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FINAL DRAFT BHUTAN STANDARD

Quinoa



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The National Standards Body of Bhutan

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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

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FOREWORD

This Bhutan Standard for Quinoa was developed Bhutan Standards Bureau and adopted as Bhutan Standard after the draft finalized by the Food and Agricultural Technical Committee TC02 and approved by the Bhutan Standards Bureau Board (BSB Board) on Day Month Year.

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

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DRAFT BHUTAN STANDARD

Quinoa

1 Scope

This Bhutan Standard applies to processed quinoa (*Chenopodium quinoa* Willd.) for human consumption, packaged or in bulk.

This standard does not apply to quinoa used as seeds for propagation or products derived from quinoa (e.g., flour, flakes, etc.).

2 Normative References

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

ISO 24333 – Cereal and Cereal Products – Sampling

BTS 139: 2020 SARS 0014: 2018 Bhutan Standard on Food hygiene- General practices- Code of practice.

BTS 268 CODEX STAN 1-1985 Bhutan Standard on Labelling of prepackaged foods

3 Terms and Definitions

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

3.1 Quinoa

Quinoa is the dried matured grain obtained from *Chenopodium quinoa* Willd.

3.2 Processed Quinoa

Processed quinoa is quinoa grain (*Chenopodium quinoa* Willd) that has been subjected to cleaning, de-husking and sorting.

3.3 Defects

3.3.1 Broken Grains

Are pieces of grains with sizes less than three quarters of the whole grain.

3.3.2 Damaged Grains

Are grains that differ from others in their form or structure, because they have been altered by physical, chemical or biological agents.

3.3.3 Germinated Grains

Are grains that show development of the radicle (embryo).

3.3.4 Coated Grains

Are grains that retain the husk or part of the flower attached to the grain.

3.3.5 Immature Grains

Are grains that have not reached physiological maturity, characterized by small size and greenish coloration.

3.4 Extraneous Matter

Extraneous matter is all organic and inorganic materials other than quinoa.

4 Quality Factors and Essential Composition**4.1 Quality Factors – General**

Processed quinoa shall be;

4.1.1 Safe and suitable for human consumption.

4.1.2 Free from abnormal flavours and odours.

4.1.3 Free from extraneous matter as per specified in the *Table 1*.

4.1.4 Free from living insects and mites.

4.1.5 Processed quinoa color should be characteristic, where the most common are white (pearly, pale, grayish), black and red, among others.

4.2 Quality Factors – Specific

4.2.1 Processed quinoa shall conform to the following specific quality factors as specified in *Table 1*. Laboratories may use the test methods which meet the specific performance criteria and are validated.

Table 1 – Specific Quality Factors

S/N	Parameters	Limit (Max)
1	Moisture	12 %
2	Extraneous Matter	0.1 %
3	Broken Grains	3 %
4	Damaged Grains	2.5%
5	Germinated Grains	0.5 %
6	Coated Grains	0.3 %
7	Immature Grains	0.9 %

4.3 Essential Composition

4.3.1 Processed quinoa shall conform to the following essential chemical requirements as specified in the *Table 2*. Laboratories may use the test methods which meet the specific performance criteria and are validated.

Table 2 – Chemical Requirements

S/N	Parameters	Limit
1	Moisture	12%, Max
2	Protein	10%, Min
3	Saponin Content	0.1%, Max
4	Total Ash	3.5%, Max
5	Uric Acid	100mg/kg, Max

5 Microbiological Requirements

5.1 Processed quinoa shall conform to the following microbiological requirements as specified in *Table 3*. Laboratories may use the test methods which meet the specific performance criteria and are validated.

Table 3 – Microbiological Requirements

S/N	Parameters	Limit (Max)
1	Yeast and mould	10 ⁴ cfu/g
2	Aerobic mesophilic	10 ⁶ cfu/g
3	E. coli	Absent/g
4	Salmonella	Absent/25g
5	Total Coliform	10 ³ cfu/g

5.2 Mycotoxins

5.2.1 Processed quinoa shall conform to the mycotoxin limit specified in the *Table 4*. Laboratories may use the test methods which meet the specific performance criteria and are validated.

