

**Market Performance and Farmer's  
Perception of National Fertilizer Limited  
in Katni District of Madhya Pradesh**

**PROJECT REPORT**

*Submitted to*

**Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur**

In partial fulfilment of the requirement for

The Degree of

**MASTER OF BUSINESS ADMINISTRATION**

*In*

**AGRI BUSINESS MANAGEMENT**

*By*

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**Department of Agriculture Economics & Farm Management**

**College of Agriculture, JNKVV, Jabalpur (MP)**

2020

## CERTIFICATE-I

This is to certify that the project report entitled “**Market Performance and Farmer’s Perception of National Fertilizer Limited in Katni District of Madhya Pradesh**” submitted in partial fulfilment of the requirement for the degree of **MASTER OF BUSINESS ADMINISTRATION** in **AGRI BUSINESS MANAGEMENT** of Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur is a record of the bonafide research work carried out by **MR. VISHNU KUMAR** ,Enrolment no.180108052,under my guidance and supervision. The subject of the project report has been approved by the Student’s Advisory Committee & the Director of instruction.

All the assistance and help received during the course of investigation has been acknowledged by him.

Place: Jabalpur

**Dr. Ashutosh Shrivastava**

Date:

**(Chairman of the Advisory Committee)**

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Member	Dr. N. Khan	.....
Member	Dr. (Smt.) Bharti Das	.....

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## CERTIFICATE-II

The is to certify that the project report entitled “**Market Performance and Farmer’s Perception of National Fertilizer Limited in Katni District of Madhya Pradesh**” submitted by **Mr. VISHNU KUMAR** to the Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur in partial fulfilment or the requirement for the degree of **MASTER OF BUSINESS OF ADMINISTRATION** in **AGRI BUSINESS MANAGEMENT** in the Institute of Agri business Management, Department of Agriculture Economics & Farm Management ,has been after evaluation ,approved by the External Examiner and by the Student’s Advisory committee after an oral examination on the same.

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(A Govt. of India undertaking)

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NFL/ZO/BPL/HR/TRA/2020/10340

DATE: 28.10.2020

**To whom so ever it may concern**

This is to certify that **Mr. Vishnu Kumar** a student of Master of Business Administration, Institute of Agri Business Management, Department of Agriculture Economics and Farm Management, College of Agriculture, JNKVV Jabalpur has successfully completed his 2 months project work started from 22 January 2020 to 21 march 2020 in our organization on "**Market Performance and Farmer's Perception of National Fertilizer Limited in Katni District of Madhya Pradesh**".

During the period of his internship/training program with us he was found to be punctual, hardworking and showed keen learning aptitude.

We wish him success for all his future endeavors'.

for National Fertilizers Limited

  
Sr. Manager (H.R.)

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## **Declaration and Undertaking by the Candidate**

I am Vishnu Kumar S/o Shri Jaypal, certify the work embodied in the project report entitled Market Performance and farmer's perception of National Fertilizer Limited in Katni District of Madhya Pradesh's own my first hand bonafide work carried out by me under the guidance of Dr. A. Shrivastava at Department of Agriculture Economics and Farm Management , College of Agriculture , J.N.K.V.V., Jabalpur during 2019-2020.

The matter embodied in the project report has been submitted for the award of any other degree/diploma. Due credit has been made to all the assistance and help.

I, undertake the complete responsibility that any act of misinterpretation, mistakes and errors of fact are entirely of my own.

I, also abide myself with the decision taken by my advisor for the publication of material extracted from the project report work and subsequent improvement, on mutually beneficial basis, provide the due credit is given, thereof.

Place: Jabalpur

**(VISHNU KUMAR)**

Date:

MBA (ABM)

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Year of submission : 2020

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Place: Jabalpur

Date:

**VISHNU KUMAR**

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**CHAPTER - 1**  
**INTRODUCTION**

## INTRODUCTION

Agriculture plays a vital role in Indian economy. It accounts 17 percent of India's gross domestic product (GDP) and provide employment to 50 percent of the country's workforce. India is worlds the largest producer of pulse, rice, wheat, spices, products. India has emerged as the second largest producer of fruits and vegetables in the world. More than 70 percent in this sector people are engaged in the Agriculture sector.

Today fertilizers are most important because day by day population is increased and land available is slowly declining to sustain the food grain production like cereal and pulses efficient management of agriculture inputs are need lead of the time. The role of fertilizer amongst agriculture input is critical to enhance productivity of crops. Fertilizer is decidedly by the most important among all the inputs purchased by the farmer for use in present day agriculture with a view to accelerating agricultural production. Integration of various sources of nutrients and mitigating multi nutrient deficiency in food grain production dissemination of agricultural technology from LAB TO LAND is crucial to bring about change in agricultural production system. Through the promotional programs such as demonstrations, farmers meeting, field days, crop seminars, sales points, personal training, campaigns like soil test and biofertilizers farmer visit training programmes emphasize the importance of balanced use of fertilizer for maintaining soil health for sustainable agriculture.

India is the second largest fertilizer producer of the world. Fertilizer industry is developing in terms of technology. Indian manufacturers are adopting advance manufacturing processes to prepare innovative new products for Indian agriculture. India has entitled as the second largest producer and exporter of nitrogenous fertilizer. Fertilizer industry in India is meeting all the requirements of agricultural industry since the time of its inception in 1906. When the first production unit of single super phosphate (SSP) was installed in Ranipet near chennai with an annual capacity of 6000 MT. Then two large-sized fertilizer plants one The Fertilizer & Chemicals Travancore of India Ltd. (FACT) at Cochin in Kerala and the Fertilizers

Corporation of India (FCI) in Sindri in Bihar. These two were established as pedestal fertilizer units to have self-sufficiency in the production of food grains. Afterwards the industry gained impetus in its growth due to green revolution in late sixties, followed by seventies and eighties when fertilizer industry witnessed an incredible boom in the fertilizer production.

The tremendous demand of fertilizers has led the country to invest huge in the public, co-operative and in private sectors. At present India has more than 57 large sized plants of fertilizers manufacturing wide assortment of fertilizers including nitrogenous, phosphatic, Ammonium Sulphate (AS), Calcium Ammonium Nitrate (CAN), Urea, DAP and complex fertilizers.

### **1.1 Importance of project**

National fertilizer limited (NFL) has produce variety of quality product according to demand of product in the farm sector in the country. It has so far-fetched a good share of fertilizer market in the Katni district of Madhya Pradesh for Wheat crop. For the high production of Wheat crop fertilizer consumption is good. The large part of Katni district are unaware to the use of fertilizer application hence the market of Katni district has good potential in the business of fertilizer while considering the project assigned by NFL for its market share, market potential and farmer preference in Katni district.

### **1.2 Specific Objective**

- To estimate the market potential of fertilizer for Wheat in the study area.
- To access the market share of fertilizer in the study area.
- To study the farmer's preference and perception about the use of fertilizer.
- SWOC analysis of National Fertilizer Limited.

### **1.3 Limitation of study**

1. The time of this project work was two months which was not sufficient for this type of dynamic project. The findings of the study on the basis of small numbers of respondents.
2. The response of the survey is only based on the memory of respondent so there is possibility of some biases.

3. The farmer does not keep any farm records so they are not able to answer the appropriate question.
4. Because of the pandemic some of the primary/field data was collected their telephonic interview hence error may be there.

**CHAPTER - 2**  
**CORPORATE PROFILE**

**NATIONAL FERTILIZERS LIMITED - PROFILE**



**एन एफ एल**

**NFL**

## **Background & Company Profile**

### **2.1 Introduction**

NFL, a Schedule 'A' & a Mini Ratna (Category-I) Company, having its registered office at New Delhi was incorporated on 23rd August 1974. Its Corporate Office is at NOIDA (U.P). It has an authorized capital of Rs. 1000 crore and a paid-up capital of Rs. 490.58 crore out of which Government of India's share is 74.71 % and 25.29 % is held by financial institutions & others.

### **2.2 Vision & Mission**

The company has a Vision i.e. "to be a leading Indian company in fertilizers and beyond with commitment to all stakeholders" and a mission "to be a dynamic organization committed to serve the farming community and other customers to their satisfaction through timely supply of fertilizers and other products & services; continually striving to achieve the highest standards in quality, safety, ethics, professionalism, energy conservation with a concern for ecology and maximizing returns to stakeholders".

### **2.3 Manufacturing Plants**

NFL has five gas-based Ammonia-Urea plants viz. Nangal & Bathinda plants in Punjab, Panipat plant in Haryana and two plants at Vijaipur at District Guna, in Madhya Pradesh. The Panipat, Bathinda & Nangal plants were revamped for feed stock conversion from Fuel Oil to Natural Gas, an eco-friendly fuel during 2012-13 / 2013-14. Vijaipur plants of the company were also revamped for energy savings & capacity enhancement during 2012-13, thus increasing its total annual capacity from 20.66 LMT from 17.29 LMT, an increase of 20%. The company currently has a total annual installed capacity of 35.68 LMT (Re-assessed capacity of 32.31 LMT) & is the 2nd largest producer of Urea in the country with a share of about 16% of total Urea production in the country.

Company has a Bio-Fertilizers Plant at Vijaipur with a capacity of 600 tonnes of solid & liquid Bio-Fertilizers to produce three strains of Bio-Fertilizers viz. PSB, Rhizobium and Azotobacter are produced.

## **2.4 Products**

NFL is engaged in manufacturing and marketing of Neem Coated Urea, three strains of Bio-Fertilizers (solid & liquid) and other allied Industrial products like Ammonia, Nitric Acid, Ammonium Nitrate, Sodium Nitrite and Sodium Nitrate. The brand name of the company is popularly known in the market as 'KISAN'.

The company has also started production of certified seeds under its Seeds Multiplication Programme for sale under its own brand name as Kisan Beej.

## **2.5 Imports & Trading**

Apart from manufacturing business, the company is also expanding its business, in a consistent & phased manner, by way of imports and trading of various agro-inputs like Non-Urea Fertilizers, certified seeds, Agrochemicals, Bentonite Sulphur, City compost through its existing PAN India dealer's network under single window concept.

## **2.6 Marketing setup**

NFL Marketing Network comprises of Central Marketing Office at NOIDA, three Zonal Offices at Bhopal, Lucknow & Chandigarh, 16 State & 2 UT Offices and 35 Area offices spread across the marketing territory of NFL.

The company has 10 Soil testing laboratories (6 Static & 4 Mobile) with annual capacity of testing around 65000 samples for Macro Nutrients and 10000 samples for Micro Nutrients and are fully dedicated to the testing of soil health helping farmers to facilitate balanced fertilization.

## **2.7 Research Centre's**

The company has a R&D set up at each Manufacturing Unit i.e. at Nangal, Panipat, Bathinda and Vijaipur as well as at Corporate Office (Noida) which are primarily focused and undertakes various innovation studies to develop new, efficient & safer processes, value added products and suggest implementation of energy saving schemes.

