

# Ecosystem Productivity

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## Energy Production

Ecosystem productivity is the rate of organic matter accumulation in an ecosystem. If it gets changed over generations will be good to determine the changes in long-term ecosystem productivity. It describes the ability of a landscape to sustain in the healthy ecosystems. Physical, chemical and biological conditions and processes influence this process. Factors such as climate change decreases aquatic ecosystem productivity.

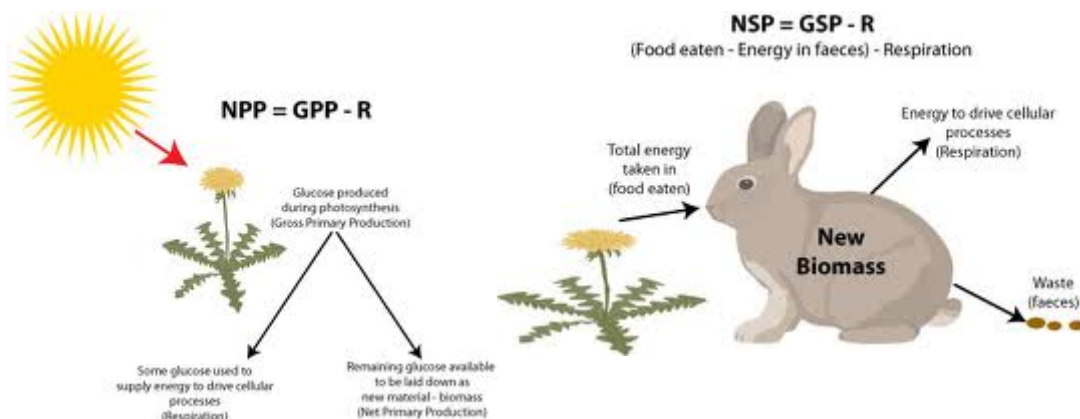
### The Energy

The atmosphere receives heat. How? Tropical region & temperate regions during the day time & the growing season receive energy of surface. Because all of the sunlight trapped in photosynthesis (plants food production process) is released as heat. So it is clear that the flow of energy through ecosystems is measured in units of heat.

## Gross Productivity

At a given trophic level, the amount of energy captured in organic matter during a specified interval is known as a Gross productivity.

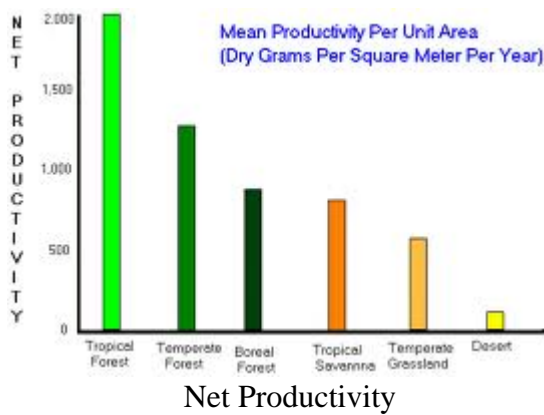
The amount of trapped energy is varying between plants. Photosynthesis, evaporation and reflection together make the 100% energy of gross productivity. Light energy is converted to chemical energy by photosynthesis within the cells of plants. All the energy fixed by plants is converted to sugars. This is Gross Primary Production (GPP), because it occurs in the primary producers, the plants and that is difficult to measure. But measuring the Net Primary Production (NPP) is useful and easy too.



The productivity Process

## Net Productivity

The energy lost by the respiration of the organisms at the tropic level would be deducted from the amount of energy trapped in organic matter during a specified interval. An ecosystems NPP is the rate at which plants accumulate dry mass, usually measured in  $\text{kg m}^{-2} \text{yr}^{-1}$ . This stored energy is the major food for consumers within that ecosystem.



### Net productivity of a plant community

Herbivores start of a series of transformations which make up a food chain and a food web.

- Fungi and bacteria consume some amount.
- Some amount may be stored.
- GPP Vs NPP

NPP represents the difference between the rate at which plants photosynthesize (GPP) and the rate, which they respire (R).  
( $NPP = GPP - R$ ).

Glucose is produced in photosynthesis. It is useful for plant growth, maintenance and reproduction. So some amount of the energy would be lost. This is called as the respiration. The remaining is deposited in and around cells represents the stored dry mass.

### Human and productivity

Humans depend upon net productivity for food both directly and indirectly.

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### Reference Links:

- <http://www.sciencedaily.com/releases/2008/04/080424112451.htm>
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC15485/>
- [http://en.wikipedia.org/wiki/Primary\\_production](http://en.wikipedia.org/wiki/Primary_production)
- [http://en.wikipedia.org/wiki/Ecological\\_pyramid](http://en.wikipedia.org/wiki/Ecological_pyramid)

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