

BTS XXX: 2024

འབྲུག་མེ་ཏྲོག་ཀོ་པི་གི་གནས་ཚད། དཔྱེ་རིམ་དང་སྡེ་རིམ།

DRAFT BHUTAN STANDARD

Cauliflower – Classification and Grading



ICS 67.080.01

© Copyright 2024

BHUTAN STANDARDS BUREAU

The National Standards Body of Bhutan

THIMPHU 11001

August 2024

Price group A

DRAFT BHUTAN STANDARD FOR THE PURPOSE OF WIDE CIRCULATION

འབྲུག་མེ་ཏྲོག་ཀོ་པི་གི་གནས་ཚུན། དབྱེ་རིམ་དང་སྡེ་རིམ།

DRAFT BHUTAN STANDARD

Cauliflower – Classification and Grading

DRAFT BHUTAN STANDARD FOR THE PURPOSE OF WIDE CIRCULATION

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
Published in Thimphu, Bhutan

Table of Contents

FOREWORD.....	iv
Introduction.....	v
Cauliflower – Classification and Grading	1
1 Scope.....	1
2 Normative References	1
3 Terms and Definitions	1
3.1 Classification.....	1
3.2 Grading	1
3.3 Sound.....	1
4 Minimum Requirements	1
5 Classification	2
5.1 Extra Class	2
5.2 Class I	2
5.3 Class II	3
6 Grading	3
7 Tolerances	3
7.1 General.....	3
7.2 Quality Tolerances	4
7.2.1 Extra Class	4
7.2.2 Class I	4
7.2.3 Class II	4
7.3 Size Tolerances.....	4
8.1 Uniformity.....	4
8.2 Packaging.....	4
8.3 Labelling.....	4
9 Sampling	5
10 Requirements for Contaminants	5
11 Hygiene.....	5
Bibliography	6

BTS XXX: 2024

FOREWORD

This Bhutan Standard for Cauliflower - Classification and Grading was adopted by Bhutan Standards Bureau after the draft finalized by the Environment and Sustainability Technical Committee TC 10 and approved by the Bhutan Standards Bureau Board (BSB Board).

This standard is subjected to systematic review after five years to keep pace with the market trends, industrial and technological developments. Any suggestions and further information may be directed to the concerned Technical Committee.

DRAFT BHUTAN STANDARD FOR THE PURPOSE OF WIDE CIRCULATION

Introduction

Cauliflower (*Brassica oleracea var. botrytis*) is one of the cole crops that belongs to Brassicaceae family. In Bhutan, cauliflower is grown at an altitude between 300m to 2800m above mean sea level. The released and notified varieties in Bhutan are Wengkhar Metokopi 1, Wengkhar metokopi 2, White Summer, White Express 50 (heat tolerant), Pragati 40 (heat tolerant), Suhasini, Candid Charm, White Top, Monsoon Queen, Valentena (colored) and Carotena (colored).

The use of standard remains voluntary and when referenced by regulatory authorities for implementation, the standards become mandatory.

DRAFT BHUTAN STANDARD FOR THE PURPOSE OF WIDE CIRCULATION

DRAFT BHUTAN STANDARD FOR THE PURPOSE OF WIDE CIRCULATION

འབྲུག་མེ་རྒྱུ་ཀོ་བོ་བོ་གི་གནས་ཚུལ། དབྱེ་རིམ་དང་སྒྲེ་རིམ།

DRAFT BHUTAN STANDARD

Cauliflower – Classification and Grading

1 Scope

This standard applies to commercial varieties of fresh cauliflower vegetables from *Brassica oleracea* L. var. *botrytis*, of the Brassicaceae family, intended for consumer consumption following preparation and packaging.

This document does not apply to cauliflower for industrial processing.

2 Normative References

The following 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 applies including amendments.

CAC/RCP 44-1995, *Code of Practice for the Packaging and Transport of Fresh Fruits and Vegetables*.

CODEX STAN 1-1985, Rev. 1-199, *Codex General Standard for the Labelling of Prepackaged Foods*.

CODEX STAN 193-1995, *Codex General Standard for Contaminants and Toxins in Food and Feed*.

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

3 Terms and Definitions

For the purpose of this standard, the following terms and definitions shall apply:

3.1 Classification

Involves grouping item into categories or classes based on shared quality.

3.2 Grading

Assessing and assigning a numerical or descriptive rating to produce.

3.3 Sound

Produce not affected by rotting or deterioration making it unfit for consumption.

4 Minimum Requirements

In all classes, subject to the special provisions for each class and the tolerances allowed, the cauliflower:

4.1 Shall be intact; however, cauliflower may be presented “with leaves”, “without leaves”, or “trimmed” provided they comply to the following provisions:

4.1.1 “With leaves”: cauliflower covered with healthy green leaves, sufficient in number and long enough to cover and protect the head entirely. The stem shall be cut off slightly below the protecting leaves.

4.1.2 “Without leaves”: cauliflower with all the leaves and the non-edible portion of the stem removed. At most, there may be five small and tender pale green leaves, untrimmed, close to the head.

