Agrosta® Wonderfast

Digital Firmness and size measurement of fruits

The Agrosta® Wonderfast was first designed in 2020 and improved in 2024 to provide a highly accurate and fully automated solution for testing any kind of fruit using penetrometry *and* Deflection.

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Thanks !

Many thanks for having acquired an Agrosta instrument
Your package contains :

- The Agrosta®Wonderfast
- 2 turntables (Depending on your request, either two identical turntables or two different ones)
- 2 Tips : For penetrometry standard or according to client request
- A user manual with a certificate of conformity
- A 110V / 220V power supply
- A USB stick containing the software
- A USB cable

We highly recommend reading the user manual, as it provides clear and concise instructions to help you maximize the use of the device.

Product Overview

Design & Manufacturing : The **Agrosta®Wonderfast** is **entirely designed and assembled in France**.

- The **motherboards** come from the **USA**.
- The **shield boards** are manufactured in **Hong Kong and the USA**.

Handling & Care: The **Agrosta®Wonderfast is NOT waterproof**.It is a **precision instrument**, so please handle it with care and avoid **dropping or knocking** it.

Warranty: The **Agrosta®Wonderfast** comes with a **two-year guarantee**.

Measurement Specifications :

- **Minimum Pressure : 100 grams**
- **Maximum Pressure**: **10 000 grams**
- **Resolution**: **±1g**
- **Size Measurement**: Provided in **mm** *(The user must enter the initial size between the sensor head and the bottom of the cup of the turntable)*

Compatibility : The software is compatible with Windows XP, Vista, 7, 8, 10 and 11

AGROSTA®Wonderfast– Step-by-Step Guide

1. Install the Driver

- **Do not connect your machine yet**.
- Insert the **USB stick** into your computer.
- In **2023**, there are **two drivers** to install:
    1. **Install DRIVER1 first**.
    2. **Then install DRIVER2**.

2. Connect the USB Cable

- Plug the **USB cable** between the **instrument** and your **computer**.

3. Device Recognition

- **Wait a few seconds** until the device is recognized.
- The **driver will automatically link to the device**.

4. Install the Software

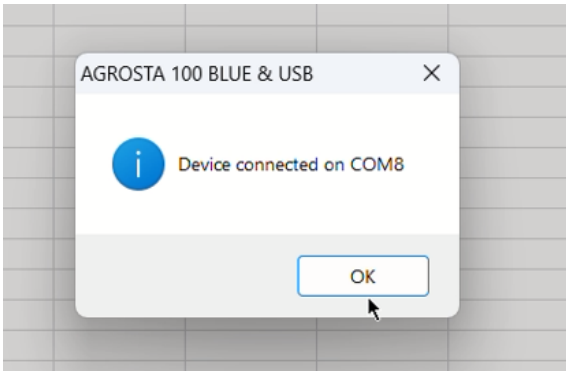
- Open the **USB stick** and **double-click** on **"INSTALL"**.
- **Follow the setup procedure** to complete the installation.

5. Connect the Power Plug

- Plug the **power supply** into the **machine**.

6. Start the Software

- Once installed, the **software will start automatically**.
- The **connection with the machine is automatic**.



7. Software Usage & Testing Procedure

The software comes with a **light version of Excel**, allowing you to:

- Open any **Excel file** or use the **blank sheet** that appears at startup.
- Click on the cell where you want the **data to start displaying**.
- Click on **"START NEW SERIE"**: This will add the **date, time, and column headers**.
- You can **click on any other cell** to add extra information *(e.g., sugar content, variety...)* or start another batch in a different part of the sheet.
- At the end of your tests, you can **save the Excel file**.

8. Barcode Reader Support

- You can use a **barcode reader** to scan references.
- **Select the target cell**, then scan the barcode to insert its reference.