## **2.8 Implementation of Energy Saving Schemes**

The company has recently implemented various energy saving schemes such as Purge gas recovery plant at Vijaipur-II, hooking up of old redundant Ammonia Synthesis Converter (S-200) with New Converter (S-300) at Pan pat & Bathinda Units and additional 2 nos. cooling tower cells in Urea Plant at Vijaipur-II. The company has also commissioned two roof top solar plants of 100 KW & 90 KW at Corporate Office, Noida and Bathinda Unit.

Further, in order to meet the strict energy norms fixed by GOI under New Urea Policy 2015 w.e.f. 01-04-2018, though the investment is economically unviable without suitable dispensation as sought by NFL from GOI the company is in the process of implementing energy saving schemes i.e. Installation of Gas Turbine Generator along with Heat Recovery Steam Generation Unit at Panipat, Bathinda & Nangal Units with an estimated cost of Rs. 700 crores.

The company is also going to implement energy saving schemes at Vijaipur-I & II to further bring down the energy consumption.

## **2.9 New Investments**

1. Bentonite Sulphur Plant of 25000 MTPA capacity at Panipat Unit with a cost of Rs. 44 crores have been commissioned on 20th December 2017.
2. Setting up Di-nitrogen Tetroxide (N<sub>2</sub>O<sub>4</sub>) plant at Vijaipur Unit on Built Own Operate & Supply basis (BOOS) for ISRO.
3. R&D initiative with M/s IARI, New Delhi to design & develop an applicator & logistic arrangement for application of Urea Ammonia Nitrate (UAN) which is envisaged to be manufactured at Nangal Unit.

## **2.10 Besides above, the company is also envisaging the following investments**

1. Construction of Natural draft prilling towers at Panipat & Bathinda Units to improve Urea prill size with estimated cost of Rs. 90 crores (Rs. 45 crore each for Panipat & Bathinda Unit).
2. Agro Chemical plant at Bathinda for production of farm insecticides.

3. Di-Ammonium Phosphate (DAP) plant of 10 LMT per annum along with Phosphoric Acid Plant in Algeria under buy back arrangement & in Joint Venture mode with GSFC, RCF and NMDC.
4. Seed processing plants at Indore, Bathinda and Panipat.

### **2.11 Joint venture**

NFL in collaboration with M/s EIL and M/s FCIL has formed a Joint Venture (JV) Company as Ramagundam Fertilizers & Chemicals Limited (RFCL) to revive the old FCIL plant at Ramagundam. The equity participation in the joint venture is 26% each by NFL & EIL, 11% by FCIL and 11% by State Government of Telangana. This plant shall have the annual Urea capacity of 12.71 LMT. The zero date of the project is 25th September 2015 and is targeted to be completed by end of December 2018. The project is in progress.

### **2.12 Agriculture Extension Services**

The company is also playing a pivotal role in extending various agricultural extension services such as educating the farmers on judicious use of fertilizers along with total know-how on improved and scientific methods of cultivation to improve soil productivity. The company is providing support to the farmers by undertaking soil analysis for Macro & Micro Nutrients through its static & mobile soil testing vans for balanced use of fertilizers.

The company participates in various Krishi Melas organized by leading agriculture universities for direct & effective communication with farmers.

### **2.13 Corporate Social Responsibilities**

The Company is equally committed towards society by taking responsibility for the impact of their activities on customers, employees, shareholders, communities and the environment in all aspects of their operations. Besides focusing primarily on the areas like Children Education, Women Empowerment, Health and hygiene, etc., the company also aims to conserve the natural resources for their efficient and sustainable use. Company has taken initiatives in the area of water conservation by renovation and maintenance of old and degraded water bodies, construction of stop dams in the severe water deficient regions of Central India. Company is also

adopting focused approach for introduction of Non-Conventional sources of energy by installing Solar Water heating systems, solar lights, solar lanterns etc. in the old age homes and in the remote and backward villages where electricity is the major problem.

## 2.14 Manpower Position

**Table 2.1 Manpower status as on 31.10.2019**

Unit Name	Total Employees	Executive	Non-Executive
<b>Nagel</b>	976	294	682
<b>Bathinda</b>	529	266	263
<b>Panipat</b>	518	256	262
<b>Vijaipur</b>	666	365	301
<b>CMO</b>	466	288	178
<b>C.O.</b>	198	177	21
<b>Total</b>	<b>3353</b>	<b>1646</b>	<b>1707</b>

(Source - NFL Zonal office Bhopal)

## 2.15 Human Resource

The Corner stone of NFL's meritorious track record is its human resource. At NFL, we firmly believe that our employees are our most valued resources.

NFL has always been a forerunner in the fertilizer sector and this has been made possible through the company's thrust on human resources development.

NFL offers a host of exciting career/opportunity to dynamic/young/qualified individuals in Production/Maintenance/Marketing/Finance and Human Relations. NFL has three induction levels Management Trainees/Technicians & Operator Apprentices & Commercial Apprentices. Developmental and functional programs based on training needs, as judged in the area of updating of technical supervisory and managerial skills along with specialized requirements from time to time.

The services which have been developed in the area of Training and Development within the organization are readily available to other organizations within the laid policies and procedures of the Company.

## **2.16 Caring Organization**

The Company's concern for its employees is reflected through its efforts in the area of health, safety and welfare of its employees. NFL not only meets the statutory obligations, but has undertaken numerous voluntary measures beyond the statutory requirements. The Company has well equipped hospitals, canteens recreation clubs, housing facilities, schools and safe working environment. The onus of NFL's high production levels lays on harmonious and cordial industrial relations at all its manufacturing Units. The Company has not lost even a single man-day on this account.

To cater to the needs of training and development, NFL has a well-defined and well-designed training plan. Major activities undertaken by HRD are:

Recruitment and Training of Trainees at various levels viz. officers, supervisors and workers.

Organizing of developmental and functional programs based on training needs, as judged in the area of updating of technical, supervisory and managerial skills long with specialized requirements from time to time.

Imparting of training to people from other organizations within India and abroad.

Formulate policies regarding manpower deployment on hire to other organizations within India and abroad.

The services which have been developed in the area of Training and Development within the organization are readily available to other organizations within the laid policies and procedures of the Company.

## **2.17 MoU**

Memorandum of Understanding (MoU) is a negotiated agreement between Government as owner of public enterprises and the management of the Public Sector Enterprises (PSEs). MoU is meant to measure the

Performance of Management of PSE at the end of the year in an objective and transparent manner.

In the search of improving accountability and giving higher operational autonomy to Public Sector Undertaking, the Department of Public Sector Enterprises (DPE) Government of India introduced the concept of Memorandum of Understanding (MoU) in early nineties. The new Industrial Policy of 1991 made it mandatory for all PSUs to enter in to MoU with their respective Administrative Ministries. The MoU over these years has gained significant improvement from the fact that it reflects the company's overall composite rating and secondly the performance of the Chief Executive of the company is partly seen through MoU. The strengthening of existing system of monitoring PSUs through MoU is an important element of the present policy of the Government.

The Company has signed MoU with DOF for the year 2019-20 on 22nd May, 2019.

NFL started signing MoU from the year 1991-1992 and has been getting Excellent rating for most of the years. NFL's MoU rating from 1991-92 to 2017-18 is given below.

**Table 2.2 Mou rating**

<b>Year</b>	<b>Rating</b>
2017-18	Very good
2016-17	Good
2015-16	Very good
2014-15	Very good
2013-14	Very good
2012-13	Good
2011-12	Excellent
2010-11	Excellent
2009-10	Excellent
2008-09	Excellent

(Source – NFL Zonal office Bhopal)

## **2.18 National Fertilizer Limited units in India**

Coming under the administrative control of Ministry of Chemicals and Fertilizers, it is the second largest producer of the key fertilizer urea in India. NFL has five gas-based ammonia-urea plants viz Nangal and Bathinda in Punjab, Panipat in Haryana and two at Vijaipur (Madhya Pradesh).

### **2.18.1 NANGAL UNIT**

National Fertilizers Limited,

Naya Nangal, Punjab-140126

Tel: 01887-220543

Fax: 01887-220541

Email: [nangal@nfl.co.in](mailto:nangal@nfl.co.in)

#### **2.18.1.1 About NFL Plant**

Consequent upon the reorganization of FCI group of plants, Nangal Plant was transferred to NFL & subsequently expansion plant of Nangal Unit was commissioned with an installed capacity of 3.30 LMT. Further in order to sustain and enhance the company's growth, NFL successfully revamped Urea Plant of the Nangal Unit & Commercial Production was commissioned after revamp w.e.f. 1st Feb 2001 thus enhances the Annual installed Capacity from 3.30 LMT to 4.785 LMT. As per guidelines of GOI, in order to reduce subsidy burden & Carbon footprint, NFL revamped the Nangal Unit on LSTK basis for changeover of Feedstock from LSHS/FO to Natural Gas and commercial production on Gas was commenced during April 2013.

#### **2.18.1.2 Salient features of Nangal unit**

Installed Capacity: 478500 MTPA

Capital Investment: 229.19 Crores

Commencement of Production: November 1, 1978

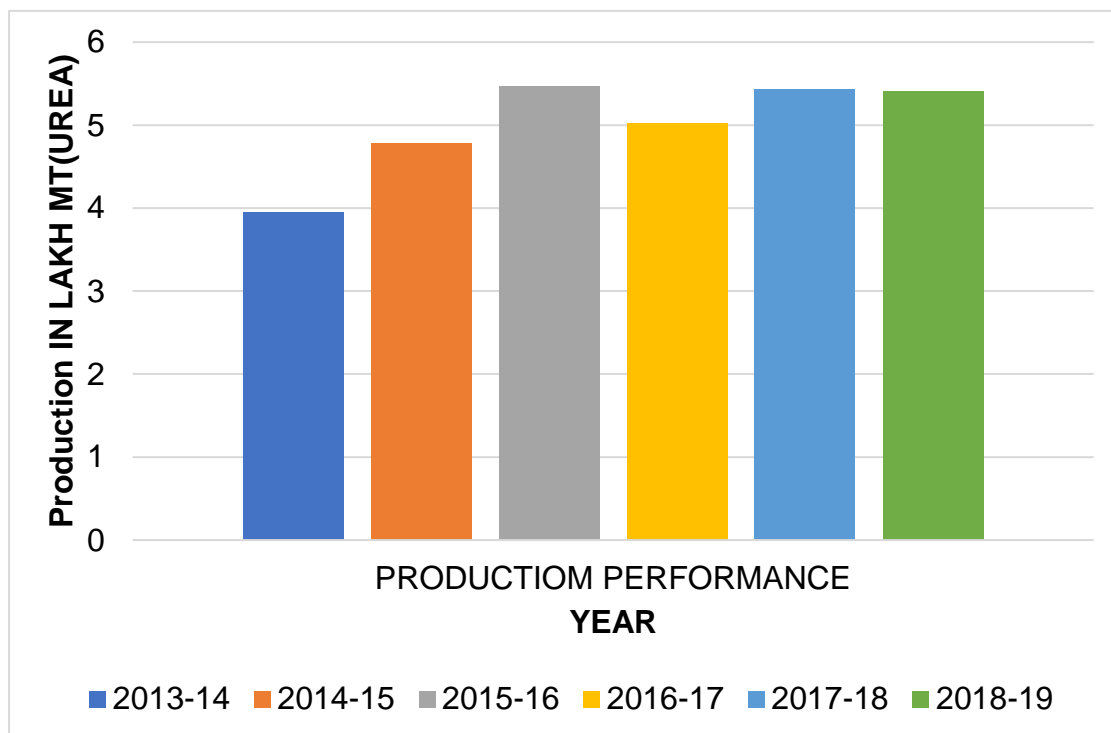
#### **2.18.1.3 Process**

Ammonia: KBR SMR (Steam Methane Reforming)

