

**NEW TECHNOLOGY MOISTURE METERS  
Dickey-john GAC 2500 & Perten AM 5200**

Date: August 20, 2015

To: All owners/users of grain moisture meters

From: The Grain Warehouse Department, Nebraska Public Service Commission

RE: Grain Moisture Testing Equipment Concerns and Issues

The Grain Warehouse Department has concerns with some issues we are finding with older model moisture meters. These issues are almost exclusively in relation to testing corn, and as such we felt it imperative to make the industry aware of our concerns.

The Department inspects 1,134 moisture meters annually. Of those meters, 318 are newer models that utilize a new technology and 816 are older models that utilize older technology. Of the 816 older models, 774 are Dickey-john models and the remaining older models were manufactured by Burrows, Steinlite, Motomco, and Infratec.

There are two national agencies, the National Type Evaluation Program (NTEP) and the Grain Inspection Packers and Stockyards Act (GIPSA), which establish the national standards for moisture meter testing. These agencies create and maintain the uniform testing procedures for testing different meter models and determine and approve calibrations for grain moisture meters. To determine the appropriate calibrations, NTEP and GIPSA collect grain samples from all over the U.S. each year and analyze them to determine if changes in meter calibrations are necessary for various grains. The agencies utilize a three-year average of the samples in determining if calibration changes to meters are necessary. Any necessary calibration changes are announced on either May 1<sup>st</sup> or August 1<sup>st</sup> of each year.

There are certain tolerance ranges for meters that have been written and agreed upon by NTEP and GIPSA. Each moisture meter manufacturer conducts its own tests and compares its samples to air oven testing results to determine moisture content. The manufacturer then makes approved calibration changes for its meter to ensure they are within the established tolerances. The last approved calibration changes made by Dickey-john to its older model meters were in 2010.

In Nebraska, we annually collect grain samples from around the state and analyze them to determine how they will work in different meters. We inspect corn samples of at least four different levels of moisture, sometimes five. We concentrate on moisture levels from 15% to 22%, as the industry starts discounting prices when moisture levels exceed 15 percent. Commission rules provide a tolerance range for tested meters not to exceed .5 of a point, plus or minus, on all corn with 20% moisture or below. Tolerances for corn in excess of 20% moisture are .8 of a point, plus or minus. Commission rules cap the allowable moisture at 22% to meet the .8 of a point tolerance.

In 2013, the corn samples we collected to use in our meter tests started diverging significantly from the readings we saw in 2012. We were somewhat concerned but not alarmed. In most cases, the older technology readings were drier than they had been the previous year on moisture levels below 20%, but were consistently wetter on samples above 20% moisture. We compared the older meter readings to readings utilizing the new moisture meter technology the Department uses in our meter testing.

We believe advancements in grain hybrids and changing growing conditions are the reasons behind the changes we are seeing in the corn we are testing. It is our understanding northern Iowa is experiencing something similar; however, this trend is not nationwide.

In 2014, our concerns continued to increase when we tested the corn samples we collected. We collected samples from Northeast, East Central, Southeast, and South Central Nebraska. The samples from the Southeast and East Central regions were sufficiently wet for testing purposes, but the moisture readings were testing at over .5 of a point low on all the samples with less than 20% moisture and over a whole point lower on samples exceeding 20% moisture when compared to the new technology testers. If the Department had used exclusively 2014 corn samples for our tests this year, we would have

failed all the meters using the older technology, as there was no calibration adjustment authorized to these meters.

In April of 2015, we again collected samples of corn from the Southeast and South Central regions, knowing these samples would not have higher moisture readings, but to test additional samples. What we collected was in the 11% to 15% moisture range. When we compared the measurements made on the old technology to measurements made using new technology, we again found the old meters were all showing test results indicating higher moisture content than the new technology. The 13% samples would have been rejected while the others would have barely made it into the .5 of a point tolerance.

We contacted Dickey-john officials in Auburn, Illinois regarding our findings and submitted grain samples to them for their analysis. They concur the older meter technology is problematic on the 2014 Nebraska corn samples. However, the results we are finding in Nebraska are not showing up on the three-year average of national samples conducted by NTEP and GIPSA, therefore they have not authorized any calibration changes to any of the older technology meters. Consequently, Dickey-john and the others with the older technology meters will not be making any calibration changes to the older meters.

For our 2015 testing, the Department continued to use 2013 corn samples, thereby allowing the older meters to pass inspection for another year. We hoped calibration changes would be authorized in May and/or August of 2015 to allow the older technology meters to pass inspection. However, as that did not happen, the older meters will remain the same. Therefore, when the Department begins collecting and reviewing 2015 corn samples for use in our 2016 inspections, there is a very real possibility those meters using older technology will fail inspection and have to be replaced.

We can't say with absolute certainty the older meters will fail when tested in 2016, but there is a good likelihood they will and at the very least will be reading low on moisture content, to the detriment of the meter owner. We are confident that new technology meters will pass inspection in 2016. Dickey-john and Perten are the only two approved manufacturers of new technology meters in the U.S. market. The new meters cost around \$5,500, which we are aware is not an insignificant investment.

Therefore, we want to get the word out and bring this issue to the industry's attention now, before testing begins in 2016. We want to forewarn those owners with older meters to enable them to decide how and when to deal with the issue. Those that choose to wait and see if the older meters will pass inspection in 2016 on 2015 corn need to be prepared to replace failed meters quickly. Others may choose to budget in the cost of new meters before harvest in 2015, most likely recouping the cost during harvest. The choice will be up to each meter owner, but we felt it incumbent upon us to give them the information to allow them to make an informed decision.