Forest Processes
Group B

Outline

1. Introduction
2. Energy flow
3. Nutrient cycling
4. Litter decomposition
5. Discussion

Introduction

Climate: hot and wet

Soil: Oxisol derived from metamorphic rock

Luxurious vegetation

No human disturbance

Isolated system

Energy Flow

- Laws of thermodynamic

1st: the sum of the net heat, supplied to the system and the net work done by the system is equal to zero

2nd : Degradation of energy from concentrated (non-variation) to dispersed (random) form e.g. heat dissipation and development of food chain / food webs.

Food Chain

- Food chain is regarded as the energy flow among living organisms
- E.g. grass→ worm → bird
- Only 10% of energy in biomass can be passed to next trophic level
- Energy loss to environment

  e.g. respiration, excretion and death

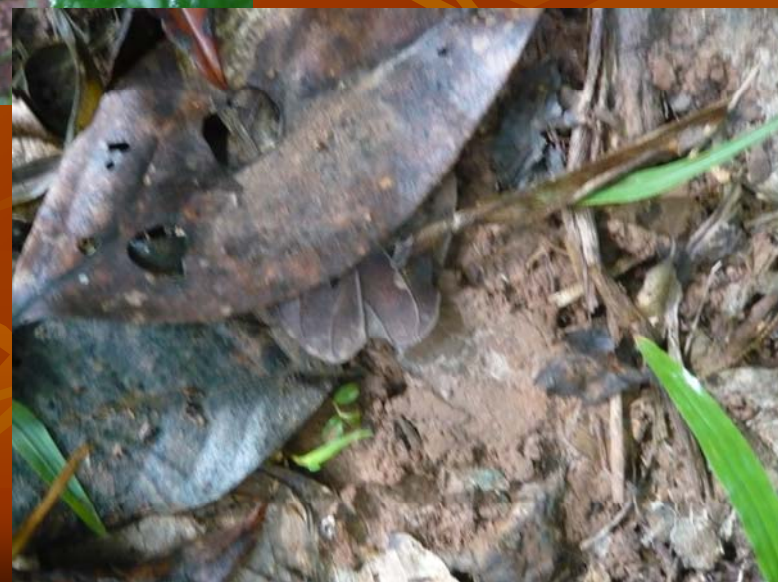
Nutrient Cycling

Source of nitrogen:

- Atmosphere (78%)- Dry and Wet deposition
- Input by animals- Dead body and droppings
- They cannot be uptaken by plant directly because it is immobile

3 important pathways in nutrient cycling in TRF

1. Throughfall
2. Stemflow
3. Litterfall



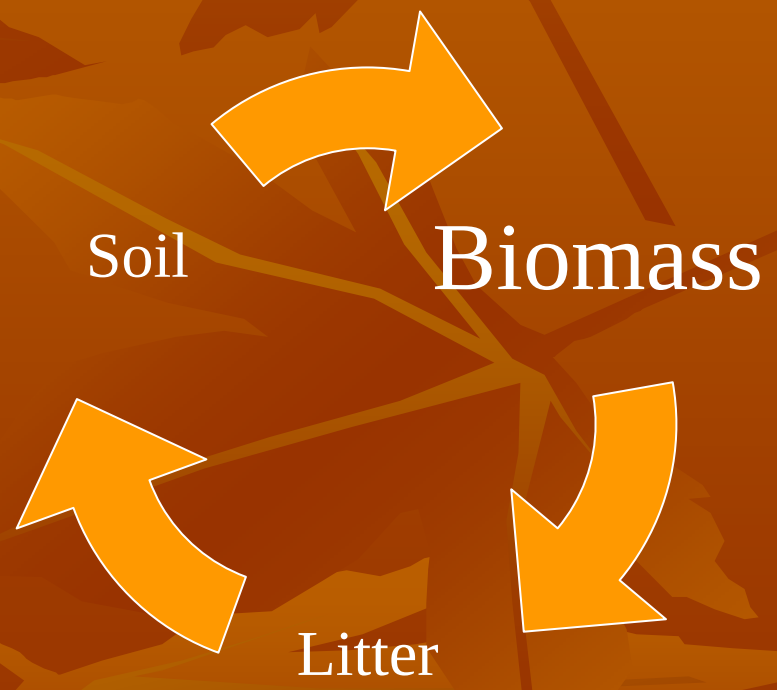
Processes

Immobile nitrogen(N2)→ absorbable form nitrogen(NO3-, NH4+)

- Lightning
- Biological nitrogen fixation in legumes (root nodules have nitrogen fixing bacteria)
- Free living bacteria

Nutrient Cycling

- Soil, litter and biomass
- Self- Sufficient
- Tight and rapid



Litter Decomposition

- Originally, the productivity of litter is high
- But, due to hot and wet climate
- Decomposition rate is high
- Hence, standing litter is thin (2-3 tons /hectare)

- Humification
- Mineralization

Discussion