



# DRY BEANS - BEST PRACTICES FOR IMPROVED NUTRITION AND INCOMES



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The U.S. Government's Global Hunger & Food Security Initiative



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FROM THE AMERICAN PEOPLE





## WHY STANDARDS MATTER

When dry beans conform to the standards, and are available in large quantities, it is easier to sell to high value markets with less risk of the grain being rejected by the buyer.

- Farmers get better prices and reduce post-harvest losses. They can participate in the Warehouse receipt system where they can store the beans until the price improves, and take a bank loan using their beans as surety.
- Traders get a reliable supply of quality dry beans that they can sell to their clients. When dry beans conform to the standards, and is available in large quantities, it is easier to sell to high value markets with less risk of the grain being rejected by the buyer.
- Processors want a continuous and reliable supply of high quality beans. Complying with the standards reduces waste and ensures that the final product is of high quality and earn a higher price.
- Consumers get food that is safe and nutritious to eat.

## Specific Requirements for Dry Beans

S/N	Characteristics	Maximum Limit			Test Method
		Grade 1	Grade 2	Grade 3	
i)	Foreign matter, % m/m	0.5	0.75	1	EAS 901
iii)	Other edible grains, % m/m	0.1	0.2	0.5	
iv)	Pest damaged grains, % m/m	1	2	3	
vi)	Contrasting varieties, % m/m	1.5	3	5	
vii)	Broken/split, % m/m	1	2	3	
viii)	Shrivelled/diseased and discoloured, % m/m	3	5	7	
ix)	Total defectives grains, % m/m	3.5	6.3	9.1	
x)	Filth, % m/m	0.1			EAS 901
xi)	Moisture, % m/m	14			
<b>Note 1:</b> The parameter, total defective grains is not the sum total of the individual defects. It is limited to 70% of the sum total of individual defects.					
<b>Note 2:</b> Discolouration is limited to at least 25% change in colour on both sides of the grain.					



## MOISTURE CONTENT:



Moisture content is a measure of how much water is in the beans (how wet it is). It can be measured with a moisture meter.

Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Moisture, % m/m	14		



## ORGANOLEPTIC (APPEARANCE, COLOUR AND SMELL):



Dry beans are dried matured seeds, well filled, clean, wholesome, uniform in size, colour and shape; free from abnormal flavours, mouldy, sour or other undesirable odour, horrible smell and discolouration.

## SHRIVELLED/DISEASED AND DISCOLOURED BEANS:



### Shrivelled beans

They are beans which are under-developed and wrinkled over their entire surface.

### Diseased beans

They are beans which are affected by mould growth or bacterial decomposition, or other causes that may be noticed without having to cut the grains to examine.

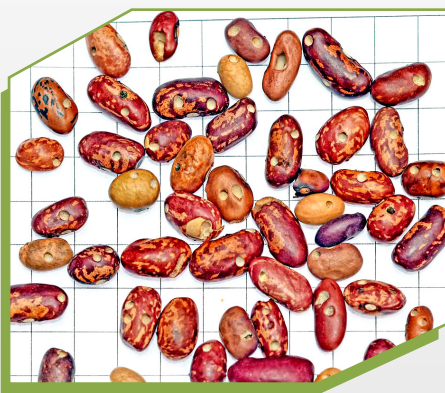
### Discoloured beans

They are beans which are damaged by heat, frost or water.

**Note:** Discolouration is limited to at least 25% change in colour on both sides.

Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Shrivelled/ diseased and discoloured, % m/m	3	5	7

## PEST DAMAGED BEANS:



Pest damaged beans are beans with obvious weevil-bored holes or which have evidence of boring or tunneling, indicating the presence of insects, insect webbing or insect refuse; beans chewed in one or more than one part of the bean which exhibit evident traces of an attack by pests.

Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Pest damaged grains , % m/m	1	2	3

## BROKEN/SPLIT BEANS:



These are beans whose cotyledons are separated or one or both of the cotyledons have been broken.

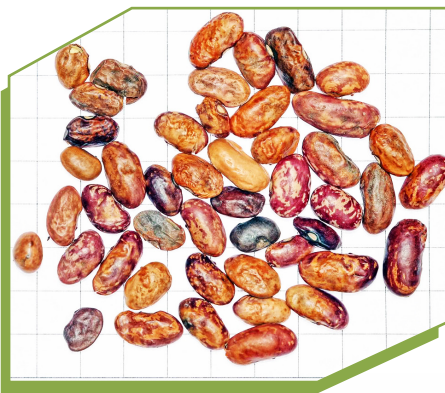
Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Broken/split, % m/m	1	2	3

## GERMINATED BEANS:



Germinated beans are grains showing visible signs of sprouting, such as cracked seed coats through which a sprout has emerged or is just beginning to merge.

