

(Legislative Supplement No. 22)

LEGAL NOTICE NO. 44

**THE CROP PRODUCTION AND LIVESTOCK ACT**  
(Cap. 321)

**IN EXERCISE** of the powers conferred by section 4 of the Crop Production and Livestock Act, the Minister for Agriculture makes the following Rules -

**THE CROP PRODUCTION AND LIVESTOCK (SEED AND WARE POTATO PRODUCTION AND MARKETING STANDARDS) RULES, 2005***Preliminary*

1. These Rules may be cited as the Crop Production and Livestock (Seed and Ware Potato Production and Marketing Standards) Rules, 2005. Citation.

2. In these Rules, except where the context otherwise requires - Interpretation.

“agronomy” includes all soil and crop management practices in the course of crop production;

“certificate” means the certificate issued by an inspector with regard to seed and ware potato;

“crisps” means firm slices of potatoes cooked by deep frying in vegetable oil, with or without table salt or spices;

“disease” means any abnormal condition of the potato plant, communicable or believed to be communicable by the transfer of a causative agent declared to be a disease by the Minister under the Plant Protection Act, the Suppression of Noxious Weeds Act and the Seeds and Plant Varieties Act;

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“fresh chips” means slices of mature sound potato tubers which have been cooked by deep frying in vegetable oil for 3 – 5 minutes at a temperature of 180°C ± 5°C;

“frozen chips” means chips prepared in the manner set out in rule 8 and the Eighth Schedule to the Rules;

“inspector” means an agricultural officer or an officer of the Kenya Plant Health Inspectorate Services (KEPHIS) or its assignee;

“potato” means the plant botanically known as *Solanum tuberosum*, and includes its shoots, tubers, stem cuttings, tubers-lets, plant-lets, eye-buds, seed potatoes, ware potatoes, leaves and any other part of the plant, whether raw or processed;

“seed potato” means potatoes traded for propagation use;

“ware potato” means potatoes (also known as table potatoes) traded purely for consumption use.

#### *Seed Potato Production Standards*

Agronomic  
practices – seed  
potato.

3. (1) The agronomic practices set out in the First Schedule shall be followed to ensure production of high quality seed potato, and the Minister may, by notice in the Gazette, set out other practices to be followed.

(2) Seed potato shall be produced from such stock as may be certified from time to time, and shall be free from pests and diseases, true to variety, and plants of another variety contained in the true variety shall not exceed 0.5% of the weight of a unit of the true variety.

(3) The following agronomical practices shall be followed to ensure a healthy potato crop-

- (a) pests and diseases shall be controlled by use of chemical products recommended by the Pest Control Products Board (PCPB) and cultural methods;
- (b) growing potato plants shall not be contaminated by diseases such as bacterial wilt;

(c) the proportion of growing potato plants showing symptoms of the following diseases shall not exceed the corresponding percentages of the total population of growing potato crop-

(i) viral diseases (leaf roll, virus X, Y and S) – 10%;

(ii) mild mosaic – 15%;

(iii) fusarium wilt – 3%;

(iv) nematodes – 3%.

(4) Potatoes shall be harvested only when fully mature and the following practices shall be adhered to-

(a) haulms shall be removed when yellowish in colour (due to maturity), fourteen days before harvesting in order to harden the potato skin;

(b) potato tubers shall be covered with soil to shield them from light and prevent tuber greening and moth entry;

(c) tubers shall be removed from the ground using a forked jembe or ridger, and sorting shall subsequently be done to remove rotten tubers, stones and lumps of soil;

(d) harvested potato tubers shall be placed for 10 to 12 days in conditions having a temperature of between 15° and 20° C and a relative humidity of 90% in order to harden the skin and heal minor injuries.

4. (1) No seed potatoes shall qualify as such unless they conform to the characteristics set out in the Second Schedule to these Rules, and are certified to have so conformed by an inspector.

Seed potato characteristics

(2) A person tendering potatoes for inspection shall receive a certificate from an inspector confirming that such potatoes have been inspected and approved by the inspector for sale.

(3) An inspector may, at the request of the owner of potatoes that have not been approved after inspection, issue the owner with a certificate providing that rejected seed potatoes revert to ware potatoes.

Inspection of potatoes.

5. (1) An inspector may, after inspection, reject potatoes that are not true to type; diseased with bacterial wilt, soft rot or any other disease; infested by potato pests; are above or below required sizes; adulterated, defective or damaged; or have wet skins.

(2) Small potato tubers shall measure between 25 to 35 mm in diameter; medium size tubers shall measure between 35 to 45 mm in diameter; while big tubers shall measure between 45 to 60 mm in diameter.

