Role of Vermicomposting in Health Care Waste (Organic Waste) Management

Presented by

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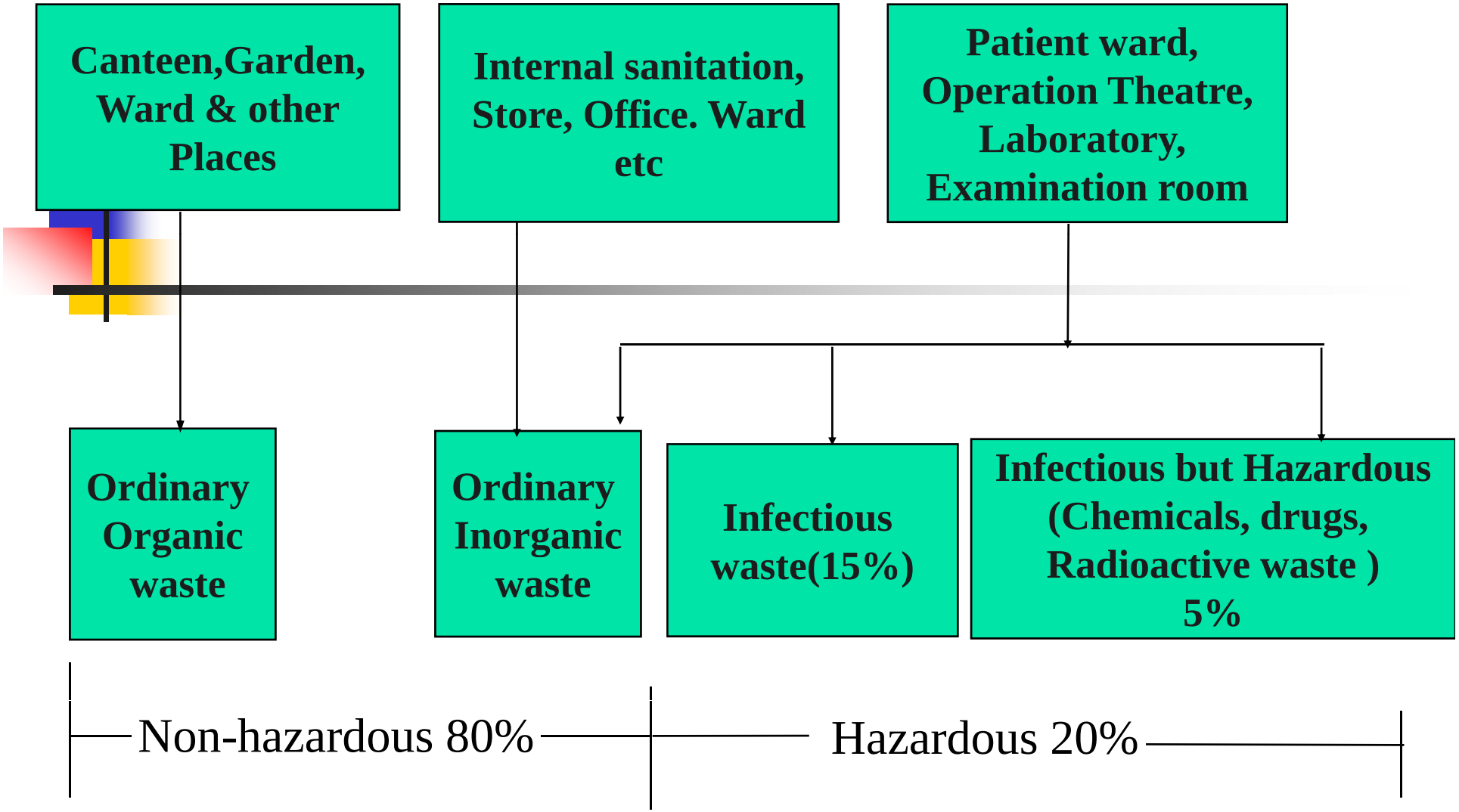
Health Care Waste (Source)



Problems due to mismanagement of Organic Waste

- Provides food & shelter to disease carrying rodents, insects & other organisms.

