

PHILIPPINE NATIONAL STANDARD

PNS BAFS 40:2014
ICS 65.080

Organic Fertilizer



BUREAU OF PRODUCT STANDARDS

Member to the International Organization for Standardization (ISO)
Standards and Conformance Portal: www.bps.dti.gov.ph

Contents	Page
Foreword	
1 Scope	1
2 Reference	1
3 Definition of terms	1
4 Products description	4
4.1 Organic Fertilizer	4
4.2 Compost / Soil Conditioner	4
4.3 Microbial Inoculant	4
4.4 Organic Plant Growth Regulator / Promoter	4
4.5 Organic Plant Supplement	4
5 Minimum requirements	5
6 Sampling methods	6
6.1 Sampling for laboratory analysis	6
6.2 Laboratory Sampling (Sample preparation for laboratory analysis)	8
7 Labeling	8
Annexes	
1 List of Allowed Raw Materials as inputs for Organic Fertilizer Production	10
2 List of Restricted and Prohibited raw materials as inputs for Organic Fertilizer Production	11
References	12

Foreword

The Philippine National Standards (PNS) for Organic Fertilizer was established and adopted in 2008 with substantial inputs from the Fertilizer and Pesticide Authority and advice from the Technical Working Group (TWG) created through Special Order 565 Series of 2004. Since its adoption, the industry players and the academe called for the revision of the standards.

PNS/BAFPS 40:2008 is hereby revised to reflect the results of the studies and advances related to organic fertilizer, compost, plant regulator, and organic plant food supplements. The revised PNS has been prepared to provide a uniform approach on the definition, classification, specifications and properties, methods for analysis and sampling, labeling and allowed raw material inputs. It is hoped that this standard accomplishes the goal of ensuring the consistent quality of organic fertilizers available in the market.

This standard cancels and replaces PNS/BAFPS 40:2008.

Organic fertilizer

1 Scope

This Standard applies to organic fertilizers, compost, plant growth regulator, and organic plant food supplements.

2 References

The titles of the standard publications referred to in this standard are listed on the inside back cover.

3 Definition of terms

For the purpose of this code, the following definitions apply:

3.1**raw materials**

naturally occurring materials used in the production of organic fertilizer products. Raw materials that were mined or naturally extracted should comply with the Department of Environment and Natural Resources (DENR) regulations. The list of Allowed (A) raw materials are listed in Annex 1. The list of Restricted (R) and Prohibited (P) materials are listed in Annex 2.

3.2**pathogens**

organisms (microorganisms and infective parasites) that can cause negative effects on human health

3.3**label**

a display of the written, printed or graphic information on the immediate container of any product. Information on the label provides the sellers and the buyers with the safe and effective use of the product for which it is registered

Label must be of such design and material that does not deteriorate easily, become illegible or get separated from the container under the rigors of transport, storage and use. It should withstand extreme weather conditions

3.4**batch**

organic fertilizer/soil amendment/compost/ that is produced from the same type of organic materials, at the same time and location, by the same manufacturer/producer, or made during the same cycle or period of manufacture

3.5**sample size**

number of samples drawn from each batch of organic fertilizers/organic amendments/compost to be analyzed.

3.6 synthetic

a substance that is formulated or manufactured by a chemical process or by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources, except for those substances created by naturally occurring biological processes.

4 Product description

4.1 Organic Fertilizer - any product in solid or liquid form, of plant (except by-products from petroleum industries) or animal origin that has undergone substantial decomposition that can supply available nutrients to plants with a total Nitrogen (N), Phosphorus (P) and Potassium (K) of five to seven percent (5-7 %). This may be enriched by microbial inoculants and naturally occurring minerals but no chemical or inorganic fertilizer material has been added to the finished product to affect the nutrient content.

4.2 Compost / Soil Conditioner - any product in solid or liquid form, of plant (except by-products from petroleum industries) or animal origin that has undergone substantial decomposition that can supply available nutrients to plants with a total Nitrogen (N), Phosphorus (P) and Potassium (K) of 2.5 to less than five percent (2.5-5%). This may be enriched by microbial inoculants and naturally occurring minerals but no chemical or inorganic fertilizer material has been added to the finished product to affect the nutrient content. Compost and soil conditioner are used interchangeably in this Standard.

4.3 Microbial Inoculant - biologically active products containing optimum population of one or a combination of active strains of bacteria, actinomycetes, algae and fungi that are useful in different biological activities, such as but not limited to: N₂-fixation, decomposition of organic residues and enhancement of nutrient availability.

4.4 Organic Plant Growth Regulator / Promoter - any compound of organic origin, in liquid or solid form, which in low concentration promotes or modifies physiological process in plants.

