



F E M A S

FEED MATERIALS ASSURANCE SCHEME

Products and By-products of Root Crops

PRODUCTS & BY-PRODUCTS OF ROOT CROPS SECTOR NOTES

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NOTE: Although these Sector Notes may be translated into various languages for the convenience of users, the English version remains the definitive reference document in the event of any dispute.

NOTES ON THE IMPLEMENTATION OF FEMAS FOR BUSINESSES PRODUCING ROOT CROP PRODUCTS

Sector Notes are provided to assist FEMAS participants and assessors in establishing some background knowledge of specific feed industry supply sectors where issues may exist that are uncommon, or of less relevance, in other sectors. These Notes are not necessarily exhaustive.

These Sector Notes are relevant to businesses involved in the production of root crop products for use in or as animal feed (including: sugar beet products, potato and other food crop by-products or downgrades).

These Notes are laid out in the same format as the FEMAS International Core Standard. Where additional comment is necessary, the clause reference is to the appropriate section of the FEMAS International Core Standard. It is emphasised that the comments included in this document are intended to assist in the application of the corresponding requirements of the FEMAS International Core Standard and are not to be considered in isolation. For clauses where no additional comments are provided in this document, the original requirements of the FEMAS International Core Standard continue to apply without any additions or exclusions.

In subsequent issues, additions and amendments to these Notes will be shown in *blue italics*, for ease of reference.

The expert knowledge and assistance of members of the UK Root Crop Processing Industries in preparing these Sector Notes is gratefully acknowledged.

1.10 Definitions

By-product (Co-product): *Product produced as the result of a process primarily intended to produce a different product.*

Root Crops: *Tubers and roots of plants processed for use in human food or animal feed. These include: sugar beet, manioc (tapioca), sweet potato and potato.*

For additional definitions refer to FEMAS International Core Standard

SECTION 3 RESOURCES AND GOOD HYGIENIC PRACTICES

3.4 Storage Facilities

Where whole root crops, intermediate products or feed ingredients are stored outside, participants must be able to demonstrate that no additional hazards are created by this practice. Among those issues to be considered are:

- i) The development of toxins through mould activity;
- ii) Ingress by pests and their potential incorporation into feed products;
- iii) Contamination with pathogens through contact with bird and other animal droppings and urine;
- iv) Contamination through vehicle movements and by litter, mud and ground water.

3.15 Process Water & Water Used For Cleaning Purposes

Where the processing of root crops involves the use of water as a means of transporting the crop or as a means of grading and sorting products, participants must be able to demonstrate that no additional hazards are created from the use or re-use of water for this purpose.

Where any material is recovered from process water and incorporated into feed products, participants must be able to demonstrate that no additional hazards are created by this practice.

Where this is a potential hazard, the presence of fish and other aquatic wildlife in water systems must be considered and controlled to ensure no contamination of feed products.

3.16 Control of Contaminants

Where the processing of root crops includes the use of minerals and clays, participants must be able to demonstrate that no additional hazards are created by this practice. Specific evidence will be required to confirm that no excessive levels of natural contaminants are present in the minerals or clays used, notably heavy metals and dioxin.

The mechanical harvesting of root crops and the storage of root crops in fields prior to collection may lead to wildlife being collected with the raw materials. As the presence of most types of animal protein is undesirable in livestock feeds, and may be illegal, all reasonable precautions must be taken to prevent ingress by animals and to remove any animals that may be present amongst the root crop.

Where feed products are derived from the first stages of processing root crops (removal of foliage and rootlets, grading, etc), participants must be able to demonstrate that stones and other contaminants are not incorporated into the feed products.

SECTION 4 TRANSPORT REQUIREMENTS

4.2.1 Transport of Bulk Goods

Where the carriage of whole root crops results in the presence of soil inside load compartments, transport delivering raw materials will often be inherently 'dirty'. Additional care is required to ensure this does not lead to lax or unhygienic practices.

Where vehicles transporting root crops are not sheeted, or otherwise covered, participants must demonstrate that this will not lead to unacceptable hazards as a consequence.

4.2.3 Inspections of Land Transport Prior to Loading

Where the health and safety of quality personnel would be put at risk by climbing onto road tankers to carry out internal inspections, participants must comply with one of the following:

- Allow safe access by provision of safety platforms from which inspections may be done
- Nominate and train drivers to undertake inspections (in which case records of training must be held)
- Utilise risk assessment methodology to put in place alternative controls that will ensure issues of cross-contamination can be avoided (e.g. by use of dedicated tankers). In any such assessment, consideration must be given to the potential effects of inadvertently mixing different grades of the same product.

SECTION 5 PRODUCT SAFETY MANAGEMENT

5.1.3 Feed Ingredient Specifications

Where root crops, such as potatoes, have been fried in cooking oil prior to supply as animal feed, participants must ensure that the oil content is managed carefully and declared to prospective clients, as excessive levels of dietary oil will be detrimental to ruminant livestock.

5.2 Raw Materials

As the harvesting of root crops will often result in the collection of some quantity of soil along with the roots, controls in growing areas must give consideration to hazards that can be present in the soil. Among those issues to be considered are:

- i) Natural contamination of soil by heavy metals;
- ii) Presence of pollutants, such as dioxin and heavy metals dispersed from nearby industrial incineration and other industrial activities;
- iii) The presence of animal protein as a result of spreading processed animal protein on the land;
- iv) The presence of accumulated pathogens and heavy metals through the use of human sewage and animal excrement as fertilizer;
- v) The presence of other potentially harmful extraneous matter occurring in the growing medium.

5.9 Technological Additives

Where chemical treatments are used on stored root crops to control sprouting, mould development or maturation, participants must be able to demonstrate that residues from these products will have no adverse effect upon feed ingredients.

5.13.5 Undesirable Substances

Participants' risk assessments must evaluate the potential hazards arising from naturally occurring toxins produced by moulds and fungi known to attack the root crop species being processed. Where identified as potential hazards by the HACCP study, appropriate measures must be put in place to ensure no statutory maximum limits for toxins are exceeded in any feed ingredients produced.

Particularly where mouldy root crops rejected for food use are incorporated into feed products, participants must be able to demonstrate that *this does not increase any hazards to an unacceptable level.*

Seasonal conditions may increase the risk of mould or fungal attack in root crops, particularly for those stored outside after harvesting and prior to processing. Participants must be aware of such potential hazards and have procedures in place to ensure that they are properly controlled.

Applicable Regulations

N.B. This section of the Sector Notes is intended to assist participants and assessors in identifying specific regulations that should be considered with regard to this sector. It is not necessarily exhaustive nor does it reduce the obligation of both participants and assessors to ensure they are familiar with any regulations relevant to this sector.

In addition to those regulations that apply to all feed ingredients, suppliers of Products and By-products of Processing Root Crops based in, or supplying to, the EU must be aware of the following specific regulations:

Regulation (EC) No 1292/2005 amending Annex IV to Regulation (EC) No 999/2001 of the European Parliament and of the Council as regards animal nutrition

REGULATION (EC) No 163/2009 - amending Annex IV to Regulation (EC) No 999/2001 of the European Parliament and of the Council laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies.