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Biopesticide – Specification

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Compliance with this standard does not, of itself confer immunity from legal obligations

A Uganda Standard does not purport to include all necessary provisions of a contract. Users are responsible for its correct application

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Foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda. UNBS is mandated to co-ordinate the elaboration of standards and is

(a) a member of International Organisation for Standardisation (ISO) and

(b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and

(c) the National Enquiry Point on TBT/SPS Agreements of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

This Draft Uganda Standard has been developed as a result of a need to provide guidance to industry in production and regulation of Biopesticides.

This Draft Uganda Standard was developed by the **UNBS/TC 2/SC 20 – Agrochemicals and veterinary drugs** Sub Committee under the Food and Agriculture standards Technical Committee, UNBS/TC 2.

Introduction

Biopesticides are certain types of pesticides derived from such natural materials as animals, plants, fungi and bacteria. Biopesticides fall into three major classes:

1. Microbial pesticides consist of a microorganism (e.g., a bacterium, fungus, nematode, virus or protozoan) as the active ingredient. Microbial pesticides can control many different kinds of pests, although each separate active ingredient is relatively specific for its target pest[s]. For example, there are fungi that control certain weeds, and other fungi that kill specific insects.

2. Plant-Incorporated-Protectants (PIPs) are pesticidal substances that plants produce from genetic material that has been added to the plant. For example, scientists can take the gene for the Bt pesticidal protein, and introduce the gene into the plant's own genetic material. Then the plant, instead of the Bt bacterium, manufactures the substance that destroys the pest.

3. Biochemical pesticides are naturally occurring substances that control pests by non-toxic mechanisms. Conventional pesticides, by contrast, are generally synthetic materials that directly kill or inactivate the pest. Biochemical pesticides include substances, such as insect sex pheromones, that interfere with mating as well as various scented plant extracts that attract insect pests to traps.

4. Bio rations (Regulation)

Biopesticides are usually inherently less toxic than conventional pesticides and generally affect only the target pest and closely related organisms, in contrast to broad spectrum, conventional pesticides that may affect organisms as different as birds, insects, and mammals.

Biopesticides often are effective in very small quantities and often decompose quickly, thereby resulting in lower exposures and largely avoiding the pollution problems caused by conventional pesticides. When used as a component of Integrated Pest Management (IPM) programs, biopesticides can greatly decrease the use of conventional pesticides, while crop yields remain high.

The objective of this standard is to ensure that biopesticides on the market are appropriately tested through the quality criteria provided while ensuring that farmers obtain only certified products and as well aid the industry in the manufacture of quality biopesticides. This standard will also promote the safe use of biopesticides and promote fair trade.

Biopesticide — Specification

1 Scope

This Draft Uganda standard specifies requirements and methods of sampling and test for biopesticides. This standard does not cover requirements for conventional chemical pesticides and Plant Incorporated Protectants.

2 Normative references

The following referenced documents are indispensable for the application 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.

Agricultural Chemicals Control Act, 2006 (Act No.1 of 2007)

Pesticide registration and control regulation, 2010

3 Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply.

3.1
biopesticide
form of pesticides derived from such natural materials as animals, plants, bacteria and fungi that control pests by non-toxic means

3.2
active agent/ingredient
living agent in a biopestcide to which pest control activities are attributed

4 Requirements

4.1 General requirements

The biopesticide shall comply with existing regulatory requirement. The biopesticide shall be fully registered as required under the Agricultural Chemicals Control Act and have undergone a complete efficacy assessment and environment impact assessment.

The base or carrier material used in the manufacture of biopesticide shall be solid or liquid, be free from contamination and appropriate for the intended purpose.

The biopesticide shall be presented in an appropriate form to aid its application. It may be in the form of dry powder, granules or liquid.

The biopesticide shall not contain substances that are likely to be detrimental or injurious to vegetation, animals, public health or the environment when used according to the directions provided by the manufacturer.

The biopesticide shall not contain substances that would, when applied in amounts commonly used or as specified in the directions for use, leave in the tissues of a plant a residue of a poisonous or harmful substance.

4.2 Specific requirements

Biopesticides shall comply with the specific requirements stipulated in table 1.

Table 1 — Specific requirements for biopesticides

S/No.	Parameter	Limit	Test method (s)
i)	pH	6.5 – 7.5	
ii)	Moisture content, % m/m (For biopesticide produced using solid base material)	30 – 40	

5 Hygiene

Biopesticides shall be produced and handled under hygienic conditions and in appropriate premises in order to prevent contamination of the product.

