

CRACKless Egg™ - Evaluation

Conducted for

PEI Egg Commodity Marketing Board

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By

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Condensed Report

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Project Objective:

The stated objective of this project was “to determine the rate of egg breakage before and after using the Crackless Egg on all Island layer barns”.

Background:

Any agricultural food product is subject to adverse effects of rough handling and impacts, but eggs the most. Damage levels of 7-10% are reported to occur. It is therefore of paramount importance to identify handling locations, which produce impacts, which produce cracks or break the eggs, and take appropriate remedial action.

Executive Summary:

The Crackless Egg Technology will do what the manufacturer says it will.

The Crackless Egg is designed to mimic the size, shape and weight of a “large” egg. It is designed to be placed anywhere in the egg gathering, conveying or packaging systems, traveling among the eggs as they move along. All the while, the unit is recording the magnitude and direction of all the impacts it receives, the temperature of its’ surroundings, transmitting all information instantaneously to a graphic display on a remote Palm handheld device. Impacts are instantly recorded visually and simultaneously saved in memory. High impact spikes can be “flagged” on the Palm for later investigation and analysis. Any location showing impacts of a magnitude capable of damage can be identified and remediation measures taken immediately.

The unit itself performed flawlessly during the test period. Sufficient bench testing (for reference) was conducted to reliably calibrate the magnitude of impact that would consistently crack eggshells. Impact readings of “50” on the scale were found to cause cracks after 3-5 hits, more than 90% of the time. Impact readings of “45-85” caused failure. The unit is easy to become familiar with and easy to use.

The Project completely analyzed eight PEI operations; two laying/grading units, three mechanically (auto) picked operations, two hand picked barns and a pack-only station. Follow ups or repeat calls were made on five of the locations and the transportation of eggs was checked from four sites.

When asked what potential benefits that this device might provide to the industry, the producers themselves suggested the following areas:

- Feed Management; when breakage levels reach a predetermined point, it might be economic to switch to a feed with more available calcium, albeit more expensive.
- Identification of points in the lines with impact levels, which can cause breakage. Once identified, remedial action can be quickly and effectively taken.
- Cracking levels in one operation tested were reduced from 4.2% to 2.2% in the first visit.
- Increased income. One producer calculated that for a 25,000 bird flock, a 1% reduction in cracking would make him an additional \$200 per day. An industry representative calculated \$250.

Project Discussion:

On the farms where the instrument was used, it was enthusiastically received. When the unit was given to the operators to use, they quickly took the opportunity to check out spots they deemed to be suspicious, and upon finding or confirming high impacts, adjustments were made and the confirmation runs made with the instrument. In all cases, improvements were achieved.

Points of Impact:

Certain areas had impact levels that were much higher than either we, or the operators, expected. These places were:

- Eggs rolling into eggs
- At / on the egg saver wires
- At the entrance and exit of the vertical elevators

The four tests conducted on the trucking of eggs revealed absolutely no impact levels of concern.

My Observations & Professional Opinion:

This product will do what its' manufacturer says it will do. The instrument performed flawlessly in all the testing that I conducted. The reference testing, confirmed by repeatable "on farm" readings, allows me to conclude that this is a piece of technology that will pay for itself.

We did have one opportunity to have results returned on the next day, and in that instance the crack levels were reduced from 4.2% to 2.2%. We are confident that our suggestion for improvement was responsible for the positive change.

To be of any value to anyone, this instrument has to be used on a regular basis! It will not help to find ANY problems if it is sitting on a desk or in a drawer!

This instrument is easy and convenient enough to use that it is conceivable to think that it might be used on a daily basis in many operations. The payback is there. As examples of potential savings of only 2%, using the following assumptions:

Production efficiency of 85%; and eggs at \$1.43 per dozen. Cost of the Crackless Egg \$8995 CDN.

# Layers	100,000	500,000	1,000,000
Efficiency	.85	.85	.85
Eggs/day	85,000	425,000	850,000
1% crack reduction	850	4,250	8,500
3 dozens	70.8	354.2	708.3
Savings/day (USD 0.95/doz)	67.26	336.50	72.89
Savings/year	24,550	122,22.50	245,604.85
Payback period	20 weeks	4 weeks	2 weeks

How much would you save by having the CRACKless EGG™ in your operation?