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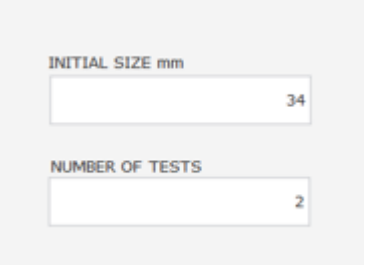
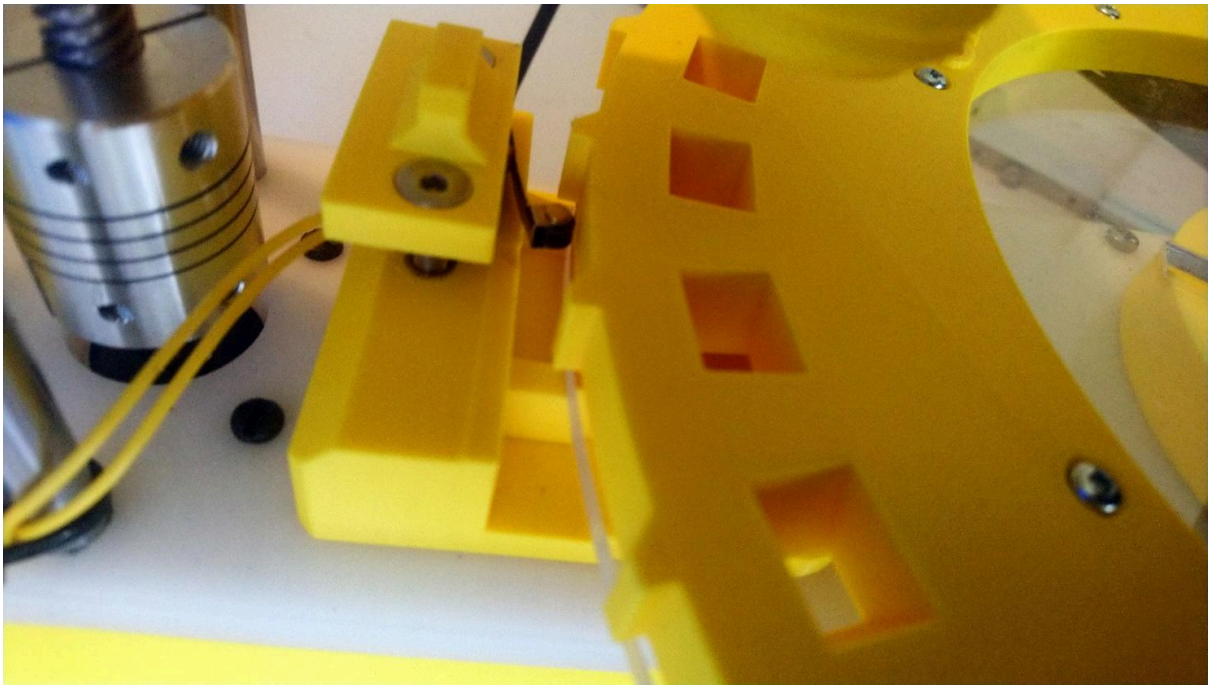
9. Launching a Cycle

1. **Define the number of tests**
    - Enter the **number of fruits** placed on the table (between **1 and 32**) in the corresponding field.
    - 

    - Example for **blueberries**:
        - If the table is **full of fruits**, enter **32**.
        - For **continuous testing** *(removing and replacing berries during the cycle)*, enter a **higher value** like **1000**.
        -
2. **If you need to stop the cycle**
    - You can **stop anytime** by clicking on **"STOP CYCLE"**.
    - If the machine does not stop properly, unplug the **USB and power cable**, then reconnect and restart the software.

