Philippine Institute for Development Studies

Prospects for Widespread Adoption of Organic-Based Fertilizers in the Philippines: A Rapid Appraisal

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Introduction

- Heavy reliance on chemical fertilizers
- Sustainability concerns (ecological, economic)
- Fertilizer price spike (urea at ~₱3,000/sack, May 2022)
- Rising interest in organic/nature-based alternatives
- DA response:
  - large-scale fertilizer subsidies
  - subsidies mostly for inorganic fertilizers

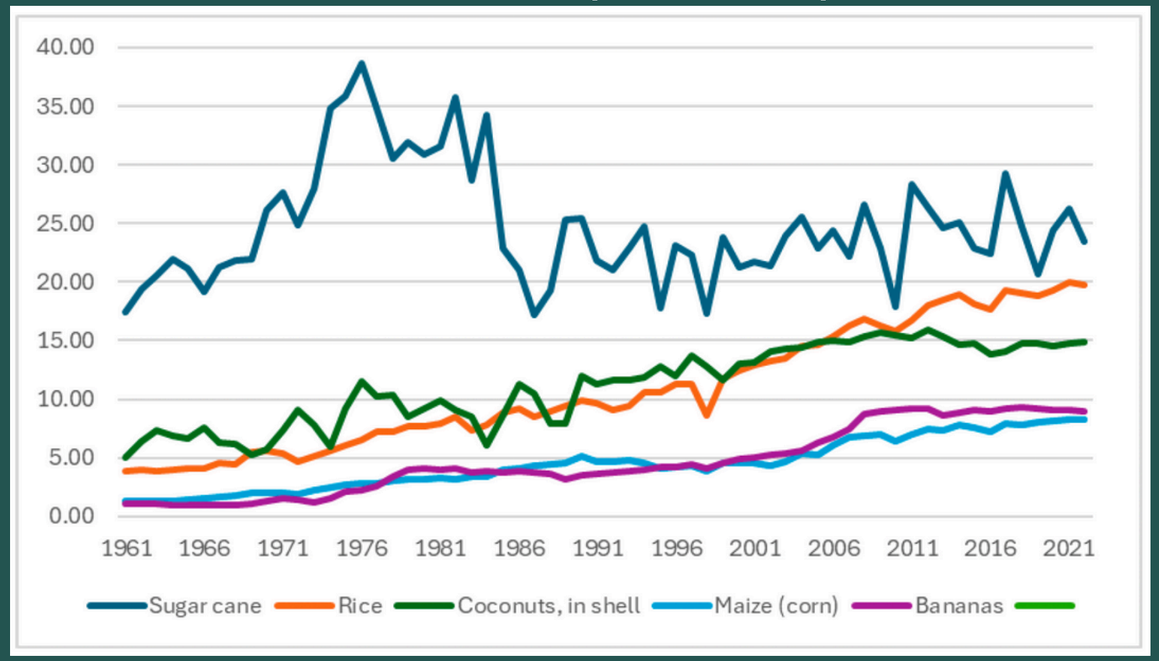
Main study objective:

To undertake a rapid appraisal of organic fertilizer use and its expansion potential in the Philippines

- **Extent of organic fertilizer use in PH agriculture**
- **Factors influencing farmer adoption**
- **Supply potential, availability, and affordability**
- **Programs and policies shaping incentives and constraints**
- **Policy directions for value chain development**