## TOTAL DEFECTIVE BEANS:



These are beans which have been broken, pest damaged, shrivelled, immature, rotten, mouldy, diseased, germinated and discoloured.

Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Total defective grains, % m/m	3.5	6.3	9.1

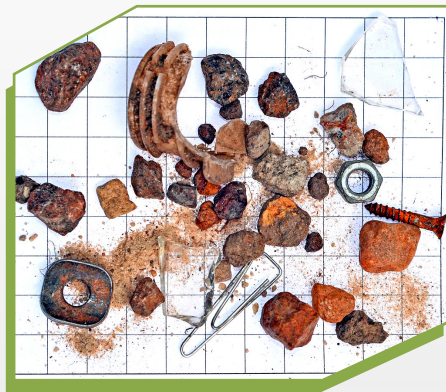
**Note:** The parameter total defective grains is not the sum total of the individual defects. It is limited to 70% of the sum total of individual defects.

## ORGANIC MATTER:



Organic matter is any animal or plant matter (seed coats, straws, weeds) other than beans, damaged beans, inorganic extraneous matter and harmful / toxic seeds.

## INORGANIC MATTER:



Inorganic matter are stones, glass, pieces of soil and other mineral matter.

## FOREIGN MATTER:



Foreign matter is all organic and inorganic material other than beans, broken kernels and other grains.

Characteristic	Maximum Limit		
	Grade 1	Grade 2	Grade 3
Foreign matter, % m/m	0.5	0.75	1.0

**Foreign Matter = Organic Matter + Inorganic Matter**

## CONTRASTING VARIETIES:



Contrasting varieties are beans of different colour, size or shape from the beans of the designated variety.

Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Contrasting varieties, % m/m	1.5	3	5



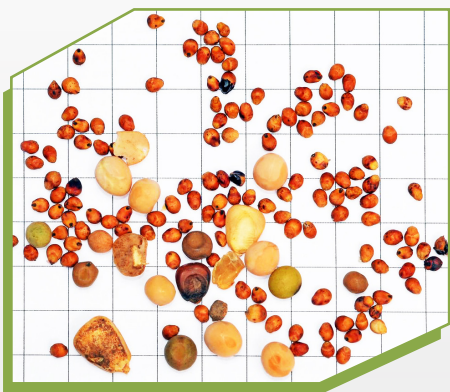
## FILTH:



Filth are impurities of animal origin for example bird excrement and rat droppings.

Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Filth, % m/m	0.1		

## OTHER EDIBLE GRAINS:



These are grains other than common beans (*Phaseous vulgaris*), whole or broken such as maize, sorghum, wheat etc.

Characteristic	Maximum limit		
	Grade 1	Grade 2	Grade 3
Other edible grains, % m/m	0.1	0.2	0.5

## PESTICIDE RESIDUES

A pesticide is a chemical that is used to prevent, destroy, or repel pests. Most pesticides contain chemicals that can be harmful to people, animals, or the environment. Dry beans shall comply with pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

## OTHER CONTAMINANTS

A contaminant is any substance not intentionally added to food or feed for food producing animals, which is present in such food or feed as a result of the production, manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food or feed, or as a result of environmental contamination such as heavy metal which may be of public health concern e.g. Lead and Cadmium.

### HYGIENE ISSUES:



Dry beans must be produced, prepared and handled properly. Beans must be practically free from visible soil, dust or other visible foreign matter.



## PACKAGING OF BEANS:

Dry beans must be packed in suitable packages which are clean, free from insect, fungal infestation and the packaging materials must be of food grade. Food grade material is packaging material, made of substances which are safe and suitable for their intended use and which will not impart any toxic substance or undesirable odour or flavor to the product. Dry beans must be packed in containers which safeguard the hygienic, nutritional, technological and organoleptic qualities of the beans. Each package must contain dry beans of the same type and of the same grade designation. If dry beans are presented in bags, the bags must be free of pests and contaminants. Each package must be securely closed and sealed.

## LABELLING:

Each package shall be legibly and indelibly labelled with the following: product name as —Dry beans; variety; grade; name, address and physical location of the producer/packer/importer; lot/batch/code number; net weight in kilograms; declaration-Food for Human Consumption; storage instructions as-Store in a cool dry place away from contaminants; crop year; packaging date; instruction on disposal of used package, country of origin; and a declaration on whether the dry beans were genetically modified or not.

**Note:** EAC Partner States are signatory to the International Labour Organizations for maximum package weight of 50kg where human loading and offloading is involved.





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