

# CABBAGE (*Brassica oleracea* (L.) *capitata* L.)

## I. Application and Amplification of General Seed Certification Standards

The General Seed Certification Standards are basic and, together with the following specific standards constitute the standards for certification of cabbage seed.

## II. Land Requirements

Land to be used for seed production of cabbage shall be free of volunteer plants.

## III. Field Inspection

A minimum of three inspections shall be made, the first before the marketable stage of heads, the second when heads have formed and the third at the flowering stage.

## IV. Field Standards

### A. General requirements

#### 1. Isolation

Cabbage seed fields shall be isolated from the contaminants shown in column 1 of the Table below by the distances specified in columns 2 and 3 of the said Table:

<i>Contaminants</i>	<i>Minimum distance (meters)</i>	
	<i>Foundation</i>	<i>Certified</i>
1	2	3
Fields of other varieties	1600	1000
Fields of the same variety not conforming to varietal purity requirements for certification and from the following varieties of <i>Brassica oleracea</i> (L.):	1600	1000

- Brassica oleracea* (L.) var. *oleracea* : wild cabbage.  
*B. oleracea* (L.) var. *ramosa* DC.: branching bush kale.  
*B. oleracea* (L.) var. *millecapitata* (Lev.) Helm: thousand headed kale.  
*B. oleracea* (L.) var. *gemmifera* DC : Brussels sprouts.  
*B. oleracea* (L.) con var. *acephala* DC : fodder kale (*Karamsag*).  
*B. oleracea* (L.) var. *viridis* L. : collards, tree Kale.  
*B. oleracea* (L.) var. *gongyloides* L. : Kohl rabi or Knol-kohl.  
*B. oleracea* (L.) var. *costata* DC : Portugal cabbage, tronchuda kale.  
*B. oleracea* (L.) var. *subauda* L. : savoy cabbage.  
*B. oleracea* (L.) var. *italica* Plenck. : broccoli (Sprouting broccoli).  
*B. oleracea* (L.) var. *botrytis* L.: cauliflower (heading broccoli).

#### B. Specific requirements

Factor	Maximum permitted (%)*	
	Foundation	Certified
Offtypes	0.10	0.20
**Plants affected by seed borne diseases	0.10	0.50

\*Standards for offtypes shall be met at and after flowering and for seed borne diseases at final inspection.

\*\*Seed borne diseases shall be:

Black leg (*Leptosphaeria maculans* (Desm). Ces. & de Not.)

Black rot (*Xanthomonas campestris* pv. *campestris* (Pamm.) Dawson)

Soft rot (*Erwinia carotovora* (L.R. Jones)

#### V. Seed Standards

Factor	Standards for each class	
	Foundation	Certified
Pure seed (minimum)	98.0%	98.0%
Inert matter (maximum)	2.0%	2.0%
Other crop seeds (maximum)	5/kg	10/kg
Weed seeds (maximum)	5/kg	10/kg
Germination (minimum)	70%	70%
Moisture (maximum)	7.0%	7.0%
For vapour-proof containers (maximum)	5.0%	5.0%

# CAULIFLOWER (HEADING BROCCOLI) :

*Brassica oleracea* [L.] var. *botrytis* L.

## AND

# BROCCOLI (SPROUTING BROCCOLI):

*Brassica oleracea* [L.] var. *italica* Plenck.

### I. Application and Amplification of General Seed Certification Standards

The General Seed Certification Standards are basic and, together with the following specific standards constitute the standards for certification of the seeds of cauliflower and broccoli.

### II. Land Requirements

Land to be used for seed production of cauliflower and broccoli shall be free of volunteer plants.

### III. Field Inspection

A minimum of three inspections shall be made, the first before the marketable stage, the second at the marketable stage and the third at flowering stage.

