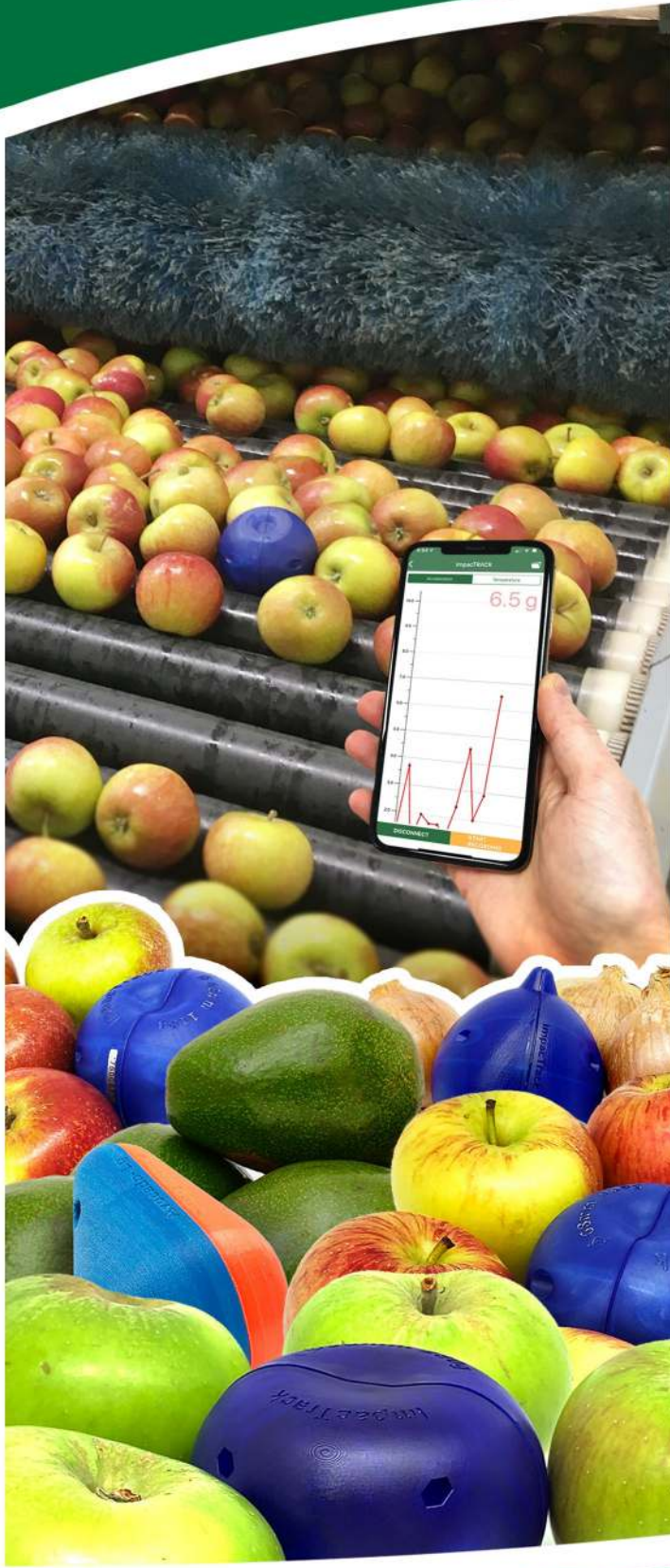


**Martin  
Lishman**

**IMPACTTRACK**



*Shock and Temperature Sensor and Logger*

# ImpactTrack Shock Sensing

## ImpactTrack



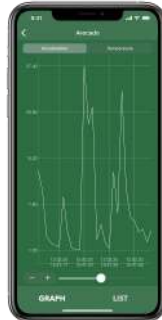
Avocado processors using ImpactTrack have made changes to grading and packing equipment and eliminated significant damage losses



ImpactTrack has helped Apple processors to improve handling systems and carry out remedial action quickly to prevent damage



Real-time data view



Stored data view

The ML Sensing App is free to download for iOS and Android

## IMMEDIATELY Finds Sources of Damage to Fresh Produce

The ImpactTrack shock sensor and logger monitors damage to fresh produce caused by handling, processing and transport operations. It can help to reduce food production waste, monitor transport and logistics and improve quality control systems.

