

The FruitLab®5 has been designed in 2018

It comes with the best technology for measuring the **firmness / softness, weight size and color** of quite any kind of fruit or vegetable – It is a statistic instrument for measuring the crispiness of Apples, pears, potatoes, mangos, apricots, papaya, cucumber, peaches, kiwi, and the firmness of oranges, lemon, pomelo, cherry, strawberry... and many other fruits and vegetables



Many thanks for having acquired an Agrosta instrument

Your package contains :

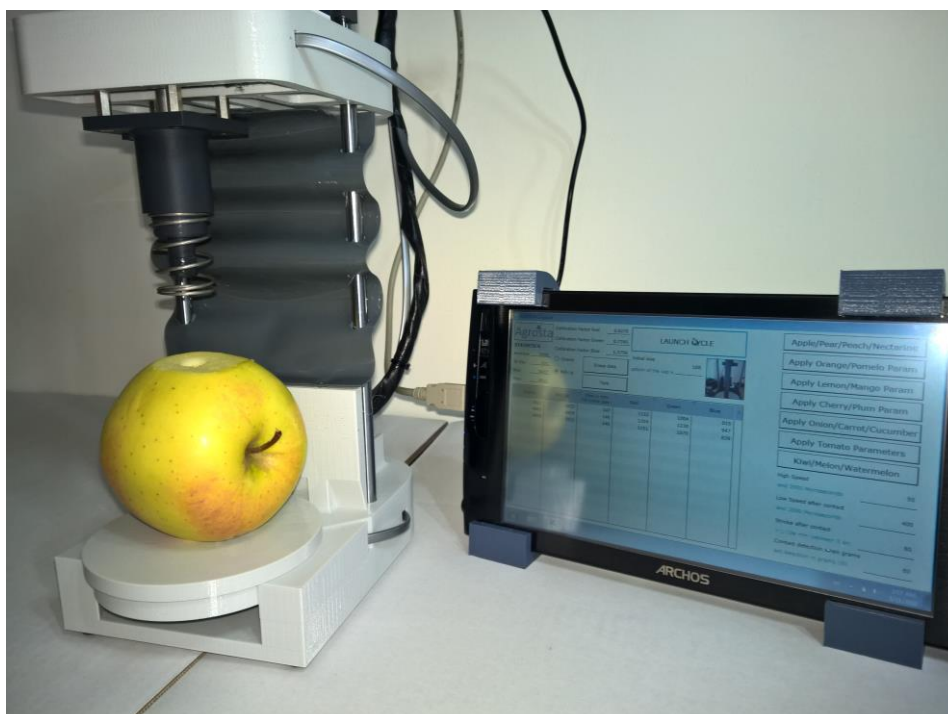
- The instrument itself
- 2 Tips : 8 and 11 (mounted on instrument), other tips on demand
- A USB Stick with the software for windows
- A USB cable for the texturometer
- A USB cable for the Lab scale
- The Lab scale module
- A power supply
- A certificate of conformity
- A manual
- A removable plate with the colorimeter in the middle

The CrispLab is provided with 2 tips : A tip of 11 and a tip of 8 + specific tips according to your requirements

- The tip of 11 is recommended for : APPLE, PEAR, PEACH, KIWI, PAPAYA
- The tip of 8 is recommended for : MANGO, CUCUMBER, APRICOT, POTATO
- Other tips on demand (ORANGE, CHERRY, STRAWBERRY, MELON, AVOCADO..)

Main characteristics of the machine :

- Using Stepper Motor Nema 23
- Stepstick (Motor Electronics) from Asia
- Main electronic processor based on Arduino (Made in Italy) – 2 Boards, 1 for movement & 1 for measurement & statistics
- Electronic shield for pressure testing made in Hong Kong (Based on HX 711 24 bits precision)
- Design and software made by Agrosta in France
- Precision force sensors made in France
  
