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## **EAST AFRICAN STANDARD**

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### **Cassava seed — Requirements for certification**



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*East African Community*  
*P.O. Box 1096,*  
*Arusha*  
*Tanzania*  
*Tel: + 255 27 2162100*  
*Fax: + 255 27 2162190*  
*E-mail: [eac@eachq.org](mailto:eac@eachq.org)*  
*Web: [www.eac-quality.net](http://www.eac-quality.net)*

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## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards. XXXXXX.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 012, *Seed and propagation materials*.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

# Cassava seed — Requirements for certification

## 1 Scope

This Draft East African Standard specifies the certification requirements for pre-basic, basic and certified seed cassava (*Manihot esculenta Crantz*). It includes requirements for eligible varieties, application for certification, field requirements, field inspection, stem harvesting and cutting, packaging and labelling.

This Standard does not apply for tissue culture plantlets”

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

OECD Schemes for Varietal Certification or the Control of Seed Moving in the International Trade.

## 3 Terms and definitions

For the purposes of this standard, the terms and definitions given in UPOV apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **distinctness**

variety is deemed to be distinct if it is clearly distinguishable in at least one character from any other variety whose existence is a matter of common knowledge at the time of filing the application for registration

### 3.2

#### **field**

defined and identifiable area of land or facility that is used to produce a seed crop under the Seed Certification Scheme

### 3.3

#### **field inspection**

inspection of a field and/or seed crop, by an inspector to check if the minimum requirements for seed certification have been satisfied

### 3.4

#### **field number**

number assigned to the field by the mandated authority for seed certification, when the application form for certification is submitted

- 3.5  
seed producer**  
person or entity registered to produce seed
- 3.6  
isolation**  
minimum distance between a field of cassava seeds and any other cassava crop that is required to prevent contaminations
- 3.7  
inspector**  
authorized official or accredited entity responsible for carrying out seed certification activities
- 3.8  
label**  
tag or other device that is attached to seeds or that accompanies any lot of bulk seed and which describes the kind of seed and any other required information
- 3.9  
previous cropping**  
minimum period (seasons or years) that elapse between the production of a crop of the same species in the same field as the one entered in the certification scheme
- NOTE Ratoons are not applicable in this definition.
- 3.10  
breeder**  
person or organisation responsible for the production or maintenance of a variety included in a National Variety List, and who ensures that the variety remains true to type throughout its full life-span
- 3.11  
off-type**  
plant of the same species which does not exhibit the recognised and accepted habit and characteristics of the variety being grown
- 3.12  
variety registration**  
recording of a new variety in a National Variety List after it has been tested and satisfied the requirements for distinctness, uniformity, stability, and has value for cultivation and use
- 3.13  
roguing**  
removal of off-types and diseased plants or any other unwanted plant from a seed crop
- 3.14  
seed certification**  
quality assurance system whereby seed is subjected to official control and inspection
- 3.15  
seed lot**  
defined quantity/number of cassava seeds produced from the same field and bearing the same reference number and for which the origin, production history and identity is known
- 3.16  
stability**  
condition of a variety distinguishing characteristics to remain unchanged after repeated growing cycles

### **3.17**

#### **uniformity**

variety is deemed to be uniform if, subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its relevant characteristics

### **3.18**

#### **variety**

assemblage of cultivated plants which is clearly distinguished by any characters (morphological, physiological, cytological, chemical or others) and which, when reproduced, (sexually or asexually) retains its distinguishing characters

### **3.19**

#### **National Variety List/catalogue**

list of varieties that have been registered by a national designated seed certification authority

#### **national designated seed certification authority**

organization, or agency empowered by national legislation to administer the certification of seed potato under this Standard

### **3.20**

#### **ratoon**

new shoot or sprout springing from the base of a cassava seed plant after stem cutting

### **3.21**

#### **seed**

stem cutting of cassava used for vegetative propagation of plants

### **3.22**

#### **breeder seed**

seed directly controlled by the plant breeder whose production complies with the plant breeding principles from which all other seed classes are produced