The ImpactTrack logger is encased in a shell which mimics the dimensions, shape, weight and density of the real produce. It will behave and react (including floating in water) in the same way as the produce you are working with.

ImpactTrack enables immediate improvements to quality problems in fresh produce production and assists with the prevention of economic losses caused by bruising and damage.

### Key Features

- **Wide range of shells** to mimic the movement of fruit and vegetables prone to damage and bruising during handling and transport
- **Immediate results** - Impact readings are viewed instantly via Bluetooth interface on a tablet or smartphone, using the App supplied
- **Shock and temperature data** are stored for download after testing or transport events

See ImpactTrack in action - log on to: [www.martinlishman.com/impacttrack](http://www.martinlishman.com/impacttrack)

## Suited to reducing damage in many types of fresh produce



The range of shapes also includes carrot, parsnip, 3 sizes of avocado, peach, mango, coconut, strawberry, sweetcorn, pineapple, melon, plum tomato and banana.



9 different apple shapes with many different weights have been created, to reflect different varieties and densities - allowing the shape to float at the same level as the real fruit

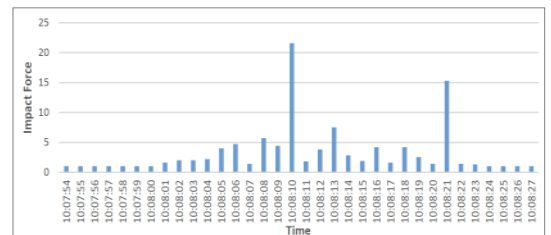
Complex shapes such as garlic, mussel or pineapple can be created, and can be waterproof if required, to suit the handling and processing systems

## BENEFITS of ImpactTrack

The ability to monitor impacts during handling, processing and transport results in less waste and higher production yields.

Producers and shippers are more aware of the effects of their processes, leading to more sympathetic handling systems.

### Interpreting Results



This data chart, created from data downloaded from the App and exported to Excel, shows the highest impact every second and highlights two significant shocks. To interpret these, actual damage caused to the real produce by the impacts would be calibrated with the ImpactTrack results. Further ImpactTrack testing would indicate damage sources without the need for regular calibration.


# ImpactTrack Shape Data












## ImpactTrack - used during HANDLING and TRANSPORT

The ImpactTrack logger is supplied encased in a wide range of 3D-printed shapes designed to mimic the dimensions, shape, weight and density of the real produce. **The table below lists the specifications for each shape available.** If the dimensions required are not listed, we can make a different size for you.

When choosing a shape, it is important to know the average weight and dimensions of the produce being processed. The final weight of the ImpactTrack is then matched to this so that it behaves and reacts (including floating in water) in the same way as the real produce. Most shapes are waterproof and can be made with the same buoyancy as the produce being processed.

The ImpactTrack logger can also be used on its own to monitor transport operations. It is small enough (a 3cm cube) to be located discretely inside packaging. Using the smartphone App, the logger can begin recording at the start of a transport event and, when retrieved at the destination, the data can be downloaded to another smartphone.