- Resolution : 1 gram
- Max pressure : 20 000 grams (Capacity 20 Kg, limited to 18 Kg by software)
- Min pressure measurement : 31 grams
- Precision : 1 gram
- Color given by a Spectrophotometer, that gives the intensity of reflection of light for 6 different wavelengths
- Automatic connected lab scale with precision 0.1 gram, resolution 1 gram (automatic detection of fruit), maxi 3 Kg
- Software compatible with Windows XP, 7, 8 and 10



## 1) Machine Setup

### 1/ INSTALL DRIVERS

Nom	Modifié le	Type	Taille
CH341SER	27/11/2018 10:05	Dossier de fichiers	
INSTALL	27/11/2018 15:10	Dossier de fichiers	
Texturometer_Drivers	27/11/2018 15:10	Dossier de fichiers	
autorun.inf	27/11/2018 15:10	Informations de c...	1 Ko
Balance_Driver.EXE	24/01/2017 01:17	Application	238 Ko
INSTALL.EXE	26/02/2014 10:39	Application	212 Ko
INSTALL.ZIP	27/11/2018 15:10	Dossier compressé	11 735 Ko

Double click on “Balance\_Driver” – Follow setup procedure

Double click on “Texturometer\_Drivers”, and double click on DRIVER 32 Bits or DRIVER 64 Bits depending on your computer type - Follow setup procedure

2/ CONNECT THE USB PLUG OF THE COLORIMETER TO YOUR COMPUTER, WAIT 1 MINUTE

3/ DOUBLE CLICK ON “INSTALL” AND FOLLOW SETUP PROCEDURE

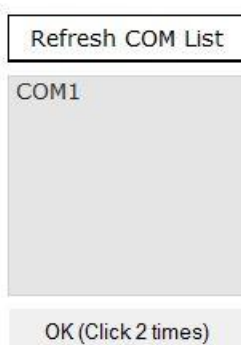
4/ THE SOFTWARE STARTS

5/ CONNECT THE FIRST USB PLUG BETWEEN THE MAIN MACHINE AND THE COMPUTER

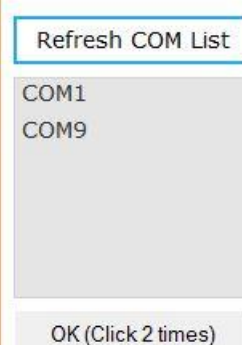
6/ CONNECT POWER PLUG TO THE MAIN MACHINE

7/ Click on “Refresh COM List”

- |                            |                      |
|----------------------------|----------------------|
| 1) Connect<br>Texturometer | 6) Connect Lab Scale |
| 2) Refresh COM List        | 7) Refresh COM List  |
| 3) Click on new COM        | 8) Click on new COM  |
| 4) Click on OK (Twice)     |                      |



- |                            |                      |
|----------------------------|----------------------|
| 1) Connect<br>Texturometer | 6) Connect Lab Scale |
| 2) Refresh COM List        | 7) Refresh COM List  |
| 3) Click on new COM        | 8) Click on new COM  |
| 4) Click on OK (Twice)     |                      |



8/ Click on the new COM appearing (For example, on the picture, COM9)

10/ Click 2 times on OK

11/ Connect the Lab scale USB cable

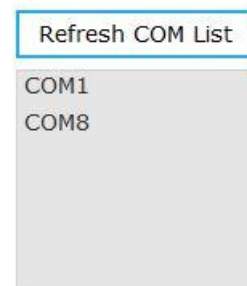


12/ Click on “Refresh COM List”

6) Connect Lab Scale  
7) Refresh COM List  
8) Click on new COM



6) Connect Lab Scale  
7) Refresh COM List  
8) Click on new COM



13/ Click on the new COM appearing (For example, on the picture, COM8)

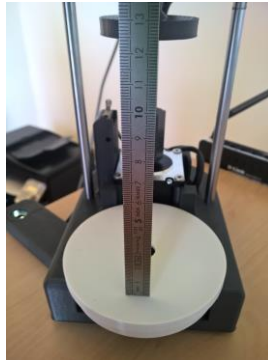
14/ Your machine is ready !

