

VERMICOMPOSTING IN THE PHILIPPINES

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INTRODUCTION

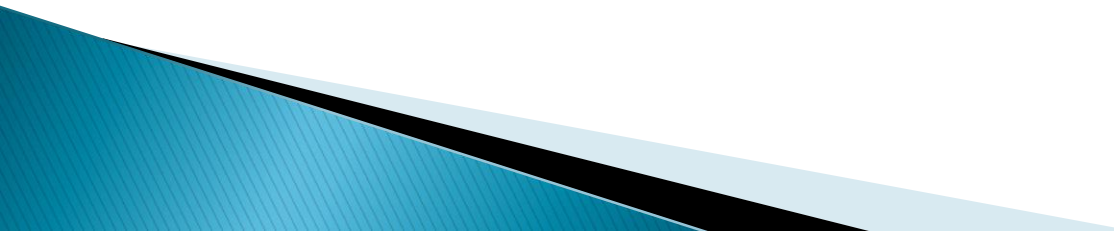
Vermi – Latin for “worm”

Vermicomposting – the aerobic production of compost using earthworms and biodegradable materials

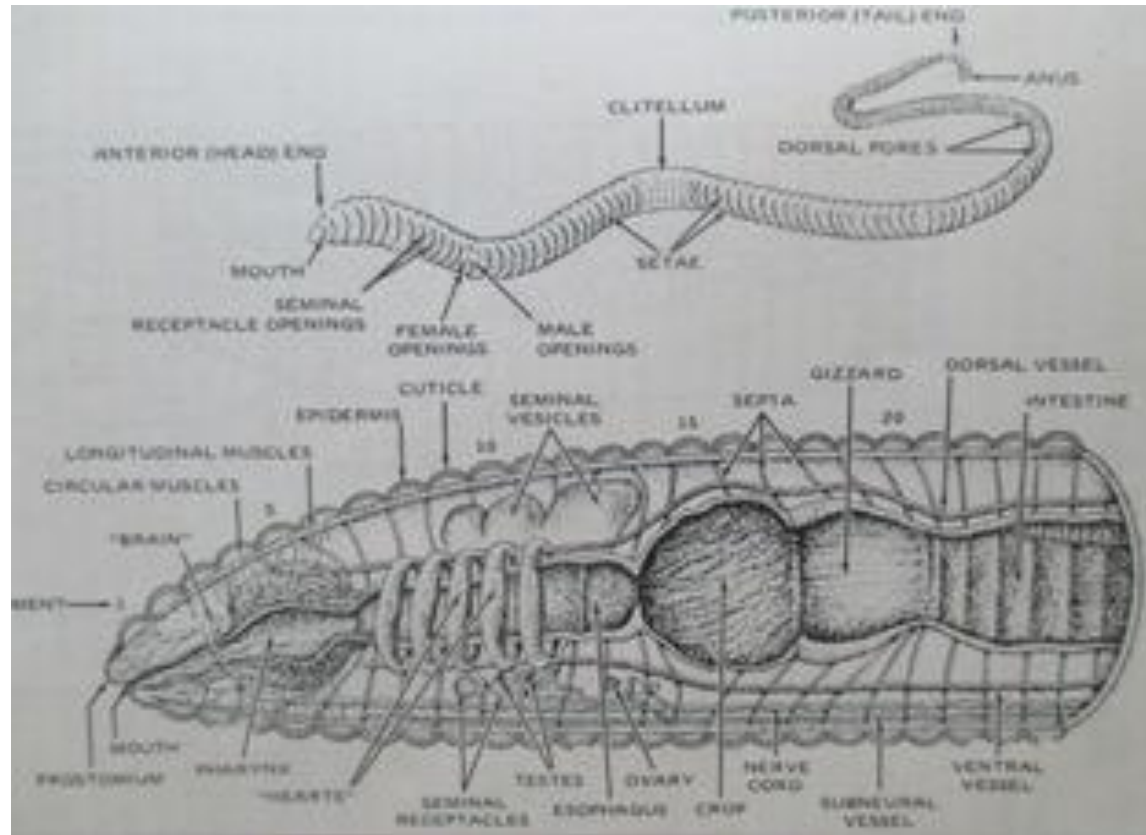
Vermicompost – an excellent soil enhancer and bioactive fertilizer for organic farming