4.5 Organic Plant Supplement - any compound of organic origin in liquid or solid form which in low concentration promotes or modifies physiological processes in plants. Total NPK is not lower than 0.5% and not more than 2.5% (0.5-2.5%) and may contain beneficial microorganisms, micronutrients and plant growth regulators. These plant supplements include, but are not limited to: FPJ (Fermented Plant Juice), FFJ (Fermented Fruit Juice), FAA (Fish Amino Acid), FE (Fish Emulsion), Seaweed Extracts, Vermi Tea, Compost Tea and the like.

5 Minimum requirements

Table 5.1. Specifications for Organic Fertilizer and Compost / Soil conditioner

Properties	Organic Fertilizer	Compost/Soil Conditioner
Total NPK	5 - 7%	2.5-<5%
C:N	12:1 – 20:1	12:1 – 20:1
Organic Matter	≥ 20%	≥ 20%
Actual Moisture Content	30 - 35%	30 - 35%
Color	brown to black	brown to black
Consistency	friable	friable
Odor	no foul odor	no foul odor

Table 5.2. Allowable level of pathogens for Organic Fertilizers, Compost, Plant Growth Regulator and Organic Plant Supplements

Pathogens	Allowable Level
Fecal Streptococci	<5 x 10 ² CFU/g
Total coliforms	<5 x 10 ² CFU/g
Salmonella	0
Infective parasites	0

Table 5.3. Allowable Level of Heavy Metals for Organic Fertilizers, Compost, Plant Growth Regulator and Organic Plant Supplements

Heavy Metals	Allowable Level (mg/kg dry wt) (PPM dry wt.)
Arsenic (As)	5
Zinc (Zn)	5
Lead (Pb)	250
Copper (Cu)	300
Chromium (Cr)	150
Nickel(Ni)	50
Mercury (Hg)	2
Cadmium (Cd)	5

5.1 For products with microbial inoculants- The Genus should be verifiable and be stated in the label.

5.2 For plant growth regulator or organic plant food supplement products such as humin, seaweed extract, fermented products (Fermented Plant Juices, Fermented Fruit Juices), blood meal, bone meal, any claim should be verifiable, while products with at least 3% total (soluble) N will be subjected to other confirmatory test.

Table 5.4. Minimum Requirements for Plant Growth Regulators and Plant Supplements

Main ingredient	Total NPK	Other Requirements
Animal origin (bone meal, blood meal)	5 - 7%	Products that contain high concentrations of Nitrogen shall have a maximum of 5-7% NPK
FAA, FE	0.5 - 2.5%	All claims for contents of macro and micronutrients, microorganisms and plant growth hormones should be verifiable. Secondary and micronutrients should not exceed levels that will be toxic to plants and humans. Heavy metal content should be within allowable levels as stated in Table 5.3 of this PNS.
Plant based (FPJ, FFJ)	0.5 - 2.5%	
Seaweed extracts	0.5 - 2.5%	
Vermi-tea, Compost tea,	0.5 - 2.5%	
Humin and Humic acids	0.5 - 2.5%	

5.3 Absence of foreign materials

Plastics, aluminum, wrappers, stones and other materials must be totally removed from the product.

6 Sampling methods

6.1 Sampling for laboratory analysis

All finished products should be subjected to lot sampling for laboratory analysis using the following procedure:

For composite sampling of solid products:

1. Present to the inspector the production documents containing the number of bags per batch number and bag number.
2. The inspector will randomly select the Bag number.
3. The selected bags will be emptied into a clean area. All contents of the selected bags (maximum of 5 bags) will be thoroughly mixed.
4. Submit five kilograms (5 kg) of the composite sample to the laboratory.

- Information relative to the sample taken must be accurate and complete to allow traceability of the sample back to the lot from which it was sampled.

Table 6.1 Required Number of Samples for Solid Products

Number of bags*/ per batch	Bags to be sampled
≤50	2
51 to 100	3
101 to 300	8
301 to 500	15
501 to 1000	20
More than 1000	Multiples of 20
NOTE: * 1 bag = 50 kg	

NOTE: If the samples analyzed do not conform to the standards, the inspecting Certifying Body (CB) should review the production process which may include bulk sampling.

For composite sampling of liquid products:

- Present to the inspector the production documents containing the number of containers per batch number and container number.
- The inspector will randomly select the container number and subject the selected containers for analysis.
- Information relative to the sample taken must be accurate and complete to allow traceability of the sample back to the lot from which it was sampled.

