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# Organic Farming for Sustainable Agricultural Production

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**Lecture 16 : Vermicompost Quality and Marketing**

# Quality Criteria for Vermicomposts

## A. Physical Characteristics

- Bulk density, Porosity and Particle size
- Moisture content

## C. Biological Characteristics

- Enzyme activity
- Microbial Community

## B. Chemical Characteristics

- Acidity (pH)
- CEC
- EC
- C/N ratio
- Total C, N, P and K content
- Ammonical-N and Nitrate-N
- Secondary nutrients (Ca Mg S) and micronutrients content

## Quality Criteria for Vermicompost

Physical and Chemical parameter	Content
Organic Carbon (%)	20- 25
Pore space (%)	70-80
Moisture (%)	30
Acidity (pH)	6.5-7.5
CEC	50-100 meq/100 g soil
EC (soluble concentration)	< 1 dS/m
Total N (%)	1 to 3
C/N	10 - 20

Chemical and Physical parameter	Content
Total P and K	> 0.7%
Ca and Mg	>1.0 % and >0.5%
Ammonium N	300 ppm
Nitrate N	100 to 200 ppm

## Comparison between Conventional VC and Enriched VC

Chemical Properties	Conventional VC (%)	Microbial Enriched VC (%)	Rock enriched VC (%)
Total N	1.3-1.5	1.8-2.4	1.4-1.5
Total P	0.8-1.0	0.9-1.3	2.9-3.5
Total K	1.0-1.1	1.1-1.60	2.8-3.5
Total Ca	0.5-0.8	1.5 - 2.0	7.0-8.0
Total Mg	0.1-0.2	0.6 - 0.8	1.5-2.3

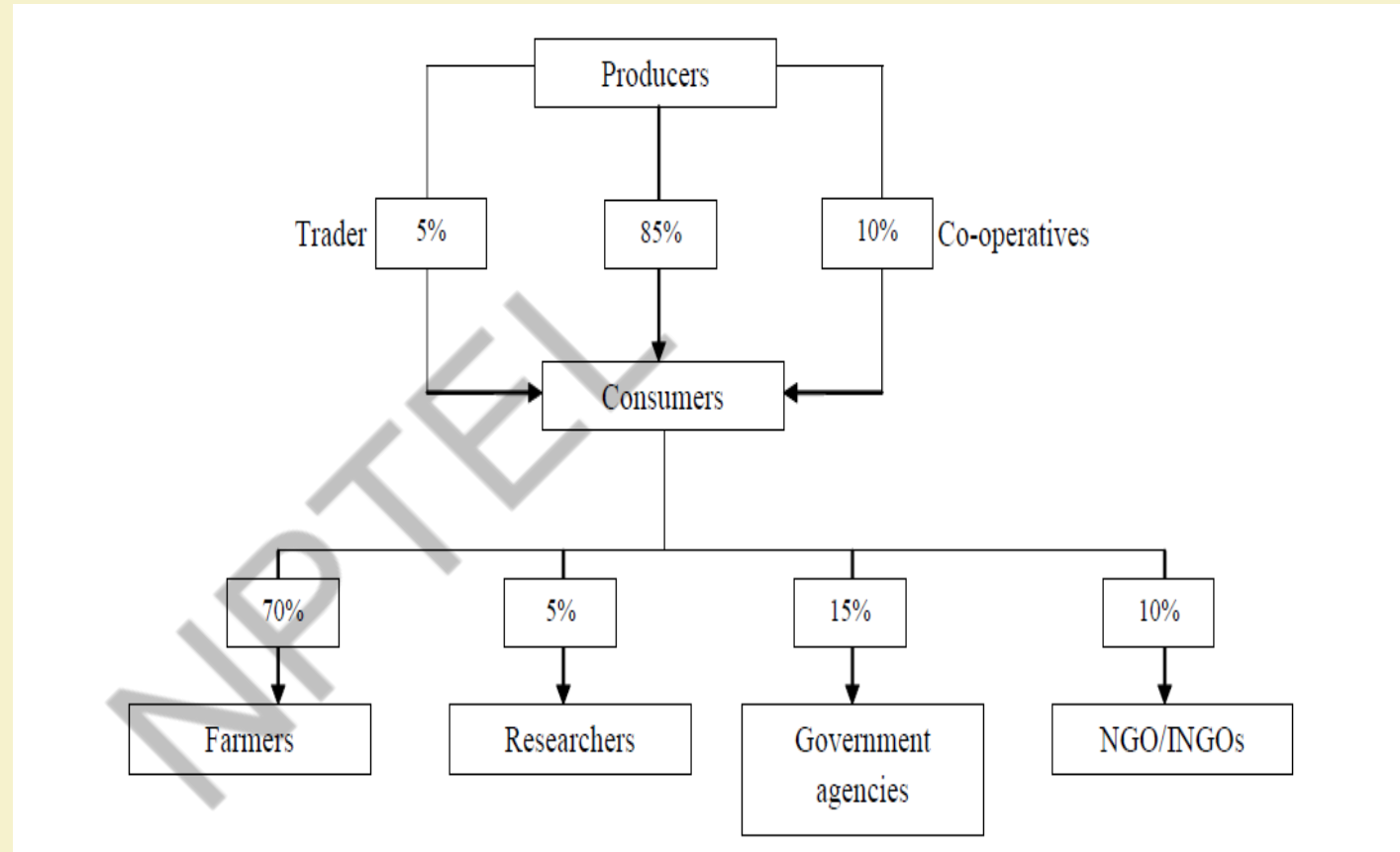
Chemical Properties	Conventional VC (ppm)	Microbial Enriched VC (ppm)	Rock enriched VC (ppm)
Available N	103-1326	1600-1700	705-1500
Olsen P	900-1087	900-1125	1165-1444
Ammonium acetate K	1250-3330	4320-5230	4320-9274

