

Ag-IQ moisture meter makes economic sense

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The Ag-IQ moisture meter is proving to be a valuable tool for nut growers and processors.

The moisture meter can rapidly measure kernel moisture content of a sample of nuts that may be in-hull, in-shell or as kernel.

It was designed by Dr John Fielke and is available in two versions.

Firstly, as a handheld meter that was designed for in-orchard use and secondly, as a spear version that was designed for reaching deep into stockpiles or bins of nuts.

The Ag-IQ moisture meter was first developed for almonds in 2017 and in 2018 calibrations for walnuts were added.

Calibrations for other nuts can be developed upon request.

It is being distributed in California by Flory Industries for the handheld meter and by Wilkey Industries for the spear.

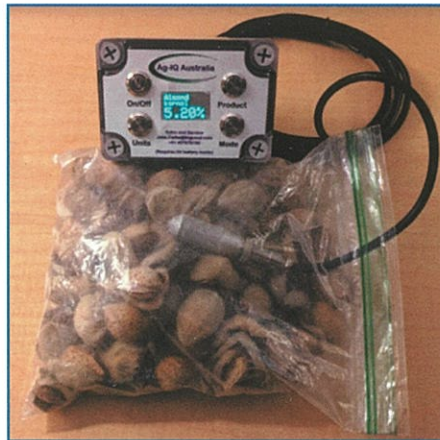
Simply place the sensor tip into a sample of almonds or walnuts and the meter will display the kernel moisture content.

It provides kernel moisture content from in-hull, in-shell or kernel samples without the need to shell out the kernels.

Once the inserted sensor is at the same temperature as the sample, a result is known in less than two minutes.

The meter works by placing a digital temperature and humidity sensor into the bulk nuts.

The moisture content of the kernel is determined through the use of Equilibrium Moisture Content (EMC) curves calibrated against both oven drying and the Dickey John GAC 2100 moisture meter.



The Ag-IQ moisture meter reading kernel moisture content with its sensor placed in a bag of in-hull almonds.

An example of an equilibrium moisture content calibration is shown in Table 1.

The key to a quick accurate reading is for the almonds to have sat for a few days in a bin or stockpile and have equilibrated their moisture between the hull, shell and kernel.

A field test of almonds drying will also give useful results.

The benefits of using the Ag-IQ moisture meter include being able to use it in the orchard, office, stockpad or factory.

It means no more trips from the orchard to the office or processor and waiting for a kernel moisture test result.

It saves time as there is no need to crack out kernels to undertake a kernel moisture test.

Results can be used to track the progress of drying and be used to schedule when to shake, sweep, condition and pick up nuts.

It provides rapid testing of multiple samples and it can help eliminate sending nuts (e.g. almonds) that are too wet to the processor.

Knowing the moisture status of in-orchard almonds can make you money by helping to improve scheduling of harvest activities of shaking, sweeping, conditioning and pickup, and thus minimise the time almonds are on the orchard floor.

It will help eliminate delivering over-dried almonds that are difficult to process and have a loss of kernel mass.

It will also prevent kernels above the moisture receival limit that will degrade quickly, attract a drying charge and slow processing.

Moisture content affects processability, shelf life and customer acceptance of a nut crop.

The Ag-IQ moisture spear is available in two lengths, one and two metres, and can be inserted into bins or stockpiles of nuts.

It can quickly measure the moisture content at various locations without the need to dig into the stockpile or bin to take a sample.

Knowing the moisture content can highlight where moisture content needs to be modified and managed.

Temperature (°C)	Relative Humidity (%)			
	40	50	60	70
10	4.1%	4.8%	5.7%	6.9%
20	3.9%	4.5%	5.4%	6.7%
30	3.6%	4.3%	5.1%	6.4%
40	3.4%	4.0%	4.8%	6.1%

Good	Too dry	Too wet
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Table 1. Raw Nonpareil almond kernel equilibrium moisture content as a function of temperature and humidity.