Vermiculture – the farming of earthworms

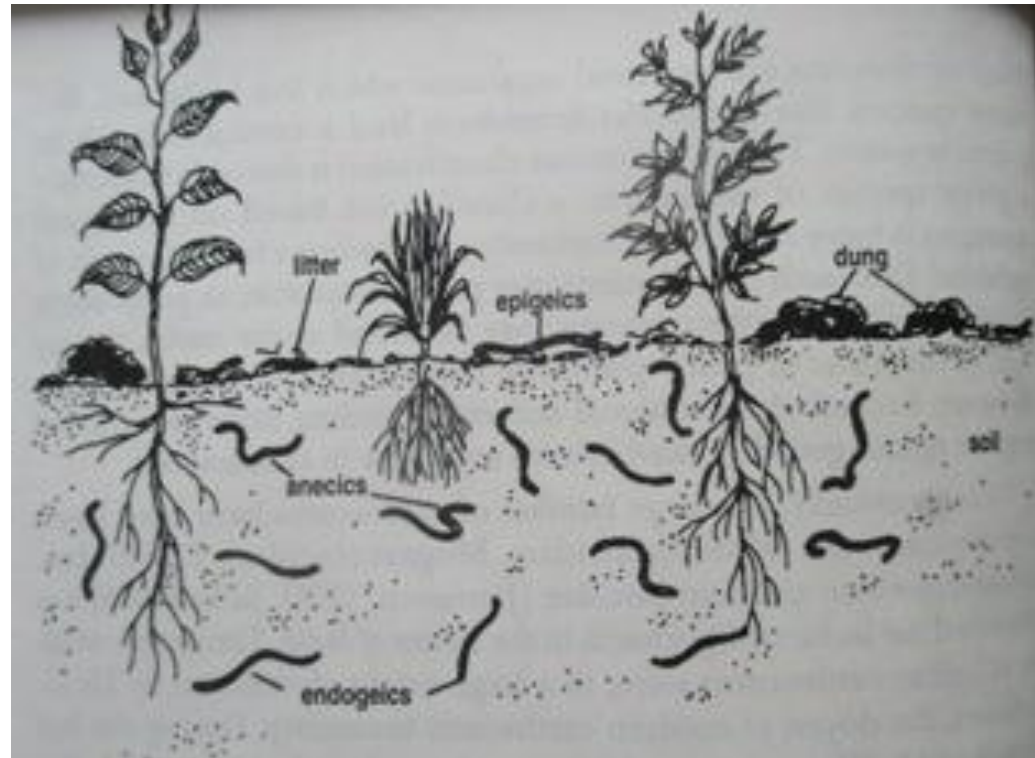
What are earthworms?

- Harmless segmented invertebrates (annelids)
 - Not parasitic
 - Soft-bodied, with no special covering
 - Breathe through their skin
 - Feed on moist organic material rich in bacteria and fungi
 - Hermaphroditic or parthenogenetic
 - There are around 4,000 species in the world; about 29 have been identified in the Philippines
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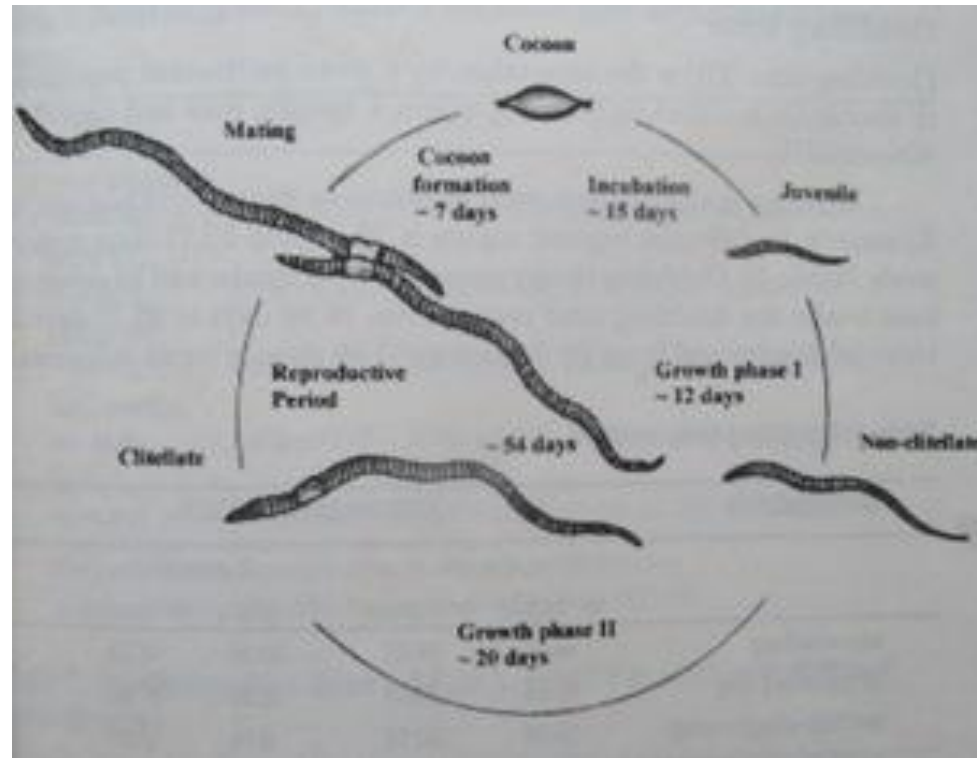
THE ANATOMY OF AN EARTHWORM