Table 4 – Mycotoxins

S/N	Parameter	Maximum Levels (mg/kg)
1	Aflatoxin B ₁	0.010
2	Total Aflatoxins (B ₁ , B ₂ and G ₁ , G ₂)	0.015
3	Ochratoxin A	0.005

5.3 Pesticide Residues

5.3.1 The processed quinoa shall comply with those maximum residue limits (MRL) established by the Codex Alimentarius Commission.

5.4 Heavy Metals

5.4.1 Processed quinoa shall conform to the following heavy metal limits specified in the *Table 5*. Laboratories may use the test methods which meet the specific performance criteria and are validated.

Table 5 – Heavy Metals

S/N	Parameters	Maximum Levels (mg/kg)
1	Lead	0.2
2	Cadmium	0.1

6 Food Additives

6.1 The use of food additives shall not be permitted.

7 Hygiene

7.1 The hygienic requirements shall be in accordance with BTS 139: 2020 SARS 0014: 2018.

8 Sampling

8.1 Sampling shall be carried out in accordance with ISO 24333 or any internationally accepted methods.

9 Packaging

9.1 Processed quinoa shall be packaged in containers which will safeguard its hygienic, nutritional, technological, and organoleptic qualities.

9.2 The packaging shall be safe and suitable for the intended use and shall not transfer toxic materials, odours or flavours to the product. All the materials used inside the packaging shall be of food grade, clean, new and of an adequate quality so as not to cause damage to the product.

10 Labeling

10.1 The labelling shall be carried out in accordance with BTS 268: 2020 CODEX STAN 1-1985.

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FOOD AND AGRICULTURE TECHNICAL COMMITTEE (TC 02)**Organization****Representative(s)**

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, MoAF

Mr. Namgay Thinley

Department of Agriculture, MoAF

Mr. Bal Bahadur Rai (Alternate)

Department of Agricultural Marketing and Cooperatives,
MoAF

Mr. Dawa Tshering

Department of Agricultural Marketing and Cooperatives,
MoAF

Mr. Jamyang Lophyal (Alternate)

Department of Industry, MoEA

Mr. Tashi Dorji

National Post Harvest Centre, Paro

Mr. Dechen Tshering

Office of Consumer Protection, MoEA

Mr. Jigme Dorji

Office of Consumer Protection, MoEA

Mr. 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 CEREAL AND CEREAL PRODUCTS (TC 02/SC12)**Organization****Representative(s)**

Quinoa Grower Association, Samtse

Mr. Nar B. Rai
(Chairperson)Bhutan Agriculture and Food Regulatory Authority,
Thimphu

Ms. Dechen Choki

Bhutan Agriculture and Food Regulatory Authority,
Thimphu

Mr. Kinley Dorji (Alternate)

Department of Agriculture, MoAF, Thimphu

Mr. Jigme

Department of Agriculture, MoAF, Thimphu

Mr. Jambay Cheda (Alternate)

Department of Agricultural Marketing and Cooperatives,
MoAF, Thimphu

Mr. Jamyang Lophel

Department of Agricultural Marketing and Cooperatives,
MoAF, Thimphu

Mr. Pema Wangchuk (Alternate)

Food Corporation of Bhutan Limited, Phuentsholing

Mr. Dorji Wangchuk

Food Corporation of Bhutan Limited, Phuentsholing

Mr. Sangay Choeda (Alternate)

National Post Harvest Center, Paro

Mr. Sonam Lhundub

National Post Harvest Center, Paro

Ms. Sonam Deki (Alternate)

Nutri Food Products, Mongar

Mr. Kezang Tshering

Nutri Food Products, Mongar

Mr. Kinley Penjor (Alternate)

One Gewog One Project, Thimphu

Mr. Sonam Tobgay

One Gewog One Project, Thimphu

Mr. Nima Wangdi (Alternate)

Member Secretary

Cheki Zangmo

Standardization Division

Bhutan Standards Bureau