

ICS 67.050
CCS X 04



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

GB/T 18525.4-2026

Replacing GB/T 18525.7-2001

**Irradiation processing practice for agricultural products - Part
4: Lotus seeds**

农产品辐照工艺 第4部分：莲子

Issued on: May 25, 2026

Implemented on: December 1, 2026

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

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 4 of GB/T 18525 "Irradiation Processes for Agricultural Products". GB/T 18525 has already published the following parts.

- 1. Legumes and their products;
- 2. Cereals and their products;
- Irradiation process for insect control and mold prevention in dried shiitake mushrooms (GB/T 18525.5);
- 6. Dehydrated Vegetables;
- 7. Spices and Seasonings;
- 8. Cooked Meat Products;
- 11. Dried Longan;
- 12. Pollen. This document replaces GB/T 18525.7-2001 "Irradiation Insecticide Process for Hollow Lotus". Compared with GB/T 18525.7-2001, the only differences are in the structural adjustment. Aside from integration and editorial changes, the main technical changes are as follows:
 - a) The scope has been changed (see Chapter 1, Chapter 1 of the 2001 edition);
 - b) Added terms and definitions for "process dosage", "dosage non-uniformity", and "dosage distribution test" (see Chapter 3);

c) The terms and definitions for "lotus seed" and "hollow lotus" have been removed (see Chapter 3 of the 2001 edition);

d) The requirement for "irradiation facilities" has been added (see Chapter 4);

4 Irradiation device

4.1 Irradiation devices shall comply with relevant provisions such as GB/T 17568 and GB/T 25306.

4.2 The irradiation device shall be a gamma-ray device that produces ^{60}Co or ^{137}Cs radionuclides, or an accelerator with an electron beam energy not exceeding 10 MeV. The device and the X-ray device that meets the relevant standards.

5.1 Packaging and Storage

5.1.1 Packaging specifications shall meet the requirements of irradiation processing and food-grade, insect-proof packaging materials shall be used.

5.1.2 Storage should meet the temperature, humidity and light conditions required by the product.

5.1.3 Irradiation should be carried out immediately after lotus seeds are packaged to prevent the growth of microorganisms and damage from pests.

5.2 Process Determination

5.2.1 Dosage distribution testing should be conducted based on the lotus seed packaging to determine the location of the monitoring dosimeter.

5.2.2 The minimum effective dose for insecticides is generally

0.4 kGy; the minimum effective dose for bactericides can be determined based on the initial microbial loading of the actual product. The purpose of mild irradiation should be determined. The maximum tolerable dose should be set based on the effect of the absorbed dose on the quality of lotus seeds, and should not exceed

5.2.3 The loading mode should be determined based on the lotus seed packaging specifications, the type of irradiation device, and the type of irradiation container, and the product dosage under this loading mode should not exceed the specified limits. Uniformity should meet the dosage requirements of the irradiation process.

5.2.4 Equipment operating parameters should be set according to process dosage and loading mode.

5.2.5 Irradiation process documentation shall be developed, including but not limited to process dose, loading mode, equipment operating parameters, and dose measurement

system. Systematically monitor the location of the dosimeter.

6 Irradiation process

6.1 Irradiation Operation Irradiation processing is organized according to the requirements of the irradiation process documents. The process includes setting parameters, loading products, irradiation implementation, and dose monitoring. It also monitors and records the irradiation equipment, related parameters, and online product flow process.

6.2 Dose Monitoring According to the irradiation process documentation, monitoring dosimeters are deployed for measurement and recording. The dosimeter measurement system is selected according to GB/T 16640. Select and regularly trace back to the national absorbed dose standard.

6.3 Irradiation Interruption If the irradiation process is interrupted, the impact on the absorbed dose of the product should be assessed, and subsequent processing and recording should be carried out.

6.4 Repeated irradiation To control pests, irradiation can be repeated, but the cumulative dose should not exceed the maximum tolerable dose of lotus seeds.

7 Post-irradiation management

7.1 Storage Irradiated and unirradiated products should be stored separately. The storage environment should meet the requirements of NY/T 1504.

7.2 Release

7.2.1 The irradiated product can only be released after confirming that the absorbed dose meets the process dose requirements and that there are no other abnormalities in the irradiation process.

7.2.2 When non-compliance with process dosage requirements or other non-conforming situations occur, they shall be handled in accordance with the non-conforming product management procedure.

8. Record and File Management All records and documents should be properly kept and retained for up to 6 months after their expiration date.