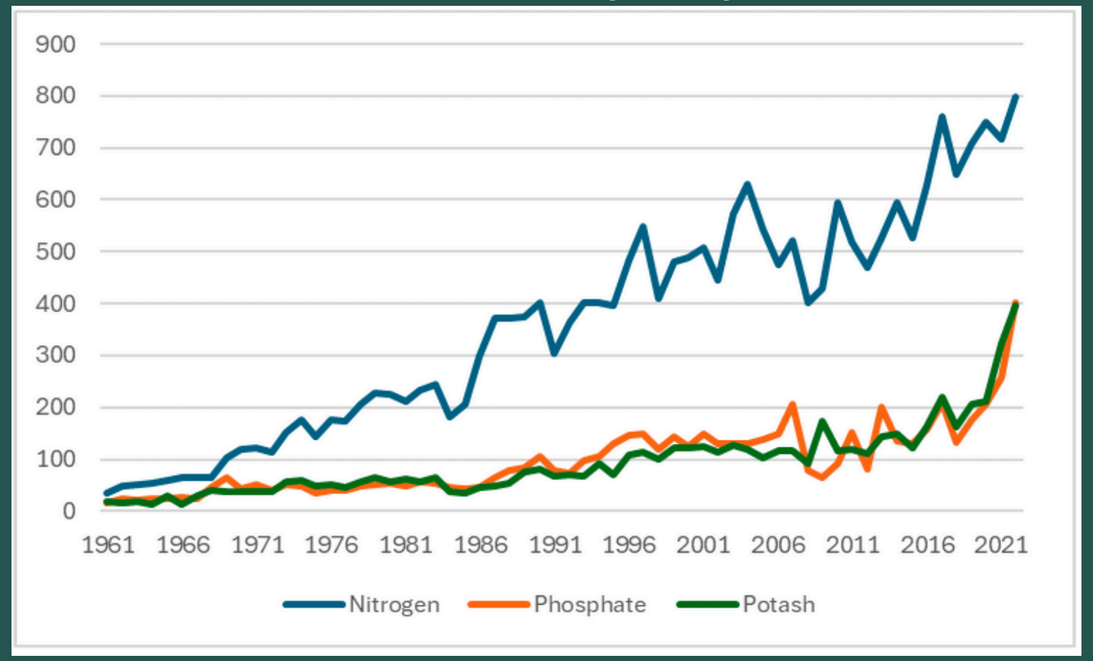
Crop production and fertilizer use have steadily increased over the decades.

Production of major crops in the Philippines, 2010 – 2023 ('000 tons)



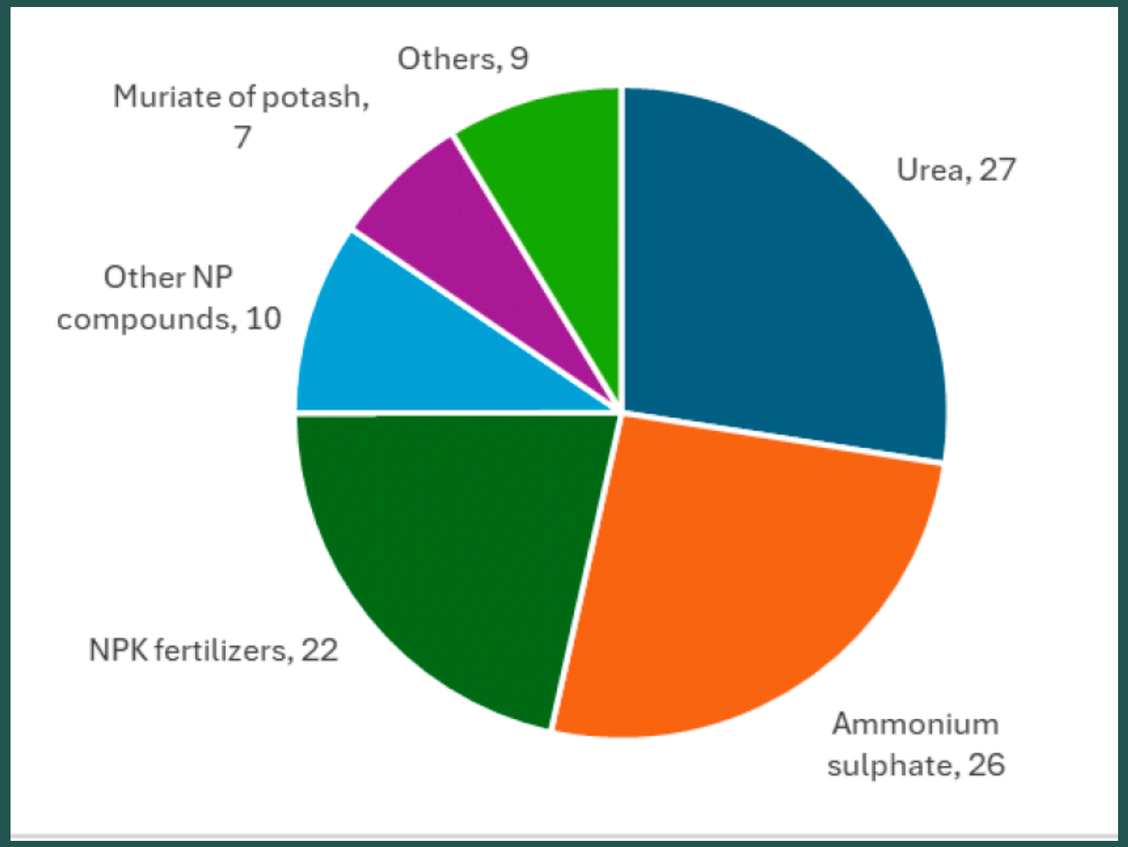
Source: FAO (2024)