With Purifier Technology

Urea: Technimont Total Recycle Process

Raw material: Coal, LNG/ RLNG, Power, Water



(Source – NFL Zonal office Bhopal)

**Fig. 2.1 Production Performance of Nagal unit**

### 2.18.2 PANIPAT UNIT

National Fertilizers Limited,

Gohana Road, Panipat,

Haryana-132106,

Tel: 0180- 2652481 to 485, 2655570

Fax: 0180- 2652515

Email: nflpanipat@nfl.co.in

#### 2.18.2.1 About NFL Plant

Panipat unit of NFL was commissioned on 1st Sept 1979 based on gasification technology of Feed Stock on LSHS /Fuel Oil with the annual installed capacity of 511500 MT of Urea. Subsequently as per guidelines of

GOI, in order to reduce subsidy burden & Carbon footprint, NFL revamped the Panipat Unit on LSTK basis for changeover of Feedstock from LSHS/FO to Natural Gas and commercial production on Gas was commenced during Jan 2013.

### 2.18.2.2 Salient features of Panipat unit

Installed Capacity: 511500 MTPA

Capital Investment: 338.27 Crores

Initial Commencement of Production: September 1, 1979

Commencement of Production on Gas after Revamp: March 28th, 2013

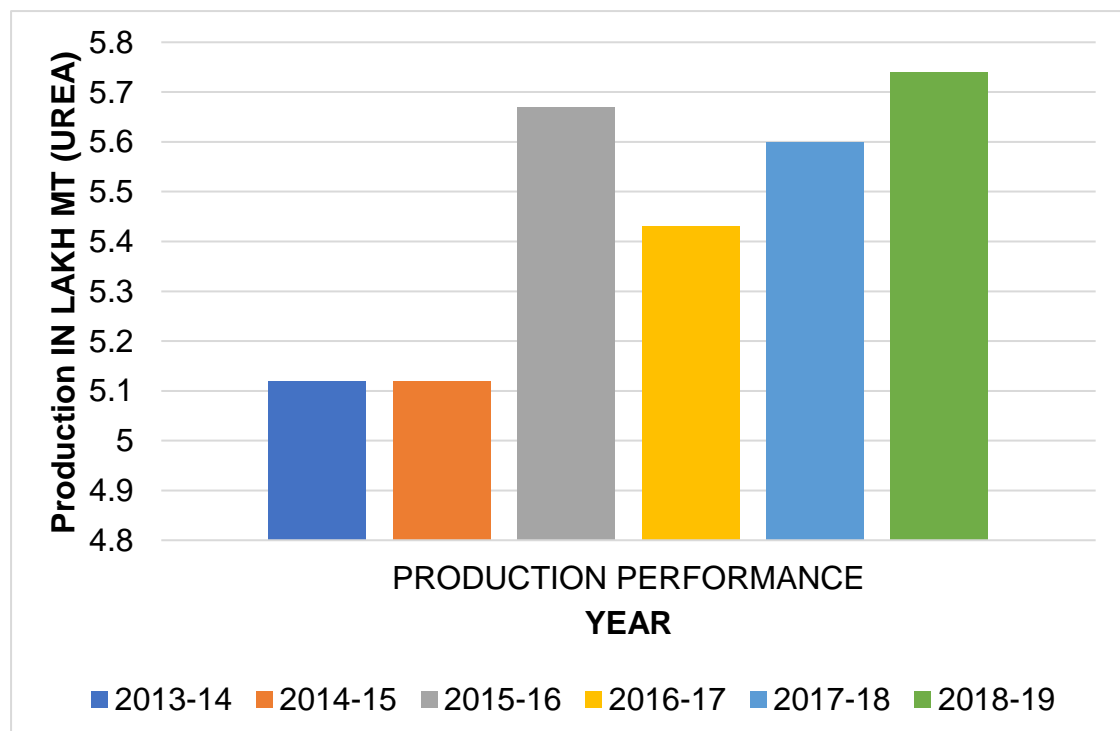
### 2.18.2.3 Process

Ammonia: HTAS Steam Methane Reforming (SMR) Technology

Urea: Mitsu Toastsu total Recycle C Improved

Raw material: Coal, LNG/ RLNG, Power, Water

Captive Power Plant: 2 x 15 MW



(Source- NFL Zonal office Bhopal)

**Fig. 2.2 Production Performance of Panipat unit**

### **2.18.3 BATHINDA UNIT**

National Fertilizers Limited,

Sibian Road, Bathinda,

Punjab- 151003,

Tel: 0164- 2270261, 2760262

Fax: 0164- 2760270

Email: nfladm@nfl.co.in

#### **2.18.3.1 About NFL Plant**

Bathinda unit of NFL was commissioned on 1st Oct 1979 based on gasification technology of Feed Stock on LSHS /Fuel Oil with the annual installed capacity of 511500 MT of Urea. Subsequently as per guidelines of GOI, in order to reduce subsidy burden & Carbon footprint, NFL revamped the Bathinda Unit on LSTK basis for changeover of Feedstock from LSHS/FO to Natural Gas and commercial production on Gas was commenced during Jan 2013.

#### **2.18.3.2 Salient features of Bathinda unit**

Installed Capacity: 511500 MTPA

Capital Investment: 349.41 Crores

Initial Commencement of Production: October 1, 1979

Commencement of Production on Gas after Revamp: March 11, 2013

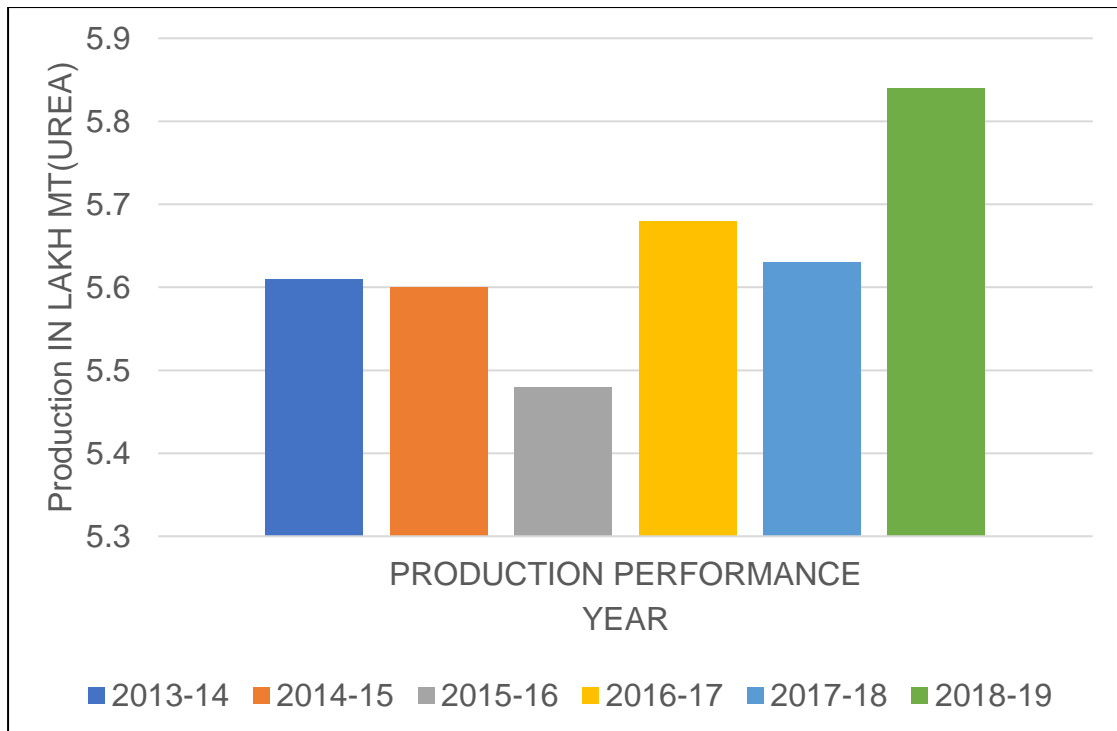
#### **2.18.3.3 Process**

Ammonia: HTAS Steam Methane Reforming (SMR) Technology

Urea: Mitsu Toatsu total Recycle C Improved

Raw material: Coal, LNG/ RLNG, Power, Water

Captive Power Plant: 2 x 15 MW



(Source – NFL Zonal office Bhopal)

**Fig. 2.3 Production Performance of Bathinda unit**

#### **2.18.4 VIJAIPUR - I & II**

National Fertilizers Limited

Vijaipur, Distt. Guna,

Madhya Pradesh-473111

Tel: 07544 - 273089, 273109

Fax: 07544 - 273089, 273109

Email: [cc@nfl.co.in](mailto:cc@nfl.co.in)

##### **2.18.4.1 About NFL Plant**

National Fertilizers Ltd, Vijaipur unit is one of the four units of M/S National Fertilizers Limited. With the commencement of commercial production of the Expansion project the gas-based unit at Vijaipur now comprises of two 1520 ton per day (tpd) Ammonia streams and four 1310 tpd Urea streams and related off-site facilities. The gas is being received from the HBJ gas pipe line being operated by M/s Gas Authority of India Ltd (GAIL) another government of India undertaking. The Ammonia stream completed

under the Expansion Project can also be operated with 50 % feed of Naptha in case of shortage of the gas supply. The line one plants (one stream of Ammonia and two streams of Urea) were built with a total cost of Rs 533 Crores and the cost of the Expansion Unit (one stream of Ammonia and two streams of Urea) is estimated at Rs 1067 Crores. For both streams of Ammonia plants, the consultant has been M/S HaldorTopsoe of Den-Mark and M/S Projects Development India Ltd. (PDIL), and for all the four streams of Urea consultant have been PDIL and M/S SnamProgetti of Italy.

In order to further reduce energy consumption & augment capacity of the Vijaipur Plant, Company has revamped both the plants at Vijaipur as a result. The annual installed capacity of Vijaipur Units has been enhanced by 3.40 LMT (16% in case of Vijaipur -I and 23% in case of Vijaipur-II) with the total capacity of the company has been increased from 32.31 LMT to 35.68 LMT.

