01

SmartAg

"An agricultural management expert in your pocket"

SmartAg, jointly developed by Wuxi Specrizon Technology Co., Ltd. and the National Engineering and Technology Center for Information Agriculture (NETCIA) of Nanjing Agricultural University, is a handheld hyperspectral intelligent agricultural device, used for crop growth monitoring, fertilization/spraying guidance, yield evaluation and other application scenarios. It has the following characteristics:

Easy to operate After a fast two-step calibration, the user can easily use the device to collect the spectral information against the crop, and obtain its agronomic parameters according to the embedded model;

Long battery life It works for 10 hours on one charge, and can also be used while charging with mobile power (Type C interface charging);

Light weight The device weights only 75g, and can be adhered on the mobile phone with a magnetic holder, or clamped by a selfie stick to obtain spectral information from crops;

Various models Relying on nearly 20 years of model analysis experience of NETCIA of Nanjing Agricultural University, various models can be adopted to make accurate predictions of agronomic parameters.

Spectral Range	400-850 nm
Spectral Resolution	10 nm
Sampling Interval	1 nm
Sensor Type	CMOS
Dimensions(L×W×H)	74×57×26 mm
Field of View	25°
Connection	Bluetooth
Operating System	iOS 10.0 /Android 9.0 or above
Weight	75g
Agronomy parameters	Above 20 (rice, wheat, corn)

01 STEP 1. **Bluetooth Connection** > 02 STEP 2. **Calibration** > 03 STEP 3. **Data Acquisition**

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SmartAg

makes agricultural management smarter

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Handheld hyperspectral

intelligent agricultural device

Jointly Developed by Wuxi Specrizon Technology Co., Ltd. and Professor Zhu Yan's team of NETCIA of Nanjing Agricultural University

INTRODUCTION OF PROFESSOR ZHU YAN'S TEAM
OF NANJING AGRICULTURAL UNIVERSITY

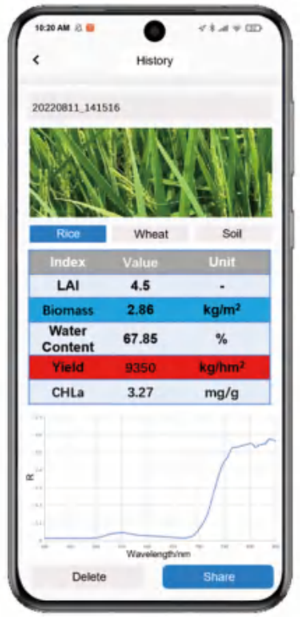
Professor Zhu Yan's team is affiliated to the National Engineering and Technology Center for Information Agriculture(NETCIA) of Nanjing Agricultural University, which is recommended by the Jiangsu Economic And Information Technology Comminsion and approved by the Industry And Information Technology Of Jiangsu, and is a national research and development institution specializing in information agriculture and precision agriculture technology innovation, system integration, transformation and application. NETCIA relies on modern information technology and agricultural science to build a multidisciplinary high-quality R&D and extension team for information agriculture, and form a regionalized information agriculture industry technology alliance. At present, there are 13 professors, 4 associate professors and 2 lecturers in the team, of which 3 have been selected by The National Science Fund for Distinguished Young Scholars, 2 by Changjiang Scholars Programme of China, 1 in the first batch of young and middle-aged scientific and technological innovation leading talents in the country, 2 as outstanding scientific research talents of the Ministry of Agriculture, 3 as Jiangsu Province Distinguished Professors, 2 in the second-level training objects of Jiangsu 333 Project, etc., 1 wins the 14th China Young Female Scientist Award, and 2 wins the China Youth Science and Technology Award. NETCIA has won 4 second prizes of National Science and Technology Progress Award and 6 first prizes of Ministry and Provincial Science and Technology Progress Awards; At present, Professor Zhu Yan has published more than 400 SCI papers and more than 100 EI papers in internationally renowned journals such as Nature Climate Change, Global Change Biology, and Remote Sensing of Environment, and co-published 15 monographs and 10 teaching materials; 41 national invention patents were authorized; More than 60 national computer software copyrights have been registered. In 2020, the group of "Mechanism and Method of Monitoring and Predicting Food Crop Productivity" was successfully selected as the National Natural Science Foundation of China Innovation Research Group, which is the first National Natural Science Foundation of China Innovation Research Group approved for the discipline of smart agriculture in China, and Professor Zhu Yan serves as the academic leader of the group.

02

03 Introduction to the SmartAg APP

"SmartAg" APP is a supporting application software for the handheld hyperspectral intelligent agricultural device developed by Wuxi Specrizon Technology Co., Ltd. and the team of Professor Zhu Yan of the NETCIA of Nanjing Agricultural University. The APP connects the smart phone with the device through Bluetooth and quickly obtain the reflectance spectrum of crops, then transmits the data to the cloud through wireless network in real-time. The cloud can quantitatively analyze the physiological and biochemical parameters of the crop, and displays the results immediately on the smartphone, the models support online analysis of several crops including rice, wheat, corn, etc., and more than ten physiological and biochemical parameters are available for each kind of crop, such as leaf nitrogen content, leaf nitrogen accumulation, leaf area index, leaf dry weight, leaf fresh weight, leaf moisture content, stem moisture content, chlorophyll a, chlorophyll b, carotenoids, leaf crude protein content, stem crude protein content and yield.

The crop growth monitoring system composed of "SmartAg" APP and handheld hyperspectral intelligent agricultural device is a Powertul tool of agricultural production, which not only realizes real-time monitoring of crop spectra, but also dispays the spatio-temporal display of monitoring results, monitoring position viewing, historical data comparison and other functions. Also it can provide guidance for accurate and quantitive fertilizing and dusting.Compared with traditional laboratory chemical analysis methods, this system is fast, real-time, efficient and intelligent, which can meet the needs of different users for rapid real-time monitoring.



04 SmartAg APP highlights

1)"SmartAg" is a supporting application software for handheld hyperspectral intelligent agricultural device of the same name

2)The device can be interconnected with a smartphone through Bluetooth for real-time control and data transmission

3)The combination of the device and APP forms an intelligent handheld mobile micro crop growth monitoring station integrating data acquisition, scene recording, indicator inversion, trend analysis, comparative analysis, mobile phone sharing, cloud upload and other functions

4)Relying on the nearly 20 years of model analysis experience of the NETCIA of Nanjing Agricultural University, numerous agronomic parameters can be accurately predicted

5)The advantages of the system are fast, real-time and intelligent, which can meet the needs of different users for rapid real-time agricultural detection