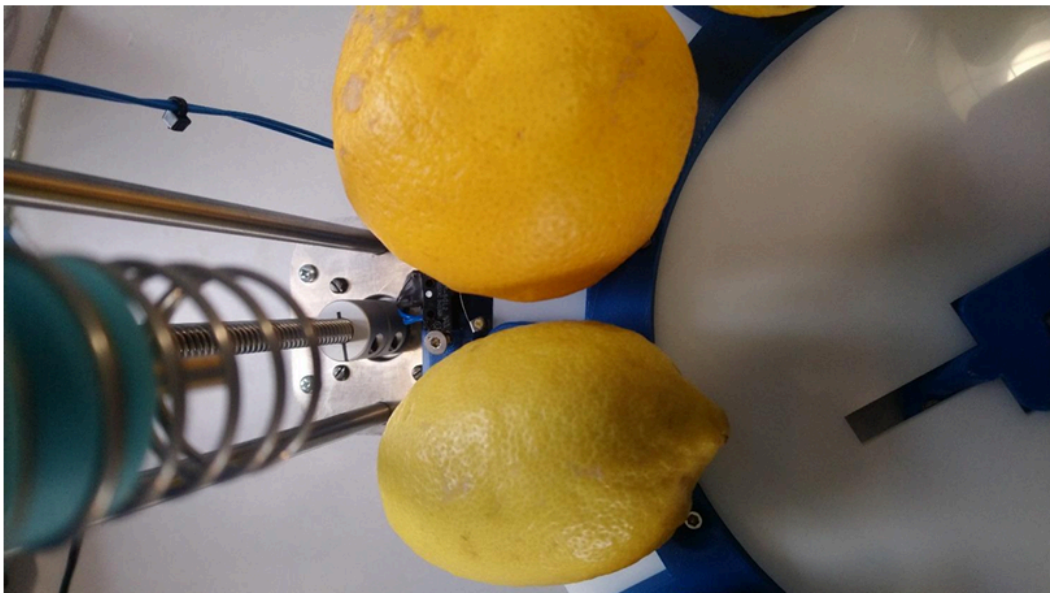
3. **Position the turntable**

    - Switch between **two cups** as shown in the reference photo.
    - The machine **always starts** with the **cup on the right side**.



⚠️ Warning

- The **largest fruit** must be placed **first** at the start of the cycle.
    - This will **define the maximum size** for the machine's operation.
- In the following example, the **first fruit to be tested** is the **pomelo** *(the largest fruit in the batch)*.



4. Measurement Strategies

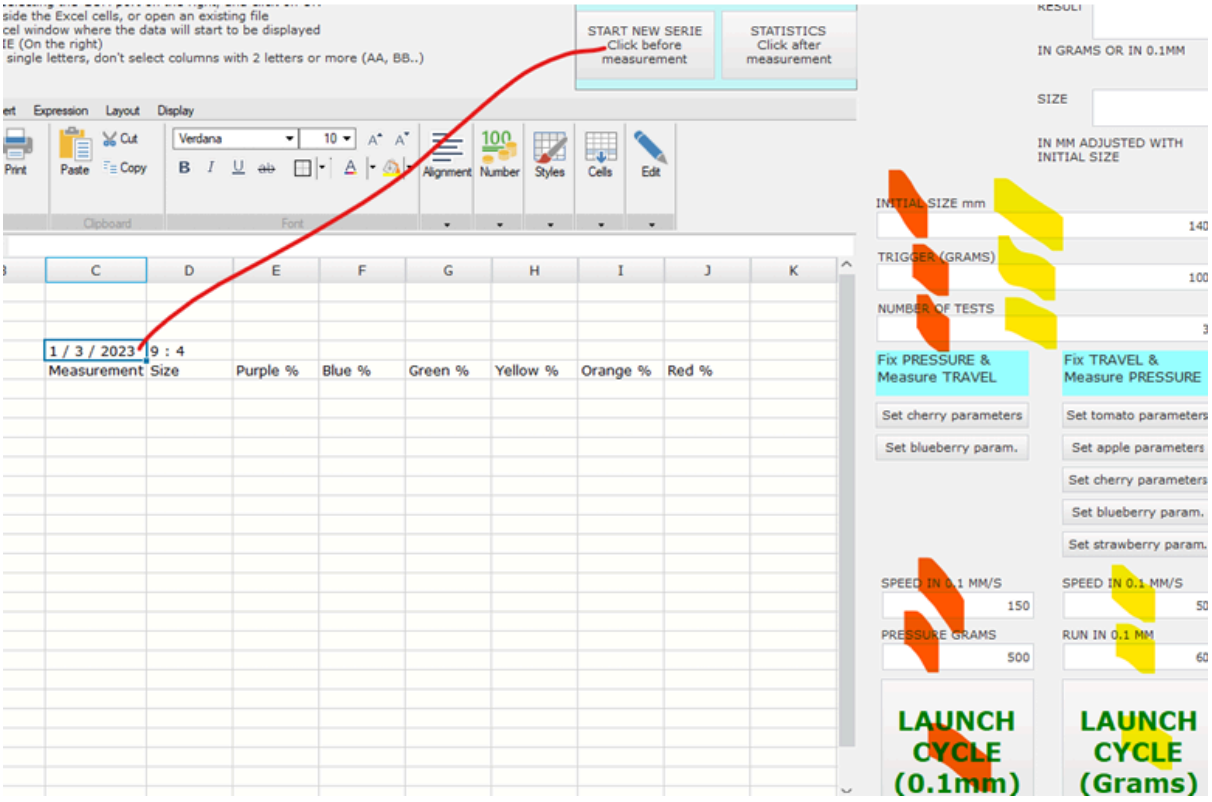
The **Agrosta® Wonderfast** allows you to choose between **two different measurement strategies**, depending on the type of fruit and the desired analysis method:

