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A Study on Supply and Demand of Nitrogen Fertilizer in Andhra Pradesh

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Abstract
Agriculture has most demanding and advancement factor in marketing. Fertilizers contain one or more of these essential plant nutrients. Nitrogen, Phosphate, and Potassium are the major nutrients supplied by chemical fertilizers. Nitrogen promotes plant growth and development. Plants look green and the growth will be lushful .It helps increasing crop yields. At higher levels nitrogen causes a loss of certain plant species, depletion of soil nutrients, death of fish and aquatic organisms, and contamination of drinking water.
The supply and demand for nitrogen is discussed relative importance of fertilizer and fixed nitrogen. The main purpose of this paper is to discuss supply and demand of nitrogen fertilizer in Andhra Pradesh. The overview of the state is discussed.

Key Words: *Nitrogen, Fertilizer, Supply, Demand.*

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I. Introduction

Agriculture is the largest sector of economic activity in India. The production of food grain in India has increased spectacularly due to the Green Revolution. Agricultural growth has a direct impact on poverty eradication and is an important factor in employment generation. Indian agriculture faces the dual challenge of feeding a billion people in a changing climatic and economic scenario. It is the main source of livelihood for almost 70% of the country's total population. The impact of climatic change on agriculture has been severely felt in India. The low productivity of Indian agricultural sector which is mainly because of climatic change, small land holdings, improper usage of fertilizers, old and traditional methods of cultivation, illiteracy of farmers. The vital role of agriculture arises out of the position the agrarian sector occupies in the overall economy of the country.

The process of agricultural marketing begins with the farmer and end up with the consumer. In between these two extreme ends one can find many intermediaries like transporters, warehouse owners, commission agents, wholesalers, Retailers etc. performing their duties to enable the agricultural marketing process to reach its completion.

Fertilizers are organic or inorganic substance adds nutrients to soil for the purpose of increasing the growth of crops, trees, or other vegetation. In each crop year, certain amounts of these nutrients are depleted and must be replenished to the soil to maintain fertility and ensure continued, healthy future crops. Fertilizer is the most important source of plant nutrients. Careful selection of chemical fertilizers will be able to supply the plant nutrients at nearly optimum levels to achieve economical and environmental efficiency.

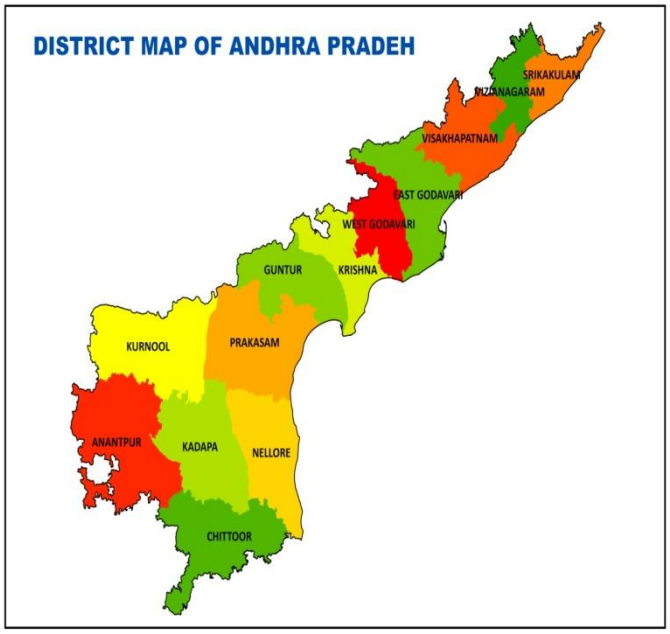
Nitrogen promotes plant growth and development. Plants look green and the growth will be lushful, it helps increasing crop yields. At higher levels nitrogen causes a loss of certain plant species, depletion of soil nutrients, death of fish and aquatic organisms, and contamination of drinking water.