#### **2.18.4.2 Salient features of Vijaipur unit - I**

Installed Capacity: 999900 MTPA

Capital Investment: 516.00 Crores

Initial Commencement of Production: November 1, 1988

Commencement of Revamp: April 24, 2012

#### **2.18.4.3 Process**

Ammonia: Steam reforming of NG / Naptha

Urea: Ammonia Stripping

Raw material: NG / Naptha, Power, Water

Captive Power Plant: 3 x 17 MW

#### **2.18.4.4 Salient features of Vijaipur unit – II**

Installed Capacity: 1066230 MTPA

Capital Investment: 1071.00 Crores

Initial Commencement of Production: March 31, 1997

Commencement of Revamp: July 31, 2012

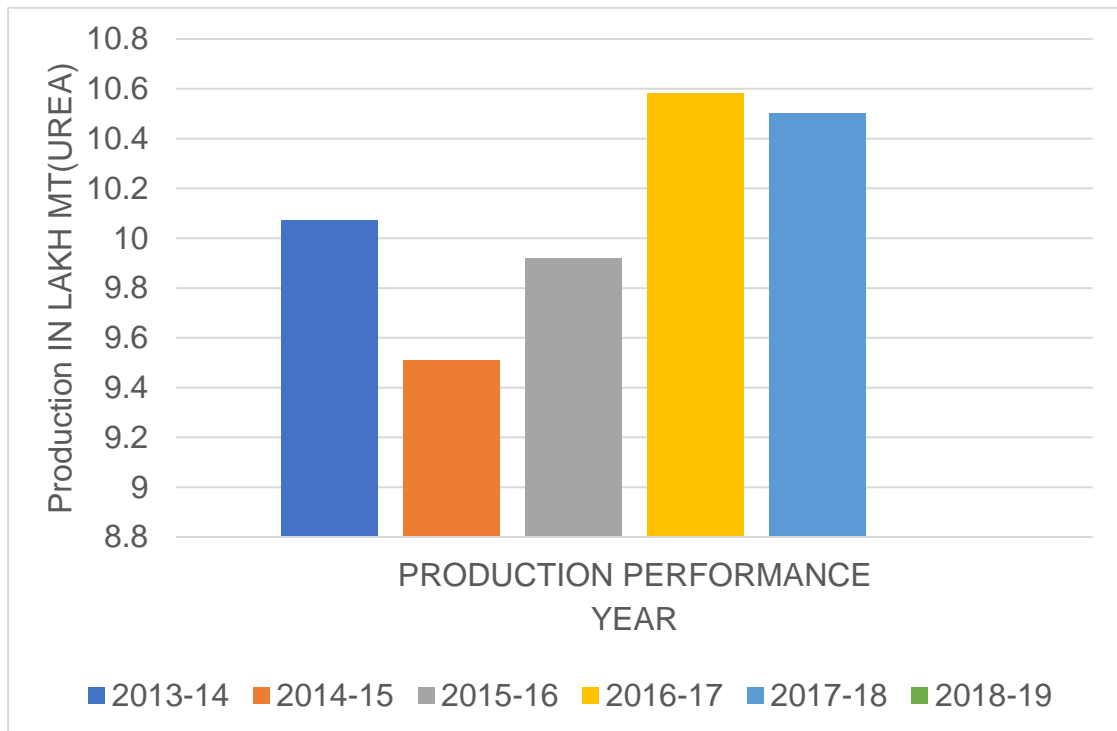
#### 2.18.4.4 Process

Ammonia: Steam reforming of NG / Naptha

Urea: Ammonia Stripping

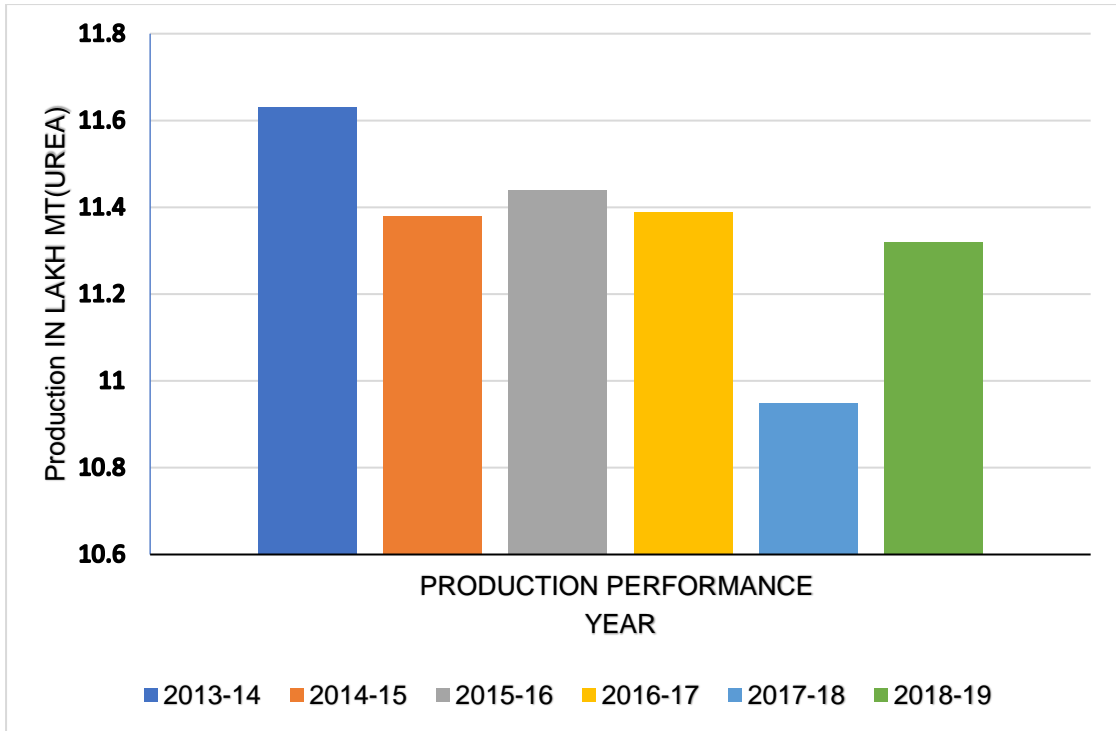
Raw material: NG / Naptha, Power, Water

Captive Power Plant: 3 x 17 MW



(Source – NFL Zonal office Bhopal)

**Fig. 2.4 Production Performance of Vijaipur unit -I**

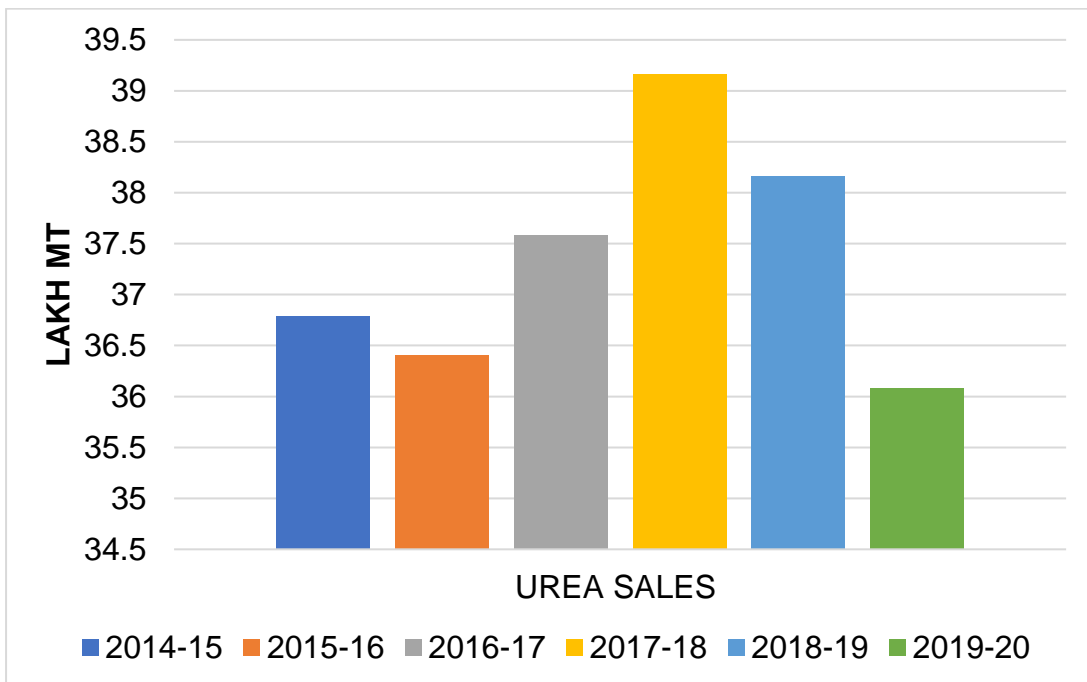


(Source – NFL Zonal office Bhopal)

**Fig. 2.5 Production Performance of Vijapur unit -II**

## 2.19 Performance

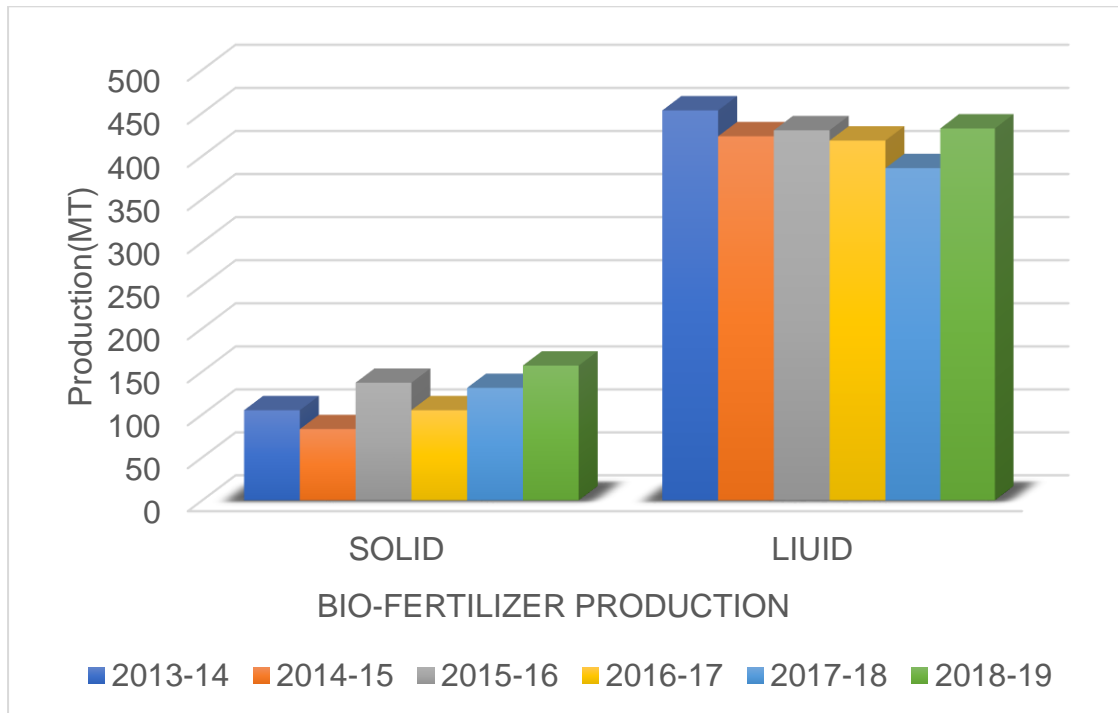
### 2.19.1 Ureasales



(Source – NFL Zonal office Bhopal)

