

Brief Guide for N-Pen N-100 (Nitrogen -Tester)

1. Basic Information:

- Your N-Pen (N-Tester) is calibrated to measure nitrogen values in wheat and barley.
- Four different formulas enable measuring nitrogen content in:
 - **Wheat grain**
 - **Wheat plant (green leaf)**
 - **Barley grain**
 - **Barley plant (green leaf)**
- After you perform a measurement, the device calculates automatically the nitrogen content. **The result is displayed in %.**
- Your N-Pen is pre-set by the manufacturer for a series of 10 measurements. After you perform a series of 10 measurements, the average value of nitrogen content is automatically determined and displayed in %.
- The average value is calculated as follows: the maximum and minimum values are extracted and the average is calculated of the remaining eight values. If one (or more) of the 8 values significantly differs from the rest, the device does not accept it (them) and asks you to repeat one or more measurements. The display shows how many measurements must be repeated, for instance, *“Measure left: 2”*.
- The manufacturer recommends performing internal calibration of the optical part of the device from time to time. For internal calibration, go to menu Setting / Calibration – see more information on page 3). Before performing the calibration, make sure that the optical part of the device, including the inner part of the sample holder, is clean.
- The device turns off automatically after 3 minutes of no use. If this happens, your last selection, for instance, *“Measure – N barley grain”*, is stored in the memory. It means that after turning on you can continue your work (*“Measure – N barley grain”*) without scrolling through the menus.

2. Important Tips for Measuring:

Follow these basic rules in order to obtain the most precise results:

- Always perform your series of measurements on **10 different plants** of the same species (wheat or barley).
- Measurement must be done on the **2nd or 3rd youngest leaf** of the particular plant.
- Perform the measurement as close as possible to the **mid part of the leaf**.

3. Care and Maintenance:

- Never submerge the device in water!
- Keep the optical part clean and dry!
- Use soft, non-abrasive tissue for cleaning the optical part!
- The device should not come in contact with any organic solvents, strong acids or bases.
- The device operates from four AAA single-use or rechargeable batteries. They may be easily replaced by unscrewing the cover of the battery holder on the rear of the device.

4. Operation Instructions:

- The device is operated by two keys: “**MENU**” and “**SET**”.
- In general, use the “**MENU**” **key to scroll** through sequential menu options.
- Use the “**SET**” **key to select** a menu option based on cursor > position.

5. Operation Scheme:

The following scheme shows the menu structure and particular options offered in the main menu and single submenus.

Main Menu

Submenu

Measure

N wheat grain (*Measures N in wheat grain*)

N wheat plant (*Measures N in wheat plant*)

N barley grain (*Measures N in barley grain*)

N barley plant (*Measures N in barley plant*)

Return (*Returns you to the Main Menu*)

Data

Erase (*Erases all measured and saved data*)

Browse = (*Browses all previously measured and saved data*)

Return = (*Returns you to the Main Menu*)

Setting

Bluetooth On = (*Turns on Bluetooth*)

 Off = (*Turns off Bluetooth*)

Calibration (*Serves internal calibration of the optical part of the device*)

Multiplication (*After the multiplication constant is selected and entered, this function multiplies automatically the measured result by a selected constant, for instance, 10 or 100*).

Average = (*This function enables to select number of measurements, out of which the average value of N is calculated. The minimum number is 10; the maximum number is 100. The manufacturer's default value is 10*).

Sound On (*Turns on the device beeping*)

 Off = (*Turns off the device beeping*)

Time = (*Serves setting internal date and time*)

Return = (*Returns you to the Main Menu*)

Turn Off