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5.3 ENERGY AND ECOSYSTEMS

Energy

Net production of consumers

- Very little energy transferred at each stage for growth
  - Not all of the organism is consumed
  - Lost as heat
  - Lost in faeces and urine
- N = I – (F + R)
- Food chains are often not very long
- Farming increases efficiency of energy transfer e.g. providing heating, restricting movement
- Secondary and tertiary consumers then obtain energy from primary consumers
- NPP is also available to consumers e.g. herbivores

Net primary production

- NPP is left over for plant growth and reproduction

Gross primary production

- Chemical energy left after accounting for respiratory losses
- NPP = GPP – R
- The chemical energy in the biomass of plants

Ecosystems

Producers

- Plants synthesise organic substances using sunlight and carbon dioxide
- Plants use the sugars for respiration and making biological molecules
- Biological molecules comprise the biomass of the plant

Biomass

- Mass of living material
- Fresh mass can be affected by water, so dry mass is used
- The chemical energy in dry mass is estimated with calorimetry

Productivity

- Rate of production of biomass in a given area in a given time

AQA

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