Overview

Andhra Pradesh is located at the southeastern coast of the country. It is the eighth largest state in India covering an area of 162,970 km^2, the north-western portion of the state was bifurcated to form a new state of Telangana on 2 June 2014. State is the tenth largest by population with 49,386,799 inhabitants of the total population, approximately 62% or 46 lakh families are dependent on the agriculture and allied sectors.

The State, basically being Agro-Based economy, Agriculture & Allied sectors contributes more than 29% of the GSDP as against 17% in All India GDP. Andhra Pradesh is an exporter of many agricultural products. Rice, sugarcane, cotton, pepper, chilli, mango, and tobacco are the local crops. Recently, crops used for vegetable oil production such as sunflower and peanuts have gained favor.

Anantapur district in Rayalaseema is the largest district in area and Srikakulam district in Uttarandhra is the smallest. East Godavari district is the most populous while Vizianagaram district is the least populous.



Area	162970 sq.km
Districts	13
Mandals	670
Revenue Divisions	49
Revenue Villages	17398
Gram Panchayats	12918
Municipal Corporations	13
Municipalities/ Nagar Panchayats	97
Population (as per Census 2019)	9.17 crore
Total Literacy Rate	67.35%

Supply of seeds through Aadhar enabled webland based biometric system, it has been introduced for the first time for distribution of groundnut seed during Kharif 2016 and Bengalgram during Rabi 2016 and this has been extended for next seasions. All the farm holdings of the state were covered under Soil Health Cards by 2017-18. The State has recorded an impressive economic growth through agriculture.

Fertilizer

A fertilizer is any material of natural or synthetic origin that is applied to soil or to plant tissues to supply one or more plant nutrients essential to the growth of plants. Many sources of fertilizer exist, both natural and industrially produced.

Nitrogen is considered to be the most important nutrient, and plants absorb more nitrogen than any other element. It is essential to in making sure plants are healthy as they develop and nutritious to eat after they're harvested. That's because nitrogen is essential in the formation of protein, and protein makes up much of the tissues of most living things.

Phosphorus is linked to a plant's ability to use and store energy, including the process of photosynthesis. It's also needed to help plants grow and develop normally. Phosphorus in commercial fertilizers comes from phosphate rock.

Potassium is the third key nutrient of commercial fertilizers. It helps strengthen plants' abilities to resist disease and plays an important role in increasing crop yields and overall quality. Potassium also protects the plant when the weather is cold or dry, strengthening its root system and preventing wilt.

Organic fertilizers that are high in nitrogen include urea, which is derived from urine, feathers, dried blood and blood meal. Feathers contain 15% N, dried blood contains 12% N, and blood meal contains 12.5% N.

When applied to garden soil, nitrogen supports plants' rapid growth and encourages the healthy development of foliage and fruit. This makes nitrogen fertilizer especially appropriate for young plants that need to grow rapidly as they establish themselves in the soil. During the late vegetative and early reproductive stage the demand for nitrogen is high. Application of nitrogen just before or during the time of most rapid nitrogen uptake assures the most efficient use of nitrogen by the crop.

Urea contains the highest percentage of nitrogen and is rapidly replacing ammonium nitrate. When surface applied, urea is the most readily volatilized of the dry nitrogen materials. Richest source of nitrogen, Manure – Rabbit, cow, horse, goat, sheep, and chicken manure are very high in nitrogen and can be anywhere from 4% up to 9% nitrogen by weight.

Consumption of Fertilizer (N+P+K) in Andhra Pradesh

(Kg Per Hectare)

Year	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
AP	278.4	242.9	199.7	220.1	237.2	225.7	212.07	227.8	236.5

Mobile Based Fertilizer Management System is to monitor the movement of the fertilizer from the company to Warehouse, Wholesalers and from Wholesalers to Retailers. The proposed system will help in monitoring the movement of Fertilizer's consignments and its stock position at various warehouses, wholesalers, and retailers.