| Shape   | Diameter (mm) | Height (mm) |
|---|---------------|-------------|
|    | 64            | 60          |
|   | 68            | 55          |
|   | 68            | 68          |
|   | 74            | 60          |
|   | 74            | 72          |
|   | 82            | 70          |
|   | 85            | 85          |
|   | 90            | 65          |
|   | 100           | 65          |
|  | 54            | 164         |
|  | 64            | 165         |
|  | 49            | 165         |
|   | 48            | 44          |
|  | 56            | 52          |
|   | 86 x 67       | 119         |
|  | 85            | 275         |
|  | 116           | 379         |
|   | 123           | 366         |

| Shape  | Diameter (mm) | Height (mm) |
|--|---------------|-------------|
|    | 60            | 92          |
|  | 73            | 105         |
|  | 76            | 109         |
|    | 60            | 55          |
|   | 70            | 79          |
|  | 81            | 98          |
|  | 80            | 71          |
|  | 42            | 178         |
|  | 63            | 61          |
|  | 52            | 65          |
|  | 50            | 75          |
|  | 94            | 111         |
|  | 150           | 175         |
|  | 36 x 40       | 83          |
|  | 30 x 37       | 60          |

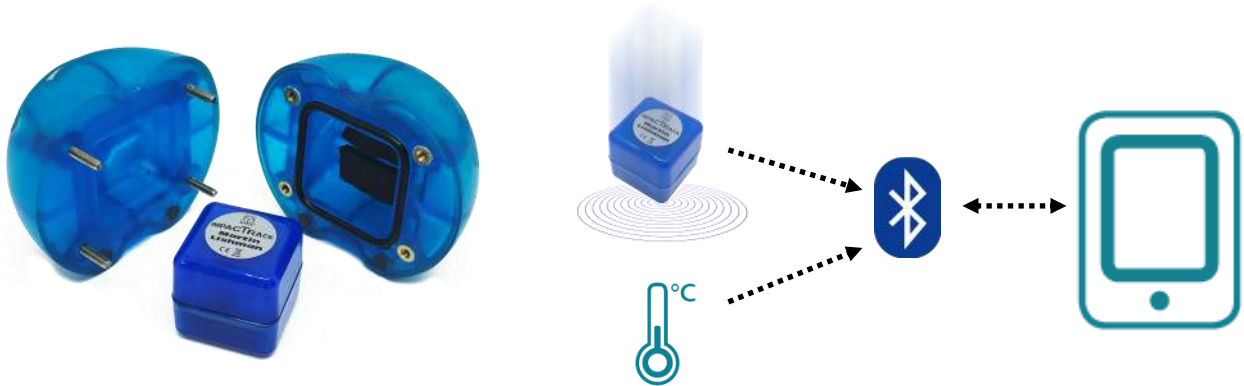
### Other shapes available

The latest shapes we have produced or designed include:

- \* Flower with replaceable stem
- \* Daffodil bulb
- \* Large and small potato
- \* Sweet pepper

Please enquire for further details.

# ImpacTrack Features and Specifications



## **Measuring and recording impacts**

ImpacTrack measures impacts at the rate of 400 times per second (400Hz) and records, in the logger memory, the largest impact during the logging interval (which can be set between 1 second and 24 hours).

## **Adjustable logging start delay**

Measurement of impacts can be delayed for between 1 second and 6 months until the start of a specific part of a handling or transport process.

## **Adjustable data recording thresholds**

Minor impacts and normal temperatures can be ignored in the logger memory, giving more focus on large impacts and extreme temperatures, and also avoiding filling the logger memory too quickly.

## **Data transfer**

Using Bluetooth 4.0 LE, with transmission distance up to 50 meters depending on conditions.

## **ML Sensing App for iOS or Android smartphone or tablet**

Data is viewed using the App in real-time or recorded for download and export in Excel compatible data format (CSV). Free to download from the App Store or Google Play, it can be loaded on multiple devices and is available in English, French, German, Spanish, Portuguese and Russian.

**Battery** - replaceable lithium battery (½ AA 3.6V/1Ah) gives up to c.6 month battery life, depending on recording threshold and logging interval settings.

**Logging memory** - up to 32,000 measured values, with over 10 years data storage without battery

**Impact range/accuracy/resolution** - up to 27g (G-force) / ±0.25g / 0.1g

**Temperature range/accuracy/resolution** - from -25 to +75°C / ±0.5°C / 0.1°C

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