Discussion on the Paper:

Prospects for Widespread Adoption of Organic-Based Fertilizers in the Philippines: A Rapid Appraisal
Briones, et al, 2024

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Discussion on the paper of Briones et al 2024

Outline

I. Support to NOAP recommendation

II. Barriers to adoption of organic agriculture: OBF provides the solution

III. Untapped plant raw materials for OF production

IV. Evidence for integrated development of OF

V. Conclusion

I. Why we need OBF? - Situationer – a big threat to our food security

- we are **the world's largest rice importer in 2024**

– DA Spokesperson says that we lost 1 million metric tons of **palay because of El Niño, La Niña, and a series of typhoons**

NOAP – National Organic Agriculture Program anchored on nourishing the soil environment with sufficient organic matter - **an adaptation to climate change – answer to the problem presented by DA**

- OM from compost increases soil water holding, increases water infiltration and movement, buffers soil pH; improves CEC; clearly observed during drought, increases population of beneficial soil microorganisms – biocontrol of pests and diseases
- enhances soil health

Discussion on the paper of Briones et al 2024

I. Data - *in-situ* composting with TMI in normal soil and Cu contaminated soil during El Nino event

Comparison of yields in treated (RS Compost+ TMI) and control during the 2018-2019 El Nino events in normal (≤ 50 mg kg^{-1}) and high Cu content (290-386 mg kg^{-1}) in Mogpog, Marinduque

Season	Mean water stress level	Mean yield (t/ha) fields with normal soil Cu content ≤ 50 mg kg^{-1} Business as usual		Mean yield (t/ha) fields with soil Cu content 290-386 mg kg^{-1} (heavily contaminated)	
		Treated (w/ rice straw compost + TMI) – res conserving practice	Control (no rs compost, 0 TMI (business as usual)	Treated (w/rs compost + TMI) – res conserving practice	Control (no rice straw compost, no TMI - (business as usual)
DS 2018	1	5.7	4.5	1.0	0.5
WS 2018	3	3.4	1.9	4.7	2.2
DS 2019	*5 (severe drought)*	***2.2***	***0***	***1.9***	***0***
WS 2019	1.6	3.8	2.1	4.2	1.0
	Ave yield	3.8	2.1	2.9	1.0

Data presented showed that:

Rice fields remained productive despite severe drought – adaptation to climate-change

Fields showed resilience when the intensity of drought decreased

Source: Cuevas & Banaay, 2022

I. Can OA "feed the Philippines"? No studies have been done in the Philippines.

Soil properties of the rice fields in Brgy. Capayang and Brgy. Mangyan-Mababad, Mogpog

Soil Parameters	Capayang	Mababad
% OM	4.9	4.9
pH	6.66	7.0
CEC (cmol/kg)	22.5	20.66

Data showed that w/ <u>good soil fertility level, OA using INM w/ RS Compost & TMI</u> can increase yield by 32% - 40% w/ 50% reduced CF to - 8.1 t/ha , Inbred PSB RC 18 (Ala)

Mean* rice yield of Inbred PSB RC 18 (Ala) in WS 2017 and DS cropping 2017-18 of , in Brgy. Capayang, site and Brgy Mababad, Mogpog, Marinduque showing benefits from compost + TMI *

