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Title of the Paper:- Environment Science & Ecosystem Management.

Solution 1

→ Structures of Ecosystem:-

(i) Basic structure of Ecosystem:-

This structure has two components in itself:-

a) Abiotic Components

It includes the inorganic compounds like, CO_2 , water, N_2 , Ca, etc., ~~an~~ organic compounds like that are biologically synthesized by the biotic counter parts and the Physical environment.

b) Biotic Components. plants &

Majorly it includes the animals in present in the ecosystem.

eg. Autotrophic (Producers), Heterotrophs (consumers) and Decomposers.

(ii) Physical structure of an Ecosystem:-

→ It is classified at different levels and categories:-

→ Mountains, valleys, cracks, Swamps, lakes, etc.

→ Vertically we distinguish ecosystem as

— Sub-surface layer

— Soil layer

— Ground

— Herbaceous

— Shrub

↓ — Subdominant tree canopy

— Dominant tree canopy

↓ — Aerial layer.

(III) Chemical Structure of an Ecosystem:-

- Elemental Difference
- Compound Difference
 - Structural difference in Abiotic
 - Structural difference in Biotic
 - Human intervention.
- Chemical components with special information content in ecosystem.
 - Pigment, Enzymes, Nucleic acids, Vitamin, Protein, Hormones, Phenolic & Terpenes.

(IV) Genetic Structure of an Ecosystem:-

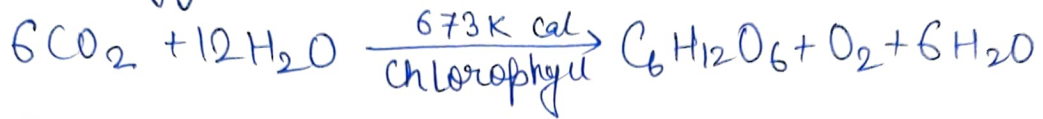
- This structure are specific for biotic components.
- Genetic structure is only based on the information embedded in the nucleic acid.
- This structure is manifested in
 - Species level in Population.
 - Trophic level in the ecosystem.
 - Ecosystem level where environmental variable force genetic evolution.

→ Energy flow in the Ecosystem:-

→ Ultimate energy is in the form of Solar Energy.

→ Autotrophs traps solar energy (producers) and later it moves to the heterotrophs (consumers). The energy is transferred from one trophic level to another in succession in the form of a chain which is called food chain.

→ Energy Fixation (Productivity)



→ Rate of energy fixation

→ Primary productivity is generally expressed in $\text{K cal/m}^2/\text{annum}$ or $\text{cal/m}^2/\text{day}$.

$$P_g = P_n + R$$

\downarrow gross productivity \downarrow Net Productivity \rightarrow Rate of respiration.

→ Secondary productivity

- Gross sec. productivity is the total plant material

- Net secondary productivity is the amount of energy stored in the tissue of heterotopes after respiration.

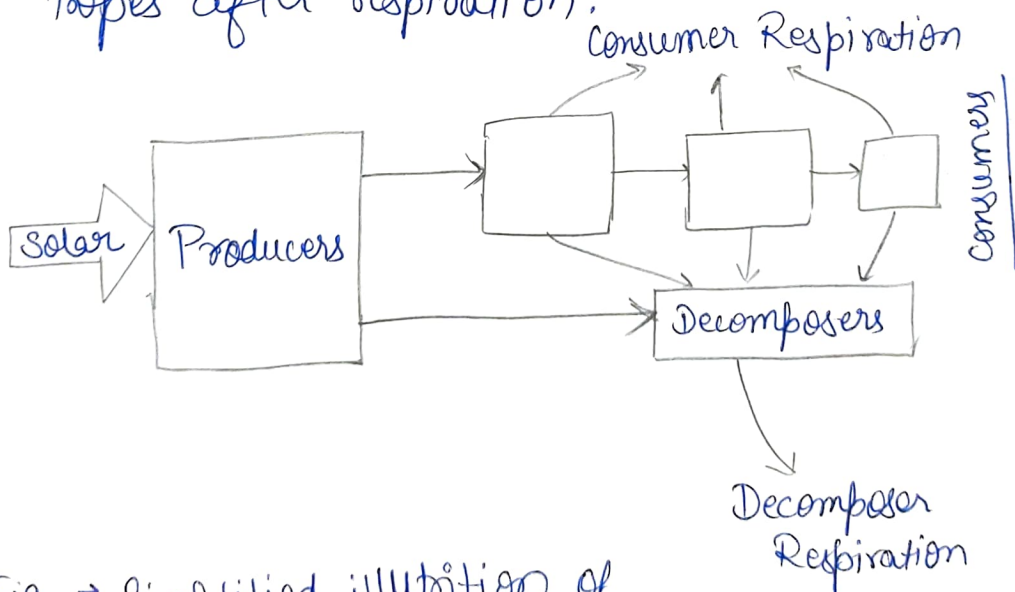


Fig. → Simplified illustration of the energy flow from solar to decomposer.