**Fig. 2.6 Urea sales**

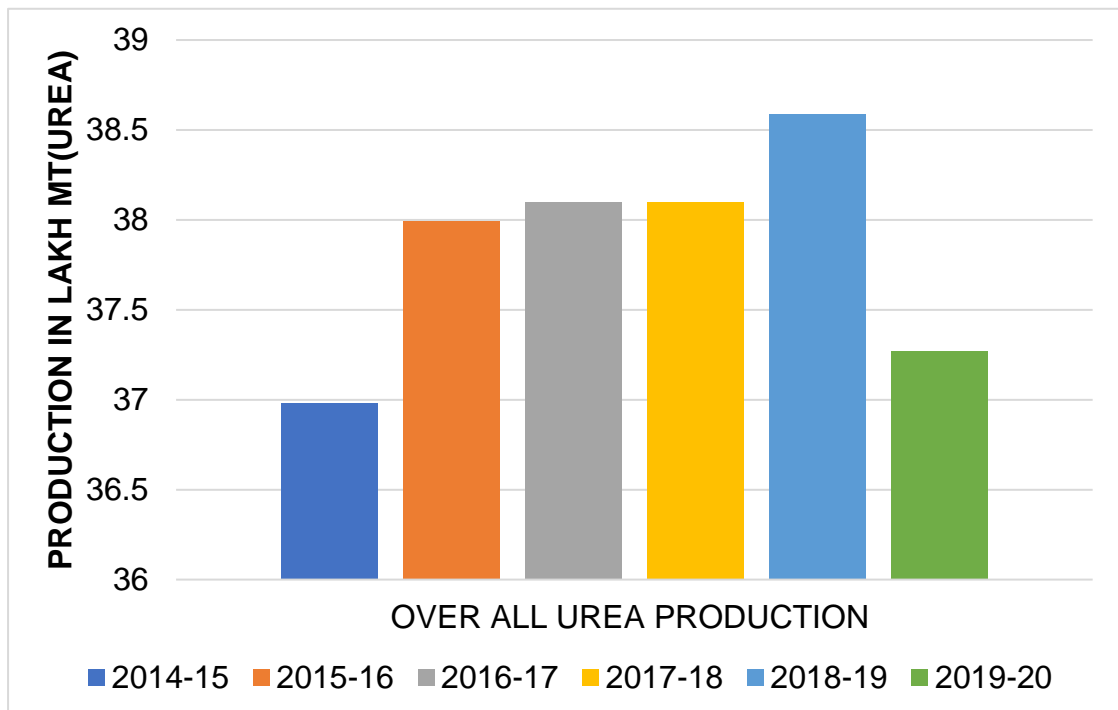
### 2.19.2 Bio- fertilizer production



(Source – NFL Zonal office Bhopal)

**Fig. 2.7 Bio-fertilizer production**

### 2.19.3 Over all urea production



(Source- NFL Zonal office Bhopal)

**Fig. 2.8 Over all urea production**

## 2.20 National Fertilizer Limited product details

NFL is engaged in manufacturing and marketing of urea, Neem-coated urea, bio-fertilizers (solid and liquid) and other allied industrial products like ammonia, nitric acid, ammonium nitrate, sodium nitrate etc.

### 1. Neem Coated Urea



Fig. 2.9 Kisan Urea of NFL

### Introduction

Agronomical trial on Paddy and Wheat crops with Neem coated Urea as source of Nitrogen has produced significantly higher yield at research and farm level. Looking into the potential of Neem Coated Urea and its acceptance by the farmers, Ministry of Agriculture in July 2004, included the Neem Coated Urea in FCO. The use of Neem Coated Urea has been found to improve the uptake of N, P and K significantly. Since 2008 the, Ministry of Chemicals and Fertilizers allowed Neem Coated Urea manufacturer to sell NCU at 5% above the MRP, to recover the cost of coating, however cost of Neem kernel Oil and production as such of Neem Coated Urea has increased significantly. As per recent notification dated 25.05.2015 all the urea producers in country shall now be producing 100% urea as NCC in order to improve crop productivity and reduce the subsidy. Balanced use Nitrogen, Phosphorous, Potassium along with the requirements of secondary and micronutrient increase the yield at economic level. Of the three major

Nutrients Nitrogen, Phosphorous and Potash, nitrogen has received the maximum attention because of many reasons. Nitrogen gets easily converted to available forms from various types of fertilizers that are being applied for crop nutrition. Also nitrogen in Nitrate form is highly mobile and get lost through the process of leaching especially under irrigated conditions. Nitrogen is also lost in the process of de-nitrification where the nitrate form is back converted into Nitrogen and Ammonia and lost to atmosphere.

There are many references available on Nitrogen that indicates that the recovery of nitrogen under irrigated and submerged condition is hardly 35% due to various kind of loses it is subjected to such as de-nitrification, ammonia volatilization and leaching. In the world 50% of nitrogen is supplied through Urea and the scenarios in India are no different. In order to keep the nitrogen losses at minimum level, agricultural scientist have come out with various agronomical recommendations, to reduce these loses. The prevalent recommendations are split application, band placement, and deep placement using the see drill. All these practices make available the right quantities of requirement at the place of absorption. Application of bigger granules of urea retards the dissolution.

In addition to agronomical practices, various kind of nitrification inhibitors such as Nitrapyrin (N-Serve) and Terrazole (Dwett) were developed in USA. These Nitrification agents are very expensive and add to the already high cost of crop production in India.

Keeping in view the low Nitrogen use efficiency it has been felt to find out the use of some indigenous use of material and coating process for reducing the nitrogen losses from Urea. Use of Neem oil in various form such as Neem oil cake, Neem oil and other Neem product have been found useful in reducing the release from Urea and increase its use efficiency. Neem oil contains various kind of bitter, especially the Meliacins that have been identified in retarding the process of nitrification of Urea.

### **Production of Neem Coated Urea at NFL**

National Fertilizers Limited, in the year 2002, standardized the techniques for production of Neem Coated Urea in situ, at its Panipat Unit.

Since then many changes have been made in the process and applicant solution, to have a uniform and consistent coating of Neem oil on urea prills, to maintain the concentration of Neem oil content as per the specification prescribed in FCO. Based upon the results of extensive field trial where Neem Coated urea was found to be agronomical superior to normal prilled urea, NFL became the first company in India that was granted the permission to produce and market the Neem Coated Urea, vide Govt of India Notification No S.O.807 (E) dated 9 July 2004 .Today the company has facilities at all its 3 Units namely Nangal, Bathinda, Panipat and Vijaipur, for production of Neem Coated Urea. Neem coated urea produced at these production facilities is marketed in all the 14 States where the company is marketing its Urea. Year wise Unit wise production of Neem Coated Urea(In MT).

## **2. Bio-Fertilizer**




Bio-FertilizerNFL manufactures and markets three types of Bio-Fertilizers, Rhizobium, Phosphate Solubilising Bacteria (PSB) and Azetobactor. Starting with a mere 23 MT production in 1995-96, the production has risen to 231 MT (Approx) in 2010-11. The Company presently markets its bio-fertilizers in Madhya Pradesh, Maharashtra, Uttar Pradesh, Uttrakhand, Chattisgarh, Bihar, Jharkhand, Himachal Pradesh, Jammu & Kashmir, Punjab, Haryana & Rajasthan.

Bio-fertilizers are used to supplement chemical fertilizers as also to maintain soil fertility; besides the following:-

1. Bio-Fertilizers are supplement to Chemical Fertilizers.
2. Bio-Fertilizers are cheap and can reduce the cost of cultivation.
3. Fix Biological Nitrogen in the soil, which is readily available to the plant.
4. Increase crop yield by 4-5% on an average.
5. Improve soil properties and sustain soil fertility.
6. Provides plant nutrient at low cost and useful for the consecutive crops.

The applicability of Bio-Fertilizers marketed by NFL of different crops is as under:

Table 2.3 Bio fertilizer of NFL

Name of Bio-Fertilizers	Contribution	Most Beneficiary Crop
<p><b>A. Nitrogen Bio-Fertilizer</b></p> <p><b>1. Rhizobium(Symbiotic)</b></p>  <p><b>3. Azetobactor (Non Symbiotic)</b></p> 	<p><b>a)</b> Fixes 50-300kg. N/hactre</p> <p><b>b)</b> Leaves residual nitrogen for succeeding crop</p> <p><b>c)</b> Increase yield by 10-35%</p> <p><b>d)</b> Maintains soil fertility</p> <p><b>a)</b> Fixes 20-40mgN/g of C-Source</p> <p><b>b)</b> Produces growth promoying substances like vitamin B groups, Indole acetic acid and Giberelic acid.</p> <p><b>c)</b> 0-15% increase in yield.</p> <p><b>d)</b> Maintains soil fertility</p> <p><b>e)</b> Biological control of plant diseases by supperssing some plant pathogens.</p>	<p>Pulse Legumes: Gram, Lentil, Moong, Urd, Cowpea, Arhar, Oil.</p> <p>Legumes: Groundnut and Soyabean</p> <p>Fodder Legumes: Barseem, Lucerne</p> <p>Forest Leghume: Subabul, Shisam, Shinsh.</p> <p>Wheat, Jowar, Barley, Paddy, Mustard, Cotton, Sugercane, Banana, Tomato, Cauliflower, Lady finger, Tobacco, Coconut, Flowers, Spices, Plantation crops.</p>
<p><b>B. Phosphorous Bio-fertilizer</b></p> <p><b>1. P.S.B. Phosphate solubilising Bacteria</b></p> 	<p><b>a)</b> Solublizers insoluble phosphate</p> <p><b>b)</b> Increases yield by 10-30%</p> <p><b>C)</b> Produce enzymes which mineralise organic phosphorous to a solubleform.</p>	<p>Non-specific: All plants.</p>

### 3. Bentonite Sulphur



**Fig. 2.10 Bentonite Sulphur of NFL**

Bentonite Sulphur is straight Sulphatic fertilizer containing Sulphur and Bentonite clay. The Sulphur present is 90% in these fertilizers and is the highest among other category of Sulphated fertilizers. This makes Bentonite Sulphur more effective in terms of supplying Sulphur to Crops. In fertilizers, besides N, P, K nutrients, Sulphur is the 4th major plant nutrient. Sulphur is an essential component in the synthesis of amino acids required to manufacture Proteins. Sulphur is also required for production of chlorophyll and utilization of phosphorus and other essential nutrients.