### **3.23**

#### **pre-basic seed**

seed of the generation directly derived from breeder seed under the direct control of the plant breeder or his/her duly accredited representative

### **3.24**

#### **basic seed**

progeny of pre-basic seed produced by seed producer(s) authorized by the Mandated Authority

### **3.25.1**

#### **certified seed 1**

first generation of seed derived from basic seed

### **3.25.2**

#### **certified seed 2**

seed which is multiplied from certified seed 1

### **3.26**

#### **off-type**

seed or plant not part of the variety because the seed or plant deviates in one or more characteristics from the variety. The off types may include other identifiable varieties, deviant plants, or various varietal types

## **4 Seed classes**

For the purpose of this standard, the following class of seed shall apply:



- a) Pre-basic seed;
- b) Basic seed;
- c) Certified seed ; and
- d) Certified seed 2

## **5 Requirements**

### **5.1 Eligible varieties**

**5.1.1** Varieties eligible for seed certification shall be those that have been registered in at least one-member country of the EAC in the national list of varieties/national variety catalogue. The country adopting the variety shall test it for at least one season”

**5.1.2** The national seed certification authority shall keep the official descriptor of the varieties it has registered in hard and electronic copies and these shall be made available within EAC on request.

### **5.2 Application for certification**

**5.2.1** The minimum information for an application for certification of a seed crop shall include the following:

- a) name, address and contact details of the seed grower;
- b) crop and variety to be produced;
- c) physical location;
- d) area and reference number of the field and cropping history for the past two cropping seasons;
- e) class of seed to be produced; and
- f) registration number of the seed grower.

**5.2.2** Information and records related to the previous cropping history, origin of seed planted, and field inspections shall be kept and used for certification to ensure full traceability of quality, genetic identity and purity of the planting material obtained.

**5.2.3** Seed producer of pre-basic, basic and certified seeds shall apply for certification of a seed crop not later than thirty (30) days after planting by filling the form in Annex A.

## **6 Field inspection**

**6.1** The national designated seed certification authority shall prepare the inspections schedule for the inspectors, based on all necessary information on the application form, to ensure that inspections are done on due time.

**6.2** A minimum of two (2) field inspections shall be done for pre-basic, basic, certified seed 1 and 2 certified seed as follows:

- a) the first field inspection should be conducted to coincide with the time when diseases are most conspicuous, such as three (3) to five (5) months after planting when diseases may be clearly identified;

b) the second one (1) to two (2) weeks before harvesting.

**6.4** The inspector shall inspect the field in accordance with the procedure provided in Annex C to check the requirements in Table 1. If the field is found to be in conformity with those requirements it shall be approved.

**6.5** The field inspection report shall indicate the field status and comments for any corrective actions required such as re-inspection to confirm the field standards. All field inspection reports shall be provided to the seed producer right after each inspection. The field inspection report as provided in Annex C shall be signed by both parties, i.e. inspector and producer or the producer's representative..

## 7 Specific field requirements

**7.1** Pre basic seed shall be produced under the responsibility of the breeder or his/her duly authorized representative.

**7.2** Basic seed shall be produced under responsibility of seed producer(s).

**7.3** Certified seed may be produced in two generations by seed producer(s).

**7.4** Ratoons shall be taken as the next class of the seed.

**7.5** A maximum of two (2) ratoons are allowed for pre-basic and basic; and one ratoon for Certified seed 1 (C1).

**7.6** The production of seed through ratoons shall be allowed by the inspector during the last inspection based on the quality of the seed.

**7.7** A field producing a seed crop of cassava shall be approved for certification if it complies with the requirements in Table 1 when tested in accordance with test methods specified therein.