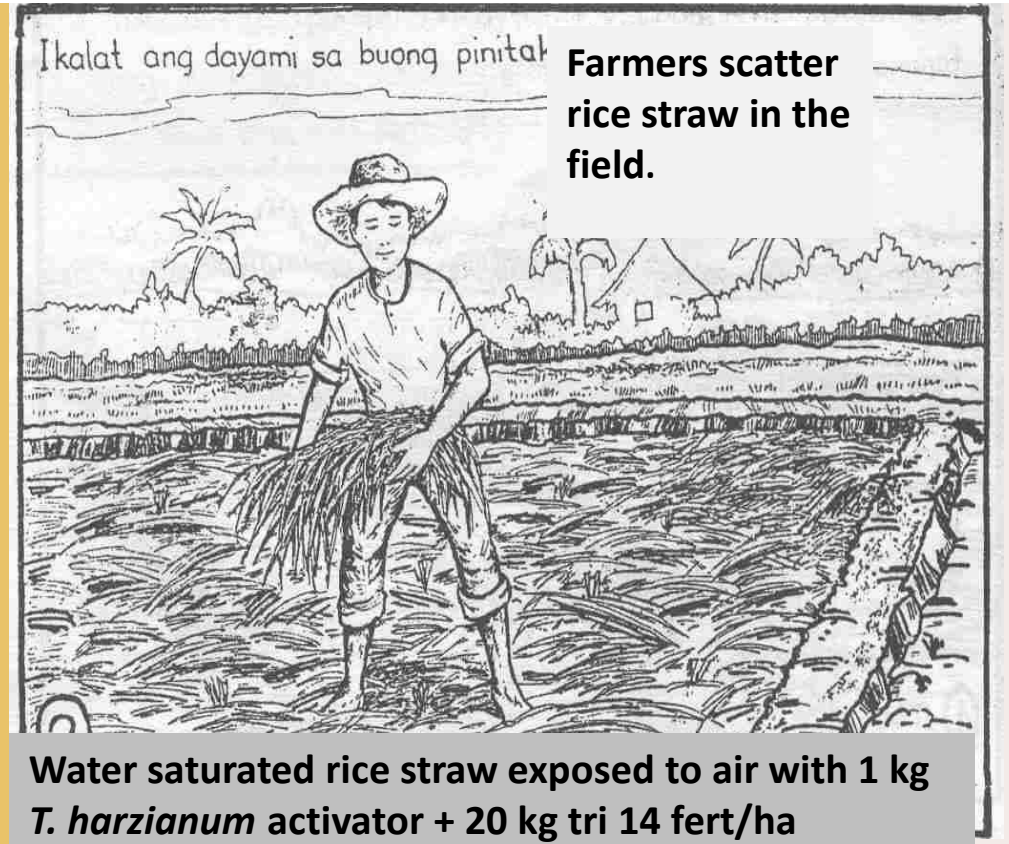
	Capayang		Mababad	
	Mean Yield (t/ha)		Mean Yield (t/ha)	
Treatments	WS 2017	DS 2017-18	WS 2017	DS – 2017-18
T1- 0 input	**4.5^{abc}**	**5.5^{b}**	**3.2^{cd}**	**4.9^{bc}**
T2 - Full Rec CF	5.9^{abc}	6.5^{b}	3.5^{bc}	5.6^{bc}
T3 – 1/2 Rec CF, TMI	6.2^{ab}	7.3^{a}	4.2^{ab}	5.9^{b}
T4 – RS Comp,1/2 Rec ChF, TMI	**6.5^{ab}**	**8.1^{a}**	**4.9^{a}**	**8.2^{a}**
T5 – RS Comp, Full RCF, TMI	7.9^{a}	7.8^{a}		

Source:*Aba, BL and Cuevas, 2024 –

Recommendation: Explore the line of researchto determine the potential of OA with INM w/ INM and TMI in "feeding the Philippines"

