

འབྲུག་-----ཁྱི་གནས་ཚད།

## BHUTAN STANDARD

Potato-Specification



ICS 67.220.10

© Copyright 2023

**BHUTAN STANDARDS BUREAU**

**The National Standards Body of Bhutan**

**Thimphu 11001**



འབྲུག་-----ཁྱི་གནས་ཚད།

**BHUTAN STANDARD**

Potato -Specification

## **PDF disclaimer**

This PDF may contain embedded typefaces. In accordance with Adobe's Licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The Bhutan Standards Bureau accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

## **COPYRIGHT PROTECTED DOCUMENT**

© BSB 2023

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from BSB at the address below in the country of the requester.

Director General  
Bhutan Standards Bureau  
Rijug Lam  
Thimphu-11001  
Tel: 00975-2-325104/325401  
Fax: 00975-2-323712/328298  
Web: [www.bsb.gov.bt](http://www.bsb.gov.bt)

Published in Thimphu, Bhutan

## Table of Contents

FOREWORD .....	iv
INTRODUCTION .....	v
1 Scope .....	1
2 Normative References .....	1
3 Terms and Definition .....	1
3.1 Extraneous Matter .....	1
3.2 Table Potato .....	1
3.3 Contaminants .....	1
3.4 Curing .....	1
4 Description .....	1
4.1 Shape and size .....	1
4.2 Color .....	2
5 Hygiene .....	2
6 Contaminants .....	2
7 Quality Requirement .....	2
7.1 Whole .....	2
7.2 Appearance .....	2
7.3 Pests and Diseases .....	2
7.4 External Moisture .....	2
7.5 Temperature .....	2
7.6 Sprout .....	2
7.7 Odour .....	2
7.8 Defects .....	2
7.9 Maturity Requirements .....	3
8 Sizing .....	3
9 Classification of Class .....	3
9.1 Class I .....	3
9.2 Class II .....	3
9.3 Class III .....	4
10 Sampling .....	5
11 Test Methods .....	5
12 Packaging .....	5

## **BTS XXX: 2023**

12.1	Packing.....	5
12.2	Labelling .....	5
13	Storage and Transport.....	5
	Bibliography .....	6



# **BTS XXX: 2023**

## **FOREWORD**

Bhutan Standards Bureau (BSB) is a National Standards Body (NSB) of Bhutan. This standard for Potato C was developed by Technical Committee TC02, Food and Agriculture, Subcommittee SC 15, Fruits and Vegetables under Bhutan Standards Bureau after the draft finalization by the Food and Agriculture Technical Committee, TC 02 and approved by the Bhutan Standards Bureau Board (BSB Board) on x<sup>th</sup> Month August 2023.

This standard specifies requirements for grading, packaging and labelling for potato. This standard is drafted in accordance with the BSB Rule for Structure and Drafting of Bhutan Standards, 2018. Some of the elements of this standard may be the subject of copyrights.

This standard is subject to systematic review after five years to keep pace with the market trends, industrial and technological developments. Amendments are issued to standards as the need arises on the basis of comments.



**INTRODUCTION**

Potato is one of the widely produced, consumed and traded horticultural crops in Bhutan. Due to existence of favourable conditions for the production of high-quality potatoes in the country, its production has rapidly increased over time. Currently, it is grown by more than 34,000 households and cultivated in all 20 districts of Bhutan. However, farmers of higher altitudes Dzongkhags such as Bumthang or Haa depend directly on potato crop for their livelihood. This is due to the fact that through the sale of potatoes they buy household essentials and other livelihood necessities. In addition, it is one of the significant crops generating revenue to the national economy. Some of the potato varieties popularly grown in Bhutan are Desiree, Nasephey Kewa Kaap (NKK), Yusi Maap and Yusi Maap-2.

Given the importance of this crop in terms of economy and livelihood support, there is a need to develop the national standard which is currently missing. The standard would ease trade and further improve the existing value chain. Hence, having standard was felt necessary and was being developed to address some of the emerging issues to maintain the quality Bhutanese potatoes.

The use of this standard remains voluntary. However, when referenced by regulatory authorities as a basis for legislations, the standards become mandatory.



# འབྲུག་-----གྱི་གནས་ཚད།

## BHUTAN STANDARD

### Potato-Specification

#### 1 Scope

This standard applies to commercial varieties of table potato (*Solanum tuberosum* L) grown to be supplied fresh to the consumer after cleaning and packaging. Potatoes for industrial processing and seed potatoes are excluded.

#### 2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CAC/RCP 44-1995 *Code of practice for packaging and transport of fresh fruit and vegetables*

BTS 139:2020 SARS 0014:2018, *Food hygiene- General principles – Code of practice*

BTS 269 CXS 1 (Amended 2009) *General guidelines on claims*

#### 3 Terms and Definition

For the purposes of this document, the following terms and definitions apply;

##### 3.1 Extraneous Matter

Any foreign substances in potato associated with objectionable condition or practices in production, storage and/or distribution of potato.