**Table 1 — Specific requirements for cassava seed crops**

Characteristic	Pre-basic	Basic seeds	Certified seeds			Test method	
			C1	C2			
Field standards							
Previous cropping, number of season, min.	2	2	2	2		Annex C	
Isolation, m, min.	Between controlled fields	5	5	5	5		
	Between controlled fields and uncontrolled fields	200	100	100	100		
Off-types, %, max.	0	0	0.5	0.5			
Diseases							
Cassava mosaic disease, %, max.	0	0	0	0			
Cassava brown streak disease, %, max.	0	0	0	0			
Cassava brown streak disease, lab testing %, max.	0	0	0	0			

Cassava bacterial blight disease, % , max.	0	0	0	0		
Pest						
Cassava mealybug, % of infested plants, max.	0	0	1	2		
Cassava green mite, % of infested plants, max.	2.5	2.5	3	3.5		
Scale insects, % of infested plants, max.	1	2	3	3		
Stem cutting						
Length for cutting, cm, min.	30	30	30	30		
Diameter for cutting, cm, min.	2	2	2	2		
Number of live nodes per cutting, min.	5	5	5	5		
Skin injury/scar/damage, %, max.	15	15	15	15		
NOTE The permitted number of ratoons is determined in accordance with 7.5.						

7.8 The validity for seed certificate shall be 30 days from the date it was issued.

NOTE Field may be rejected for certification due to unsatisfactory conditions caused by noxious weeds, poor growth, poor stands, excessive disease presence, pest damage, and any other condition that prevents accurate inspection or creates doubt as to the identity of the variety.

## 8 Stem cutting harvest requirements

8.1 Harvest of cassava seeds shall be done within 8 months up to 18 months for the mother field; and 6 months up to 12 months for ratoons. Stem cuttings should be harvested not more than ten (10) days before planting.

8.2 Cassava stem cuttings shall be packaged and handled in a way that safeguards its quality.

## 9 Labelling

9.1 All categories of seed that have been certified shall be packaged to safeguard the quality of the seed and shall have the official label of the national designated seed certification authority.

9.2 The labels for each category shall be identified by the following colours:

- a) Pre-basic seed: Violet band on white;
- b) Basic seed: White;
- c) Certified seed 1: Blue;
- d) Certified seed 2: Red;

**9.3** The labels shall be prominent, indelible and legible, and issued by a national designated seed certification authority. The following information shall be included on the official labels:

- a) name of the crop, “cassava stem cutting”;
- b) species (Latin name);
- c) variety denomination;
- d) seed lot number;
- e) number of cuttings per package;
- f) harvest date.
- g) logo of the national designated seed certification authority;
- h) name and address of national designated seed certification authority;
- i) seed class; and
- j) season and country of production.

It is recommended that the harvesting of the cutting be done in the presence of inspector and the seed dealer. In this case, the package should be legibly and indelibly labelled with the following information:

- h) inspector name/code;
- i) harvest date; and
- j) certificate number.

#### **9.4 Chemical treatment**

The nature of the active substance of any chemical treatment of the seed potato shall be indicated either on the outside of the unit of presentation, on the official label or a label provided by the supplier, or printed on the unit of presentation. This information may also appear inside the unit of presentation.

#### **9.5 Re-inspection and re-labelling**

If re-inspection is conducted, the authority which carried out the re-inspection shall be stated on the new label, as well as the date of the re-sealing. Re-labelling shall be done under the supervision of the 10.4 Chemical treatment

The nature of the active substance of any chemical treatment of the seed potato shall be indicated either on the outside of the unit of presentation, on the official label or a label provided by the supplier, or printed on the unit of presentation. This information may also appear inside the unit of presentation.

#### **9.5 Re-inspection and re-labelling**

If re-inspection is conducted, the authority which carried out the re-inspection shall be stated on the new label, as well as the date of the re-sealing. Re-labelling shall be done under the supervision of the NDA. The new label shall show the particulars which appeared on the old label. If a new label is necessary, this shall show the particulars, which appeared on the old label, the date of the re-closing and the authority concerned. NDA/ certification authority. The new label shall show the particulars which appeared on the old label. If a new label is necessary, this shall show the particulars, which appeared on the old label, the date of the re-closing and the authority concerned.