### IV. Field Standards

#### A. General requirements

##### 1. Isolation

Seed fields shall be isolated from the contaminants shown in column 1 of the Table below by the distances specified in columns 2 and 3 of the said Table:

Contaminants	Minimum distance (meters)	
	Foundation	Certified
1	2	3
Fields of other varieties	1600	1000

1	2	3
Fields of the same variety not conforming to varietal purity requirements for certification and from the following varieties of <i>Brassica oleracea</i> (L.):	1600	1000
<i>Brassica oleracea</i> (L.) var. <i>oleracea</i> : wild cabbage.		
<i>B. oleracea</i> (L.) var. <i>capitata</i> L.: cabbage.		
<i>B. oleracea</i> (L.) var. <i>ramosa</i> DC.: branching bush kale.		
<i>B. oleracea</i> (L.) var. <i>millecapitata</i> (Lev.) Helm.: thousand headed kale.		
<i>B. oleracea</i> (L.) var. <i>gemmifera</i> DC.: Brussels sprouts.		
<i>B. oleracea</i> (L.) convar. <i>acephala</i> DC.: fodder kale ( <i>karamsag</i> ).		
<i>B. oleracea</i> (L.) var. <i>viridis</i> L.: collards, tree kale.		
<i>B. oleracea</i> (L.) var. <i>gongylodes</i> L. : kohlrabi or knol-kohl.		
<i>B. oleracea</i> (L.) var. <i>costata</i> DC.: Portugal cabbage, tronchuda kale.		
<i>B. oleracea</i> (L.) var. <i>subauda</i> L.: savoy cabbage.		

#### B. Specific requirements

Factor	Maximum permitted (%)*	
	Foundation	Certified
Offtypes	0.10	0.20
**Plants affected by seed borne diseases	0.10	0.50

\*Standards for offtypes shall be met at and after flowering and for seed borne diseases at final inspection.

\*\*Seed borne diseases shall be:

Black leg (*Leptosphaeria maculans* (Desm.) Ces. & de Not)

Black rot (*Xanthomonas campestris* pv. *campestris* (Pamm.) Dawson)

Soft rot (*Erwinia carotovora* L.R. Jones)

#### V. Seed Standards

Factor	Standards for each class	
	Foundation	Certified
1	2	3
Pure seed (minimum)	98.0%	98.0%

1	2	3
Inert matter (maximum)	2.0%	2.0%
Other crop seeds (maximum)	5/kg	10/kg
Weed seeds (maximum)	5/kg	10/kg
Germination (minimum)	65%	65%
Moisture (maximum)	7.0%	7.0%
For vapour-proof containers (maximum)	5.0%	5.0%

# CHINESE CABBAGE [HEADING & NON- HEADING] [*Brassica pekinensis* [Lour.] Rupr. & *Brassica chinensis* L.]

## I. Application and Amplification of General Seed Certification Standards

The General Seed Certification Standards are basic and, together with the following specific standards constitute the standards for certification of chinese cabbage seed.

## II. Land Requirements

Land to be used for seed production of chinese cabbage shall be free of volunteer plants.

## III. Field Inspection

A minimum of three inspections shall be made, the first before the marketable stage of heads, the second when heads have attained the marketable stage and the third at the flowering stage.

## IV. Field Standards

### A. General requirements

#### 1. Isolation

Seed fields shall be isolated from the contaminants shown in column 1 of the Table below by the distances specified in columns 2 and 3 of the said Table:

<i>Contaminants</i>	<i>Minimum distance (meters)</i>	
	<i>Foundation</i>	<i>Certified</i>
1	2	3
Fields of other varieties of the same species	1600	1000

1	2	3
Fields of the same variety not conforming to varietal purity requirements for certification and from any of the other species of genus <i>Brassica</i> listed below:	1600	1000

*Brassica rapa* (L.): turnip.

*B. napus* (L.) var. *napobrassica* (L.) Peterm : rutabaga (swede).

*B. juncea* (L.) Czern & Coss. subsp. *juncea* : Indian mustard or *rai* or *bangla sarson*.

*B. juncea* (L.) Czern. & Coss. subsp. *integrifolia* (West) Thell: vegetable mustard or *rai*.

*B. juncea* var. *rugosa* (Roxb.): *Pahadi rai*.

*B. chinensis* Juslen. non Duthie & Fuller: brown *sarson* or *kali sarson*.

*B. napus* L. var. *glauca* (Roxb.) Schulz : yellow *sarson* or *Pilli sarson* or *sarish*.