(3) No bag weighing 50 Kg of seed potato shall contain more than 3% of the total weight of tubers smaller than the minimum size indicated, nor more than 3% of the total weight of tubers larger than the maximum size indicated. Lumps of earth or other adulterating matter shall not exceed 2% of the total weight and external defects due to poorly shaped or damaged tubers shall not exceed 3% of such total weight.

(4) The packaging unit for seed potatoes shall not exceed 50 Kg and shall contain tubers of the same variety, category, class, size and origin.

Storage of potatoes.

6. (1) Only potatoes that have met the requirements set out in rule 5 (2) shall qualify to be stored for propagation purposes.

(2) Potatoes shall be put into a store as soon as possible after harvesting.

*Ware Potato Production Standards*

7. (1) The agronomic practices set out in the First Schedule shall be followed to ensure production of high quality ware potato, and the Minister may, by notice in the Gazette, set out other practices to be followed.

Agronomic practices – ware potato.

(2) Ware potatoes shall be produced from clean seed stocks free from any pests and diseases, true to variety, and seeds of another variety shall not exceed 0.5% of the total weight of a packaging unit of the true variety.

(3) The following agronomical practices shall be followed to ensure a healthy potato crop-

- (a) pests and diseases shall be controlled by use of chemical products recommended by the Pest Control Products Board (PCPB) and through cultural methods;
- (b) growing potato plants shall not be contaminated by diseases such as bacterial wilt;
- (c) the proportion of growing potato plants showing symptoms of the following diseases shall not exceed the corresponding percentages of the total population of growing potato crop-
  - (i) viral diseases (leaf roll, virus X, Y and S) – 10%;
  - (ii) mild mosaic – 15%;
  - (iii) fusarium wilt – 3%;
  - (iv) nematodes – 3%.

(4) Potatoes shall be harvested only when fully mature and the following practices shall be adhered to-

- (a) haulms shall be removed when yellowish in colour (due to maturity), fourteen days before harvesting in order

to harden the potato skin;

- (b) potato tubers shall be covered with soil to shield them from light and prevent tuber greening and moth entry;
- (c) tubers shall be removed from the ground using a forked jembe or ridger, and sorting shall subsequently be done to remove rotten tubers, stones and lumps of soil;
- (d) harvested potato tubers shall be placed for 10 to 12 days in conditions having a temperature of between 15° and 20° C and a relative humidity of 90% in order to harden the skin and heal minor injuries.

Characteristics of ware potato.

8. No ware potatoes shall qualify as such unless they conform to the characteristics set out in the Third and Fourth Schedules to these rules, and are duly certified by an inspector

#### *Seed and Ware Potato Storage Standards*

Storage conditions of potatoes.

9. (1) Potatoes shall either be stored under cold or farm (ambient) conditions, and the respective requirements set out in the Fifth and Sixth Schedules to these Rules shall be adhered to during storage.

(2) Seed potatoes shall be stored in places exposed to diffuse light to facilitate quality sprouting.

#### *Grading and Packaging Standards*

Harvesting, grading and packaging of potatoes.

10. (1) To ensure that only quality potatoes reach the market, producers shall conform to the following practices-

- (a) harvest mature tubers only and sort out carefully to avoid damage;
- (b) remove foreign matter such as loose soil and soil clods from the harvested produce;

(c) remove substandard tubers such as those diseased, affected by greening, damaged by potato tuber moth (PTM) or damaged during harvest or in storage;

(d) wash, brush and peel if destined for the pre-peeled potato market.

(2) Potatoes shall be presented as either seed potatoes or ware potatoes and graded in sizes according to their diameters in millimetres (mm) as follows-

(a) seed potatoes shall be graded into four sizes designated as-

(i) baby: less than 25 mm;

(ii) small: 25 to 35 mm;

(iii) medium: 35 to 45 mm;

(iv) big: 45 to 60 mm.

(b) ware potatoes shall be graded into four sizes designated as-

(i) baby: less than 30mm;

(ii) small: 30 to 45 mm;

(iii) medium: 45 to 65 mm;

(iv) large: 65 to 80 mm.

(3) No potatoes shall be removed from any area unless they are packaged in clean and intact sisal or jute bags and well sewn on top with netting material. The bags shall bear clear marks, in letters at least two inches in size, indicating the name, address and location of the grower, potato variety, date harvested and sell/use by date.

(4) The standard weight for seed potatoes of a specified variety shall be 50 Kg.

(5) The standard weight for ware potatoes of a specified variety shall be 110 Kg.

*Potato Transportation Standards*

Transportation of potatoes.

