Fertilizers

- All plants need certain mineral nutrients to survive. These minerals occur naturally in the soil and are taken up from the soil by the roots of the plants. Most soils usually have enough of these minerals to keep plants healthy.
- However, some nutrients are gradually used up by the plants, or are washed out of the soil, and need to be replaced to maintain optimal growth and appearance.
- The most common mineral nutrients that need replacing are Nitrogen (N), Phosphorus (P) and Potassium (K).
- The term ***"fertilizer material"*** means a commercial fertilizer containing one or more of the recognized plant nutrients, which is used primarily for its plant nutrient content.
- Fertilizers are derived from a wide variety of natural and manufactured materials and are sold in solid, liquid and gaseous form (anhydrous ammonia). These materials are designed for use or claimed to have value in promoting plant growth or increasing plant-available nutrient levels in soils.

Complete versus Incomplete Fertilizer

- A fertilizer is said to be a complete or mixed fertilizer when it contains nitrogen, phosphorus and potassium (the primary nutrients). Examples of commonly used complete fertilizers are 6-12-12, 10-10-10, 15-15-15 and 20-10-10.
- An incomplete fertilizer will be missing one or more of the major components. Examples of incomplete fertilizers are: 34-0-0 (ammonium nitrate), 46-0-0 (urea), 18-46-0 (diammonium phosphate), 0-46-0 (triple super phosphate) and 0-0-60 (muriate of potash).
- Incomplete fertilizers are blended to make complete fertilizers. As an example, if 100 pounds of 46-0-0 (urea) were combined with 100 pounds of 0-46-0 (concentrated super phosphate) and 100 pounds of 0-0-60 (muriate of potash), a fertilizer grade of 15-15-20 would result. When these quantities are combined, each quantity is diluted by the other two materials by one-third, provided each fertilizer material contributed equal weight to the blend

Imbalance in use of fertilizers in India

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- The manufacture, sale, and distribution of fertilizers in the country is regulated by the Ministry of Chemicals and Fertilizers, under the Essential Commodities Act, 1955.
- There are three major types of nutrients used as fertilizers: Nitrogen (N), Phosphatic (P), and Potassic (K). Of these, the pricing of urea (containing N fertilizer) is controlled by the government, while P and K fertilizers were decontrolled in 1992, on the recommendation of a Joint Parliamentary Committee.
- It has been observed that urea is used more than other fertilizers. While the recommended ratio of use of the NPK fertilizers is 4:2:1, this ratio in India is currently at 6.7:2.4:1. Overuse of urea is especially observed in the states of Punjab, Haryana and Uttar Pradesh.
- An imbalanced use of urea may lead to a loss of fertility in the soil over a period of time, affecting productivity.
- Urea (N) is the most produced (86%), consumed (74%) and imported (52%) fertilizer in the country. The government determines the quantity of fertilizers to be imported based on their domestic availability.
- However, the process of fixing the quantity to be imported and actually receiving the imports takes about 60-70 days, since only three companies are allowed to import urea into the country.
- Thus shortages are often caused in the urea market. Since farmers have to ensure that urea is applied to their crops on time, it leads to the growth of black markets selling urea, often at prices above the maximum retail prices.
- The level of fertilizer required for a crop depends upon the soil type, level of yield, and water availability, in addition to the type of crop.
- Certain crops such as rice, wheat, maize, cotton and sugarcane require larger quantities of nitrogen as compared to pulses, fruits and vegetables.
- Although the ratio of N, P, and K fertilizer usage across crops has increased, the quantity of fertilizers used by India is still lower as compared to other countries.
- The average consumption of fertilizers increased from 106 kg per ha in 2005-06 to 128 kg per ha in 2012-13. In comparison, Pakistan consumes 205 kg per ha and China consumes 396 kg per ha.

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- To meet the production target of 300 million tonnes of food grains by 2025 which was mentioned earlier, 45 million tonne of fertilizers would be required. Of this, 6-7 million tonnes may be met from organic fertilizers, but the rest would be met by chemical fertilizers (containing N, P and K). The domestic production of fertilizers would have to be increased to meet this demand.