## 2) Starting measurements

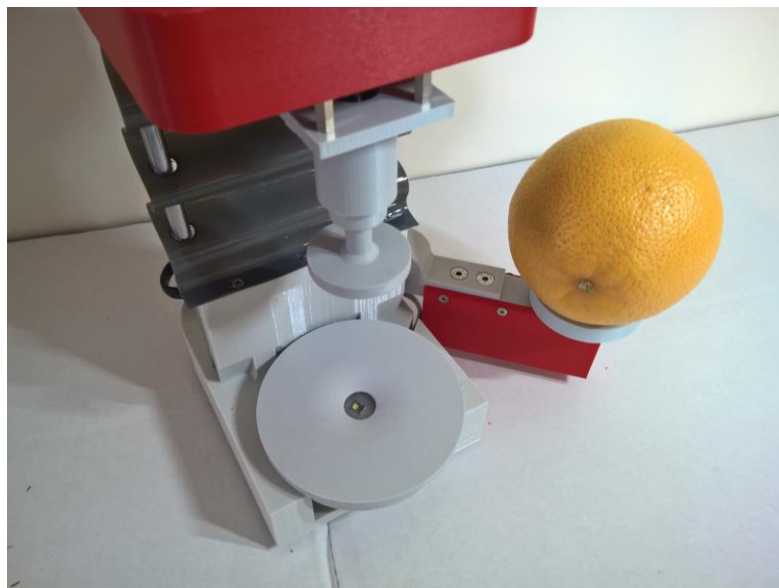
- Screw the tip you want (remove first the spring by turning it in the clockwise direction if necessary)



- Measure the distance between the sensor and the plate (Depending on position of upper endstop, and enter this distance in mm in the field "Initial size" of the software)



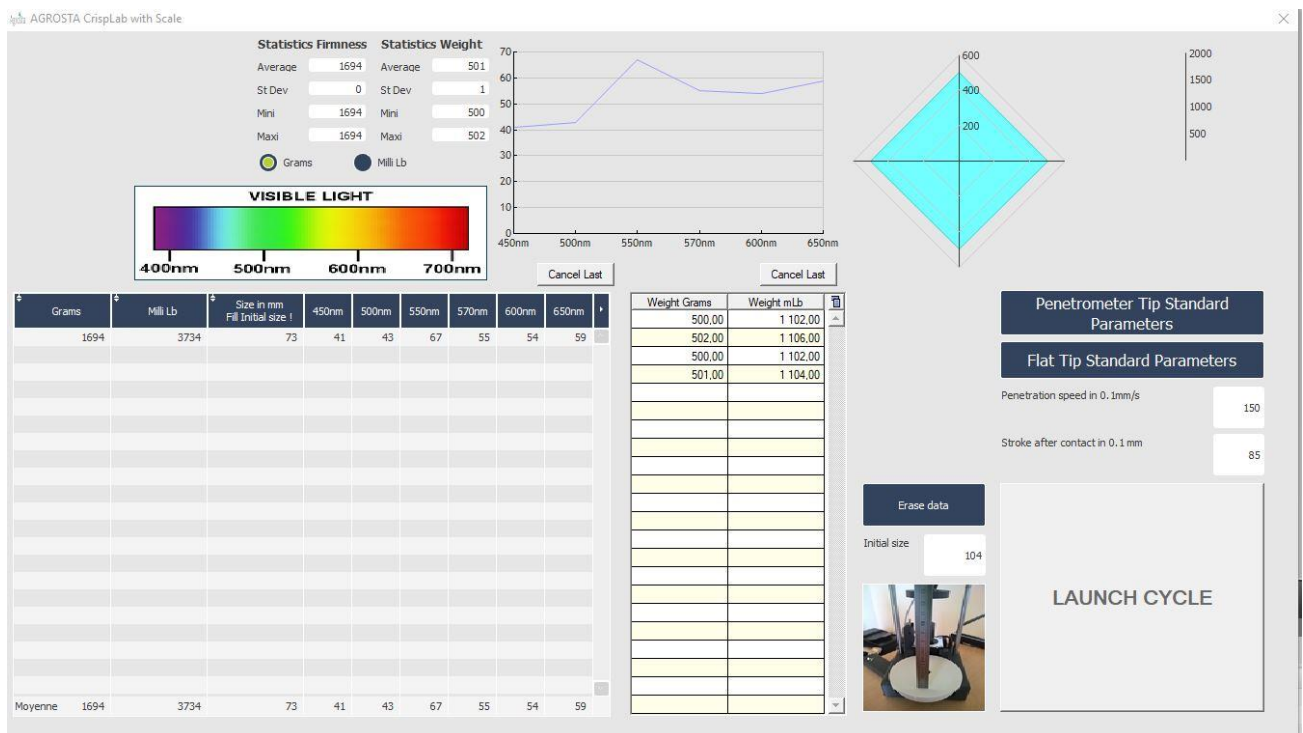
- Place a fruit the balance tray, after 2 seconds, the weight will appear in the corresponding chart in the software – Remove the fruit, and place another one, a second line will appear in the chart