Fertilizer use by nutrient type, 1961-2022 (tons)



Source: FAO (2024)

Distribution of total fertilizers applied, Philippines, 2022 (%)



Source: FAO (2024)

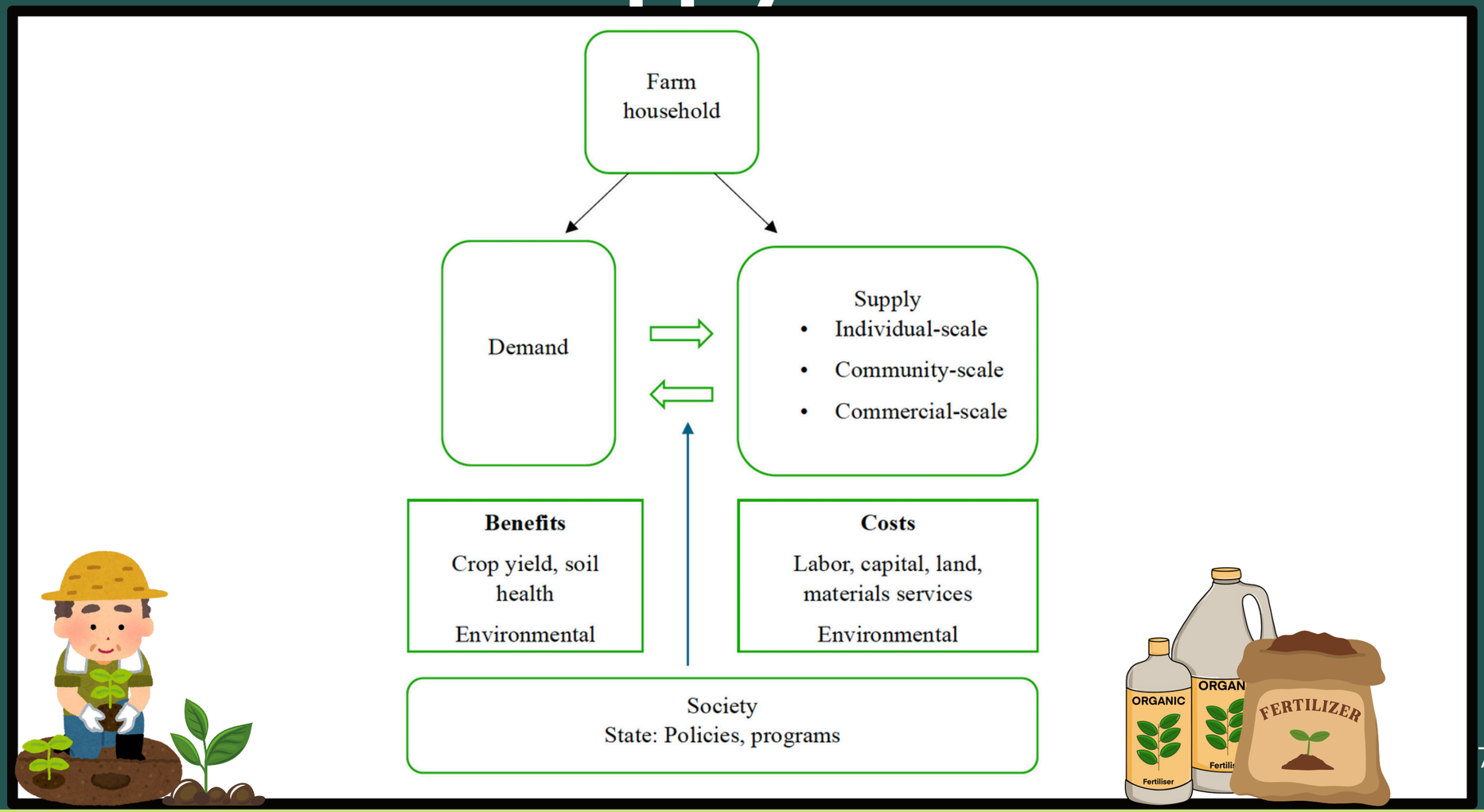
The most commonly applied inorganic fertilizers are nitrogenous and complete fertilizers