##### 3.2 Table Potato

Table potatoes include all potatoes intended for preparation at home for consumption

##### 3.3 Contaminants

Any biological or chemical agent, foreign matter or other substances not intentionally added to potato which may compromise potato safety or suitability

##### 3.4 Curing

Curing is the process of drying the outer skin of potato to create a protective layer that helps preventing from damages.

#### 4 Description

##### 4.1 Shape and size

In general, the shapes of potato ranges from small and round to large and oblong/oval. Some varieties may have bumps or other surface irregularities.

# **BTS XXX: 2023**

## **4.2 Color**

The color of potatoes can vary depending on the variety, but they are commonly red, white, yellow and brown. some varieties of potatoes may have a red or purple skin or flesh.

## **5 Hygiene**

The produce shall be handled in accordance with the provision of BTS 139: 2020 SARS 0014: 2020.

## **6 Contaminants**

**6.1** The produce covered by this Standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission or any other relevant national regulations.

**6.2** The produce covered by this Standard shall comply with the maximum levels of the contaminants and toxins in accordance with the General Standard for Contaminants and Toxins in Food and Feed (CXS 193-1995) or any other relevant national regulation.

## **7 Quality Requirement**

### **7.1 Whole**

The produce shall not have any part removed nor have suffered any damage making them incomplete.

### **7.2 Appearance**

The produce shall be clean, fresh, firm and free from any visible extraneous matter.

### **7.3 Pests and Diseases**

The produce shall be free from pests and diseases.

### **7.4 External Moisture**

**7.4.1** The produce shall be adequately cured at 15 to 18 °C; except condensation following removal from cold storage.

**7.4.2** The produce should undergo 12 hour sweating before marketing.

### **7.5 Temperature**

The produce shall be free from frost damage and freezing injuries.

### **7.6 Sprout**

The produce shall be free from sprouting or may not be longer than 3mm in length.

### **7.7 Odour**

The produce shall be free from foreign odour.

### **7.8 Defects**

#### **7.8.1 The produce shall be free from:**

**7.8.1.1** Brown stains due to heat.

**7.8.1.2** Cracks (including growth cracks), cuts, bites, bruises or roughness (shall not exceed 4 mm in depth).

**7.8.1.3** Green coloration (not exceeding one eighth of the surface area that can be removed by normal peeling).

**7.8.1.4** Serious deformities in shape and size.

**7.8.1.5** Grey, blue or black sub-epidermal stains; (shall not exceed 5 mm in depth).

**7.8.1.6** Rust stains, hollow or black hearts and other internal defects.

**7.8.1.7** Superficial common potato scab (scab spots shall not extend more than a quarter of the surface of the tuber).

## **7.9 Maturity Requirements**

Potatoes shall be matured with cured skin, with account being taken of the characteristics of the variety and/or commercial type and the area in which they are grown.

## **8 Sizing**

Sizing should be determined from the broadest diameter (means the maximum distance taken from the right angle on the largest axis of the tuber) of the potato (in mm) in accordance with the following Table 1.

**Table 1-Sizing of Potato**

<b>Size Code</b>	<b>Broadest Diameter(mm)</b>
A	>70
B	48-69
C	25-47
D	<24

## **9 Classification of Class**

The produce shall be classified based on quality tolerance level as depicted in Table 2.

### **9.1 Class I**

Potato in this class shall be of superior quality. They shall be well developed and shall have characteristics of the variety as regards to shape, appearance and development. They shall be free of defects with the exception of very slight superficial defects, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package.

### **9.2 Class II**

Potato in this class must be of good quality. They must have the characteristics of the variety as regards to shape, appearance and development. The following slight defects, however, may be allowed, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package;

- Slight defects in shape and color

## BTS XXX: 2023

- Slight skin defects

### 9.3 Class III

This class includes potato which do not qualify for inclusion in the higher classes, but satisfy the minimum requirements specified above. The following defects, however, may be allowed, provided the potato retains their essential characteristics as regards the quality, the keeping quality and presentation:

- Defects in shape and color
- Skin defects

**Table 2- Tolerance Level of Potato**

Sl.No.	Quality Tolerances	Percentage of defective produce, by number or weight		
		Class I	Class II	Class III
1	(i) Total Tolerances for potatoes not satisfying the minimum requirements including defects , of which no more than:	5	10	10
	a) Defects -cuts -bruises or roughness -Grey, blue or black sub-epidermal stains; > 5 mm deep -Deep common potato scab and powdery potato scab, > 2 mm deep. -superficial common potato scab > 25% of surface -Sprouts >3mm -Green coloration >1/8 of the surface area or not exceeding 2mm in depth;			
	(b) Frozen, decay, soft rot and/or internal breakdown.	1	1	2
	(c) Extraneous matter	0.25	0.50	0.50
	(d) Soil	0.25	0.25	0.25
2	<b>Additional tolerances</b>			
	(a) Produce belonging to other varieties than marked	0	0	2
	(b) Size Tolerances from what is indicated/marked	10	10	10

Note: The total of (a), (b), (c) and (d) shall not exceed the limit given in (i). Where the product is not classified the tolerances for Class II apply.

**10 Sampling**

Random sampling shall be done as per any national/internationally accepted sampling methods.