*B. napus* L. var. *napus* : *laha* or *maghi* or *achara rai*.

*B. tournefortii* Gouan: *Punjabi rai* or *jangli rai*.

*B. nigra* (L.) Koch: true mustard or black mustard or *Banarasi rai*.

*B. alba* (L.) Robenh: white mustard.

#### B. Specific requirements

Factor	Maximum permitted (%)*	
	Foundation	Certified
Offtypes	0.10	0.20
**Plants affected by seed borne diseases	0.10	0.50

\*Standards for offtypes shall be met at and after flowering and for seed borne diseases at final inspection.

\*\*Seed borne diseases shall be:

Black rot (*Xanthomonas campestris* pv. *campestris* (Pamm.) Dawson)

Black leg (*Leptosphaeria maculans* (Desm.) Ces. & de Not)

## V. Seed Standards

<i>Factor</i>	<i>Standards for each class</i>	
	<i>Foundation</i>	<i>Certified</i>
Pure seed (minimum)	98.0%	98.0%
Inert matter (maximum)	2.0%	2.0%
Other crop seeds (maximum)	5/kg	10/kg
Weed seeds (maximum)	5/kg	10/kg
Germination (minimum)	70%	70%
Moisture (maximum)	7.0%	7.0%
For vapour-proof containers (maximum)	5.0%	5.0%

# KNOL-KOHL (KOHL RABI): *Brassica oleracea* (L.) var. *gongylodes* L.

## I. Application and Amplification of General Seed Certification Standards

The General Seed Certification Standards are basic and, together with the following specific standards constitute the standards for certification of knol-kohl seed.

## II. Land Requirements

Land to be used for seed production of knol-kohl shall be free of volunteer plants.

## III. Field Inspection

A minimum of three inspections shall be made, the first before the marketable stage of knobs, the second when knobs have formed and the third at the flowering stage.

## IV. Field Standards

### A. General requirements

#### 1. Isolation

Seed fields shall be isolated from the contaminants shown in column 1 of the Table below by the distances specified in columns 2 and 3 of the said Table:

Contaminants	Minimum distance (meters)	
	Foundation	Certified
1	2	3
Fields of other varieties	1600	1000
Fields of the same variety not conforming to varietal purity requirements for certification and from the following varieties of <i>Brassica oleracea</i> (L.):	1600	1000

- Brassica oleracea* (L.) var. *oleracea* : wild cabbage.  
*B. oleracea* (L.) var. *capitata* L.: cabbage.  
*B. oleracea* (L.) var. *ramosa* DC.: branching bush kale.  
*B. oleracea* (L.) var. *millecapitata* (Lev.) Helm.: thousand headed kale.  
*B. oleracea* (L.) var. *gemmifera* DC.: Brussels sprouts.  
*B. oleracea* (L.) convar. *acephala* DC.: fodder kale (*karamsag*),  
*B. oleracea* (L.) var. *viridis* L.: collards, tree kale.  
*B. oleracea* (L.) var. *costata* DC.: Portugal cabbage, tronchuda kale,  
*B. oleracea* (L.) var. *subauda* L.: savoy cabbage.  
*B. oleracea* (L.) var. *italica* Plenck: broccoli (sprouting broccoli),  
*B. oleracea* (L.) var. *botrytis* L.: cauliflower (heading broccoli).

### B. Specific requirements

Factor	Maximum permitted (%)*	
	Foundation	Certified
Offtypes	0.10	0.20
**Plants affected by seed borne diseases	0.10	0.50

\*Standards for offtypes shall be met at and after flowering and for seed borne diseases at final inspection.