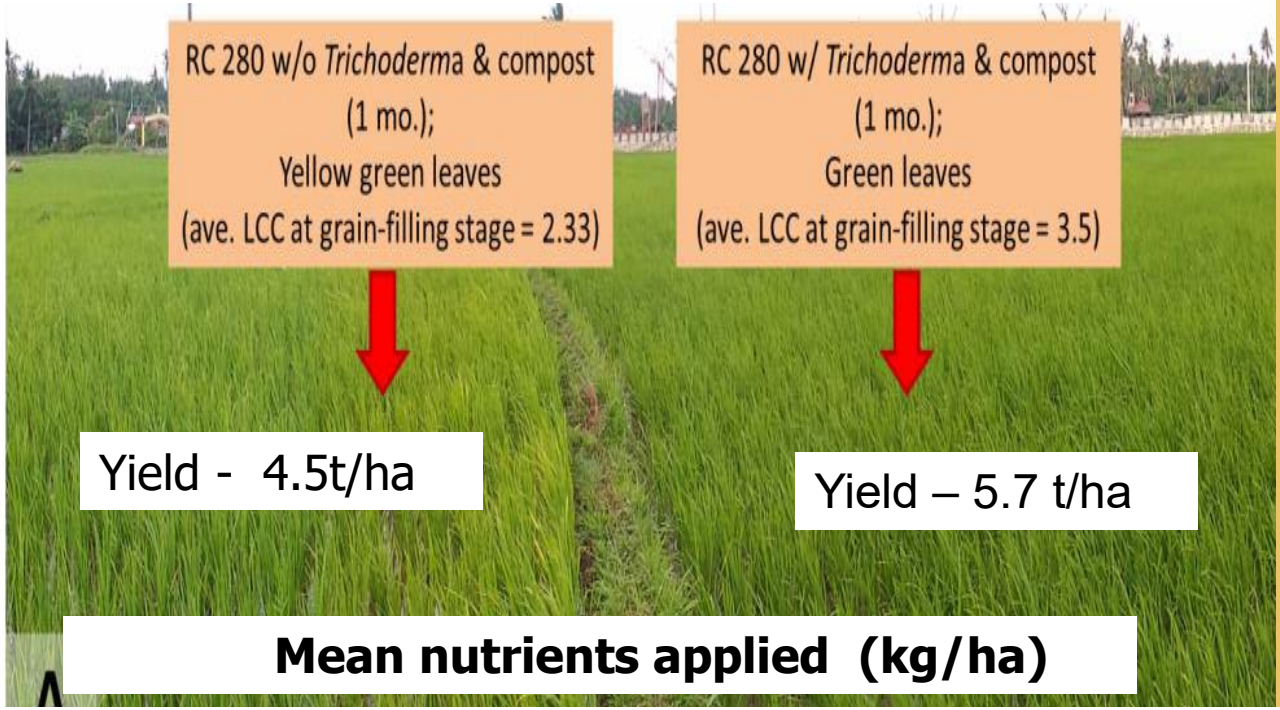
Discussion on the paper of Briones et al 2024

II. Barriers 1. Labor intensive requirements as a hindrance to widespread application of OF



Farmers scatter rice straw in the field.

Water saturated rice straw exposed to air with 1 kg *T. harzianum* activator + 20 kg tri 14 fert/ha decompose in 14- 21 days mixed to the soil during land preparation.



Mean nutrients applied (kg/ha)

	N	P	K		N	P	K
Control -	39	5.0	5.0	Treated	45	19	19

Same amount of chem fertilizer applied in the two plots; higher nutrients in treated came from compost

2025 Ph D research proved that this process had rapid decay of rice straw in 7-14 days

OBF production system,- with INM, farmer-friendly **<u>minimal labor- input</u>**, <u>*in-situ* rapid-composting rice</u> straw with use of *T. harzianum activator*- compatible with mechanized harvesting and use of TMI

Source: Cuevas and Banaay, 2022

Barrrier : Labor intensive requirements as a hindrance to widespread application of OF in rice cropping

Possible Solution: *In – situ* rapid composting with use of Trichoderma activator

Discussion on the paper of Briones et al 2024

II. Barriers 2. initial drop in yield is a major disincentive to adopting organic farming;
3. prohibition against chemical pesticide

Grain yields of NSIC Rc 216, dry and wet seasons 2024-25 as influenced by different INM practices in irrigated lowland conditions, Tumbaga, Sariaya, Quezon

Treatment	Grain yield (t h^{-1}) DS	Grain yield (t h^{-1}) WS
T1- Control (No fertilizer)	2.40 d	2.90 c
T2- Recommended Rate (RR) of CF	**4.70 a**	**4.50 a**
T3 – RS compost + TMI	3.20 c	3.15 bc
T4 –RS compost + TMI + 50% RR	**4.30 ab**	**4.10 ab**
T5 - RS compost + TMI + 75% RR	4.60 a	3.92 abc
T6 - RS compost + TMI + 100% RR	3.92 b	3.85 abc
CV	4.00 b	3.80 abc
	5.75	11.90

** In a column, means followed by the same letter (s) are not significantly different* at the 5% level by Tukey's HSD test.