4.1.3 Trimmed”: cauliflower with a sufficient number of leaves left on to protect the head. These leaves shall be healthy and green and trimmed to not more than 3 cm from the top of the head. The stem shall be cut off slightly below the protecting leaves.

BTS XXX: 2024

4.2 Shall be sound.

4.3 Shall be fresh in appearances.

4.4 Wrapper leaves should not cover all the head.

4.5 Characteristic of the variety.

4.6 Shall be clean, practically free of any visible foreign matter.

4.7 Shall be practically free of pests and damage caused by them affecting the general appearance of the produce.

4.8 Shall be free of mechanical and/or physiological damage such as low and/or high temperature.

4.9 Shall be free of abnormal external moisture, excluding condensation following removal from cold storage.

4.10 Shall be free from stain and discoloration.

4.11 Shall be free of any foreign smell.

4.12 The condition of the cauliflower shall be such as to enable it to withstand transportation and handling in satisfactory condition.

4.13 When cauliflower reach their destination, they shall be in a satisfactory condition.

5 Classification

Cauliflower are classified in three classes, as defined below:

5.1 Extra Class

5.1.1 Cauliflower in this class shall be of superior quality.

5.1.2 Shall be characteristic of the variety.

5.1.3 The heads shall be well formed, firm and compact.

5.1.4 The heads shall be of very close texture.

5.1.5 The head shall have uniform colour of the variety.

5.1.6 The head shall be uniformly white and slightly creamy in colour, for white varieties.

5.1.7 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.

5.1.8 If the cauliflower is "with leaves" or "trimmed", the leaves shall have a fresh appearance.

5.2 Class I

5.2.1 Cauliflower in this class shall be of good quality.

5.2.2 They shall be characteristic of the variety.

5.2.3 The heads shall be firm.

5.2.3 The heads shall be of close texture.

5.2.4 The heads shall be white to ivory or creamy in colour, for white varieties.

5.2.5 The heads shall be free from defects, such as blemishes, protruding leaves in the head, traces of frost, bruising.

5.2.6 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:

- a) a slight defect in shape or development.
- b) slight defects in colouring.
- c) a very slight woolliness.

5.2.7 If the cauliflower is “with leaves” or “trimmed”, the leaves shall have a fresh appearance.

5.3 Class II

5.3.1 This class includes cauliflower that do not qualify for inclusion in the higher classes but satisfy the minimum requirements specified above.

5.3.2 The following defects may be allowed, provided the cauliflower retain their essential characteristics as regards the quality, the keeping quality and presentation:

- a) defects in shape or development.
- b) slightly loose in texture.
- c) slight discoloration.
- c) yellowish in colour, for white varieties.
- d) slight traces of sun scorching.
- e) not more than five protruding pale green leaves.
- f) a slight woolliness (but not wet or greasy to the touch).

5.3.3 In addition, they may have two of the following defects:

- a) slight traces of damage caused by pests or disease.
- b) slight superficial damage due to frost.
- c) slight bruising.

6 Grading

6.1 Size is determined by the maximum diameter of the equatorial section.

6.2 The minimum diameter of head shall not be less than 8 cm.

6.3 To ensure uniformity in size, the range in size between produce in the same package shall not exceed 4 cm.

6.4 Loose-headed long-stemmed cauliflower are exempted from the sizing provisions.

7 Tolerances

7.1 General

Tolerances in respect of quality shall be allowed in each package or in each lot for produce not satisfying the requirements of the class indicated.

BTS XXX: 2024

7.2 Quality Tolerances

7.2.1 Extra Class

A total tolerance of 5 percent, by number or weight, of cauliflower not satisfying the requirements of the class but meeting those of Class I may be allowed.

7.2.2 Class I

A total tolerance of 10 percent, by number or weight, of cauliflower not satisfying the requirements of the class but meeting those of Class II may be allowed.

7.2.3 Class II

A total tolerance of 10 per cent, by number or weight, of cauliflower satisfying neither the requirements of the class nor the minimum requirements may be allowed. Within this tolerance not more than 2 percent in total may consist of produce affected by decay.

7.3 Size Tolerances

For all classes, 10% by number or mass of cauliflower not satisfying the requirements of sizing may be allowed.

8 Presentation

8.1 Uniformity

8.1.1 The contents of each package or lot shall be uniformed and contained only cauliflower of the same variety, origin, quality and size.

8.1.2 The visible part of the contents of the package or lot shall be representative of the entire contents.

8.2 Packaging

8.2.1 Cauliflower shall be packed in such a way as to protect the produce properly.

8.2.2 Cauliflower shall be packed in each package in compliance with the *Code of Practice for the Packaging and Transport of Fresh Fruits and Vegetables* (CAC/RCP 44).

8.2.3 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.

8.2.4 Stickers individually affixed to the produce shall be such that, when removed, they neither leave visible traces of glue nor lead to skin defects. Information lasered on single produce should not lead to flesh or skin defects.