\*\*Seed borne diseases shall be:

Black leg (*Leptosphaeria maculans* (Desm.) Ces. & de Not)

Black rot (*Xanthomonas campestris* pv. *campestris* (Pamm.) Dawson)

Soft rot (*Erwinia carotovora* L.R. Jones)

### V. Seed Standards

Factor	Standards for each class	
	Foundation	Certified
Pure seed (minimum)	98.0%	98.0%
Inert matter (maximum)	2.0%	2.0%
Other crop seeds (maximum)	5/kg	10/kg
Weed seeds (maximum)	5/kg	10/kg
Germination (minimum)	70%	70%
Moisture (maximum)	7.0%	7.0%
For vapour-proof containers (maximum)	5.0%	5.0%

**CABBAGE** (*Brassica oleracea* (L.) var. *capitata* L.);  
**CAULIFLOWER** (*Brassica oleracea* (L.) var. *botrytis* L.);  
**BROCCOLI** (*Brassica oleracea* (L.) var. *italica* Plenck);  
**KNOL-KOHL** (*Brassica oleracea* (L.) var. *gongylodes* L.);  
and  
**CHINESE CABBAGE (HEADING & NON-HEADING)**  
(*Brassica pekinensis* (Lour.) Rupr. & *Brassica chinensis* L.)

## **I. Application and Amplification of General Seed Certification Standards**

A. The General Seed Certification Standards are basic and, together with the following specific standards constitute the standards for certification of the seeds of foundation single crosses of cabbage, cauliflower, broccoli, knol-kohl and chinese cabbage heading and non-heading).

B. The General Standards are amplified as follows to apply specifically to the foundation single crosses of cabbage, cauliflower, broccoli, knol-kohl and chinese cabbage (heading and non-heading):

### *1. Eligibility requirements for certification*

A foundation single cross to be eligible for certification must be produced from two approved inbred lines both of which shall be self-incompatible but cross-compatible, the sources of which shall assure their identity and are approved by the Certification Agency.

### *2. Classes and Sources of seed*

(a) A foundation single cross shall consist of the first generation hybrid resulting from the controlled crossing of the two approved self-incompatible but cross-compatible inbred lines. The foundation single crosses may be of three types depending upon the procedure of seed production;

—seeds of only female parent are harvested and certified;

—seeds of both the parents are harvested separately and certified;  
and

—seeds of both the parents are harvested, mixed together and certified.

- (b) The foundation single cross shall be used for production of hybrid seed.

## II. Land Requirements

Land to be used for seed production of foundation single cross of cabbage, cauliflower, broccoli, knol-kohl and chinese cabbage (heading and non-heading) shall be free of volunteer plants.

## III. Field Inspection

A minimum of three inspections shall be made as follows:

1. the first inspection shall be made before flower stalk development to check isolation, offtypes including type of heads (curds or knobs), outcrosses, planting ratio, and other relevant factors;
2. the second inspection shall be made during flowering to check isolation, offtypes and other relevant factors;
3. the third inspection shall be made at maturity and prior to harvesting to check offtypes, seed borne diseases and other relevant factors.

## IV. Field Standards

### A. General requirements

#### 1. Isolation

Seed fields of foundation single cross of the seed crops mentioned in column 1 of the Table below shall be isolated from the contaminants shown in column 2 of the Table below by the distances specified in column 3 of the said Table:

<i>Seed Crop</i>	<i>Contaminants</i>	<i>Minimum distance (meters)</i>
1	2	3
Cabbage	Fields of other varieties including same single cross hybrid	1600

1	2	3
	Fields of the same single cross/hybrid (code designation) not conforming to varietal purity requirements for certification and from the following varieties of <i>Brassica oleracea</i> (L.): <i>B. oleracea</i> (L.) var. <i>oleracea</i> : wild cabbage; var. <i>ramosa</i> DC.: branching bush kale; var. <i>millecapitata</i> (Lev.) Helm: thousand headed kale; var. <i>gemmifera</i> DC.: Brussels sprouts; convar. <i>acephala</i> DC.: fodder kale ( <i>karamsag</i> ); var. <i>viridis</i> L: collards, tree kale; var. <i>gongylodes</i> L: kohl rabi or knol-kohl; var. <i>costata</i> DC.: Portugal cabbage, tronchuda kale; var. <i>subauda</i> L: savoy cabbage. var. <i>italica</i> Plenck: broccoli (sprouting broccoli); and var. <i>botrytis</i> L: cauliflower (heading broccoli).	1600
Cauliflower & broccoli	Fields of other varieties including same single cross hybrid	1600
	Fields of the same single cross/hybrid (code designation) not conforming to varietal purity requirements for certification and from <i>B. oleracea</i> var. <i>capitata</i> L.: cabbage, and the varieties of <i>Brassica oleracea</i> (L.) listed for cabbage except <i>B. oleracea</i> var. <i>botrytis</i> (L): cauliflower and <i>B. oleracea</i> var. <i>italica</i> Plenck: broccoli	1600
Knol-kohl	Fields of other varieties including the same single cross hybrid	1600
	Fields of the same single cross/hybrid (code designation) not conforming to varietal purity requirements for certification and from <i>B. oleracea</i> var. <i>capitata</i> (L.): cabbage and the varieties of <i>Brassica oleracea</i> (L.) listed for cabbage except <i>B. oleracea</i> var. <i>gongylodes</i> (L.): knol-kohl	1600
Chinese cabbage (heading and non-heading)	Fields of other varieties of the same species including the same single cross hybrid	1600