## **10 Post control test**

The Post control tests shall be carried out in accordance with OECD Schemes for Varietal Certification or the Control of Seed Moving in the International Trade.

## **Annex A (normative)**

### **Inspection procedure**

#### **A.1 Purpose**

This procedure is intended to provide guidelines for the Seed Inspector. They are intended to address the methods used to determine the quality of cassava seed as provided in this standard.

#### **A.2 Scope**

This procedure covers inspection of the general status of the cassava seed crop, identification of the source of the seed, isolation, previous cropping, genetic purity, health status and stem cutting requirements of the cassava seed crop.

#### **A.3 Definition of terms**

For the purpose of this procedure the terms and definitions provided in cassava seed standard shall apply.

#### **A.4 Equipment and tools**

Inspector shall be equipped with the following:

- a) current seed law, regulations and relevant standards,
- b) seed crop declaration form,
- c) variety descriptors,
- d) a seed inspector service card or letter of introduction,
- e) tally counter,
- f) support literature,
- g) measuring wheel/GPS,
- h) camera,
- i) protective clothing,
- j) report book, and
- k) calculator.

## **A.5 Procedure details**

### **A.5.1 Stage 1: Source of seeds**

**A.5.1.1** In order to authenticate the identity of the seed planted, seed producer retains proof of origin (label/receipt). of each seed lot used to plant the crop.

**A.5.1.2** The inspector checks the details provided on the label/receipt against those on the seed crop declaration form and confirms the identity of the variety.

**A.5.1.3** The inspector proceeds to next stage if the declared information correspond to those on the label/receipt otherwise the field is automatically rejected.

### **A.5.2 Stage 2: Confirmation of field size and previous cropping**

**A.5.2.1** The seed inspector interviews the seed producer on details of previous cropping seasons of the field.

**A.5.2.2** In case the previous cropping requirements are met, inspector proceeds to the next stage.

**A.5.2.3** The seed inspector, by using GPS or measuring wheel, calculates the area of the field to confirm to the declared area.

### **A.5.3 Stage 3: Checking isolation distance**

The inspector checks isolation of the seed crop whilst walking around its perimeter. If the required distance is not met, the inspector evaluates any risk of physical mixture and seed born disease contamination and makes relevant decision/recommendation.

### **A.5.4 Stage 4: Checking the general status of the field**

**A.5.4.1** The inspector assesses the general status of the field and determines whether it is in satisfactory conditions to permit the detailed examination of plants for varietal purity.

**A.5.4.2** Seed crop which is highly infested with weeds, stunted or poorly grown because of disease, pests or other causes and which cannot be assessed for other parameters is rejected.

### **A.5.5 Stage 5: Detailed examination of off-types and diseases**

The final stage in inspection is the assessment of varietal purity and health status of the seed crop. This is done when the crop location, source of seeds, varietal identity, isolation and crop condition are all satisfactory. To do this, it is necessary to follow a sampling procedure which focuses attention on small areas of the seed crop for detailed examination.

## **A.6 Sampling**

### **C.6.1 General**

**A.6.1.1** The inspector does the counts following a walking pattern that enables him/her to extrapolate the whole field while sampling

**A.6.1.2** The number of counts (samples) depends on the size of the field, 5 counts for a field up to 2 ha and an increase of 1 count for each increase of 2 ha.

**A.6.1.3 The sample corresponds to a count of 30 plants.**

NOTE One plant corresponds to all progenies deriving from one stem cutting.

### **A.6.2 Examination of off-types**

By using the descriptor of the variety, the inspector evaluates the key characteristics of the variety, including but not limited to leaf shape, shoot and; leaf petiole colour; in each count and the number of off-types is recorded and the percentage is calculated after examining all counts.

### **A.6.3 Examination of diseases**

**A.6.3.1** The inspector uses clear symptom description and chart (photo) to recognise a diseased plant.

**A.6.3.2** In each count, the inspector checks infected plant with the disease mentioned in Table 1 and takes record for each of them.