11. (1) Loading and off-loading of potatoes shall be done with care to avoid tuber injury.

(2) Potatoes shall be transported in a mode that will ensure that no deterioration through moisture loss, rain, physical damage or injury is caused.

(3) A vessel or vehicle to be used for transportation of potatoes shall be cleaned thoroughly before potatoes are loaded.

*Potato Processing Standards*

Processing of potatoes.

12. (1) Only potato tubers of high quality shall be used for processing into chips, frozen chips or fresh chips.

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(2) Processing standards shall be consistent with KS 1500 Code of Practice for the Food and Drink Manufacturing Industry under the Standards Act, the Public Health Act, and the Food, Drugs and Chemical Substances Act, and the potato tuber and product characteristics set out in the Seventh, Eighth and Ninth Schedules.

*Inspection*

Inspection of buildings, vehicles etc.

13. (1) The inspector, or any other person authorised in writing by the Minister, may enter upon any land or into any building or vehicle where potatoes are grown, purchased, stored or transported for the purposes of ascertaining that the provisions of these Rules are complied with.

(2) Any person who obstructs or refuses entry to an inspector or a person authorised under sub-rule (1) from



carrying out the required inspection commits an offence.

14. An inspector or a person authorised by the Minister may -

Search, seizure, detention, etc.

- (a) stop, search and detain any vehicle which he has reason to believe is being or has been used for conveying potatoes in respect of which an offence is being or has been committed;
- (b) convey such vehicle with its contents to the nearest police station;
- (c) seize and remove, on issue of a receipt signed by him, any potatoes from any land, building or vehicle where tobacco is grown, purchased, stored or transported if he has reason to believe that an offence is being or has been committed;
- (d) require the owner, occupant, user or driver of any such land, building or vehicle to render such explanations and give such information relating to the potatoes found therein as may reasonably be required by such person in the performance of his duties.

15. A contravention or failure to comply with any of the matters provided in these Rules or Orders made thereunder shall constitute an offence.

Offence..

16. Any person convicted of an offence under these Rules shall be liable to imprisonment for a term not exceeding six months, or to a fine not exceeding twenty thousand shillings, or to both such imprisonment and such fine.

Penalties

## FIRST SCHEDULE

(r.3,7)

*Seed and Ware Potato Production*

Land preparation: deep plough (depth of 6 – 9 cm) and prepare a fine seed bed.

Tuber size: 35 – 45 mm in diameter (average size of a chicken egg).

Variety selection: plant potato varieties adapted to the particular area.

Healthy seed: plant certified seed or healthy seed from an approved source.

Planting: plant well sprouted seed in furrows for maximum tuber formation.

Spacing in seed plots: initially in seed plots 2 m wide and variable length, 20 cm 20 cm 15 cm. This applies to pre-basic materials obtained from the Kenya Agricultural Research Institute (KARI).

Field spacing: 75 cm between furrows and 30 cm intra-furrow and 10 cm deep.

Manure: use farm-yard manure that is well decomposed to avoid black scurf disease at the rate of 5 – 10 ton per hectare.

Fertilizers: use 500 Kg of Di-ammonium Phosphate (DAP) per hectare at planting time, well incorporated into soil in the planting furrows. On acidic soils, use single or triple super-phosphate at the rate of 1,250 or 500 Kg. per hectare respectively at planting, and later top dress with 300 Kg. of Calcium Ammonium Nitrate (CAN) per hectare.

Weeding: weed when 90% of the crop has emerged from the ground.

Ridging: ridge when the crop has three to four permanent leaves followed by a second ridging two weeks later.

Mulching: use straw, dry maize stalks or other suitable crop residue.

Pest and disease control: commonly blights, bacterial wilt, leaf roll, aphids and potato moth; consult area agricultural officer.

Maturity: for disease or pest free potatoes, when the leaves are yellowish in colour.

Hardening: remove or pull haulms fourteen days before harvesting.

Harvesting: dig across the ridge to remove potato tubers.

Sorting: remove bruised tubers, foreign matter and then grade potatoes as set out in these Rules.

## SECOND SCHEDULE

(r. 4)

### *Seed Potato Characteristics*

<b>Criteria</b>	<b>Characteristics</b>
True to type and variety:	distinct, uniform and stable.
Diseases/pests:	free from wilt, soft rot and pests.
Defects:	poorly shaped and damaged tubers – not more than 3% of the total weight.
Moisture:	should be dry on the skin.
Shape:	conform to normal size of the variety.
Size tolerance:	small: 25 – 35 mm; medium: 35 – 45 mm; big: 45 – 60 mm. Lot shall not contain more than 3% of the total weight of tubers with diameters less than 25 mm, nor more than 3% of the total weight of tubers with diameters more than 60 mm.