36%

Share of palay farmers using organic fertilizer

Source: PSA (2023)

Demand-Supply Framework



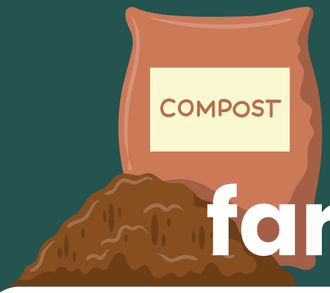
Rapid Appraisal Method

- uses desk review of relevant documents, as well as qualitative data collection from key informants

Government	DA units (HCVDP, NOAP, BSWM, FPA), PCAF, CDA
Individual producers	Usually organic fertilizer users; Identified through lists of farmer organizations (FOs) from government offices; ***(FO types: Purely inorganic, Purely organic, Balanced fertilization)***
Community producers	
Commercial producers	Located in NCR, Region IV-A; from FPA list, UPLB

Conventional agriculture

- The utilization of inorganic fertilizer is integral to modern conventional agriculture
- Causes soil degradation which undermines long term productivity of crop farming



Alternative farming practices

- Examples: Agroecology, Low External Input Sustainable Agriculture, Permaculture
- The degree of reliance on such fertilizers, as well as other input and crop management practices, vary widely across alternatives
- **Organic-based fertilizers** are integral to all alternative farming systems

Integrated Nutrient Management (INM)

The strategy is a site-specific nutrient management that aims to enhance the efficiency of fertilizer application at the **right source, right placement, right amount, and right rate** to improve soil health and productivity and prevent the decline in soil fertility (BSWM 2020 cited by FPA 2022).

Policies

1973: PD 135 Creation of Fertilizer Industry Authority (FIA)

1977 – PD 1444: FIA → Fertilizer and Pesticide Authority (FPA)

1985 – EO 1028: Deregulation mandate

1986 – MC No. 1 s. 1986: Implementation of FPA deregulation

2010 – Organic Agriculture Act

Organic Agriculture Act (2010)

- improve soil fertility and productivity
- reduce pollution and resource depletion
- protect health
- cut imported farm inputs

International Federation of Organic Agriculture Movement: “excluding synthetic fertilizers…”

Farming area certified as organic is still small

1,000 ha (2012) → 1,033 ha (2022)

8x increase in production of organic soil amendments

~4,800 tons (2012) → ~38,000 tons (2022)

Bureau of Agricutlure and Fisheries Standards (BAFS)

- Organic certification standards
- Organic certification bodies
- Participatory Guarantee System (PGS) – RA11511 OA Amendment
- organic soil amendments*
- organic biocontrol agents*

Fertilizer and Pesticide Authority

- inorganic (synthetic/chemical-based) fertilizers*
- biofertilizers

*DA Memorandum Circular No. 10, series of 2023

DA Programs

NOAP

National Organic Agriculture Program

1997: Proclamation No. 1071 authorizes BFS adoption

2020: DA MC No. 20 – DA offices to coordinate with BSWM

2022: SO No. 286, establishment of Management & Working Committees for BFS promotion

2023 | **P1,500/ha** | **"biofertilizers or microbial inoculants" fertilizer voucher**

BFS

Balanced Fertilization Strategy

Image source: NOAP Facebook Page (DA Central Visayas Facebook Post)