Note: T3, T4, T5, T6 used in-situ rapid composting with Trichoderma activator

Source: [1] Ph D. Dissertation - GR ENOJADA – Ph D Soil Science – 2025, Dr. P. B. Sanchez, Adviser - Enhancing Sustainable Rice Production Through Rice Straw Incorporation and Integrated Use Of Inorganic, Organic And Biofertilizers Under Rainfed And Irrigated Conditions

Discussion on the paper of Briones et al 2024

II. Barriers 2. initial drop in yield is a major disincentive to adopting organic farming;
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Grain yields of NSIC Rc 216, dry and wet seasons 2024-25 as influenced by different INM practices in rainfed lowland conditions – Pili, Sariaya, Quezon[1]

Treatment	Grain yield* (t h^{-1}) DS	Grain yield* (t h^{-1}) WS
T1- Control (No fertilizer)	2.40 c	1.07 b
T2- Recommended Rate (RR) of CF	**3.40 a**	**2.55 a**
T3 – RS compost + TMI	2.83 bc	1.86 ab
T4 –RS compost + TMI + 50% RR	**3.17 ab**	**2.67 a**
T5 - RS compost + TMI + 75% RR	3.37 a	3.13 a
T6 - RS compost + TMI + 100% RR	3.60 a	3.05 a
CV	6.17	24.32

**In a column, means followed by the same letter (s) are not significantly different* at the 5% level by Tukey's HSD test.

Note: T3, T4, T5, T6 used in-situ rapid composting with Trichoderma activator

Source: [1] Ph D. Dissertation - G R. ENOJADA – Ph D Soil Science – 2025, Dr. Pearl B. Sanchez, Adviser - Enhancing Sustainable Rice Production Through Rice Straw Incorporation and Integrated Use Of Inorganic, Organic And Biofertilizers Under Rainfed And Irrigated Conditions

Discussion on the paper of Briones et al 2024

Barriers: initial drop in yield is a major disincentive to adopting organic farming;
Prohibition against chemical pesticide

Possible solution:

OBF – rapid composting with Trichoderma activator and INM w/ biofertilizer TMI (also effective biocontrol agent) may provide the answer

- Good information dissemination with science –based data may overcome these barriers

III. Lack of plant raw materials has hindered the formation of organic fertilizer value chains.

We have plenty of **untapped plant raw materials**

A. Market Wastes

- BSWM provides machine shredder and machine composter – each LGU can avail of these machines – done in Mogpog, Marinduque
- MENRO – distributes compost from market wastes to farmers

B. water hyacinth or water lily

Utilizing these materials will solve more environmental problems Massive populations of water hyacinth clog rivers and water ways and cause massive flooding.

III. Untapped plant raw materials for OF production

Massive growth of water hyacinth - scenaro from Laguna de Bay

Water hyacinth. Lake shore communities can form cooperatives & with capital from LGU and machine shredder from BSW and form tie-up with piggery /poultry enterprises can produce OF.

III. Untapped plant raw materials for production of OF

Water hyacinth converted to compost and used as culture medium for vegetables in floating gardens, Masantol, Pampanga, 2019.

1Issue: Untapped plant raw materials for production of OF

Possible solution:

Another policy recommendation is needed such that the composting of water hyacinth can be integrated into value chain in the crop production system in areas where they are causing massive env't problem.

LLDA, LGUs, BSWM, BF and other LGAs must formulate strategies to eliminate the problem and integrate the OF from water hyacinth to the value chain of crop production in the region where they abound.

IV. Evidence for the Integrated development of OF and role of cooperatives in Mass production of OF

Paper recommendation: Integrate the value chain development of OF and biofertilizers with the development of the livestock, poultry, and agro-processing industry

Batangas Egg Producers Cooperative (BEPCO) - San Jose, Batangas – the Egg Basket of the Philippines registered in CDA- 2010

- farmers, feed millers, and members with related businesses in the egg industry

- with assistance from DA, BEPCO established an Egg Processing Plant, to cater the requirements of food services and manufacturing companies for safe, convenient and economical pasteurized egg products

Source: Alday- Mamang J. 2025. Advancing Bioscience Solutions For Sustainable Layer Industry Through Circular Economy
Www.Thebepcogroup.Com
Paper presented from NAST Luzon Regional Scientific Mtg. Cavite, May 20-21, 2025.