Table 6.2 Required Number of Samples for Liquid Products

Number of containers */ per batch	Containers to be sampled
≤50	1
51 to 100	2
101 to 300	3
301 to 500	4
More than 500	5
NOTE: * 1 container = 1L	

6.2 Laboratory Sampling (Sample preparation for laboratory analysis)

a. For samples with uniform fineness

Place sample on a clean piece of paper and mix thoroughly. Reduce sample to a quantity sufficient for analysis by quartering. Mix and store in air-tight container.

b. For Organic Liquid Fertilizers

For liquid fertilizers without suspended particles, stir the sample until it is thoroughly mixed, before taking a sample.

For liquid fertilizers with suspended particles, take a sample while mixing the material in order to obtain a representative sample.

7 Labeling

Figure 1. Sample 4-Panel Layout for labeling bottles and cartons

<p>TRADE NAME DESCRIPTIVE STATEMENT</p> <hr/> <p>ART WORK</p> <hr/> <p>Registered by the Bureau of Products and Fisheries Standards Pursuant to R. A. 10068 BAFPS Registration No. _____ Valid until: <u>(month and year)</u></p> <p>Net Content _____</p>	<p>Storage & Disposal</p>	<p>DIRECTION FOR USE</p>				<p>Product Information *Raw materials used</p> <p>Nutrient Content</p> <p>Product Description and type:</p> <p>*Claims *Compatibility with Bio-pesticides</p> <p>Lot/Batch No. _____ Expiry Date: _____</p>									
	<p>Prohibition</p>	<table border="1"> <thead> <tr> <th>Crops</th> <th>Rate</th> <th>Frequency of application (based on growth stage)</th> <th>Time of application</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Crops	Rate	Frequency of application (based on growth stage)		Time of application								
Crops	Rate	Frequency of application (based on growth stage)	Time of application												
<p>WARNING/PRECAUTIONS:</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>KEEP OUT OF REACH OF CHILDREN</p> </div>															

Figure 2. Sample 2-Panel Layout for Labeling Bags and sachets

Front

BRAND NAME
(with logo)

Artwork

Nutrient Content:

Nitrogen (N) %: _____
 Phosphorous (P₂O₅) %: _____
 Potassium (K₂O) %: _____
 C:N Ratio: _____
 Moisture Content: _____

Trace and secondary nutrients (ppm for each nutrient, if any)

*Claims
 *Compatibility with Bio-pesticides

**Name and Address of Local
 Manufacturer/Importer/
 Distributor**

BAFPS (Category of Product) Registration
 No. _____
 Valid until: (month and year)

Back

BRAND NAME
(with logo optional)

DIRECTION FOR USE

Crops	Rate	Frequency of application (based on growth stage)	Time of application

WARNING/PRECAUTIONS:

KEEP OUT OF REACH OF CHILDREN

Batch number:
 Lot number /code:
 Date of manufacture or importation (if applicable):

Annex 1

List of Allowed Raw Materials as inputs for Organic Fertilizer Production

Inputs
Farm animal manure, slurry, and urine
Vermi compost
Compost produced from organic residues
Green manure and green leaf manure
Azolla
Mulches from sugar cane trash, straw, etc.
Kitchen waste
Coir pith, plantation by-products & wastes
Mushroom beds
Oil cakes, milled by-products, etc.
Tea/coffee grounds
Fish and fish products without preservatives
Seaweed
Crop residues (straw, peanut hulls, etc.)
Microbial preparations (i.e. Trichoderma, Rhizobia, Mychorrizae, others) of non-GMO origin

Annex 2

List of Restricted and Prohibited raw materials as inputs for Organic Fertilizer Production*

Inputs	Status	Notes/Limitations/Rationale
Raw / undecomposed Human excrement, including urine	P	Risk of contamination
Sewage sludge	R	Only sludge from farms/bio-digesters is allowed.
Saw dust, bark, wood chips, wood ash	R	Wood not chemically treated after felling
By-products of plant origin of food & textile industries	R	Without synthetic additives and residues
Blood meal, bone, and other meal brought in from other sources	R	Origin of materials should be disease - free and without preservatives
Guano	R	Concerns on environmental sustainability - rate of extraction is subject to DENR regulations
Segregated biodegradable market waste	R	Has undergone proper segregation, and does not contain hazardous materials
Sedimentary rocks (limestone, dolomite, rock phosphate)	R	<ul style="list-style-type: none"> • May contain elevated levels of trace elements. Detailed chemical analysis is necessary. • Their widespread extraction can also deplete the natural deposits and may cause negative environmental impact. Rate of extraction is subject to DENR regulations
Igneous rocks (andesite, basalt, gabbro, diorite)	R	<ul style="list-style-type: none"> • May contain elevated levels of trace elements. Detailed chemical analysis is necessary. • May contain high levels of heavy metals and should not be allowed • Their widespread extraction can also deplete the natural deposits and may cause negative environmental impact. Rate of extraction is subject to DENR regulations
Metamorphic rocks (slate, schist)	R	<ul style="list-style-type: none"> • May contain elevated levels of trace elements. Detailed chemical analysis is necessary. • May contain high levels of heavy metals and should not be allowed • Their widespread extraction can also deplete the natural deposits and may cause negative environmental impact. Rate of extraction is subject to DENR regulations

* NOTE: If in case there are raw materials not listed in this Standard, additional inputs shall be consistent with the requirements of "Requirements on permission of other substances in Organic Agriculture Production Systems" of the Philippine National Standards for Organic Agriculture (General Standards)

References

PNS/BAFS 40:2014

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.