Classification of Earthworms



Life Cycle of an Earthworm



VERMICOMPOSTING WORMS

- (1) *Eisenia fetida* – “manure worm”
– a temperate species



- (2) *Eudrilus eugeniae* – “African night crawler”
– a tropical species from West Africa;
introduced in the Philippines in 1982



REQUIREMENTS OF COMPOSTING

- ▶ **C/N Ratio**
 - The balance of carbohydrates and nitrogenous compounds required by microorganisms for energy and growth. The ideal ratio is 25:1.
- ▶ **Water**
 - Required by microorganisms for growth
 - The favorable moisture level is 60–80%
- ▶ **Oxygen**
 - Aerobic bacteria require oxygen for respiration.
 - Loose and small particles hasten aeration.
- ▶ **Temperature**
 - Influence rate of decomposition
 - The range of 25–30 degrees Celsius is desirable for tropical conditions.

THE VERMICOMPOSTING PROCESS

- ▶ **Collection and transport of biodegradable materials**



- ▶ **Shredding of materials with a machine**



- ▶ **Thermophilic (40 degrees Celsius or more) anaerobic decomposition of processed materials for 1–2 weeks**



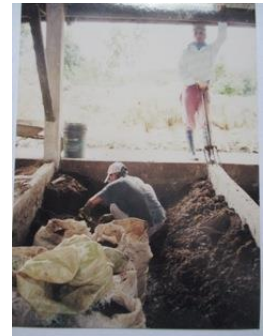
- ▶ **Laying out of processed materials (substrate) in a culture unit**



- ▶ **Checking for moisture of substrate and predator control**



- ▶ **Harvesting of vermicompost and EW biomass**



- ▶ **Processing of vermicompost**



TIMELINES OF THE VERMICOMPOSTING INDUSTRY

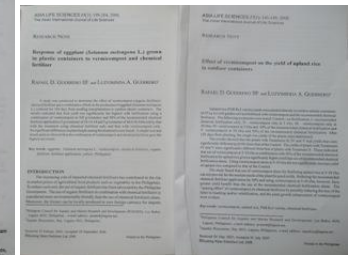
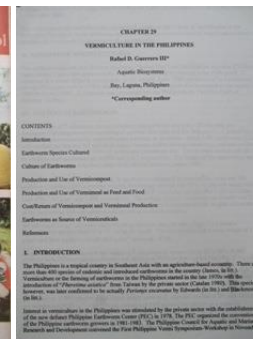
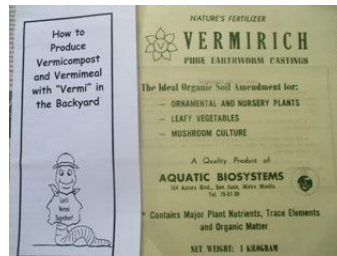
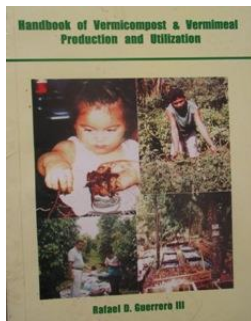
- ▶ **Early 1980s**
- ▶ Studies on the culture of the “African night crawler” (ANC) for producing vermicompost (VC) using pig manure (Guerrero *et al.*, 1982)



