



Global Cropland Expansion

For Prelims: Cropland area, Cropland Net Primary Production, Sustainable Development Goal, deforestation, Food and Agriculture Organization (FAO).

For Mains: Impact of the Expansion of the Cropland area and steps that can be taken to address it.

Why in News

According to a new study, **cropland area** across the world **increased 9%** and **cropland Net Primary Production (NPP)** by 25% from 2003-2019.

- The growth was **primarily due to agricultural expansion** in Africa and South America.

Cropland Area

- Cropland is defined as 'land used for annual and perennial **herbaceous crops** for human consumption, forage (including hay) and biofuel'.
 - Perennial woody crops, permanent pastures and shifting cultivation are excluded from the definition.
 - Herbaceous energy crops are perennials that are **harvested annually**.

Cropland Net Primary Production

- Net Primary Production (NPP) is defined as the **difference between the energy fixed by autotrophs and their respiration**, and it is most commonly equated to increments in biomass per unit of land surface and time.
 - An autotroph is an **organism that can produce its own food** using light, water, carbon dioxide, or other chemicals.
 - Respiration is a **chemical reaction** which occurs in all living cells, releasing energy from glucose.

Key Points

- **Cropland Expansion:**
 - The **largest cropland expansion** was observed in **Africa**.
 - In Africa, cropland expansion accelerated from 2004-2007 to 2016-2019, with a more than two-fold increase in annual expansion rates.
 - The **largest proportions of natural vegetation conversion to croplands** (excluding dryland irrigation) were found in **Africa, southeast Asia and South America**.
 - **Global per capita cropland area** decreased 10% during the period due to population growth but the **per capita annual cropland NPP** increased by 3.5% as a result of

intensified agricultural land use.

▪ **Reasons behind the Expansion:**

- The agricultural expansion is often explained as a direct consequence of the **global increase in food and energy requirements** due to continuing population growth.
 - The global population increased by 21% from 2003-2019.

▪ **Issues with the Expansion:**

◦ **Against SDG15:**

- Cropland expansion is a **major factor in forest loss**, which comes in conflict with [Sustainable Development Goal 15 \(SDG 15\)](#)
 - SDG 15 aims to stop deforestation and degradation of natural habitats.
 - But 49% of the **new cropland area replaced natural vegetation** and tree covers, indicating a conflict with the sustainability goal of protecting terrestrial ecosystems.

◦ **Ecological Threat:**

- It is one of the **biggest threats to the planet's ecological health**.
 - Cropland expansion mostly affects **biodiversity hotspots in Central and South America**, while **cropland intensification** threatens biodiversity especially in Sub-Saharan Africa, India and China.
 - **Agricultural intensification** can be technically defined as an increase in agricultural production per unit of inputs.

◦ **Driver of Deforestation:**

- Agricultural expansion **continues to be the main driver of [deforestation](#) and forest fragmentation**.

◦ **FAO's Estimation:**

- According to the [Food and Agriculture Organization \(FAO\)](#), if current trends hold, by **2050 the world's arable land will increase by some 70 million hectares**, and much of the new farmland will be in areas that are currently forested.

▪ **Agricultural land in India:**

- Agricultural land in India was reported at 60.43% in 2018.
- Agricultural land refers to the **share of land area that is arable**, under permanent crops, and under permanent pastures.
 - Arable land includes land defined by the FAO as land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow.

Way Forward

- **Better farming practices and technology** can increase agricultural productivity while reducing habitat loss and protecting wildlife.
 - This approach, known as "**sustainable intensification**," aims to boost the output of existing farmland using techniques such as integrated crop management and advanced pest control.
 - If applied widely, sustainable intensification could even reduce the total amount of land currently under cultivation.
- To protect wildlife habitats, **developing countries must increase the productivity of existing areas of land** by encouraging more sustainable farming practices.

[Source: DTE](#)