Shifting to organic agriculture

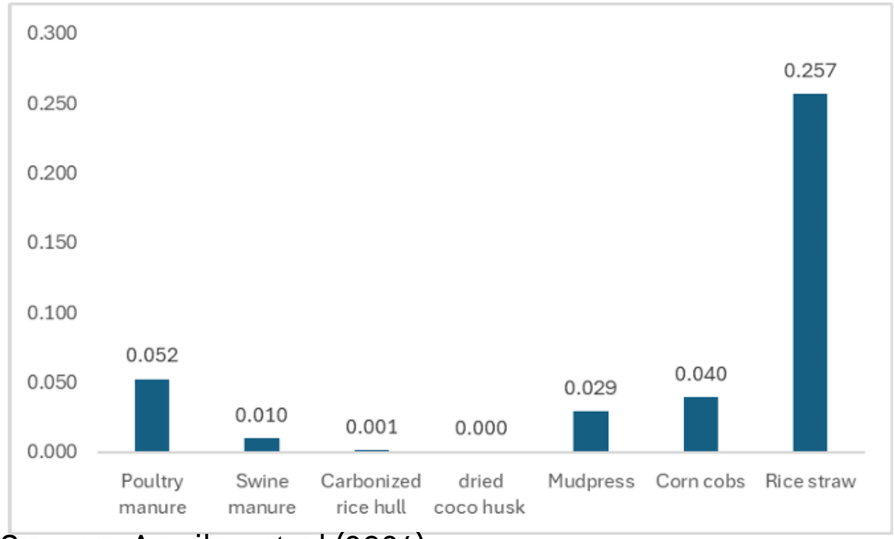
Can organic agriculture feed the Philippines?

Organic agriculture can **improve net income** but faces constraints on availability of materials and labor.

Inadequate local supply: Aguilar et al (2024) computed that there were only 0.49% available N from organic wastes in 2023.

	Nitrogen	Phosphorus	Potassium
Quantity imported	865	103	231
Required quantity to match imported nutrients:			
Poultry manure	41,190	2,739	6,176
Swine manure	37,609	1,839	27,500
Carbonized rice hull	480,556	22,889	25,667
Dried coco husk	2,146,402	515,000	10,891
Mudpress	45,526	9,035	21,000
Corn cobs	60,069	7,203	10,645
Rice straw	52,225	103,000	1,650

Source: Aguilar et al (2024)



Source: Aguilar et al (2024)

Benefits of shifting to INM

The FPA, DA and other government agencies recommends the **Balanced Fertilization Strategy** by promoting the practice of INM to address the increasing costs of inorganic fertilizers and environmental concerns.

Enhanced soil quality & increased crop yields

A study in upland corn in Inopacan, Leyte showed taller and larger ears with more kernels. Soil and crop characteristics also improved with application of organic-based fertilizers (Lina et al, 2014).

Increased income

A PhilRice study (2023) found that use of inorganic + biofertilizers & biostimulants generated the highest net income in both DS (PhP 79,195/ha) and WS (PhP 58,383/ha).

Promote sustainable praactices

INM in cabbage production promoted efficient and sustainable farming practices, reduced environmental impact, and built farmer knowledge (Tulin et al, 2016).

Types of organic-based fertilizers

Organic fertilizers

- Products that come in either solid or liquid forms from fully decomposed plant or animal materials that can supply NPK of 5-10%.

Rice Straw Biochar

Source: Pangga (2024)

Soil conditioners or soil amendments

- Change soil physical properties and enhance soil chemical and biological conditions when applied in the soil at 2.5% to less than 5% NPK (ex. biochar).