1️⃣ Penetrometry Measurement (Fixed Travel / Variable Pressure)

- In this method, you **set the penetration depth (RUN/TRAVEL)** inside the fruit.
- The machine will then **measure the pressure required** to reach this depth.
- This method is commonly used for **penetrometry tests** to evaluate fruit firmness.
- ✅ **Fill in the fields highlighted in YELLOW** in the software.

2️⃣ Deformation Measurement (Fixed Pressure / Variable Deformation)

- In this method, you **set a fixed pressure**, and the machine will measure the **deformation** of the fruit.This strategy is typically used for **soft fruits**. It allows measurements according to the **FIRMTECH standard**:
  - **Low pressure** corresponds to the **TRIGGER**.
  - **High pressure** corresponds to **PRESSURE GRAMS**.
- ✅ **Fill in the fields highlighted in ORANGE** in the software.



10. Adjusting the Size Measurement

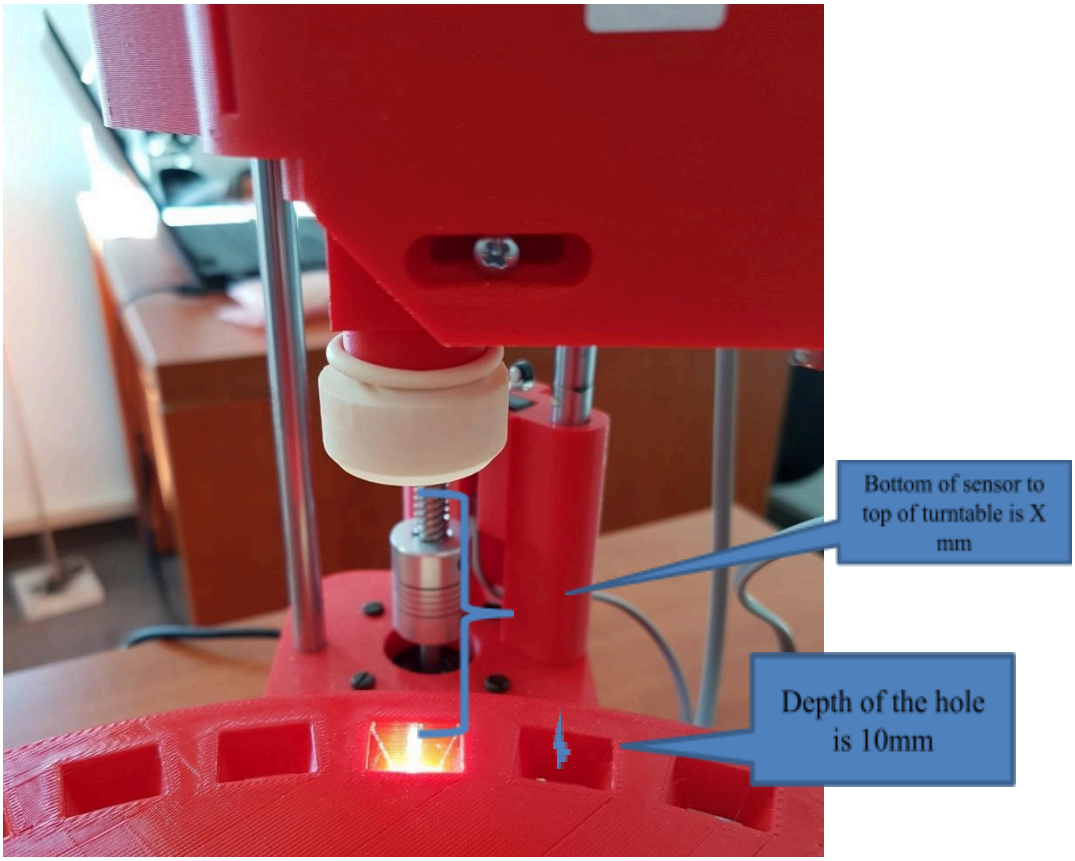
To ensure accurate fruit size measurement, you need to **enter the initial size** in millimeters.

Setting the Initial Size

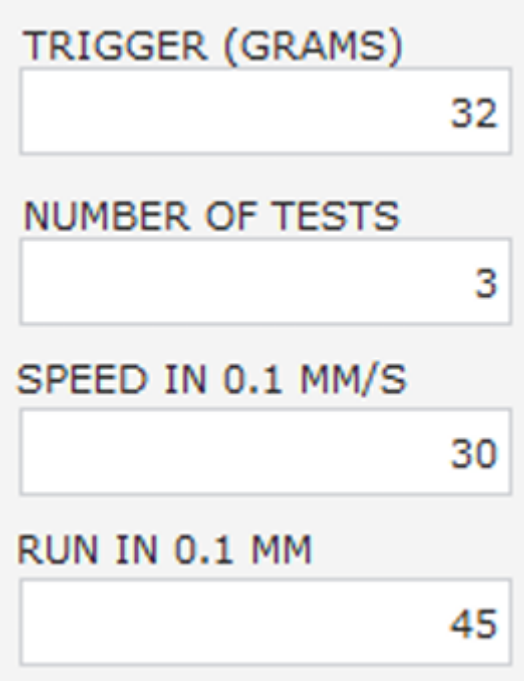
- This value corresponds to the **distance between the sensor head and the middle of the cup height** of the turntable you are using.
- Enter this value in the **"Initial size"** field in the software.

Calibration & Adjustment

- Perform **test measurements** with fruits of a **known size**.
- If needed, adjust the initial value:
  - **Adding 1 mm to the initial size will add 1 mm to the measured fruit size**.
  - Adjust accordingly until the measurements match the actual fruit sizes.
  -



11. Adjusting the Trigger, Speed, and Run (Stroke) Parameters (In RUN Adjustment Mode)



The **RUN adjustment mode** allows you to fine-tune the key parameters that determine how the **Agrosta® Wonderfast** interacts with the fruit during testing.

- **TRIGGER – Contact Pressure Threshold**
  - The **TRIGGER** defines the **pressure** at which the machine **detects that it has touched the fruit**.
  - Once the **trigger pressure** is reached, the machine **begins the RUN** (penetration) as defined in **increments of 0.1 mm**.
  - **Increasing the TRIGGER value** results in **deeper penetration** into the fruit.