Vermicomposting

- The process of using earthworms for converting the organic waste into Vermicomposting.

What is Vermicompost?

- Vermicompost is worldwide accepted as humus bio-fertilizer, Soil fertility booster, soil activator, best organic manure and soil conditioner, with all required plant nutrients, humus, organic carbon, Vitamins, enzymes, growth hormones and beneficial microbes like nitrogen fixing, Phosphate solubilizing, denitrifying and decomposting bacteria.

Requirements for Vermicompost Production

- Land
- Shade
- Water
- Biodegradable waste
- Earthworms *(Eisenia foetida, Perionyx excavatus, Eudrilus euginae and Lampito mauritii)*

Vermi Culture/Composting
Eisenia foetida

- Eisenia foetida commonly called Red worm or Banded worm or Tiger worm, belongs to surface litter dwellers.
- Nocturnal and feed on Organic matter (All kinds of waste materials except non biodegradable)
- Ideal living conditions require control of temperature (15-35 degree centigrade), moisture content(40-60%) and sufficient feed stock (Solid waste).
- Found to feed and multiply all through out the year.

Vermitechnology

- Environmentally friendly technology.
- Make use of waste material both in urban as well as rural areas to improve Sanitary conditions.
- Make Minimization of Waste at the sources
- Does not use of Energy/electricity
- Completely biodegradable
- Management of 70-75% waste

Vermiculture-Present status

- Increasing cost of inputs (Chemical fertilizers) and soil degradation due to excessive use of chemical fertilizers.
- Need for decentralized urban solid waste (Organic matter) Management.
- All locally available materials can be used, which cost less.
- User friendly, even handicapped person can do.
- Produces high quality compost. (8-10 times better than conventional compost)

Present Status....

- Enables rapid multiplication of microflora to further enhance bio nutrients (Bacteria, fungi, Actinomycetes, Auxins, Cytokinins)
- Shorter period (45-55 days) as compares to normal(100-150 days)
- Very high rate of multiplication of worms enabling early capacity expansion.

Present status.....

- The work on enrichment, fortification and value addition to vermicompost is being done by adding Limestone, pressmud from sugar mills, Granite dust, wood ash, Sulphur dust, powdered Rock phosphate.
- The ever increasing demand for earthworms can be met further improve the economic viability of vermicompost units.

  -10 to 15 times multiplication within 3 months.

Key result areas

- As an effective replacement of chemical fertilizers.
- As soil conditioner and drought proofing.(very high bio nutrient content, moisture retention capacity)
- improves texture, structure and chemical composition of soil
- Provides all plant nutrients in desired quantities and soluble forms

Key result areas

- Easy to apply- available in granular form and can be applied at any stage of crops, i.e. field preparation to few weeks before harvesting.
- Improve quality of farm products (colour, texture, taste, size etc.), increases nutrient content to provide nourishing diets).
- Most economical input that increases production, reduces cost of cultivation.

Characteristics of Vermicompost

- **Physical**

Dark brown/black rich humus, soft, free from any foul smell and contamination.

Improves absorption of plant nutrients in soil

Direct manurial value at least 8-10 times better than farm yard manure.

Increases in aeration of soil, excellent water retention properties, contains sufficient moisture

Characteristics.....

- Chemical

pH :7.0 - 7.5

C:N ratio :12 -15:1

N :1.7- 2.5%

P :1.5 -2.25%

K :1.25-2.0%

Ca, Mg, SO_4:3.0-5.0 times better than FYM

Fe, Zn, Mn, Cu: 200-700 ppm

Characteristics....

Microbiological:

- Total bacterial count :more than 10^{10}
- Actinomycetes, Fungi, Azotobacter,Rhizobium :Approx.10^{2}-10^{6}

Benefits of Vermicompost

- Increase yield
- Activates soil
- Helps in integrated nutrient management
- In tea garden land can be reclaimed for new plantation within 6 months.
- Poor soil, weak sections and waste land can be developed and improved.
- Reduction in pest attack
- Helps in water management as improves the water holding capacity.
- Growth promoting hormone.

Red Worms (Composting Worms)

Feeding Materials Preparation For worms

Pile composting & Barrel composting

Thank you