- Fields of the same single cross/hybrid (code designation) not conforming to varietal purity requirements for certification and from the other species of genus *Brassica* listed below: 1.600
- Brassica rapa* (L.): turnip.
- B. napus* (L.) var. *napobrassica* (L) Peterm: rutabaga (swede).
- B. juncea* (L.) Czern. & Coss. subsp. *juncea*: Indian mustard or *rai* or *Bangla sarson*.
- B. juncea* (L.) Czern. & Coss. subsp. *integrifolia* (West) Thell: vegetable mustard or *rai*.
- B. juncea* var. *rugosa* (Roxb.): *Pahadi rai*.
- B. chinensis* Juslen; non-Duthie & Fuller: brown *sarson* or *kali sarson*.
- B. napus* L. var. *glauca* (Roxb.) Schulz: yellow *sarson* or *Pilli sarson* or *sarish*.
- B. napus* L. var. *napus* : *laha* or *maghi* or *achara rai*.
- B. tournefortii* Gouan: *Punjabi rai* or *jangli rai*.
- B. nigra* (L.) Koch : true mustard or *Banarsi rai*.
- B. alba* (L.) Robenh: white mustard.

### B. Specific requirements

Factor	Maximum permitted (%)
Offtypes in each parent at and after flowering	0.010
*Plants affected by seed borne diseases at final inspection	0.10

\*Seed borne diseases shall be :

For cabbage, cauliflower, broccoli and knol-kohl:

Black leg: *Leptosphaeria maculans* (Desm.) Ces. & de Not)

Black rot: *Xanthomonas campestris* pv. *campestris* (Pamm.) Dawson

Soft rot: *Erwinia carotovora* L.R. Jones

For chinese cabbage (heading & non-heading):

Black leg: *Leptosphaeria maculans* (Desm.) Ces. & de Not)

Black rot: *Xanthomonas campestris* pv. *campestris* (Pamm.) Dawson)

<i>Factor</i>	<i>Standards</i>
Pure seed (minimum)	98.0%
Inert matter (maximum)	2.0%
Other crop seeds (maximum)	None
Weed seeds (maximum)	None
Germination (minimum)	70%
Moisture (maximum)	7.0%
For vapour-proof containers (maximum)	5.0%

CABBAGE : *Brassica oleracea* L. var. *capitata* L.  
CAULIFLOWER : *Brassica oleracea* L. var. *botrytis* L.  
BROCCOLI : *Brassica oleracea* (L.) var. *italica* Plenck  
KNOL-KOHL : *Brassica oleracea* (P.) var. *gongylodes* L.  
CHINESE CABBAGE: (HEADING & NON-HEADING)  
*Brassica pekinensis* (Lour.) Rupr. & *Brassica*  
*chinensis* L.

## I. Application and Amplification of General Seed Certification Standards

A. The General Seed Certification Standards are basic and, together with the following specific standards constitute the standards for certification of hybrids of cabbage, cauliflower, broccoli, knol-kohl and chinese cabbage (heading and non-heading).

B. The General Standards are amplified as follows to apply specifically to the hybrids of cabbage, cauliflower, broccoli, knol-kohl and chinese cabbage (heading and non-heading):

### 1. Eligibility requirements for certification

(a) A hybrid is one to be planted for any use except seed production. It may be any one of the following:

(i) Single cross—the first generation resulting from the controlled crossing of two approved self-incompatible but cross-compatible inbred lines. It may be of three types depending upon the procedure of seed production;

—seeds of only female parent are harvested and certified;

—seeds of both the parents are harvested separately and certified; and

—seeds of both the parents are harvested together, mixed and certified.