For fruits with an irregular surface *(e.g., raspberries, blackberries)*:

- Increase the **TRIGGER** value to **reduce the influence of surface irregularities**, ensuring more consistent measurements.

- **SPEED & RUN (Stroke) – Post-Contact Parameters**

- These two parameters control the **speed and depth** of penetration after the machine **touches the fruit**.
- Their **impact on measurement accuracy is very high**.

SPEED Adjustments:

- The maximum speed value is **200**, corresponding to **20 mm/second**.
- **If a value higher than 200 is entered**, the **motor will block and stop moving** *(this will not damage the machine)*.
- There is **no minimum speed limit**.

RUN (Stroke) Adjustments:

- The **minimum RUN value** is **20**, which corresponds to a **2 mm penetration depth**.
- If the **applied pressure reaches 13,000 grams**, the tray will **automatically return** without completing the full stroke.
- If you consistently get **exactly 13,000 grams**, you should:
    - **Reduce the RUN value** *(shorten the penetration stroke)*.
    - **Use a smaller tip** for testing.

Spring System

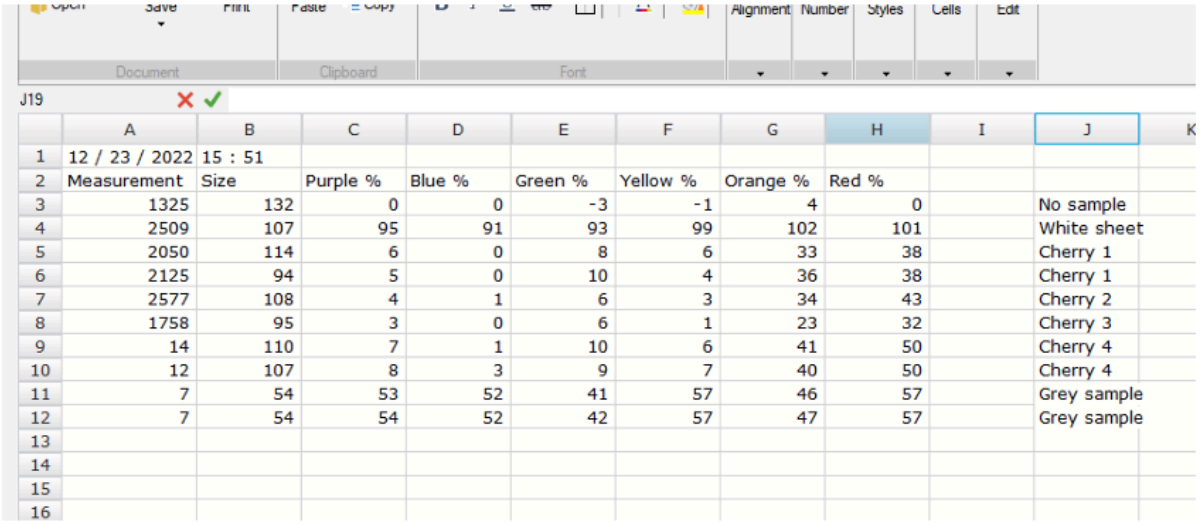
The **spring system** is designed to **hold the fruit in place** on the table during measurement.

- It helps **stabilize** the fruit to ensure **consistent** and **accurate** results.
- However, **it is not essential for the machine's operation**.

✅ **If you prefer, you can remove the spring system** without affecting the functionality of the device.

Optional Colorimeter

The **color measurement** is performed **from under the table**.