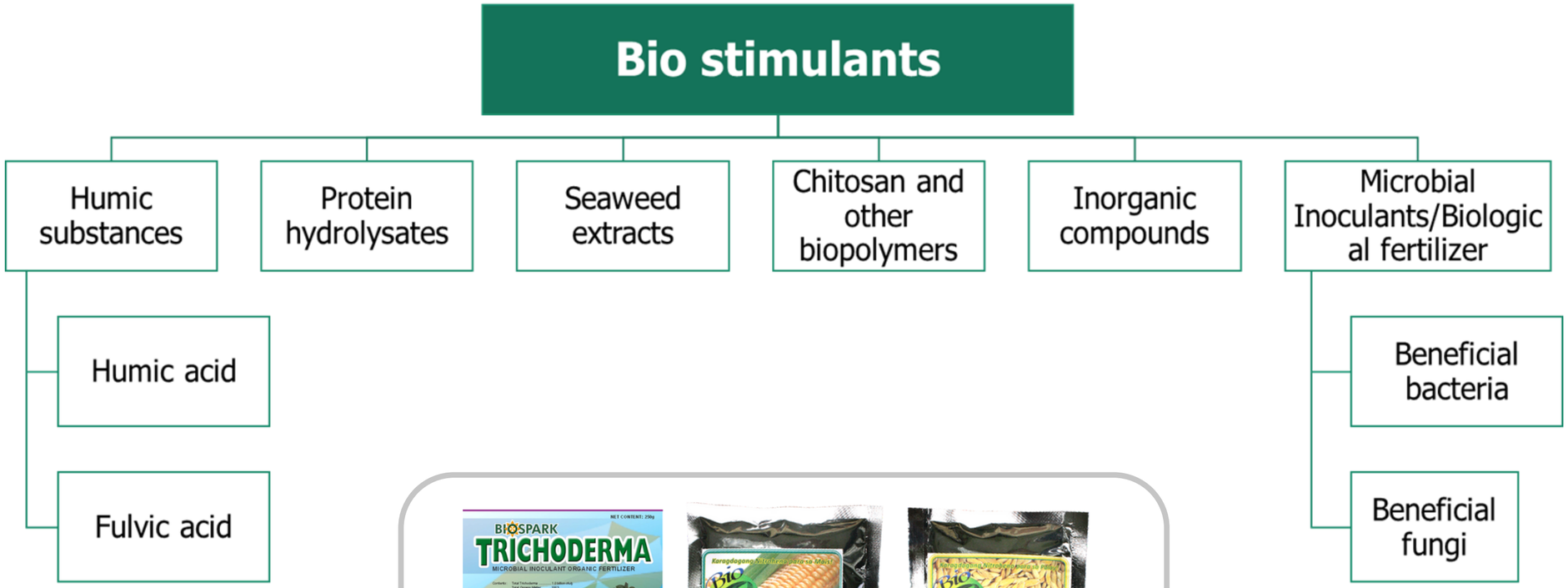
Organic plant supplements

- Products that supply NPK of not less than 0.5% to not more than 10% for solid supplements and 5% for liquid supplements (ex. FPJ, FFJ, FAA, vermi tea, vermi compost).

Quality standards:
BAFS and FPA
PNS-OSA (PNS/BAFS 183:2020)

- Maturity of compost
- Proper C:N ratio (20-40)
- Pathogen-free
- Full decomposition (%MC, temperature, O_2, physical properties, curing time)

Classification of biostimulants



Source: Pangga (2024)

Source: AGORA UPLB

Demand sources – organic agriculture

- A major source of demand for organic-based fertilizer are organic growers, who apply a variety of types of organic-based fertilizers.
- Organic growers report being able to replicate or even improve upon yields obtained under conventional farming.
- Organic farming has encountered significant barriers in increasing the number of adopters.

Other demand sources

- For major temporary crops, farmers tend to rely mostly or entirely on inorganic fertilizer, although in vegetable farming, use of chicken manure seems common.
- Rice, corn, or sugarcane farmers apply organic-based fertilizer when there is a nearby source; one exception encountered are corn farmers in Bicol.
- Commercial organic fertilizers are applied when provided for free by government; hence a significant market for fertilizer producers is government itself.
- Traditional or new practices of organic-based fertilizer application is not well-informed by the latest science.

Supply

Farm and household production:

- Organic growers are actively producing their own fertilizers, whether individually or as a group.

Commercial production:

- Basic forms of organic fertilizer are supplied by cooperatives or microenterprises in rural areas.
- More sophisticated products such as microbial inoculants are made by SMEs and a few large companies taking advantage of scale economies.

Rotary composter distributed under the SSCF program of DA-BSWM.

Policies and programs

NOAP focuses on disseminating organic farming through livelihood support and community-based certification.