#### **Advantages of using Bentonite Sulphur (BS) for different crops:**

1. Increases soil acidity or lower soil pH for alkaline soils.
2. Increases nitrogen utilization, phosphate and micronutrient uptake.
3. Resist leaching until converted to sulphate form Growth rate of roots improves ensuring that, the plant extracts maximum amount of nutrients from the soil.
4. Increases Oil content of groundnuts and other oil seeds, improves quality and quantity of pulses.

## Production of Bentonite Sulphur at NFL

In Dec 2017, 25000 MTPA Bentonite Sulphur Plant was commissioned at NFL Panipat Unit. The manufactured product meets the FCO specifications as follows:

**Table 2.4 Bentonite Sulphur at NFL**

<b>1</b>	<b>Sulphur %</b>	90 %, by weight (min)
<b>2</b>	<b>Bentonite %</b>	10 %, by weight (max)
<b>3</b>	<b>Moisture %</b>	0.5 % by weight (max)
<b>4</b>	<b>Partcle size</b>	> 90 percent of the material shall pass through 4.0 mm IS sieve and be retained on 1 mm IS sieve and < 5 % shall be below 1 mm IS sieve
<b>5</b>	<b>Colour</b>	Dark Yellow Green

NFL packages the product in packs of 5 kg, 10 kg, 25 kg and 50 kg bags. NFL is also exploring possibility of packaging in 1 kg bags to enhance its marketability.

#### 4. Industrial Products

**Table 2.5 Industrial product of NFL**

Product Chemical Formula	Rated Capacity	Specifications	Used for/ Industry	Packaging Supply
Nitric Acid Dilute (HNO <sub>3</sub> )	560MT/Day (For both the streams)	HNO <sub>3</sub> by wt.54% And 60% concentration. Balance water	Organic Synthesis Photo engraving Medicine Preparation of Nitro Compounds Oxidiser in liquid rocket propellants Refining of Silver	Road Tankers
Ammonium Nitrate (NH <sub>4</sub> NO <sub>3</sub> )	706 MT/Day (For both the streams)	Flakes 95% concn. Balance water Melt Concn 82-84% Balance water	Explosives, Pyrotechnics Herbicides & Insecticides Nitrous Oxide Absorbent for Nitrogen Oxides Ingredient for freezing Mixtures Oxidiser in solid rocket properties Nutrient for Antibiotics & yeast Catalyst	Flakes in Polyethene HDPE Bags Melt in Stainless Steel road tankers.
Anhydrous Ammonia (NH <sub>3</sub> )		99.5% purity (min)	Ni	
Sodium Nitrite (NaNO <sub>2</sub> )	9 MT/Day	97.00% purity by wt NaNO <sub>2</sub> -1% wt Moisture and Volatile matter 1.0%	Organic synthesis rubber additives chemical reagent pharmaceuticals photographic reagent pickling meat medicines dyeing & printing of fabrics rust proofing etc.	50 Kg HDPE Bags
Sodium Nitrate (NaNO <sub>3</sub> )	6 MT/Day	98% purity by wt. Na NO <sub>2</sub> – 0.5% Moisture – 1%	Oxidising agent oxidizer in solid rocket propellants fertilizers glass manufacturing chemical reagent dynamities/matches military explosives refrigerant/medicines.	50 Kg HDPE Bags

## 5. Traded Products

### 5.1 Kisan DAP (Di Ammonium Phosphate)

1. Kisan DAP is a complex fertilizer containing two major plant nutrients – Nitrogen (18%) and Phosphorus (46%).
2. Kisan DAP contains 18% Nitrogen and 46% phosphorus. Kisan DAP can be safely mixed and used with other fertilizers.
3. It is the only complex fertilizer having highest total nutrients (64%). Nitrogen and Phosphorous are available in 1: 2.5 ratios.



**Fig. 2.11 Kisan DAP (Di Ammonium Phosphate) of NFL**

4. Almost entire (15.5%) Nitrogen is almost available in Ammoniacal form which avoids leaching losses and readily availability of Nitrogen to the plants.
5. Most of the phosphorus nutrient is also in water soluble form (41.6%) and hence available to plants immediately after application.
6. Kisan DAP can be used in all cereals, sugarcane, fodder crops, vegetables and fruits.
7. The NP ratio of 1:2.5 is a scientific combination for basal application to all crops and both the nutrients are chemically combined and interaction is synergistic.
8. It is an ideal and suitable complex for all crops for basal application. And especially food crops- Paddy, Jowar, Maize and Commercial

Crops - Sugarcane, Tobacco, Cotton & Chillies and Oilseed Crops - Groundnut & Soybean.

9. DAP can be used in any type of soil and under all agro-climatic conditions.

## 5.2 KISAN MOP

1. Kisan Mop contains highest percentage of potash (60%).
2. Kisan MoP have entire potash is in water soluble form.
3. Kisan MoP improves quality of the produce apart from increasing yield.



Fig. 2.12 Kisan MOP of NFL

4. Kisan MoP increases strength of the crops and improves resistance against pests and diseases.
5. Kisan MoP counteracts ill effect of over application of nitrogenous fertilizers.

## 5.3 KISAN NPK (12:32:16)

1. 12:32:16 is a complex fertilizer containing all three major plant nutrients viz. Nitrogen, Phosphorous and Potassium.
2. 12:32:16 is a complex fertilizer containing all three major plant nutrients viz. Nitrogen, Phosphorous and Potassium.
3. This is one of the highest nutrients containing NPK complex fertilizer with total nutrients of 60%. Nitrogen and Phosphate are available in the ratio 1:2.6 as in the case of DAP.

- 12:32:16 is an ideal complex for Soya bean, potato and other commercial crops which require high phosphate during the initial stages of growth.
- 12:32:16 helps the young plants to establish faster, even under adverse soil or climatic conditions.
- 12:32:16 helps in greater root penetration and better root system even in poor soils of unstable structure resulting in higher yield from such soils.



**Fig. 2.13 KISAN NPK of NFL**

#### **5.4 KISAN NPK (10:26:26)**

- KISAN 10:26:26 is a complex fertilizer containing all the three major plant nutrients viz. Nitrogen, Phosphorous and Potassium. KISAN 10:26:26 contains Phosphorous and Potassium in the ratio of 1:1.
- KISAN 10:26:26 is a complex fertilizer containing all the three major plant nutrients viz. Nitrogen, Phosphorous and Potassium.
- KISAN 10:26:26 contains Phosphorous and Potassium in the ratio of 1:1, the highest among the NPK fertilizers. It contains 7% Nitrogen in the Ammonical form, 22% out of 26% phosphate in the water-soluble form and the entire 26% potash is available in the water-soluble form.
- KISAN 10:26:26 is ideally suitable for crops which require high phosphate and potassium especially in Sugarcane and Potato.
- KISAN 10:26:26 is also suitable for Fruit crops.

### 5.5 Water Soluble Fertilizer (Kisan 19-19-19)

1. Best foliar fertilizer for crops like paddy, wheat, pulses and vegetables.
2. Suitable for green house cultivation, nurseries, kitchen gardens and for all type of field crops.
3. 100% water soluble NPK in 19:19:19 ratio.
4. Contains all three forms (nitrate, ammonical and amide) form of nitrogen.
5. Free from chloride, sodium and other detrimental elements of plants.
6. Compatible with most common Crop Protection Products and fungicides.

### 5.6 Kisan Calcium Nitrate

1. Soluble in water, provides calcium (18.5%) and nitrate (15.5%) to the crop.
2. Improves absorption of nutrients such as nitrogen, iron, boron, copper, and manganese.
3. Enhances the immunity of crop against pests and diseases.
4. Strengthens plants and prevents crop from falling.
5. Provides a similar size, shape and colour to the crop product.
6. Provides quality and shine to the outer skin of potato.
7. Suitable for all vegetable crops, fruit crops and other crops like Tea, Cotton, Groundnut, Sugarcane etc.

### 5.7 City Compost



Fig. 2.14 City Compost of NFL

Compost is plant matter that has been decomposed and recycled as a fertilizer and soil amendment. Compost is a key ingredient in organic farming. Modern, methodical composting is a multi-step, closely monitored process with measured inputs of water, air and carbon- and nitrogen-rich materials. The decomposition process is aided by shredding the plant matter, adding water and ensuring proper aeration by regularly turning the mixture. Aerobic bacteria manage the chemical process by converting the inputs into heat, carbon dioxide and ammonium. Ammonia in the bio-mass is further refined by bacteria into plant-nourishing nitrites and nitrates.

Compost can be rich in nutrients. It is used in gardens, landscaping, horticulture and agriculture. The compost itself is beneficial for the land in many ways, including as a soil conditioner, a fertilizer, addition of vital humus or humic acids, and as a natural pesticide for soil. In ecosystems, compost is useful for erosion control, land and stream reclamation, wetland construction and as landfill cover. The compost we are selling is further enriched with biofertilizers.

## **6. Certified Seeds**

Certified seeds of various crop varieties are being sourced from three leading / major State Seed Agencies / Cooperatives viz. State Farms Corporation Ltd (SFCL), Uttaranchal Seeds & Tarai Development Corp (UAS & TDC), M/s National Seeds Corporation (NSC) etc. We have entered into an agreement with all above Government bodies state wise for procurement of certified seeds. Besides this in all the major states where we are operating we have prequalified many seed processing units/suppliers for purchase of seeds through tender process.

We have initiated seed multiplication programme in the state of Madhya Pradesh in the current Rabi season in 200 acres and expect to expand this programme in other states like Punjab, Haryana and Uttar Pradesh from the ensuing Kharif 2011. This will enable us to supply quality seeds to farmers to sustain growth and development. Primary objective of the programme is to operate as an economically viable and profitable venture and at the same time fulfill the society's social obligation. The other secondary

objectives are production of Foundation and Certified seed through registered seed growers to ensure its availability as per plan; to provide quality seeds to farming community and to sustain national food grain production by producing quality seeds.

## 7. Agrochemicals

To promote the concept of single window we have ventured into sales of agrochemicals/pesticides. As a pilot project during kharif 2010 we took up trading of agrochemicals in the state of Punjab and Haryana and based on our Kharif 2010 experience we have ventured into trading through state /Government agencies like Hafed, markfed and Hindustan Insecticides Limited in our total marketing territory.

Agrochemicals constitute a variety of products such as Herbicides - These chemicals control weeds and may pre emergence or post emergence and crop specific. Fungicides - They normally are used in controlling diseases like smuts rust etc. Insecticides - They control different types of insect pests like shoot and root borers and are crop specific.



**Fig. 2.15 Agrochemicals of NFL**

Other Chemical fertilizer marketed and proposed to be marketed by NFL are Potassium Chloride (Muriate of Potash), Diammonium Phosphate(18-46-0),Nitro Phosphate (20-20-0),NPK 12-32-16.