- Place your fruit on the Texturometer tray :



- Then choose your pre-defined type of cycle (You can change each parameter in the future) : Penetrometer tip of flat tip, and click on “Launch cycle” – The measurements appear in the left chart



The firmness is given in Grams and Lb, the size is given in mm, and calculated from the initial size you have entered. The color is given by spectrophotometry, which corresponds to the light level for 6 specific wavelengths along the visible range

Statistics are provided for the firmness (on the left side of the window) and for the weight

When you have finished your batch, you can record the tables in Excel or Word (chose the file name and place) :

FOR THAT, CLICK ON THE DATA CHART WITH THE RIGHT BUTTON OF YOUR MOUSE, AND CHOOSE THE OPTIONS INSIDE THE MENU

The screenshot shows the Agrosta FruitLab software interface. On the left, there is a 'Statistics Firmness' section with the following data:

Parameter	Value
Average	3755
St Dev	507
Mini	3029
Maxi	4409

Below this, there are calibration factors for Red (0,8270), Green (0,7740), and Blue (1,3759). A 'Color' bar chart is also visible. The main data table is as follows:

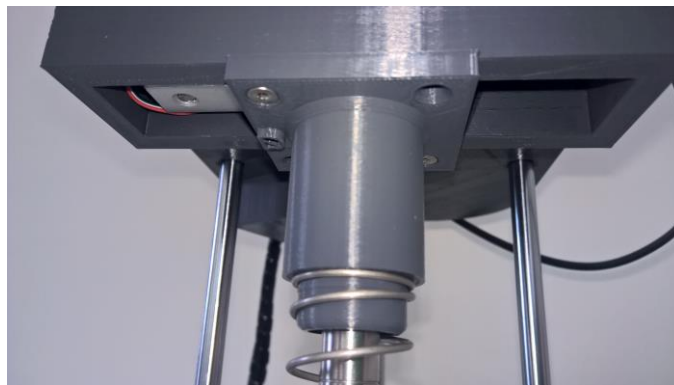
Grams	Mill Lb	Size in mm	Red	Green
1854	4087	177	363	
2000	4409	95	360	
1374	3029	113	1987	
1466	3231	106	1945	
1922	4237	106	1066	
1512	3333	117	337	
1699	3745	102	340	
1802	3972	102	479	

In the center, a 'Name of Export File' dialog box is open, showing a file explorer view of the 'Bureau' directory. The file name is 'Export.xls' and the type is 'Excel Files (\*.xls)'. On the right, there is a 'Firmness' section with a graph and a 'LAUNCH CYCLE' button. Below the launch cycle, there are several parameter settings for different fruit types, such as 'Apple/Pear/Peach/Nectarine', 'Apply Orange/Pomelo Param', etc.