Nutrient based subsidy policy for Fertilizers

- The central government launched the nutrient based subsidy policy (NBS) in 2010 for P and K fertilizers. The policy was formulated with the objective of promoting a balanced use of N, P and K fertilizers.
- The policy allowed the manufacturers of P and K fertilizers to fix their maximum retail prices (MRPs) at reasonable levels. The subsidy provided would be based on per kilogram of the nutrient.
- The policy also provided for an additional subsidy to be paid to indigenous manufacturers of fertilizers.
- The Comptroller and Auditor General of India, in its report on the performance of the NBS policy stated that in the five years since its implementation, the policy had not succeeded in bringing about a balanced use of fertilizers. The fertilizer usage ratio of urea increased from 4.3 in 2009-10 to 8.2 in 2012-13.

Fertilizer Subsidy in India

- To promote the use of fertilizers by farmers, the central government provides a fertilizer subsidy to the producers of fertilizers.
- In 2017-18, Rs 70,000 crore has been allocated for fertilizer subsidy, which is the second biggest expenditure on subsidy after food subsidy.
- Allocations for fertilizer subsidy have been increasing at an annual rate of 11.4% between 2000 and 2016. Of the subsidy allocated for 2017-18, Rs 49,768 crore has been allocated for subsidy on urea.
- Currently the amount of subsidy to be given is determined based on the cost of production of the fertilizer company. Companies with a higher cost of production receive greater subsidies. This reduces the companies' incentive to reduce their cost of production.

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- Although the consumption of urea has been increasing over the past decade, no new domestic production capacity has been added in the past 15 years.
- A Committee that examined the role of Food Corporation of India recommended that cash transfers should be made to farmers to replace the current fertilizer subsidy regime. This would allow farmers to choose fertilizers in the combination best suited to their needs, and help them to fix the fertilizer imbalance in soil.
- In the Union Budget 2016-17, it was announced that a direct benefit transfer program for fertilizers would be launched on a pilot basis in a few districts across the country. In July 2016, the government announced that it would be conducting pilot studies of direct benefit transfers in 16 districts in 2016-17

Agro Food Processing: Forming village clusters and establishing Food Storage,

- Food Processing Industry is of enormous significance for India's development because of the vital linkages and synergies that it promotes between the two pillars of the economy, namely Industry and Agriculture. India is world's second largest producer of food and has the potential to become number one in due course of time with sustained efforts.
- The growth potential of this sector is enormous and it is expected that the food production will double in the next 10 years and the consumption of value added food products will grow at a fast pace.
- This growth of the Food Processing Industry will bring immense benefits to the economy, raising agricultural yields, meeting productivity, creating employment and raising the standard of very large number of people throughout the country, specially, in the rural areas.
- Economic liberalization and rising consumer prosperity is opening up new opportunities for diversification in Food Processing Sector.
- Liberalization of world trade will open up new vistas for growth.
- The Food Processing Industry has been identified as a thrust area for development. This industry is included in the priority lending sector.

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- Most of the Food processing Industries have been exempted from the provisions of industrial licensing under Industries (Development and Regulation) Act, 1951 with the exception of beer and alcoholic drinks and items reserved for Small Scale Sector, like vinegar, bread, bakery.
- As far as foreign investment is concerned automatic approval for even 100% equity is available for majority of the processed food items.

FOOD PROCESSING POTENTIAL IN INDIA

- **2nd largest arable land in the world** -India has the tenth-largest arable land resources in the world with 161 million tonnes. With 20 agri-climatic regions, all 15 major climates in the world exist in India. The country also possesses 46 of the 60 soil types in the world
- **Largest producer of milk** -India is the largest producer of milk and second – largest producer of fruits and vegetables
- **Largest livestock population-** India has the largest livestock population of around 512 million, globally. This comprises 119 million milch (in-milk and dry) animals, 80.06 million goats and 44.56 million sheep, as of FY15. The segment contributes about 25 per cent to the country's farm GDP
- **Rising consumption expenditure-**Consumer spending in 2015 was USD1 trillion; it is likely to reach USD3.6 trillion by 2020 Source: World Travel and Tourism Council, Directorate of Statistics, TechSci Research Note: GDP - Gross Domestic Product FOOD PROCESSING
- **Favourable location for exports -**Strategic geographic location and proximity to food importing nations favour India in terms of exporting processed foods

FOOD PROCESSING- ADVANTAGE IN INDIA

Strong demand growth

- ✓ Demand for processed food rising with growing disposable income, urbanisation, young population and nuclear families
- ✓ Household consumption set to double by 2020

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