**A.6.3.3** The inspector calculates the percentage of infected plant after examining all samples.

**A.6.3.4** In case there is confusion in symptoms, the inspector may recommend laboratory testing. However, for CBSD lab testing is mandatory at Pre-basic category of seed.

### **A.6.4 Examination of pests**

The inspector examines the presence of pests as listed in Table 1.



## **A.6.5 Decision taking**

**A.6.5.1** The inspector compares the calculated percentage for each parameter with acceptable limits provided in the standard.

**C.6.5.2** Based on the results of the comparison, the inspector may accept, downgrade to lower class or reject the seed crop (part or whole)

**A.6.5.2.1** The seed crop is accepted when it complies with the requirements specified in the standard.

**A.6.5.2.3** The seed crop is downgraded to lower class when it does not meet the requirements of the declared class but meeting those of any lower class.

**A.6.5.2.4** The seed crop is rejected when the requirements of the standard are not met

## **A.7 Harvest and post harvest inspection**

**A.7.1** During the last inspection, inspector determines the diameter for cutting and number of live nodes per cutting

**A.7.2** The inspector also confirms the age of the cassava seed by use of the declaration form

## **A.8 Reporting**

The report is done as by filling in the form provided in Annex C.

## Annex B (informative)

FORM .....

Grower No.....

### APPLICATION FOR FIELD INSPECTION OF A SEED CROP

1. Full name of grower \_\_\_\_\_ Physical location/GPS coordinates \_\_\_\_\_ Postal Address \_\_\_\_\_ Tel. No. \_\_\_\_\_
2. Farm on which the seed crop is being grown \_\_\_\_\_ L/R. No. \_\_\_\_\_
3. Details of crop (Every crop regardless of size must be mentioned separately. a crop is field planted within 5 days).

#### Crop

Field crop No.	Species	Variety	Lot No. of seeds used	Class of seed used	Ha	Date planted	Approx' date of harvest	Previous cropping history

4. Seed rate per hectare \_\_\_\_\_ kg
5. I have enclosed \_\_\_\_\_ as proof of origin.
6. The person who will daily be in charge of this seed crop is (name/telephone number)  
\_\_\_\_\_

**9. Declaration:**

I hereby declare that all information provided here is true to the best of my knowledge and belief and I shall always observe all conditions governing Seeds production as provided in the Seeds Act and Regulations.

Date ..... Signature of applicant.....

Stamp of seed dealer.....

## ANNEX C (informative)

FORM .....

Date.....

G/No.....

### FIELD INSPECTION REPORT

Growers Name \_\_\_\_\_ Species \_\_\_\_\_

Variety \_\_\_\_\_ Field No. (s) Name \_\_\_\_\_

Crop No.(s) \_\_\_\_\_ Hectares \_\_\_\_\_ Class \_\_\_\_\_

1<sup>st</sup>                       2<sup>nd</sup>                       3<sup>rd</sup> ..... Inspection

(tick)

#### ITEMS:

1. is the crop true to type?  Yes     No     Doubtful

Remarks.....

2. Isolation in distance/time  satisfactory     Not Satisfactory

Remarks.....

3. Off-type(s) (describe).....

Remarks.....

4. Noxious Weeds (Specify) .....

Total found.....

5. Other Crop Species (specify).....

6. Health (Diseases).....

7. Crop Stand     Good     Satisfactory     Not satisfactory

Remarks.....

8. Estimated yield at final inspection.....

No of counts made..... Average count.....

No of plants counted..... tassels/selfing plant found.....%

CROP RESULT     Pending     Approved     rejected because of .....

If to be re-inspected within ..... days

Further remarks .....

..... Bags/ha

Copy to: \_\_\_\_\_

Seed Inspector(s) Name.....Signature.....

## Bibliography

The Seeds and Plant Varieties (Seeds) Regulations, 2016

The Seeds and Plant Act, 2006

The Plant Variety Protection Act, 2014

The Seeds and Plant Regulations, 2017

COMESA Seed Trade Harmonisation Regulations, 2014

Rwanda standard RS

Seeds Regulations 2007 and its Amendments of 2017

