<p>Understanding storage considerations can maximize the overall investment:          Decisions can be made when to blend grain based on moisture levels thus mitigating a wet, harvested product.          Decide whether or not to dry grain based on moisture content.          Periodic moisture level monitoring of stored grain can prevent additional expenses of drying.</p>
<p>At the Time of Sale</p>	<p>Everyone wants to maximize profits and time management should not be forgotten when considering profit returns. A typical combine can harvest 600-800 bushels an hour. Waiting for an elevator moisture reading can mean valuable time lost harvesting.</p>
<p>During Product Processing</p>	<p>Moisture is important at the time of product processing to aid in protecting the product and process machinery:</p> <p>Proper moisture means less wear on the mill and minimizes milling maintenance.          Optimized storage of processed grain and feed prevents product damage through mold</p>

## How to choose a moisture tester based on where you will be using it

In the Field	For a versatile, portable tester, choose the new mini GAC. No other hand held moisture tester offers test weight. Simply said, no other handheld moisture tester on the market is more accurate than the mini GAC. DICKEY-john took great pains to port the technology from the industry-standard GAC2100 into a handheld. Drawing from the same library of calibrations, it is a superior value. Finally, "grain-trade" accuracy for moisture and test weight is available in a handheld.
On a Combine	For mobile operations, the GAC500XT is a good choice. This semi-automatic tester provides moisture and test weight and operates off 12 VDC (cigarette lighter powered) or from AC power. Performance is comparable to the federal-standard GAC2100b.
At the Grain Bin	Based on power availability, any of the DICKEY-john moisture testers are good selections. The GAC series moisture testers use the same grain calibrations and the same technology to ensure consistency in readings from harvest to storage to market. The M-3G is a good economical choice for relative measurements but does not have the superior accuracy and versatility of the GAC series of products.
At the Grain Dryer	At the grain dryer, depending on power availability, choose any of the DICKEY-john moisture testers. The GAC series moisture testers use the same grain calibrations and the same technology to ensure consistency in readings from harvest to storage to market. With NTEP certified grain constants, the GAC Series moisture testers have temperature compensation that is vital to accurate moisture.

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<b>Moisture Repeatability *</b>	.1%	.1%	.1%	.1%	.2%	.5%
<b>Test Weight Repeatability **</b>	.2 lb/bu	.2 lb/bu	.2 lb/bu	.2 lb/bu	.5 lb/bu	N/A
<b>Temperature Accuracy</b>	1° F	1° F	1° F	1° F	1° F	1° F
<b>Sample Pre-weighing</b>	NO	NO	NO	NO	NO	NO
<b>Performs self-check between samples</b>	YES	YES	YES	YES	YES	NO
<b># of Language Resident in unit</b>	8	8	8	> 16	> 16	Download from web site
<b>Automatic Temperature Correction</b>	YES	YES	YES	YES	YES	YES
<b>Operator Independant Testing</b>	YES	YES	YES	YES	NO	NO
<b>Incremental Priceing</b>	\$\$\$\$\$\$	\$\$\$\$\$	\$\$\$\$	\$\$\$	\$\$	\$
<i>* Depending on grain</i>						
<i>** In trade range</i>						