Yield and cost of producing pechay (*Brassica compensis*)
with VC and complete fertilizer (CF) application

Treatment	Mean yield/plot (kg)	Cost of fertilizer/plot (P)
VC (100%)	4.1	2.25
VC (50%) + CF (50%)	4.7	3.93
VC (25%) + CF (75%)	4.6	4.78
CF (100%)	3.7	5.62

► **Mid-1980s – Mid-1990s**
Technology extension through lectures, trainings, demonstrations and publications



▶ **Late 1990s**

The Buro–Buro Vermi Farm (Brgy. Concepcion, Talisay City, Negros Occidental – first commercial adoption of the vermicomposting technology



Batchoy and Pamela Henares



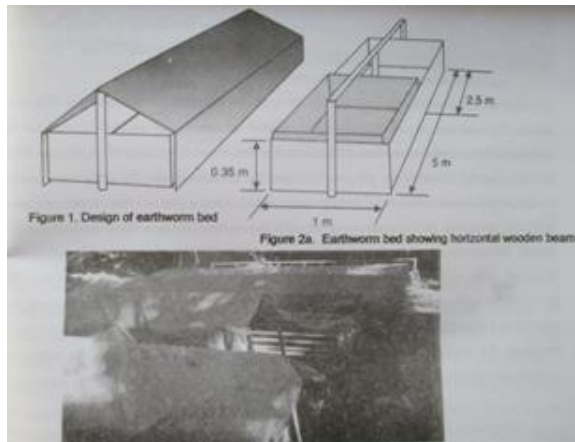
► In the 2000s

Guerrero and Guerrero (2006)

Yield and cost of eggplant fertilized with VC and CF

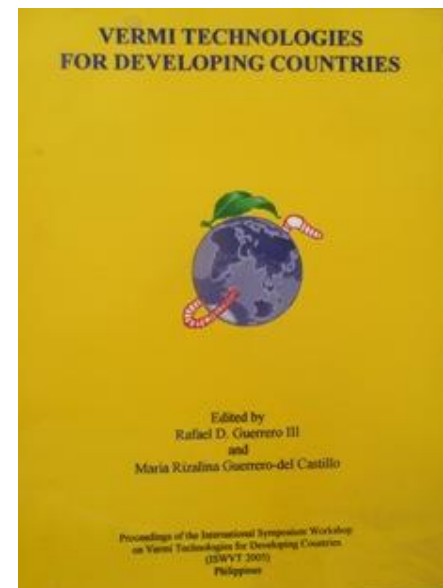
Treatment	Yield/plant (g)	Net return (P)
Control	12.5	1.56
VC only	76.2	8.25
CF only	123.7	13.50
VC + 50% CF	146.7	16.50

- ▶ Cruz (2005) in Brgy. Sum-ag, Bacolod City
 - determined the production cost of VC (cow manure + bagasse + mudpress) to be P3.53/kg
 - determined cost of ANC to be P7.06/kg



Holding of the 1st International Symposium- Workshop on Vermi Technologies for Developing Countries

PCAMRD, Los Banos, Laguna Nov.16-18, 2005



The National Vermicompost Production Program (2006–07)

- funded by the NEDA with P17.5 M
- conducted by State Colleges and Universities in 16 regions; coordinated by PCAMRD–DOST
- training of trainers, equipment, IEC materials



▶ The Present (2016)

The Kahariam Vermi Farm in Brgy. Adya, Lipa City, Batangas

- Has 1.6 hectares of outdoor culture area with covered sheds; using horse manure from more than 20 race horse farms in Batangas
- Produces 4.5 tons/day of “Vermicast” registered with the Fertilizer and Pesticide Authority (P285 / bag of 50 kg)
- Certified organic by the OCCP

THE KAHARIAM VERMICOMPOSTING MODEL



SUMMARY

Key Drivers of the Vermicomposting Industry

- (1) Scientific studies were conducted as a basis for the technology.
- (2) Technology dissemination was done.
- (3) The farmers/users were involved.
- (4) Government support was provided.
- (5) Private sector innovation came about.

State of the Industry

There are more than 200,000 stakeholders in the industry with an estimated value of P500M.

HAVE A WORMY DAY!