IV. Evidence for the Integrated development of OF and role of cooperatives in mass production of OF

SUSTAINABLE LAYER INDUSTRY THROUGH CIRCULAR ECONOMY

Closed Loop Poultry Farming System to Execute -Circular Economy - More Value, Less Waste

IV. Evidence for the Integrated development of OF and role of cooperatives in mass production of OF

Poultry houses in San, Jose. Batangas

Converted Chicken Manure into Organic Fertilizer

Biogas generation from chicken manure

Insures steady supply of OF

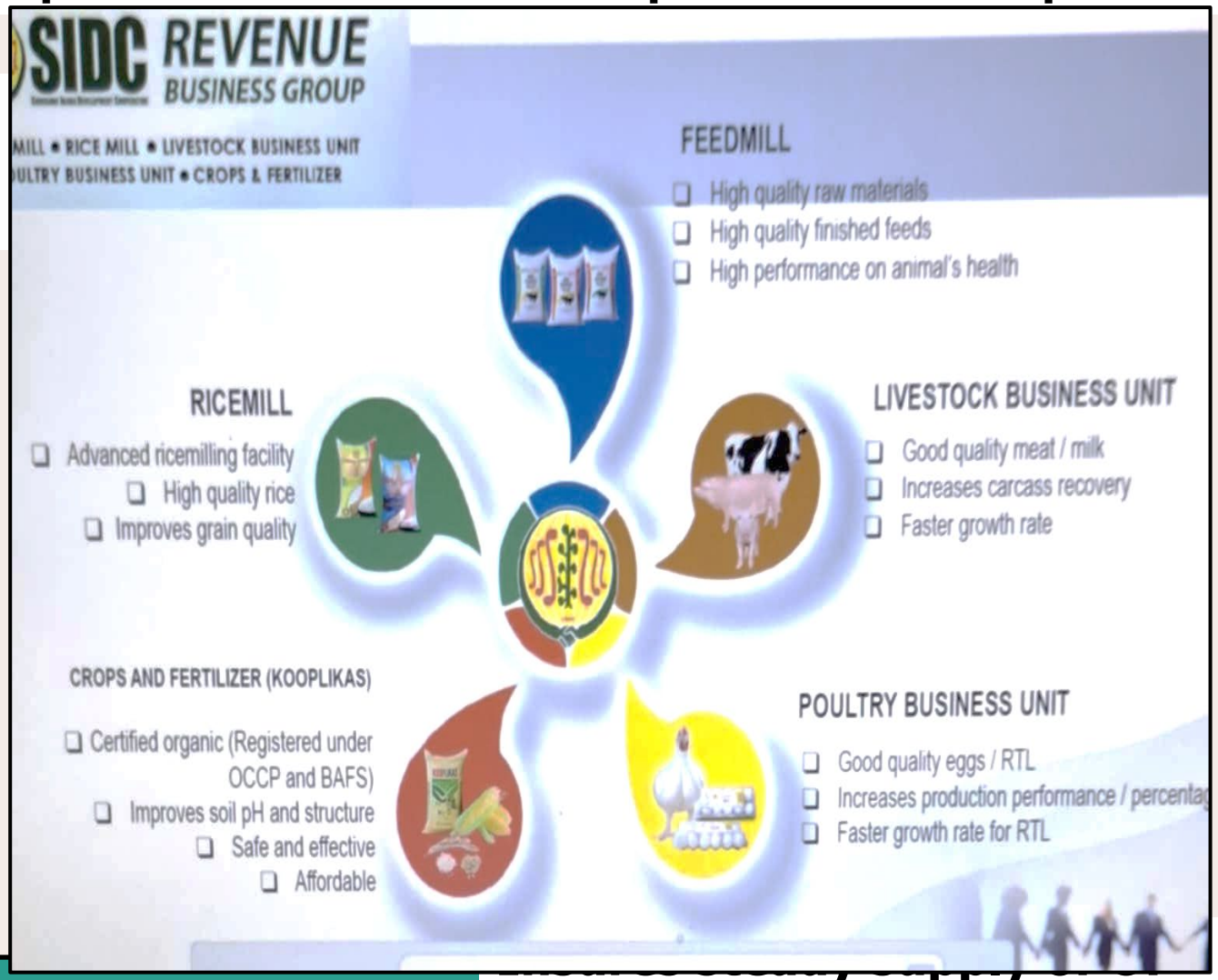
IV. Evidence for the Integrated development of OF and role of cooperatives in mass production of OF

2. Sorosoro Ibaba Development Cooperative - SIDC
Batangas City, Batangas

INTERCONNECTED AGRI-BUSINESS ACTIVITIES
✓ To promote responsible business activities through utilization of its by-products.