	A	B	C	D	E	F	G	H	I	J
1	12 / 23 / 2022	15 : 51								
2	Measurement	Size	Purple %	Blue %	Green %	Yellow %	Orange %	Red %		
3	1325	132	0	0	-3	-1	4	0		No sample
4	2509	107	95	91	93	99	102	101		White sheet
5	2050	114	6	0	8	6	33	38		Cherry 1
6	2125	94	5	0	10	4	36	38		Cherry 1
7	2577	108	4	1	6	3	34	43		Cherry 2
8	1758	95	3	0	6	1	23	32		Cherry 3
9	14	110	7	1	10	6	41	50		Cherry 4
10	12	107	8	3	9	7	40	50		Cherry 4
11	7	54	53	52	41	57	46	57		Grey sample
12	7	54	54	52	42	57	47	57		Grey sample
13										
14										
15										
16										

The Agrosta® Wonderfast is capable of measuring six different colors, providing relative values based on the detected light reflection.

Measurement Scale

- **The maximum value is reached with "Pure White".**
- **The minimum value is assigned to "No Sample" (absence of fruit).**

Measured Wavelengths (in nanometers)

- **450 nm**
- **500 nm**
- **550 nm**
- **570 nm**
- **600 nm**
- **650 nm**

Calibration Reference

- **A pure white surface placed on the turntable will return a value of 1000 for each wavelength.**

- **Dominant colors in a fruit will correspond to the highest percentage values.**
    - **Example: Cherries produce high readings in the Red and Orange spectrum *(Wavelengths 570-650 nm)*.**

This system allows for accurate color classification and fruit quality analysis.

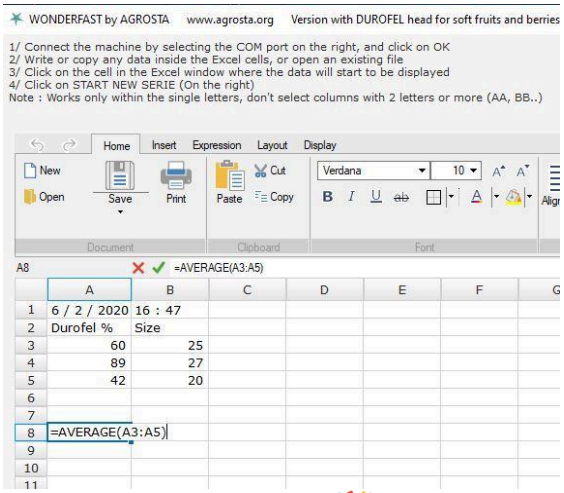
Excel Functions in the Software

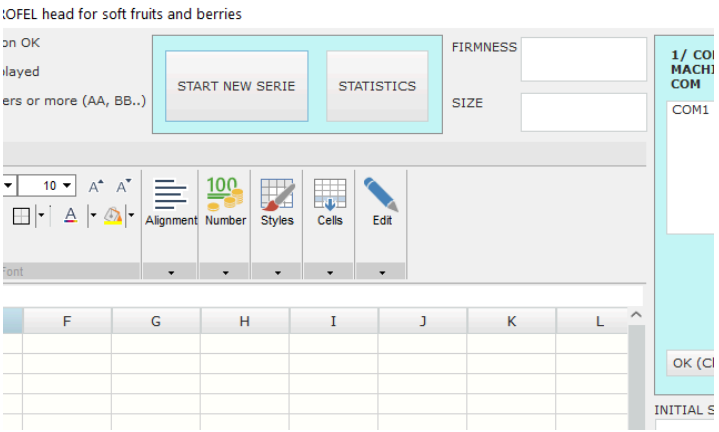
The software includes a **built-in light version of Excel**, allowing you to use all **standard Excel functions** such as:

- `=AVERAGE()` → Calculate the average of a dataset.
- `=STDEV()` → Calculate the standard deviation.
- **Many other functions** are available in the **"Expression"** tab.

Quickly Access Batch Statistics

- When you have **finished a batch**, you can obtain **quick statistics** by clicking on the **"STATISTICS"** button, located at the **top center of the window**.
- ✅ **This feature was introduced in 2021**.





Congratulations! 🎉 You are now ready to fully utilize the AGROSTA® Wonderfast.

If needed, refer to the user manual for additional guidance and explore all the features offered by this device.

Happy measuring! 🍇🍒