**11 Test Methods**

Laboratory may use any validated method of analysis.

**12 Packaging****12.1 Packing Material**

**12.1.1** The produce shall be packed in such a way as to protect the produce properly. The materials used for packaging shall be clean, well-ventilated and of a quality to avoid causing any external or internal damage to the produce (preferably mesh-bags).

**12.1.2** The use of materials, particularly of paper or stamps bearing trade specifications is allowed, provided the printing or labelling has been done with non-toxic ink or glue.

**12.1.3** The produce should be packed in compliance with appropriate section of CAC/RCP 44-1995.

**12.2 Labelling**

Package shall be labelled as "Potato" and it shall conform to the provisions provided as below. Each package shall bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside:

**12.2.1 Identification**

Packers and/or dispatcher name and address or officially issued or accepted code mark.

**12.2.2 Name of Produce/Variety****12.2.3 Date of Packaging (Optional)****12.2.4 Size Code****12.2.5 Net Weight (Optional)****12.2.6 Lot Number (Optional)****12.2.7 Origin of produce****12.2.8 Class****12.2.9 Official inspection/certification mark (optional)****13 Storage and Transport**

**13.1** The produce shall be stored in well protected structure from the sun, rain and excessive heat. In addition, the store should be dry, well ventilated, free from foreign odours and insects/ rodents proof.

**13.2** The produce should be stored at temperature between 5 to 10 °C with relative humidity level of 93 %.

**13.3** The packages should be handled and transported in such a way that they are protected from rain, from the sun or other sources of excessive heat, from foreign odours and from any other contamination

### **Bibliography**

- [1] Standard for ware potatoes cxs 339-2020
- [2] Potato -Quality Standard, National Post Harvest Centre, Paro
- [3] A basic guide on potato farming in Bhutan, Produced by: National Potato Program, ARDC Yusipang, DoA, MoAF [Dr Yadunath Bajgai & Pradeep Rai] Email: ybajgai@moaf.gov.bt February, 2020
- [4] Package of Practice for field and horticulture crops in Bhutan, DoA, MoAL
- [5] ISO 2165 Ware Potatoes – Guide to Storage
- [6] Productivity and Preferences of New Potato Varieties and their Relationships in Five Districts of Bhutan[Pradeep Rai , Yadunath Bajgai, Tshering Lhadon , Lobzang , Sangay]



**FOOD AND AGRICULTURE TECHNICAL COMMITTEE (TC 02)**

<b><i>Organization</i></b>	<b><i>Representative(s)</i></b>
National Dairy Research and Development Centre, Thimphu	Mr. Phuntsho T Norbu (Chairperson)
Bhutan Agriculture and Food Regulatory Authority, Thimphu	Mrs. Gyem Bidha
Bhutan Agriculture and Food Regulatory Authority, Thimphu	Mr. Kubir Nath Bhattarai (Alternate)
Bhutan Agro Industries Limited, Thimphu	Mrs. Nim Dem Hingmang
Bhutan Agro Industries Limited, Thimphu	Mrs. Jigme Wangmo (Alternate)
Bhutan Exporters Association, Phuentsholing	Mr. Dorji Tshering
Bhutan Livestock Development Corporation Limited, Thimphu	Mr. Sithar Dorji
Bhutan Livestock Development Corporation Limited, Thimphu	Mr. Pema Khandu (Alternate)
Department of Agriculture, Ministry of Agriculture and Forests, Thimphu	Mrs. Pema Choden
Department of Agriculture, Ministry of Agriculture and Forests, Thimphu	Mr. Jimba Rabgyel (Alternate)
Department of Agricultural Marketing and Cooperatives, Ministry of Agriculture and Forests, Thimphu	Mr. Dawa Tshering
Department of Agricultural Marketing and Cooperatives, Ministry of Agriculture and Forests, Thimphu	Mr. Jamyang Lophyal (Alternate)
Department of Industry, Ministry of Economic Affairs, Thimphu	Mr. Tashi Dorji
National Post Harvest Centre, Paro	Mr. Dechen Tshering
Office of Consumer Protection, Ministry of Economic Affairs, Thimphu	Mr. Jigme Dorji
Office of Consumer Protection, Ministry of Economic Affairs, Thimphu	Chencho Zangmo (Alternate)
Bhutan Standards Bureau, Thimphu	Mr. Sherab Tenzin, Director General (Ex-officio member)

**Member Secretary**  
 Cheki Zangmo  
 Standardization Division  
 Bhutan Standards Bureau

**Subcommittee on Fruits and Vegetables (TC02/SC15)**

<b>Organization</b>	<b>Representatives</b>
Bhutan Food and Drug Authority, MoH	Mrs. Barsha Gurung Chairperson
National Post Harvest Centre, NPHC, MoAF	Mr. Sujan Pradhan Member
Department of Agriculture, MoAL	Mr. Pradeep Rai Member
Bhutan Food and Drug Authority, MoH	Mr. Gyembo Dorji Member
Bhutan Food and Drug Authority, MoH	Mr. Lalit Kumar Orari Member

**Member Secretary**  
Kesang P Namgay  
Standardization Division  
Bhutan Standards Bureau