Source: . Magsino A G. 2025. Sustainability Through Interconnected Business Activity

Paper presented from NAST Luzon Regional Scientific Mtg. Cavite, May 20-21, 2025.



SIDC REVENUE BUSINESS GROUP

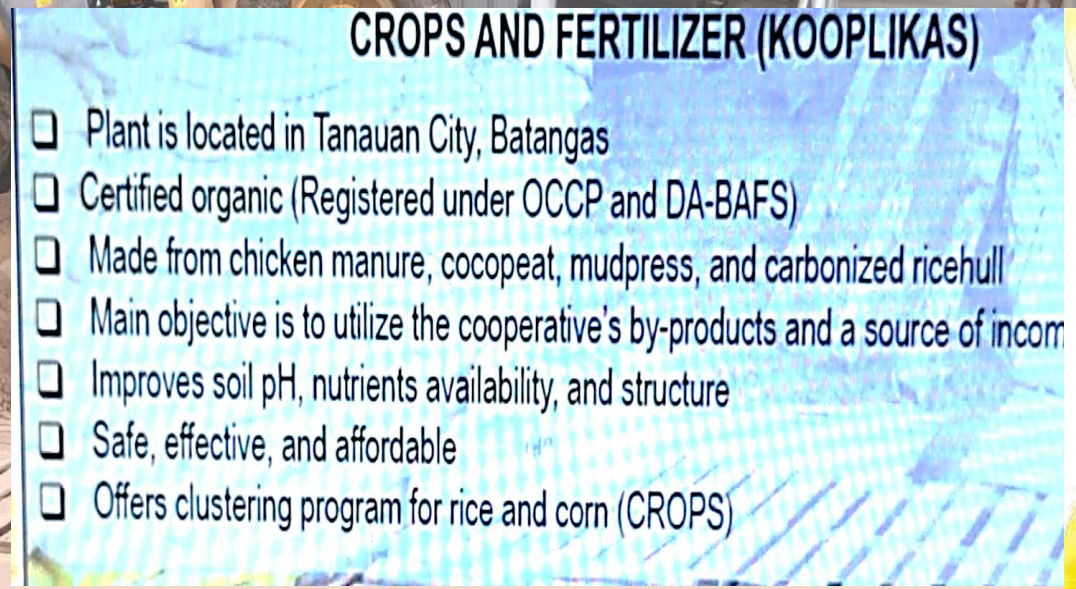
Soroosoro Ibaba Development Cooperative

●FEED MILL ● RICE MILL ● LIVESTOCK BUSINESS UNIT
●POULTRY BUSINESS UNIT ● CROPS & FERTILIZER

KOOPINOY
SIDC SAVINGS AND LOANS
Magaan ang buhay!

CROPS AND FERTILIZER (KOOPLIKAS)
Certified organic (Registered under OCCP and BAFS Improves soil pH and structure
Safe and effective
Affordable

Insures steady supply of OF



III. Role of cooperatives in mass production of OF

Discussion on the Paper: Briones et al 2024

V. Conclusion

Beyond R&D, DA must invest heavily *in extension to promote the widespread adoption of adaptive BFS.*

Farmers have to be convinced to adapt in-situ* rice straw *composting with Trichoderma activator in preparation for El Nino event – occurs with an interval of 2-3 years

If the paper's recommendations are properly implemented soon, we can reduce rice importation and rice-self sufficiency is on the horizon – *provided rice is not used as a political commodity.*

THANK YOU!!!

Literature cited:

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Magsino A G. 2025. Sustainability Through Interconnected Business Activity. 2025. Paper presented at the 47TH Luzon Reg. Sc. Mtg. NAST.