DBT (Direct Benefit Transfer) The Department of Fertilizers, Govt. of India will release 100% Subsidy on various fertilizer grades to the manufacturers based on the Net receipts to the districts till now. Modified DBT was evolved in which the subsidy payments will be made to the manufacturers based on the actual sales to the farmers by the dealers not the net receipts.

Aadhar enabled Fertilizer Distribution System (AeFDS) is started on pilot basis in Krishna and West Godavari districts.

Supply and Demand

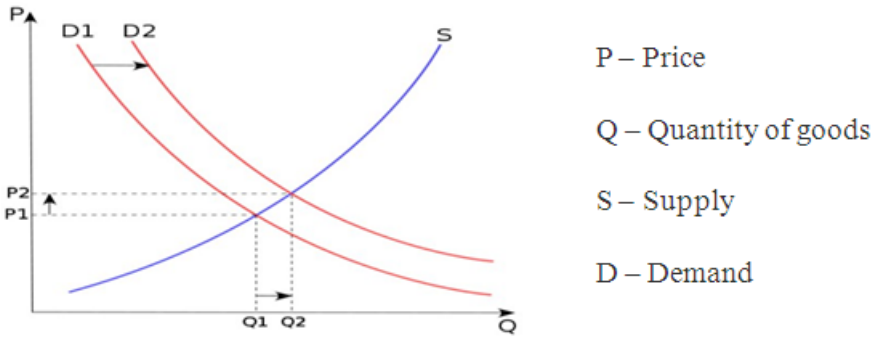
Supply and demand has a relationship between the quantity of a commodity that producers desire to sell at various prices and the quantity that consumers desire to buy. In equilibrium the quantity of a goods supplied by producers equals the quantity demanded by consumers.

Supply and demand are both important for the economy, because they impact the prices of consumer goods and services within an economy. Market economy theory -the relationship between supply and demand balances out at a point in the future, this point is called the equilibrium price.

Demand is the desire of a buyer and his ability to pay for a particular commodity at a specific price. Supply is quantity of a commodity which is made available by the producers to its consumers at certain price.

Basic laws of supply and demand

1. If demand increases and supply remains unchanged, then it leads to higher equilibrium price and higher quantity.
2. If demand decreases and supply remains unchanged, then it leads to lower equilibrium price and lower quantity.
3. If supply increases and demand remains unchanged, then it leads to lower equilibrium price and higher quantity.
4. If supply decreases and demand remains unchanged, then it leads to higher equilibrium price and lower quantity.



The law of supply describes the behavior of sellers. In general, sellers will supply more of a good at higher prices than at lower prices. When this relationship is graphed, the result is an upward-sloping supply curve.

A change in price results in movement along the supply curve from one point to another and is called a change in the quantity supplied. When factors in the market change, the supply curve shifts to the left or the right. This is a change in supply.

The law of demand describes the behavior of buyers. In general, people will demand - that is buy-more of a good or service at lower prices than at higher prices. When this relationship is graphed, the result is a demand curve.

A change in price results in movement along the demand curve from one point to another and is called a change in the quantity demanded. When other factors in the market change, the demand curve shifts to the left or the right. This is a change in demand.

Supply and demand together determine market equilibrium. On a graph, market equilibrium is the point where the supply and demand curves intersect. The price at this intersection is the equilibrium price and the

quantity is the equilibrium quantity. When the market for good or service is in equilibrium, there are no surpluses and no shortages.

Fertilizer demand is the purchase of fertilizer at a given point in time. The forecast is based on the views of the Fertilizer Outlook Expert Group.
Non-fertilizer demand is consumption for non-fertilizer use and is referred to as industrial and other demand. Net non-fertilizer demand excludes the use of nutrients (Nitrogen, Phosphorus and Potassium) that are recovered as by-product from industrial processes and then used as fertilizer.
Total demand is fertilizer demand + non-fertilizer demand.