Adulteration: earth, lumps and extraneous matter should not constitute more than 2% of the total weight of a given unit.

### THIRD SCHEDULE

(r. 8)

#### *Ware Potato Characteristics*

<b>Criteria</b>	<b>Characteristics</b>
Colour:	usual variety colour; greenish tubers shall not constitute more than 4% of the total weight of the unit.
Mechanical injury:	injured tubers shall not constitute more than 4% of the total weight of the unit.
Condition:	good tubers; decayed tubers shall not constitute more than 2% of the weight of the unit.
Texture:	firm and intact, well cured, no sprouts or silvering.
Variety:	true to type, distinct, uniform and stable.
Smell:	no smell from foreign matter contamination.
Clean:	no earth lumps and extraneous matter on the tubers or container.
Diseases/pests:	free from diseases and pests.

## FOURTH SCHEDULE

(r. 8)

*Potato Characteristics According to Use*

QUALITY CHARACTERISTICS	LOCAL	EXPORT	CHIPS	CRISPS
Tuber shape	Well shaped	Well shaped	Long/oval tubers	Oval or round
Eye depth	Shallow or deep eyes	Shallow eyes	Shallow eyes	Shallow eyes
Tuber size (diameter in mm)	30 - 80	30 - 80	50 - 80	40 - 60
Dry matter content	Not applicable	Not applicable	20 - 24%	Not more than 24%
Specific gravity	1.070 or less	1.070 or less	1.070	1.070
Reducing sugars (% of fresh weight)	Not applicable	Not applicable	Up to 5%	2 - 3%

## FIFTH SCHEDULE

(r. 9)

*Storage Under Cold Conditions*

- (a) Stored potatoes shall not contain tubers that are immature, bruised, frozen, rotten, wet or affected by fungal decay (mould), diseases, pests or tubers which have sprouted.
- (b) Potatoes shall be put into the store as soon as possible after harvesting. For the first 10 - 14 days after putting in store, the tubers shall be held at a temperature of 13°C to 18°C and high relative humidity for faster skin hardening and healing of wounds. After this, the temperature shall be lowered as quickly as possible.
- (c) Potatoes shall be stored in containers, box pallets, boxes or stacking trays, bags or in bulk. They shall be stored away from light to prevent greening.
- (d) Optimum storage temperature shall be 3°C to 6°C. For crisp ware potato type, the temperature shall be raised to between 7°C and 10°C depending on the variety. During the last two weeks of storage, the temperature shall be raised to between 10°C and 14°C and possibly up to 20°C.
- (e) Relative humidity shall be 85 to 95%.
- (f) The storage containers and the way in which they are stacked shall be such that they permit free air circulation.

- (g) Mixing of air shall be in a closed circuit to render the temperature and relative humidity uniform.
- (h) The expected storage life is eight months. This however depends on variety or cultivar and climatic zones.
- (i) Sprouting inhibitors of a chemical nature, approved by the Pest Control Products Board (PCPB) shall be applied if sprouting begins.

## SIXTH SCHEDULE

(r. 9)

*Storage Under Farm (ambient) Conditions*

- (a) Stored potatoes shall not contain tubers that are immature, bruised, rotten, wet, or affected by fungal decay (mould), diseases, pests or tubers which have sprouted.
- (b) The store shall be made of timber or stone or other locally available materials. The store shall have provision for fan ventilation to improve air circulation.
- (c) The floors of the store shall have wooden slats with air – flow ducts for ventilation, and wooden panels on the sides and the ceiling. For stores constructed of stones, they shall be fitted with fans for improved air flow through potato heaps.
- (d) Potatoes shall be stored in wooden boxes (crates) with gaps at the bottom and side planks to allow ventilation. The boxes shall be 25 – 30 cm above the floor. The crates shall be covered with loose, dry grass or straw. If heaps are of potatoes weighing more than 500 kg, an air duct shall be placed in the heap to allow for ventilation.
- (e) For optimum temperature control, the doors or ventilation ducts shall not be left open during the day when it is hot and dry. A high temperature shall be maintained for the first fourteen days after potatoes are put in a store to cure injuries. Once tubers are in permanent storage and curing is complete, cool temperatures and moist conditions shall be encouraged.
- (f) Storage life shall be up to six months depending on the variety and environmental conditions.

