

The Presenters



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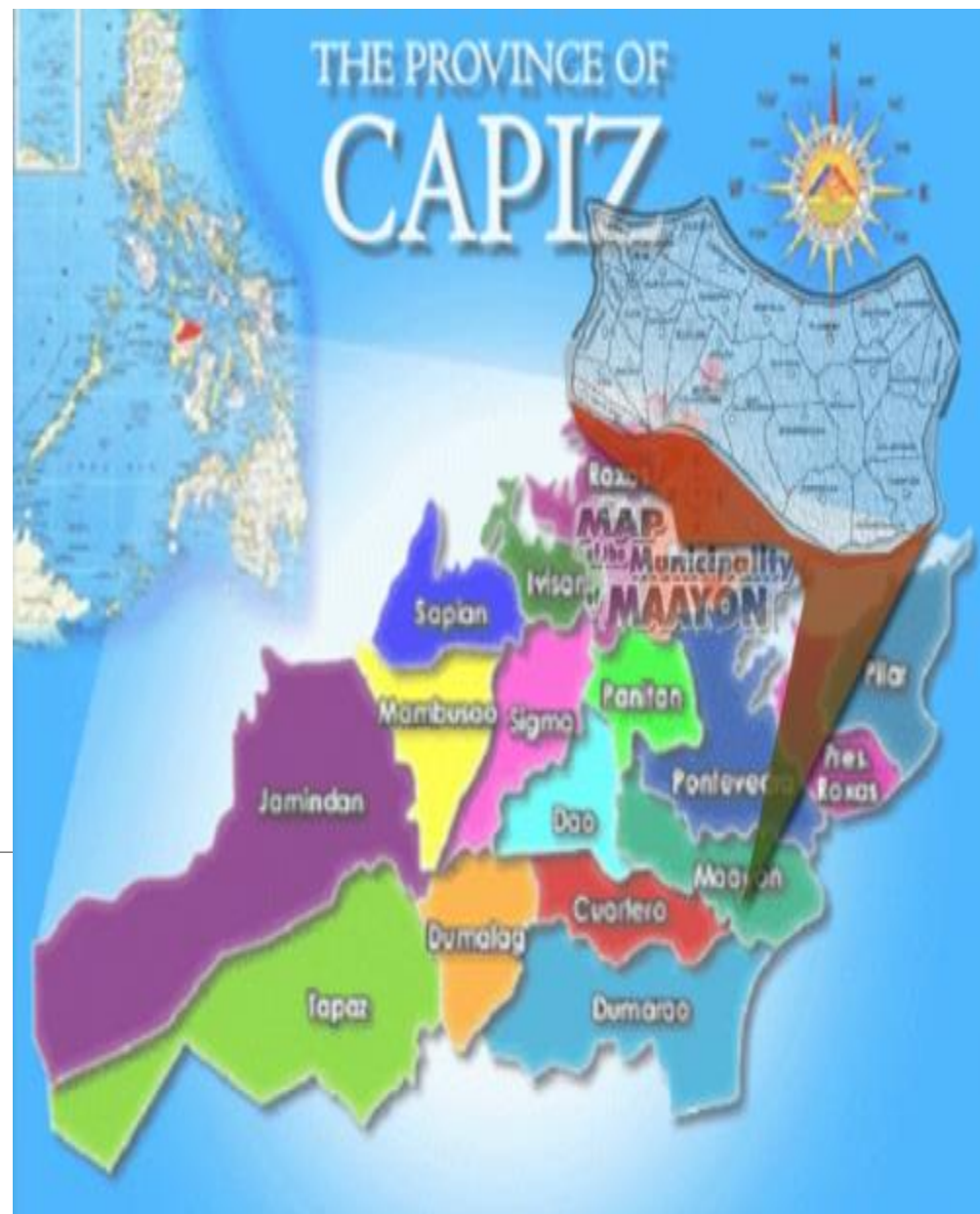
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ORGANIC AGRICULTURE RESEARCH AND DEVELOPMENT

DA-BAR Funded Project

*Capiz State University
Burias, Mambusao, Capiz*



What we are doing?...



