

FREQUENTLY ASKED QUESTIONS

A. Understanding About Fertilizer

1. What is fertilizer?

Any material or mixture used to supply one or more of essential plant nutrient elements.

2. What are the different types of fertilizers?

The different types of fertilizers include:

- **Inorganic fertilizer:** Fertilizer containing one or more major nutrients in inorganic form such as urea, DAP and SOP.
- **Organic fertilizers:** The term generally applies to products derived from animal or plant materials such as manure, dried blood, peat etc.

3. What is difference between organic and inorganic / synthetic fertilizer?

i. Organic Fertilizers:

- are formed from natural sources like compost or bonemeal
- often contain a wider range of nutrients, beneficial bacterias, and microbes
- have low concentrations of nutrients that must be made available to plants through processes done by bacteria and fungi in the soil
- will not form a crust on the soil
- feed beneficial organisms in the soil and promote an environment that maintains a healthier, less compacted soil over time
- are often more expensive because they are less concentrated
- Play vital role in soil physiochemical properties and formation, required in large quantity.

ii. Synthetic or Chemical Fertilizers:

- are formed through manufacturing processes
- usually contain only a few nutrients
- are more highly concentrated and in a form that is immediately available to plants
- may create a crust on the soil if the salts build up too high
- are often cheaper because they are more concentrated
- required in small quantity

4. Is there any expiry date of fertilizers?

There is no expiry date of chemical fertilizers. However, in case of imported Fertilizers, the container (bag) has indication regarding month and year of Manufacture/import.

5. How to diagnose nutrient deficiency symptoms?

When the concentration of an essential nutrient is low enough to limit yield severely, then distinct deficiency symptoms appear. Deficiency of a nutrient will impact the normal plant growth, crop yield often results in specific leaf and plant symptoms in different degrees at varying times during growth period. Extreme deficiencies can result in plant deaths. The deficiency symptoms broadly can be categorized into six types:

- i. Chlorosis i.e. yellowing either uniform or interveinal due to reduction in chlorophyll synthesis processes.
- ii. Necrosis or death of a plant tissue.
- iii. Lack of new or terminal growth resulting in resetting.
- iv. Appearance of anthocyanin due to collapse of chlorophyll and thus appearance of reddish colour.
- v. Stunted or reduced growth with either normal or dark green or yellow colour.
- vi. Suppressed flowering and/or fruit/seed set.

6. How can I select right combination and doses of fertilizer for any crop?

Please contact your Area / ground Agriculture Officer.

7. What is meant by the term "balanced fertilization"?

The requirement of nutrients such as Nitrogen, Phosphate and Potash are soil and crop specific. The use of right ratio of nutrients as per soil or crop requirement is known as "balanced fertilization".

8. Why Government is giving subsidy on fertilizers?

The Government is subsidizing fertilizers for their availability at reasonable prices to farming community.

9. What are the functions of essential nutrients i. e. Nitrogen, Phosphorus and potash in plants?

Primary nutrients

Nitrogen (N)

Nitrogen is an important constituent of chlorophyll, protoplasm, protein and nucleic acids. It is associated with high photosynthetic activity, the dark green colour of stem and leaves, vigorous growth, branching/tillering, leaf production and size enlargement. It improves the quality of leafy vegetables and fodders and protein content of food grains. On the other hand, an excess of nitrogen leads to excessive succulent growth and susceptibility to pest, disease attack and shedding, delay crop maturity.

Phosphorus (P)

Phosphorus stimulates early root development, leaf size, tillering, flowering, grain yield and hastens maturity. It is a constituent of certain, nucleic acids, phosphotides, phospholipids, chromosomes and the coenzymes nicotinamide adenine dineucleotide (NAD), nicotinamide adenine dineucleotide phosphate (NADP) and adenosine triphosphate (ATP). Phosphorus is essential for cell division, seed and fruit development.

Potassium (K)

Potassium plays an important role in the photosynthesis and food production processes within the plant, in the enzyme action of the plant, in increasing resistance to lodging and in the disease resistant mechanism of the plant. Potassium also plays an important role in the regulation of water conditions within the plant cell and loss of water from the plant by transpiration. Potassium is more closely connected with quality of the plant. Responsible for loading/ unloading processes of photosynthate in plants.

10. What are different types of fertilizer available in Pakistan and their nutrient contents / grade?

Fertilizers available in Pakistan with their grades

Common name	Grade or Analysis		
	N	P ₂ O ₅	K ₂ O
Nitrogenous fertilizers	-----%-----		
Urea	46	0	0
Ammonium sulphate	21	0	0
Calcium ammonium nitrate (CAN)	26	0	0
Phosphate fertilizers			
Single superphosphate (SSP)	0	18	0
Triple superphosphate (TSP)	0	46	0
Diammonium phosphate (DAP)	18	46	0
Mono-ammonium phosphate (MAP)	11	52	0
Potash fertilizers			
Sulphate of potash (SOP)	0	0	50
Muriate of Potash (MOP)	0	0	60
Complex fertilizers			
Nitro-phosphate (Nitrophos)	23	23	0
Complete fertilizers (NPKs)	08	23	18
	15	15	15
	17	17	17
	20	10	20

11. How Urea is manufactured?

The principal raw materials for the manufacture of urea are carbon dioxide and ammonia. They react under high pressure to form ammonium carbamate and then by dehydration to produce urea.

