

ICS 07.040
CCS A 77



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 45725-2025

**Visible to short-wave infrared spectral reflectance
measurement of crops**

农作物可见光-短波红外光谱反射率测量

Issued on: May 30, 2025

Implemented on: December 1, 2025

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

Preface	III
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Measurement conditions	2
4.1 Measurement Environment	2
4.2 Measurement staff and measurement time	2
4.3 Measuring devices and instruments	2
5 Measurement preparation	3
5.1 Measurement plan development	3
5.2 Inspection and debugging of measuring equipment	3
6 Field canopy spectral reflectance measurement	4
6.1 Measurement Process	4
6.2 Selection and layout of monitoring plots and monitoring points	4
6.3 Monitoring time and space benchmark and positioning	4
6.4 Instrument assembly and parameter setting before measurement	4
6.5 Standard reference board layout	5
6.6 Spectral Measurement Step	5
6.7 Number of measurements at monitoring points	5
6.8 Measurement Record	5
7 Leaf spectral reflectance measurement	6
7.1 Selection of measuring blades	6
7.2 Measurement methods and steps	6
8 Spectral measurement data processing	7
8.1 Measurement data quality control	7
8.2 Spectral reflectance calculation	7
9 Preparation of measurement report and handover of data files	8
Appendix A (Normative) Growth period of major crops and judgment rules	9
A.1 Wheat Growth Period	9
A.2 Corn Growth Period	9
Appendix C (Informative) Example of filling out the record form for the measurement of crop visible light-shortwave infrared spectral reflectance	15

Appendix D (Informative) Schematic diagram of leaf clamp method and integral method for measuring leaf spectral reflectance	17
Appendix E (Informative) Example of a report outline for crop visible-shortwave infrared spectral reflectance measurement	18
References	19

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed by the Chinese Academy of Sciences.

This document is under the jurisdiction of the National Remote Sensing Technology Standardization Technical Committee (SAC/TC327).

This document was drafted by: Beijing Academy of Agricultural and Forestry Sciences Information Technology Research Center, Chinese Academy of Sciences Space Information Innovation Institute, China Agricultural University Institute of Agricultural Resources and Agricultural Zoning, Chinese Academy of Agricultural Sciences, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Chang'an University, and Henan Polytechnic University.

The main drafters of this document are: Zhao Chunjiang, Yang Guijun, Long Huiling, Yang Xiaodong, Li Heli, Ma Lingling, Gao Maofang, Chen Pengfei, Li Zhenhong, Li Changchun, Song Xiaoyu, Xu Xingang, Feng Haikuan, Meng Yang, and Li Weiguo.

Visible-shortwave infrared spectral reflectance measurement of crops

1 Scope

This document describes the measurement conditions, measurement preparation, and field canopy spectral reflectance of crops in the visible-shortwave infrared band.

Rate measurement, blade spectral reflectance measurement, spectral measurement data processing, measurement report preparation and data file transfer.

This document is applicable to the remote sensing monitoring of crops planted in the natural environment of the field, the visible light of the canopy and leaves in the spectral library construction, and the short-wave red Spectral reflectance measurement of outer bands (350nm~2500nm), visible light-shortwave infrared bands of other crop canopies,

leaves, flowers and fruits Spectral reflectance measurements were performed as described above.

2 Normative references

GB/T 33988-2017

GB/T 36540-2018

GB/T 37804-2019

GB/T 40834-2021

NY/T 2738.1-2015

NY/T 2738.2-2015

NY/T 2738.3-2015

NY/T 4065-2021

NY/T 4378-2023

NY/T 4379-2023

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Crops

Various plants cultivated in agriculture.

Note. Includes food crops and cash crops.

3.2 Crop canopy

Above-ground organisms formed during the growth of crops that can represent field planting patterns and growth conditions.

3.3 crop leaves

Leaf organs with physiological and ecological functional traits formed during the growth process of crops.