The potential balance of nitrogen, phosphate (H3PO4-based) and potash is derived from the maximum achievable production (supply) minus the forecasts for total demand.
Potential balance = supply – (non-fertilizer demand + fertilizer demand)

Fertilizer demand is highly seasonal. Marketing system should consider the seasonality pattern for developing their programs /strategies, so that they may have the maximum impact in stimulating consumption. Fertilizer is produced thorough out the year but the consumption is confined to short spurts of a few weeks in the two main seasons Kharif (April-Sept) & Rabi (0ct-March).

AP Marked is the Nodal agency identified by the Government for distribution of fertilizers to the Institutions like PACS & DCMS. Out of the rake point stocks received by the district in state, 50% of fertilizers allotted to APMARKFED for re-allotment to PACS/DCMS and remaining 50% to private dealers as per the allotment orders is given by the District Collector.

The supply of Nitrogen fertilizer is made by the customized fertilizers by which the supply made all over the state. The marketing bodies of fertilizers are Nagarjuna fertilizers, Tata Chemicals, INDO Gulf, Coromandel fertilizers.

II. Discussions

Fertilizer is the most important among all the inputs purchased by the farmer for use in present day agriculture with a view to accelerating agriculture production. The consumption of Nitrogen (N), Phosphates (P) and Potash (K) fertilizers is very high and hence there is more marketing scope of these fertilizers. The consumption of these items is increasing steadily and will continue to increase.

Fertilizer consumption trends expressed in terms of aggregate quantities consumed and intensity of use (kg per hectare of total cropped area) reflect both demand and supply decisions. Therefore, it is essential to understand fertilizer situation in the state.

Top Priority should be given to drawl of as many fertilizer samples of NPK mixtures, as possible to ensure that quality fertilizers are supplied to the farmers. There are three labs in the State located at Bapatla (Guntur), Ananthapur and Tadepalligudem (West Godavari) with an annual analyzing capacity of 3500 fertilizer samples per lab and 3 more labs are proposed to be established at Ongole, Nellore (Bio & Organic Fertilizers) and Amaravathi .These labs analyse the fertilizer samples received from all over the state to ensure quality of fertilizers supplied to the farmers.

III. Conclusion

The state of Andhra Pradesh ranks second in fertilizer consumption in the country, Nitrogen is so vital because it is a major component of chlorophyll, the compound by which plants use sunlight energy to produce sugars from water and carbon dioxide (photosynthesis). It is also a major component of amino acids, the building blocks of proteins. Nitrogen fertilizer should be used during the late vegetative and early reproductive stage the demand for nitrogen is high. Application of nitrogen just before or during the time of most rapid nitrogen uptake assures the most efficient use of nitrogen by the crop. Many fertilizers also improve the way the soil works by helping it to retain water better and allowing air to flow freely, which is good for roots. Farmers prefer to use nitrogen fertilizers because these substances contain plant nutrients such as nitrogen, phosphorus, and potassium. Fertilizers are simply plant nutrients applied to agricultural fields to supplement required elements found naturally in the soil.

Supply plans will be decided and communicated to the States by the Department of Fertilizers (DoF), Government of India has decided to implement an Mobile based Fertilizer Monitoring System to track the movement and information availability and visibility across whole Supply Chain.

The demand for fertilizer products such as urea, DAP, SSP, MOP and complex fertilizers was estimated by using averages of their percentage shares in N, P and K consumption. Fertilizer product demand forecasts for 2020-21, the demand for urea is projected to be around 40.3 million tons, the demand for DAP, complex fertilizers (excluding DAP) and SSP would be nearly 15.8, 5.2 and 13.6 million tons, the demand for

MOP would be around 8.3 million tons. These projections of demand for fertilizer products are based on existing product nutrient ratio.

Theory of Demand, tells the relationship between the price of goods and its quantity demanded. If the price of any good or service increases then its demand decreases and vice versa.

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