(ii) Double cross—the first generation resulting from the controlled crossing of two approved self-incompatible but cross-compatible single crosses.

(iii) Three way cross—the first generation resulting from controlled crossing of an approved inbred line and certified

single cross being self-incompatible individually but cross-compatible to each other.

## 2. *Classes and Sources of seed*

- (a) Only the class "Certified" shall be recognised.
- (b) A hybrid to be certified must be produced from certified Foundation seed or seed stocks approved by the Certification Agency.

## II. Land Requirements

Land to be used for seed production of the hybrids of cabbage, cauliflower, broccoli, knol-kohl, and chinese cabbage (heading and non-heading) shall be free of volunteer plants.

## II. Land Requirements

A minimum of three inspections shall be made as follows:

1. the first inspection shall be made before flower stalk development to check isolation, offtypes including type of heads (curds or knobs), outcrosses, planting ratio and other relevant factors;
2. the second inspection shall be made during flowering to check isolation, offtypes and other relevant factors;
3. the third inspection shall be made before harvesting to check offtypes, seed borne diseases and other relevant factors.

## IV. Field Standards

### A. *General requirements*

#### 1. *Isolation*

Seed fields of hybrids of the seed crops mentioned in column 1 of the Table below shall be isolated from the contaminants shown in column 2 of the Table below by the distances specified in column 3 of the said Table:

<i>Seed crop</i>	<i>Contaminants</i>	<i>Minimum distance (meters)</i>
1	2	3
Cabbage	Fields of other varieties including commercial hybrid of the same variety	1600

1	2	3
	Fields of the same hybrid (code designation) not conforming to varietal purity requirements for certification and from the following varieties of <i>Brassica oleracea</i> (L.):	1600
	<i>B. oleracea</i> (L.) var. <i>oleracea</i> : wild cabbage;	
	var. <i>ramosa</i> DC.: branching bush kale;	
	var. <i>millecapitata</i> (Lev.) Helm: thousand headed kale;	
	var. <i>gemmifera</i> DC: Brussels sprouts;	
	convar. <i>acephala</i> DC.: fodder kale ( <i>karamsag</i> );	
	var. <i>viridis</i> L.: collards, tree kale;	
	var. <i>gongyloides</i> L.: kohlrabi or knol kohlrabi;	
	var. <i>costata</i> DC.: Portugal cabbage, tronchuda kale;	
	var. <i>subauda</i> L.: savoy cabbage;	
	var. <i>italica</i> Plenck: broccoli (sprouting broccoli),	
	var. <i>botrytis</i> L.: cauliflower (heading broccoli);	
Cauliflower & broccoli	Fields of other varieties including commercial hybrid of the same variety	1600
	Fields of the same hybrid (code designation) not conforming to varietal purity requirements for certification and from <i>B. oleracea</i> var. <i>capitata</i> L.: cabbage and the varieties of <i>Brassica oleracea</i> (L.) listed for cabbage except <i>B. oleracea</i> var. <i>botrytis</i> (L.): cauliflower and <i>B. oleracea</i> var. <i>italica</i> Plenck ; broccoli	1600
Knol-kohl	Fields of other varieties including commercial hybrid of the same variety	1600
	Fields of the same hybrid (code designation) not conforming to varietal purity requirements for certification and from <i>B. oleracea</i> var. <i>capitata</i> (L.): cabbage and the varieties of <i>Brassica oleracea</i> (L.) listed for cabbage except <i>B. oleracea</i> var. <i>gongyloides</i> (L.): knol-kohl	1600



## V. Seed Standards

<i>Factor</i>	<i>Standards</i>
Pure seed (minimum)	98.0%
Inert matter (maximum)	2.0%
Other crop seeds (maximum)	None
Weed seeds (maximum)	None
Germination (minimum)	70%
Moisture (maximum)	7.0%
For vapour-proof containers (maximum)	5.0%