PNS/BAFPS 40:2008 –Organic Fertilizer

PNS 85:1984/AMD 01:1992 – Fertilizers – Solid Fertilizer – Method of Sampling

PNS 95:1987 – Packaging – Bags for Solid Fertilizers – Specification

PNS 1033:1993 – Fertilizers – Marking – Presentation and Declaration

Ang-Lopez M. 2001. Quality and Maturation of Vermicompost Derived from Different Feedstocks. MSc. Thesis. Nova Scotia Agricultural College/ Dalhousie University. Nova Scotia, Canada.

Avery, DT. 2002. The Hidden Dangers in Organic Food. Center for Global Food Issues - California Organic Fertilizers, Inc. www.organicag.com

Fertilizer Regulatory Policies and Implementing Guidelines or “Bluebook”

FFTC International Workshop. 1997. Quality Control of Organic Fertilizers (Compost). Suweon, Korea. June23-28, 1997.

Lazcano C, M. Gómez-Brandón, J. Domínguez. Comparison of the effectiveness of composting and vermicomposting for the biological stabilization of cattle manure. Chemosphere 72 (2008) 1013 – 1019.

Lemunier, M, C. Francou, S. Rousseaux, S. Houot, P. Dantigny, P. Piveteau, and J. Guzzo. 2005. Long-term survival of pathogenic and sanitation indicator bacteria in experimental biowaste composts. Appl. Environ. Microbiol.71(10): 5779-5786

Russell, S and L. Best. 2006. Setting the standards for compost.BioCycle. Journal of Composting and Organics Recycling. United Kingdom.

Department of Agriculture
Bureau of Agriculture and Fisheries Product Standards
Technical Working Group for the Revision of Philippine National Standard for Organic Fertilizer
Department of Agriculture Special Order 442 and Series 557 of 2012

Chair

Leo P. Cañeda, CESO III
OIC-Executive Director
Bureau of Agriculture and Fisheries Product Standards

Members

- | | | | |
|---|---|----|--|
| 1 | Ms. Julieta B. Lansangan
Fertilizer and Pesticide Authority (FPA) | 8 | Dr. Gina V. Pangga
College of Agriculture
University of the Philippines Los Baños |
| 2 | Ms. Pelagia Orpia
Bureau of Soils & Water Management
(BSWM) | 9 | Dr. Blesilda M. Calub

College of Agriculture
University of the Philippines Los Baños |
| 3 | Dr. Nora B. Inciong
Board of Agriculture
Professional Regulation Commission | 10 | Dr. Nenita E. Dela Cruz
Central Luzon State University (CLSU) |
| 4 | Dr. Eduardo P. Paningbatan Jr.
College of Agriculture
University of the Philippines Los Baños | 11 | Dr. Victor B. Asio
College of Agriculture
Visayas State University |
| 5 | Dr. Erlina S. Paterno
College of Agriculture
University of the Philippines Los Baños | 12 | Ms. Leilani K. Limpin
Organic Certification Center of the
Philippines (OCCP) |
| 6 | Dr. Pearl B. Sanchez
College of Agriculture
University of the Philippines Los Baños | 13 | Mr. Armand Aquino
Negros Island Certification Agency
(OPTA) |
| 7 | Dr. Virginia C. Cuevas
College of Arts & Sciences
University of the Philippines Los Baños | 14 | Mr. Patrick Belisario
Organic Producers and Traders
Association (OPTA) |

Technical Secretariat

- 15 Ms. Lara G. Vivas
Ms. Rosemarie V. Calibo
Mr. Jonathan V. Paz
Ms. Cherry V. Lanwang
Bureau of Agriculture and Fisheries
Product Standards (BAFPS)

your partner in product quality and safety



BUREAU OF PRODUCT STANDARDS

3F Trade and Industry Building
361 Sen. Gil J. Puyat Avenue, Makati City 1200, Metro Manila, Philippines
T/ (632) 751.3125 / 751.3123 / 751.4735
F/ (632) 751.4706 / 751.4731
E-mail : bps@dti.gov.ph
www.dti.gov.ph