Biopesticides shall comply with the limits for micro-organisms specified in table 2.

Table 2 — Microbiological limits for biopesticides

S/No.	Organism	Limit		Test method (s)
i)	Viable cell count of the active agent at manufacture, cfu/mL or cfu/g, min. • *Metarrhizium anisopliae* • *Trichoderma viride* • *Pseudomonas flourescens*	Solid	Liquid	
		5×10^7	1×10^8	
ii)	Viable cell count of the active agent at expiry, cfu/mL or cfu/g, min.	1×10^5		
iii)	Non-target bacteria Contamination, cfu/mL or cfu/g, at 10^5 dilution, max.	Nil		
iv)	Pathogenic microbes, cfu/mL or cfu/g, max. i. Salmonella ii. Shigella iii. Vibrio	Nil		
Note: The active agent/ingredient in biopesticides may be from bacterium, fungus, nematode, virus or protozoan				

6 Weights and measures

The volume and fill of the biopesticides shall comply with the weights and measures legislation.

7 Packaging

The containers, including packaging materials, used to package biopesticide shall be made only of substances, which are safe and suitable for their intended uses. They shall not impart any toxic substance to the product or undesirable odour.

8 Labelling

Biopesticides shall be labelled with the following specific requirements and shall be marked legibly and indelibly:

a) name of the product shall be “Biopesticide”;

b) active ingredient shall appear in close proximity to the name of the product by specifying the genus and species of the microorganism;

c) a brand name may be used to accompany the product name;

d) microbial density;

e) name and address of manufacturer, exporter, packer and/or dispatcher;

f) type/nature of carrier;

g) batch or code number;

h) pests or pest spectrum against which the biopesticides is effective;

i) crops for which it is intended;

j) storage conditions and instructions;

k) date of manufacture;

l) expiry date;

m) net content;

n) registration number;

o) mode of action;

p) rate and method of application;

q) directions/instructions for use; and

r) safety precautions.

9 Sampling

9.1 Scale of sampling

9.1.1 Lot

All containers in a consignment belonging to the same batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, containers of the same batch shall be grouped together and each group so formed shall constitute a separate lot.

Sample shall be tested from each lot for ascertaining conformity to the requirements of this standard.

9.1.2 Sample size

The number of containers to be selected from a lot for testing for microbiological and other requirements shall depend on the size of the lot and shall be in accordance with Table 2.

Table 2 – Number of containers to be selected for sampling

No. of containers in the lot	No. of containers to be selected (n)	
	Microbiological	Other tests
up to 1300	12	18
1301 to 3200	18	24
3201 and above	24	30

9.1.3 Sampling method

The containers to be selected for testing shall be chosen at random from the lot by the following procedure. Starting from any container, count them as 1,2,3…... up to r. Every r^{th} containers thus counted shall be withdrawn, r being the integral part of N/n, where N is the total number of containers in the lot and n is the total number of container to be chosen (Table 2).

9.2 Test samples and reference samples

9.2.1 Samples for microbiological tests

The sample containers selected for microbiological tests (see col. 2 of Table 2) shall be divided at random into three equal sets and labelled with all particulars of sampling. One of these sets of sample containers shall be for the buyer; another for the supplier and the third set is the reference.

9.2.2 Samples for other tests

The sample containers selected for other tests (see col. 3 of Table 2) shall be divided at random into three equal sets and labelled with all the particulars of the sample. One of these sets of sample containers shall be for the buyer, another for the supplier and third is the reference.

9.2.3 Reference samples

Referee samples shall consist of set of sample containers for microbiological tests (see 9.2.1) and a set of sample containers for other tests (see 9.2.2) and shall bear the seals of the buyer and supplier or as agreed to between the two.

10 Methods of analysis

Test of biopesticides shall be done in accordance with the Uganda Standards stated in the relevant clauses.

Bibliography

[1]

[2]

Certification marking

Products that conform to Uganda standards may be marked with Uganda National Bureau of Standards (UNBS) Certification Mark shown in the figure below.

The use of the UNBS Certification Mark is governed by the Standards Act, and the Regulations made thereunder. This mark can be used only by those licensed under the certification mark scheme operated by the Uganda National Bureau of Standards and in conjunction with the relevant Uganda Standard. The presence of this mark on a product or in relation to a product is an assurance that the goods comply with the requirements of that standard under a system of supervision, control and testing in accordance with the certification mark scheme of the Uganda National Bureau of Standards. UNBS marked products are continually checked by UNBS for conformity to that standard.

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