Bio Chemical Properties	Conventional VC	Microbial Enriched VC	Rock enriched VC
Urease Activity ( $\mu\text{g NH}_4 \text{ g}^{-1} \text{ hr}^{-1}$ )	80-90	120-130	116-130
Acid Phosphatase activity ( $\mu\text{g pnp g}^{-1} \text{ hr}^{-1}$ )	158-172	200-255	216-222

**All value depends upon Input material in the vermicomposting process**

## Some tips of Marketing.....

- To market vermicompost for top value – the product must be uniform, consistent and reproducible
- Don't think “compost” as the only end product
- Truly understand your targeted growers and their expectations



**Marketing Channels and Market volume of vermicompost in Nepal** (Source: Devkota et al. 2014)





## Order Taking



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## Packing into a breathable bags



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## Labelling of Vermicompost Bag

- Name of the product
- Logo of the company
- Composition of the product
- Crop specific suitability
- Usage details
- Specific action
- Manufacturing and expiring date



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## Sample Cost Analysis of Vermicompost (10 beds) and six cycles in year

Parameter	Fixed Cost (Rs.)
Construction of bed (Earthing up, bricks, cement)	10000
Cost of construction of shed	40000
Cost of machinery and implements	20000
Cost of irrigation facilities	30000
Total	100,000



# Sample Cost Analysis of Vermicompost (10 beds) and six cycles per year

Parameter	Variable Cost (Rs./year): First year	Variable Cost (Rs./year): Second year onwards
Organic waste (9000 kg)	2250	2250
Cow dung (4500 kg)+Transportation cost	2250	2250
Earth worm (20 kg for first cycle)	13000	-
Fungus culture (30 litre)	300	300
Labour (180)	36000	36000
Electricity	3000	3000
Packaging	240	240
Miscellaneous expenses	1500	1500
Total	<b>58540</b>	<b>45540</b>

ITEM	Return/year, Rs
Vermicompost (9 tonne)	*90000
Vermiwash (300 litre)	3600
Earthworm (50 kg)	35000
Total	<b>128600</b>

\* Rs 10000 and Rs. 15000 per tonne of conventional and enriched VC, respectively

## Cost and return analysis of Conventional VC

Years	Fixed cost, Rs	Variable cost	Total cost, Rs	Total Return, Rs	Net Return, Rs
Year 1	100000	58540	158540	128600	-29940
Year 2		45540	45540	128600	83060
Year 3		45540	45540	128600	83060
Year4		45540	45540	128600	83060

## Cost and return analysis of Enriched VC

Years	Fixed cost, Rs	Variable cost	Total cost, Rs	Total Return, Rs	Net Return, Rs
Year 1	100000	62140	162140	173600	11460
Year 2		49140	49140	173600	124460
Year 3		49140	49140	173600	124460
Year4		49140	49140	173600	124460