12. How DAP is manufactured?

Diammonium phosphate can be produced when ammonia reacts with phosphoric acid.

13. What is Integrated Plant Nutrient System (IPNS)?

IPNS associates available, accessible and affordable plant nutrients to increase farm productivity and economic returns. It should be ecologically safe socially acceptable and economically viable. The system should maintain soil fertility and increase crop productivity. It focuses first on the seasonal or annual cropping system rather than on an individual crop; secondly, on the management of plant nutrients in the whole farming system; and thirdly on the concept of village or community areas rather than individual fields.

The main objectives of the IPNS approach are to:

- Maintain or enhance soil fertility through a balanced use of mineral fertilizers combined with organic and biological sources of plant nutrients to increase crop productivity;
- Improve the stock of plant nutrients in the soil;
- Improve the efficiency of plant nutrients, thus limiting losses to the environment.

B. Sectoral Policies/Laws/Rules

1. Whether there is any policy regarding fertilizer sector in Pakistan?

Fertilizer policy 2001 is effective in Pakistan since 01-07-2001. The purpose of this fertilizer policy was to encourage new investment in fertilizer sector and to reduce reliance on fertilizer import. It was decided to keep the price of feed gas at US \$ 1.10/MMBTU or prevailing Middle East price which ever is higher for existing plants so that local fertilizer price is less than imported fertilizer. Price of fuel gas will be same as for other industrial consumers. It was further decided that imports of sulphur, rock phosphate and phosphoric acid for manufacturing of fertilizer, will be free of custom duty and sale tax.

2. What is policy for import of fertilizer in Pakistan?

All the fertilizers except urea are imported by private sector and provided to the farmer according to price in international market. Urea is imported by trading Corporation of Pakistan (TCP) and distributed by National Fertilizer Marketing Limited (NFML) at price prevalent in domestic market. The gap of price between international and domestic market is borne by Government as subsidy.

3. What is the policy for price control of fertilizer in Pakistan?

It is clearly mentioned in Fertilizer Policy 2001 as per section 5.1 that selling price of fertilizers shall remain deregulated on the understanding that the manufacturers will allow free market forces to prevail and shall not resort to formation of cartels.

4. What are incentives for new investment in fertilizer sector?

To encourage new investment in fertilizer sector following incentives have been provided.

- i. Price of feed gas will be based on the Middle Eastern price or \$ 0.77 less 10% discount i.e. 70 c/MMBTU which ever is higher for a period of 10 years from the date of commissioning.
- ii. Mari gas field has been allocated to fertilizer plants/other users on first come first served basis with priority given to fertilizer plants in the event of concurrent demand.
- iii. Import of new plant will be exempted from import surcharge, excise duty, sales tax and other local, provincial and federal levies.
- iv. Charge of catalyst, chemical, lubricants and spares will be exempted from all taxes and levies for the first two years.
- v. Import of second hand plant, machinery, equipment will have same concession/exemption as applicable to new plants.
- vi. If an investor undertakes an expansion, major BMR or debottle necking of an existing plant which results in increase in the production capacity of the plant, such additional investment and additional gas shall be treated at par with a new plant for purpose of concession/exemptions.

C. Regulatory framework/incentives

1. What about standardization/registration of new fertilizer products in Pakistan?

Pakistan standards and Quality Control Authority (PSQCA) under the umbrella of Ministry of Science and Technology is responsible for standardization/registration of new fertilizer products either local or imported.

2. Whether there is anybody to monitor the quality of fertilizers?

Provincial agriculture departments monitor the quality of fertilizers and prevent marketing of adulterated/substandard fertilizers.

D. Investment potential/opportunities in fertilizer sector?

1. What are the potential areas for investment in fertilizer sector in Pakistan?

There are two main fertilizers i.e. urea and Di-ammonium phosphate (DAP) accounting for almost 85 per cent of total fertilizer consumption. Pakistan is self-sufficient in urea as installed capacity of 6.3 million tonnes per annum is more than domestic demand provided gas is available to all manufacturing units. There is only one plant of DAP having production capacity of 0.7 million tonnes per annum. Total demand of DAP is around 2.4 million tonnes per annum. Hence, more than two third of DAP requirement is met through import which result in loss of foreign exchange to the tune of US \$ 718 million or Rs. 97 billion per annum. New investment in this sector of DAP manufacturing can result in saving of precious resources.