## 2.21 Marketing Network

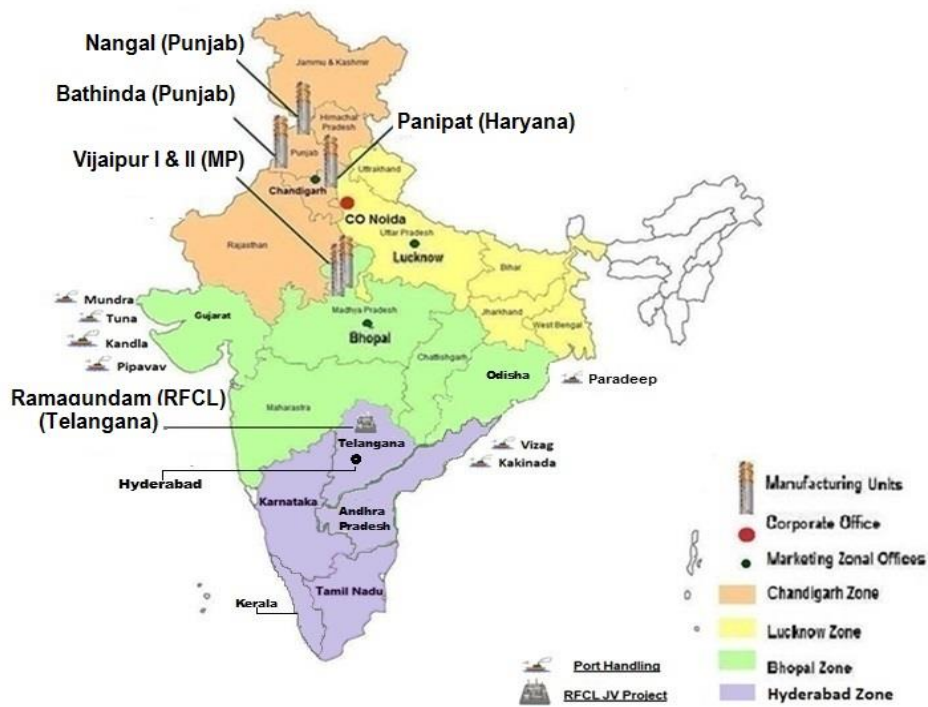


Fig. 2.16 Marketing Network of NFL



## Marketing Division 2018-19

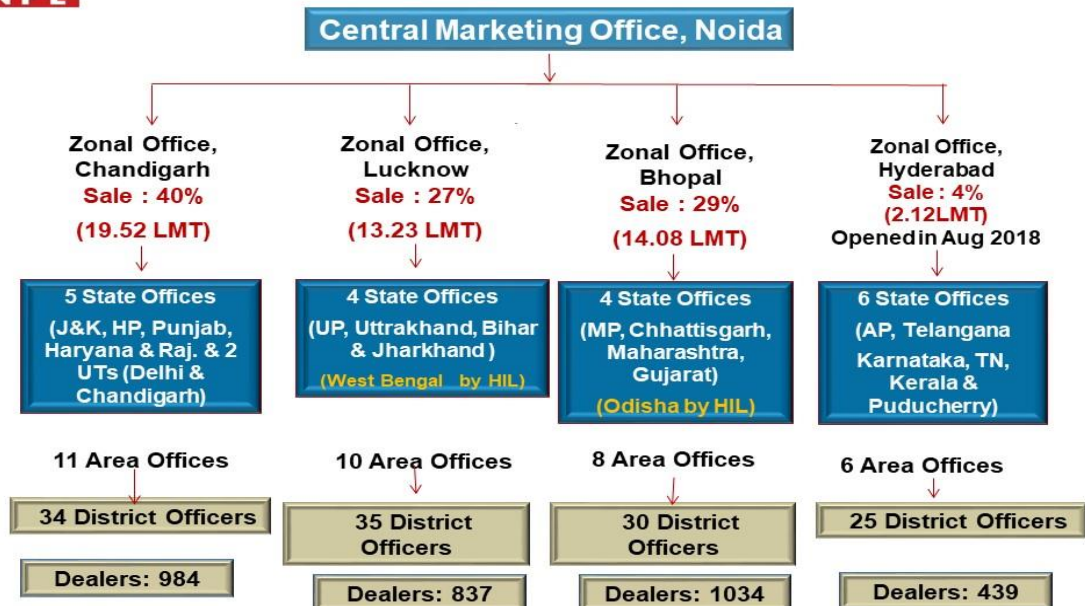
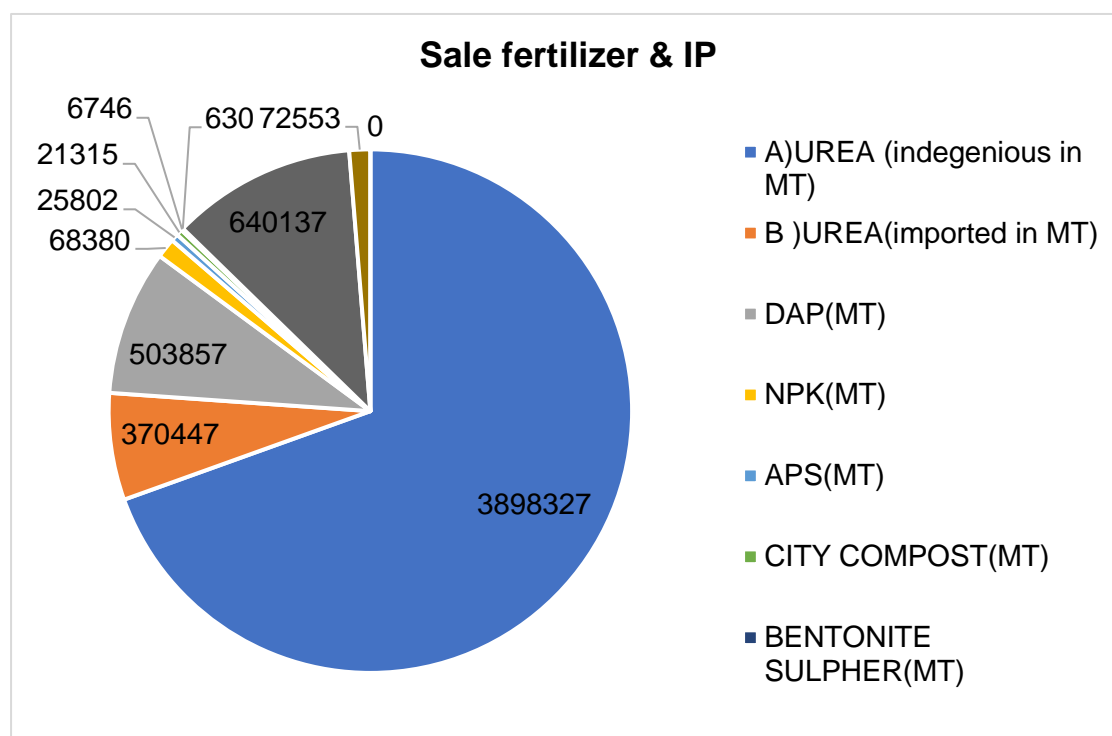


Fig. 2.17 Marketing division of NFL

1. Promotion activities, which include agronomical programmes, use of extension media, publicity and farmer development programmes.
2. The Company provides a comprehensive capsule of various fertilizer.
3. To provide to the farmers high quality products in the right time, NFL has an extensive and integrated marketing network.
4. The complete farmer satisfaction through best services is the drawing force of NFL's marketing, strategy. The Company has expanded its programme from improving the crop productivity at farm level to the overall development of the farming community.

## 2.22 Sale fertilizer & IP



(Source – NFL Zonal office Bhopal)

**Fig. 2.18 Sale fertilizer & IP of NFL**

**CHAPTER - 3**  
***PROFILE OF THE STUDY AREA***

## PROFILE OF THE STUDY AREA

The knowledge of general characteristics of the study area is essential for understanding the features of the area. This will facilitate the discussion with respect to similarities and variation in land use pattern, rainfall, cropping pattern etc. This also enlightens the socio-economic conditions of the area selected for the study.

### 3.1 Geography of Katni

Geography of Katni district covers an area of 4949.59 square kilometres. The district of Katni is situated in the North-eastern parts of the state of Madhya Pradesh in India and also forms the northern district of Jabalpur Commissionerate division. Mudwara was the biggest (area-wise) tahsil of Jabalpur before Katni became a district in the year 1998. The Katni district is located between twenty-three degree thirty-seven minutes and twenty-four degree eighty minutes to the North latitude and seventy-nine degree fifty-seven minutes and eighty degree fifty-eight minutes to the East longitude. This district in the Madhya Pradesh state is placed three hundred and ninety-two meters above sea level.

Katni, Chhoti Mahanadi and Umdar are the three major rivers in the Katni district and the name Katni of Mudwara is given after the Katni River, which is two kilometres away from Mudwara. The shape of the district of Katni is roughly oval. The district enjoys an average climatic condition.

**Table 3.1 Geography of Katni district of Madhya Pradesh**

Location	Centre of MP
Latitude	23 <sup>0</sup> 47 N
Longitude	80 <sup>0</sup> 27 E

(Source – Annual report of department of statistics Katni (MP))

### 3.2 Climate and Rainfall

The climate of Katni district M.P. characterized by a summer and general dryness except during south west monsoon season. The year may

divide into four seasons. The cold season, December to February is followed by the hot season from March to about middle June. This period from middle of June to September is the south west monsoon. October and November from the post monsoon or transition period.

The nearest observatory is Jabalpur. The climatological parameters of Jabalpur used for analysis of rainfall. The average annual rainfall of Katni district is 1171.4 mm. Katni district received maximum rainfall during south west monsoon period. June to September about 56.9 percent of the annual rainfall received during monsoon season. Only 13.1 percent of the annual rainfall takes place between October to May period. Thus, surplus water for ground water recharge is available only during the south west monsoon period.