8.3 Labelling

The following basic information is required for the purpose of labeling:

8.3.1 The name of the product and/or variety.

8.3.2 The trademark or brand name, if any.

8.3.3 The name and address of the producer and/or packer and/or distributor.

8.3.4 The code or lot number.

8.3.5 The net mass or gross mass (according to the request of the importing country) or Number of units.

8.3.6 The class of product.

8.3.7 Size range expressed as minimum and maximum diameters. For example, 8cm – 12cm.

8.3.8 The producing country.

8.3.9 Date of packaging.

8.3.10 Any other marking required by the purchaser.

8.3.11 A reference to this document, i.e. BTS (optional).

9 Sampling

Sampling methods to be used for ascertaining conformance to the requirements of this specification shall be in accordance with internationally accepted methods or national methods recognized internationally.

10 Requirements for Contaminants

10.1 The produce shall comply with the maximum levels of the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995).

10.2 The produce shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

10.3 The produce should comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997).

11 Hygiene

The manufacturer shall comply in accordance with BTS 139: 2020 SARS 0014: 2018, *Food hygiene- General principles – Code of practice*.

Bibliography

UNECE standard FFV-11 concerning the marketing and commercial quality control of cauliflower.

ASEAN Stan 49:2016 – Cauliflower.

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

CAC/RCP 44-1995, *Code of Practice for the Packaging and Transport of Fresh Fruits and Vegetables*.

CODEX STAN 1-1985, Rev. 1-199, *Codex General Standard for the Labelling of Prepackaged Foods*.

CODEX STAN 193-1995, *Codex General Standard for Contaminants and Toxins in Food and Feed*.

Dorji, T., Chhetri, S., Uden, T., & Wangmo, Y. (2022). Effect of Locally Available Organic Fertilizers on Growth and Yield of Cauliflower and Soil Nutrient Composition. (*Brassica oleracea* Var. Snow Mystique). *International Journal of Agriculture and Environmental Research*, 8(3), 494-502.

<http://dx.doi.org/10.22004/ag.econ.333909>.

Research and Communication Section, TSS, NCOA Yusipang. Annual Report 2022-2023, Department of Agriculture, Ministry of Agriculture and Livestock.

VSC 211: Cauliflower. (n.d.). [Ecoursesonline.iasri.res.in](http://ecoursesonline.iasri.res.in). Retrieved April 10, 2024, from <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=12008>.

Wangmo, D., Lhaden, K., Phuntsho, L., Acharya, M., Yangdon, P., Pelden, S., & Lhaden, Y. (2018). Evaluation of Heat Tolerant Cole Crop Varieties. *Bhutanese Journal of Agriculture*, 1(1), 92-96.

FOOD AND AGRICULTURE TECHNICAL COMMITTEE (TC02)

Organization

Representative(s)

National Dairy Development Centre, MoAL, Thimphu

Mr. Phuntsho T Norbu (Chairperson)

Bhutan Agro Industries Limited, Thimphu

Ms. Tashi Dema

Bhutan Exporters Association, Phuentsholing

Mr. Tshering Yeshe

Bhutan Food and Drug Authority, MoH, Thimphu

Ms. Yeshe Lhamo

Bhutan Livestock Development Corporation Limited,
Thimphu

Mr. Birendra Dhakal

Department of Agriculture, MoAL, Thimphu

Mr. Namgay Thinley

Department of Agriculture, MoAL, Thimphu

Mr. Bal Bahadur Rai (Alternate)

Department of Agricultural Marketing and Cooperatives,
MoAL, Thimphu

Mr. Dawa Tshering

Department of Agricultural Marketing and Cooperatives,
MoAL, Thimphu

Mr. Jamyang Lophyal (Alternate)

Department of Industry, MoICE, Thimphu

Mr. Tashi Dorji

National Post Harvest Centre, DAMC, MoAL, Paro

Ms. Sonam Lhamo

Competition and Consumers Affairs Authority, MoICE,
Thimphu

Mr. Jigme Dorji

Competition and Consumers Affairs Authority, MoICE,
Thimphu

Ms. Tshewang Choden (Alternate)

Bhutan Standards Bureau, Thimphu

Mr. Karma Wangdi,
Offtg. Director General
(Ex-officio member)

Member Secretary

Cheki Zangmo

Standardization Division

Bhutan Standards Bureau

SUB COMMITTEE ON FRUITS AND VEGETABLES (TC02/SC15)

Organization

National Post Harvest Centre, DAMC, MoAL, Paro

Bhutan Food and Drug Authority, MoH, Gelephu

Bhutan Soul Farmers, Paro

National Centre for Organic Agriculture, DoA, MoAL,
Thimphu

Representative(s)

Mr. Sujan Pradhan (Chairperson)

Mr. Thinley Penjor

Mr. Lhundup Dukpa

Ms. Tshering Yangchen

Member Secretary

Cheki Zangmo

Standardization Division

Bhutan Standards Bureau

DRAFT BHUTAN STANDARD FOR THE PURPOSE OF WIDE CIRCULATION