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Effect of Nitrogen Sources and Substrate Combinations on the Yield and Quality of Vermicompost using African Night Crawler (*Eudrilus eugeniae* Kinberg)

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Introduction



- ✓ Management of waste has become one of the serious and biggest problem
- ✓ Although various physical, chemical and microbial methods of disposing organic solid waste are currently in use, these methods have some disadvantages and involve high cost (Shobith et al., 2015).

Introduction



- ✓ Vermicomposting has been reported to be a viable, cost effective technique for the efficient management of the organic solid waste (Longsdon, 1994; Hand et al., 1998 as cited by Shobith et al., 2013)



Vermicomposting



- ✓ Vermicomposting or earthworm composting involves a joint action of earthworms and mesophilic microorganisms (Aira et al., 2002) for the conversion of organic wastes into a valuable end product called vermicompost.

Vermicomposting



- ✓ Vermicomposting utilizes earthworms as bioreactors to biodegrade organic wastes to humus. Epigeics like *Eisenia fetida* and *Eudrilus eugeniae* have been used in converting organic wastes into vermicompost. Like most if not all litter-dwelling worms, the compost worm has the capacity for very rapid reproduction (Shobith et al., 2015).

Vermicomposting



- ✓ Vermicomposting process results in the bioconversion of the organic wastes into two useful products: the earthworm biomass and the vermicompost.
- ✓ Earthworm biomass can further be processed into proteins as a source of animal feeds (Hartenstein and Hartenstein, 1981).

Vermicomposting



- ✓ The type of substrate and species used for vermicomposting can influence compost quality, and therefore affect the rate of vermicompost application and its suitability as a soil amendment (Majlessi et al., 2012), and plays a significant role in plant growth and yield (Saikrithika et al., 2015)

Vermicomposting



- ✓ Vermicompost is homogenous, contains many plant growth hormones and soil enzymes, which enriches microbial populations and tending to hold more nutrients over longer periods without adverse impacts on the environment.

Vermicomposting



- ✓ During the vermicomposting process, important plant nutrients such as nitrogen, phosphorus and potassium present in the waste are converted into much soluble and available forms for plant use (Ndegwa and Thompson, 2001).
- ✓ Vermicompost thus serves as a very good fertilizer and soil conditioner (Saikrithika et al., 2015).

Objectives

- ✓ To evaluate the yield and quality of vermicompost using African night crawlers (*Eudrilus eugeniae* Kinberg) as affected by different N sources and substrate combinations

Vermicomposting



Utilization of earthworms



**Utilization of locally available materials
(azolla, leguminous plants, animal manure)**



**Production of organic fertilizer and soil
amendment**

Table 1. Weight of vermicompost produced

N sources	Weight (kg)
Azolla	2.60
Legumes	4.45
Animal manure	3.20

Table 2. Number of worms collected at harvest

N sources	Worms
Azolla	62
Legumes	100
Animal manure	152

Table 3. Quality of vermicompost

Parameter	Values
pH	7.17 – 9.12 (legumes)
Total N (%)	0.48 – 0.83 (legumes)
Total P (%P ₂ O ₅)	0.17 – 0.38 (animal manure)
Total K (%K ₂ O)	0.16 – 0.50 (legumes)
% Organic carbon	8.17 – 13.98 (legumes)

Significant Findings / Implications

- Heavier vermicompost can be obtained using leguminous materials as N source.
- More number of worms can be attained using animal manure as N source of vermicomposting.

Significant Findings / Implications

- Higher pH value, total K and OC can be attained using legumes as N source.
- Higher total P can be obtained using animal manure as N source.

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Maraming salamat po!

Thank you for listening!