SEVENTH SCHEDULE

(r. 12)

*Requirements for Processing Crisps*

I. Quality Aspects of Potato Tubers

- (a) Crisps shall be prepared from fully mature, fresh and clean potato tubers.
- (b) Potato tubers shall be round or oval and big in size (40 – 60 mm in diameter), that do not blacken during processing.
- (c) Potato tubers shall have a high dry matter content, be of 1.080 Specific Gravity. The dry matter shall be more than 20% of the weight of fresh produce.

II. Quality Aspects of Finished Crisps

- (a) Have a thickness of 1.0 to 1.5 mm.
  - (b) Light yellow to golden brown in colour.
- I Crisps shall be uniform in size and symmetry.
- (d) When packed, crisps shall not contain more than 10% by mass of small pieces, slivers and irregular pieces.
  - (e) Crisps shall be well cooked, crispy and free from excessive oil.
  - (f) Be of good texture and the external surface showing no noticeable separation from the inner portion.
  - (g) Be of good flavour, free from rancidity bitterness, foreign matter and adulteration and any other blemish or artificial colouring matter.
  - (h) A package of potato crisps shall not have more than 1% of the crisps with the following defects:
    - (i) surface or internal pigmentation;

- (ii) lesions;
  - (iii) callous area;
  - (iv) black specks and excess peel.
- (i) The package for crisps shall contain a 'sell by date'.
- (j) The package shall be able to protect the organoleptic and other quality characteristics of the crisps. It should also protect against contamination, dehydration and leakage.

## EIGHTH SCHEDULE

(r.12)

*Requirements for Processing Frozen Chips*

## I. Quality of Potato Tubers

- (a) Potato tubers shall be clean, mature, sound, long and oval with a diameter greater than 50 mm.
- (b) Potato tubers shall have a high dry matter content, be of 1.080 specific gravity, and the dry matter content shall be more than 20% of the weight of fresh produce.
- (c) Potato tubers shall be sorted, washed, peeled and cut into strips as necessary to achieve satisfactory colour when fried in edible oil or fat.

## II. Preparation of Frozen Chips

- (a) Chips shall be cut in a 'straight' or 'crinkle' manner.
- (b) The dimension of the cross-section of the cut potato chips shall either be 5 x 5 mm, 10 x 10 mm or 12 x 12 mm.
- (c) Blanch with hot water for five minutes at a temperature of 65°C to 100°C before frying.
- (d) Deep fry in edible oil or fat, and remove superficial fat before freezing.



- (e) Freeze the product to reach  $-18^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ). Range of temperature of maximum crystallization must be passed quickly
- (f) Sugars, table salt or condiments such as herbs and spices may be added.

## II. Quality Aspects of Frozen Chips

Frozen chips shall-

- (a) be free from any foreign flavours and odours;
- (b) be clean and sound;
- (c) have a uniform colour;
- (d) be without excessive sorting defects such as slivers, small pieces and scraps;
- (e) be without excessive external defects such as blemishes, eyes and discolouration;
- (f) be free from frying defects such as burnt parts;
- (g) have a uniform colour and a texture characteristic of the product, which is neither excessively soft nor soggy;
- Cap. 242 (h) be free from micro-organisms as stipulated in the Public Health Act;
- (i) have the packaging labelled "Frozen Chips" and the style of cut designated, for example, "straight cut" or "crinkle cut", and an indication of the approximate dimensions of the cross-section;
- (j) be packaged in a packaging that can protect the organoleptic and other quality characteristics of the product;
- (k) have the packaging marked with the "sell by date" as well as directions for cooking;

- (l) be transported in refrigerated trucks;
- (m) be stored and sold in refrigerated stores and outlets, respectively.

## NINTH SCHEDULE

(r. 12)

*Requirements for Processing Fresh Chips*

## I. Quality of Potato Tubers

- (a) Chips shall be prepared from clean, mature and sound potatoes, long or oval big tubers with shallow eyes, having a diameter greater than 50 mm.
- (b) Tubers shall be sorted, washed, peeled and cut into strips as necessary to achieve satisfactory colour when fried in edible oil or fat.

## II. Preparation of Fresh Chips

- (a) Blanch with hot water at 65°C to 100°C before frying.
- (b) Pan-frying shall be done using fat heated to 135°C to 190°C for six minutes.

## III. Quality Aspects of Fresh Chips

Chips shall-

- (a) be uniform in size;
- (b) have a thickness of up to 12 x 12 mm;
- (c) be light yellow or golden brown in colour;
- (d) be of good flavour, free from rancidity or bitterness;
- (e) have a good, firm texture, well cooked and mealy, moderately crispy with no signs of separation from inner portion, no excess oil and not greasy, limp or soggy.

Dated the 22nd April, 2005.

KIPRUTO ARAP KIRWA,  
*Minister for Agriculture.*