- You can remove the spring by turning it for cleaning

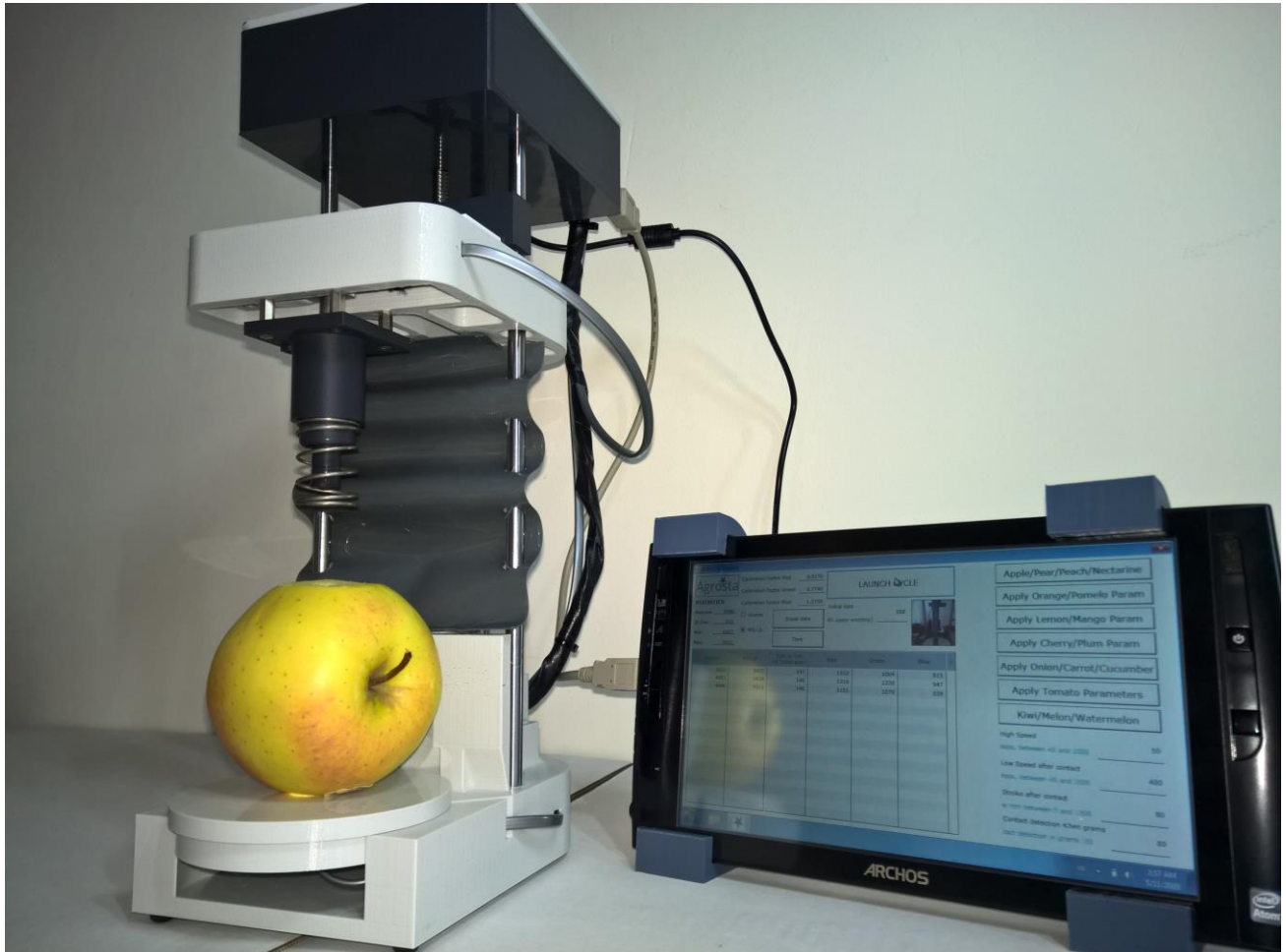


- You can remove as well the spring support by removing the 2 screws – If you prefer, you can use the machine without spring and support (Then you have to keep your fruit in hand) – take care to the fact that the letter D is on the left side if you want to install it again :





## 5) Using machine with pre-configured tablet



- Switch on the tablet by pressing 2-3 seconds on button
- Connect both USB cable (Take care to the direction, the connectors are only on one side)
- Connect the power cable of the machine
- Launch "FRUIT LAB" from the desktop of the tablet (You can use the Stillet, which is situated on the right back side bottom of the tablet)
- Place a fruit on the plate, and click on "Launch Cycle"