Government is promoting adaptive BFS with input support and extension service, although support and recommendations usually focus on inorganic fertilizers.

Concerns have been raised about the state of competition and regulation of the organic fertilizer/biofertilizer industries.

Key observations

- While nutrient application in Philippine agriculture is dominated by inorganic fertilizers, application of organic-based fertilizers is common.
- There is considerable supply potential for organic fertilizers, although a limiting factor is availability of raw materials and collection cost.
- Budgetary allocations still tend to be biased in favor of support for inorganic fertilizers.

Implications for policy

- Strengthen the NOAP by a) expanding the implementation of PGS; b) aggressively rolling out organic labeling of packaged organic produce.
- Review the regulatory system and competition oversight for organic fertilizers and biofertilizers.
- Adopt a phased repurposing of fertilizer subsidy by shifting from inorganic fertilizers to organic fertilizers and biofertilizers.
- Repurposing can also make funds available for area-based R&D to promote adaptive BFS, including soil mapping of all agricultural land in the country.

Implications for policy

- Beyond R&D, DA must invest heavily in extension to promote the widespread adoption of adaptive BFS.
- Implement a value chain program for the development of the biofertilizer and organic fertilizer industry.
- Anchor the value chain program on support for commercial networks of private corporations and capacitated FOs, and coordinated with the distribution of organic fertilizer and biofertilizer vouchers.
- Integrate value chain development of organic fertilizers and biofertilizers with development of the livestock, poultry, and agro-processing industry.

Thank You

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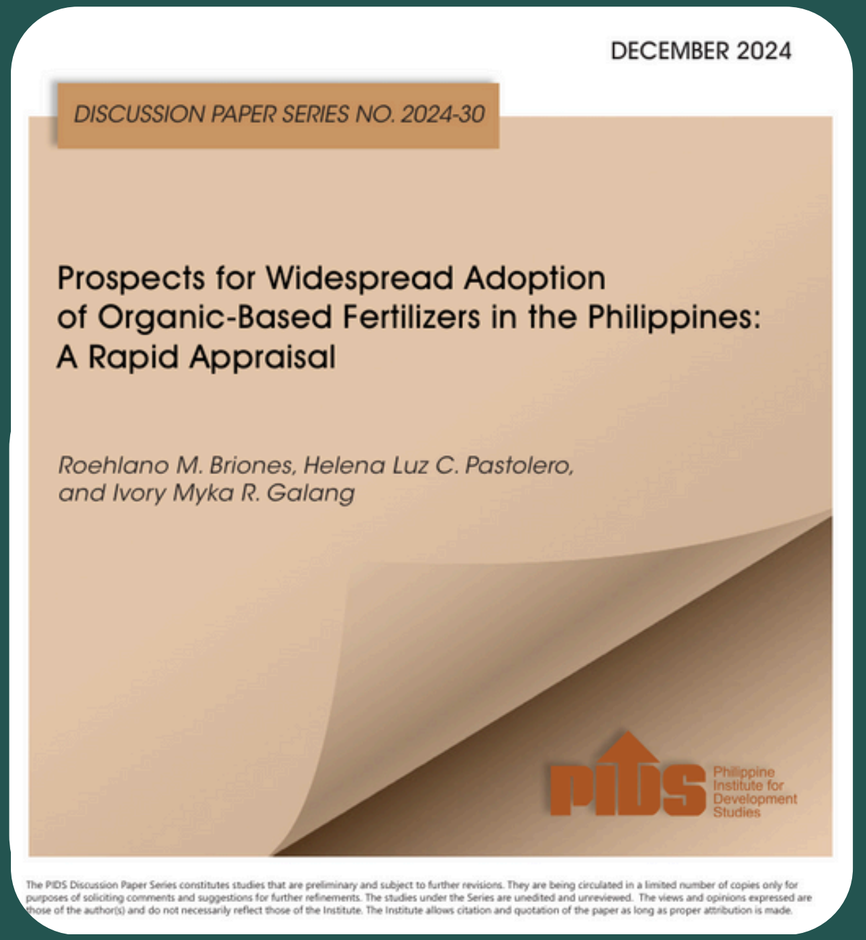

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