**Table 3.2 Maximum, minimum temperature, relative temperature and wind velocity**

<b>S.N.</b>	<b>Para meter</b>	<b>Jan</b>	<b>Fab</b>	<b>Mar</b>	<b>April</b>	<b>May</b>	<b>Jun</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annul</b>
1	Max. temp.( <sup>0</sup> c)	26.2	29.4	34.5	39.3	42.0	38.0	31.1	29.8	31.4	32.3	29.9	26.7	32.6
2	Min. temp. ( <sup>0</sup> c)	9.7	12.1	16.6	21.9	26.4	26.6	24.2	23.7	23.3	7.92	13.1	9.7	18.9
3	Relative temp %	64	58	43	33	31	59	85	88	82	70	65	70	63
4	Wind velocity (km/hr.)	3.2	3.7	4.3	5.0	6.3	8.2	7.2	6.9	5.4	3.5	2.7	2.6	4.9

(Source – Department of Agriculture Katni (MP))

### 3.3 Agriculture

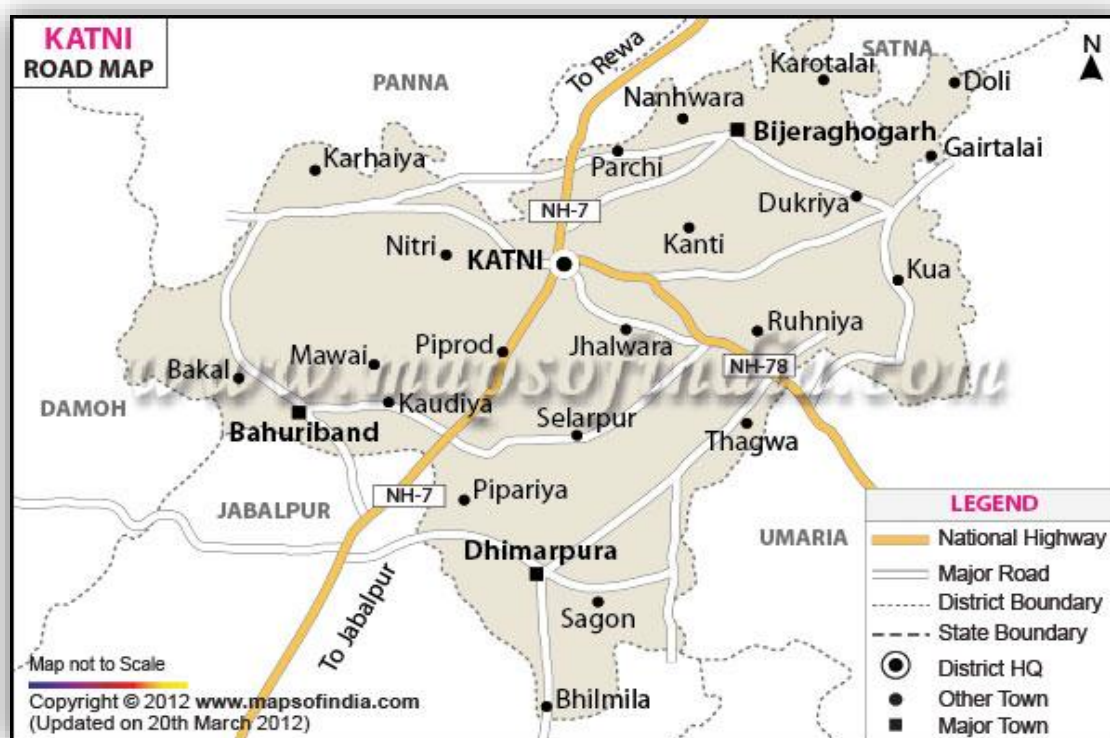
The predominate crops grown in the Katni district are paddy, wheat, pigeonpea, kodo-kutki, maize, and vegetable crops potato, tomato, onion, cabbage and other. Medicinal and aromatic crops lemongrass, palmarose, ashwagandha and isabgol.

**Table 3.3 General information**

<b>Area</b>	4950sq km
<b>Forest land</b>	1361.30sq km
<b>Latitude</b>	23 <sup>0</sup> 47 N
<b>Longitude</b>	80 <sup>0</sup> 27 E
<b>Population</b>	1292042
<b>Males</b>	662013
<b>Females</b>	630029
<b>Density</b>	260/km <sup>2</sup>
<b>Population growth rate</b>	21.38%
<b>Sex ratio</b>	948
<b>Average literacy</b>	73.62%
<b>Tehsil</b>	7
<b>Blocks</b>	7
<b>Villages</b>	969

(Source – District Planning and Statistical Office, Katni (MP))

## Map of Katni District (M.P.)



(Source – [www.mapsofindia.com](http://www.mapsofindia.com))

**Fig. 3.1 Map of Katni District (M.P.)**

### 3.4 Block wise statistics

Katni district has 7 blocks namely badwara, bahoriband, barhi, dhimarkheda, murwara, rithi and vijayraghavgrah. Dhimarkheda block is the biggest in term of area i.e.1002 sq.km. As compared to other 6 blocks while barwara is the smallest block. Dhimarkheda block have maximum number of village i.e.221 while barhi have minimum number of village i.e.51.

**Table 3.4 Block wise statistics**

Block	Geographical area (Sq. km.)	Total village
Badwara	487	109
Bahoriband	940	195
Barhi	508	51
Dhimarkheda	1002	221
Murwara	604	124
Rithi	685	116
Vijayraghavgrah	723	135
<b>Total</b>	<b>4949</b>	<b>951</b>

(Source – District Planning and Statistical Office, Katni (MP))

### 3.5 Block wise population

The table show the distribution of population in 7 blocks of Katni district. Murwara block is the highest populated block of Katni district with 3,69,519 while Barhi is the least population block in the Katni district.

**Table 3.5 Block wise population**

Census year	CD Block	Area(km <sup>2</sup> )	Population
2011	Badwara	487	1,04,196
	Bahoriband	940	1,98,914
	Barhi	508	1,03,512
	Dhimarkheda	1002	1,77,829
	Murwara	604	3,69,519
	Rithi	685	1,27,211
	Vijayraghavgrah	723	2,10,861

(Source – District Planning and Statistical Office, Katni (MP))

### 3.6 Source wise irrigated area

The source of irrigation in the Katni district are canals, tanks, open wells etc. open wells is the most popular source of irrigation in Katni district, contributing nearly 50.27% of the net irrigated area.

**Table 3.6 Source wise irrigation area**

S. No.	Name of source	Net irrigated area ('000 ha)
1	Canals	12.8
2	Tanks	0.8
3	Open wells	30.1
4	Bore well	1.2
5	Other sources	15.10
<b>Total</b>		<b>59.10</b>

### 3.7 Land use pattern

Data shows that total geographical area of Katni district is 4,94,900ha. Net cultivated area of Katni district is 2 46,300 ha and gross cropped area is 2,45,900 hectares.

**Table 3.7 Land use pattern**

S. No.	Content	Area ('000 ha)
1	Total geographical area	494.9
2	Net cultivated area	246.3
3	Forest area	100.0
4	Cropping intensity	128%
5	Gross cropped area	245.90

(Source – Department of Agriculture Katni (MP))

### 3.8 Cropping pattern

The (table 3.8) shows that in katni district the gross cropped area was 235385 hectares. The cereals crop alone covered the 69.14% of the gross cropped area in which paddy and wheat covered a major area oil seeds having very less area.

**Table 3.8 Cropping pattern**

<b>Area under cereals</b>	<b>Area (in ha)</b>	<b>Percentage (%)</b>
Wheat	56221	22.85
Paddy	99825	40.59
Jowar	4077	1.65
Maize	3889	1.58
Others	6015	2.44
<b>Total</b>	<b>170027</b>	<b>69.44</b>
<b>Area under pulses</b>	<b>Area (in ha)</b>	<b>Percentage (%)</b>
Gram	17484	7.11
Tur	5253	2.13
Ured	2765	1.12
Other	22824	9.28
<b>Total</b>	<b>48325</b>	<b>19.65</b>
<b>Area under oil crops</b>	<b>Area (in ha)</b>	<b>Percentage (%)</b>
Til	3093	1.25
Linseed	5267	2.14
Mustard	2231	0.90
Soybean	291	0.11
Other	32	0.01
<b>Total</b>	<b>10914</b>	<b>4.43</b>
Area under spice crops	575	0.23
Area under fruit crops	1569	0.63
Area under vegetable	3279	1.33
Others	11195	4.55
<b>Gross cropped area</b>	<b>245885</b>	<b>100</b>

(Source – Department of Agriculture Katni (MP))

### 3.9 CLIMATE SUMMARY

The Katni lies on 380m above sea level In Katni, the climate is warm and temperate. The rain in Katni falls mostly in the winter, with relatively little rain in the summer. This location is classified as CSA by Köppen and Geiger. The average temperature in Katni is 25.0 °C | 76.9 °F. About 1123 mm | 44.2 inch of precipitation falls annually.

#### I. Yearly temperature

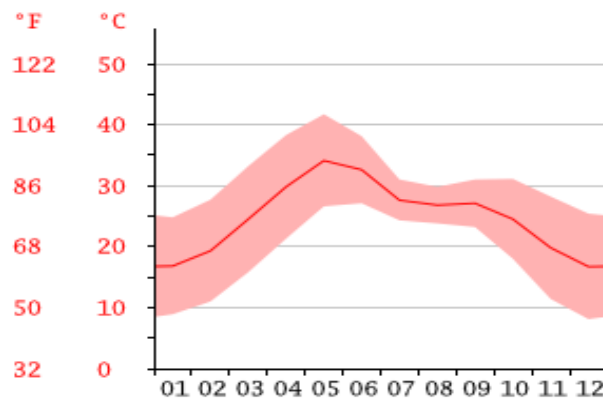


Fig. 3.2 Yearly temperature

#### II. Rain fall

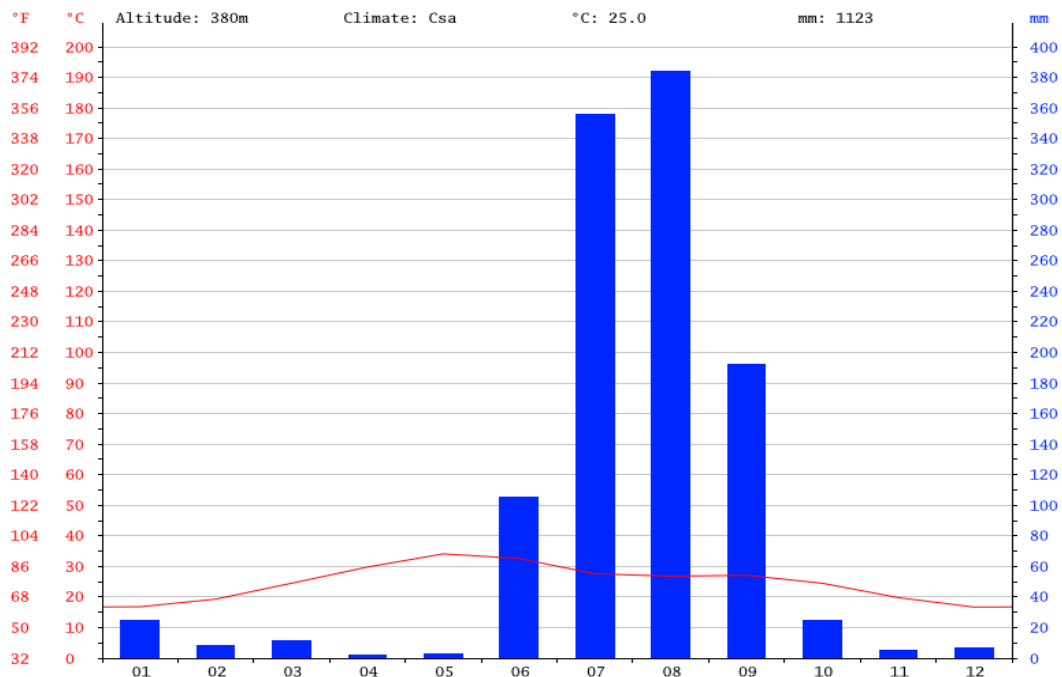
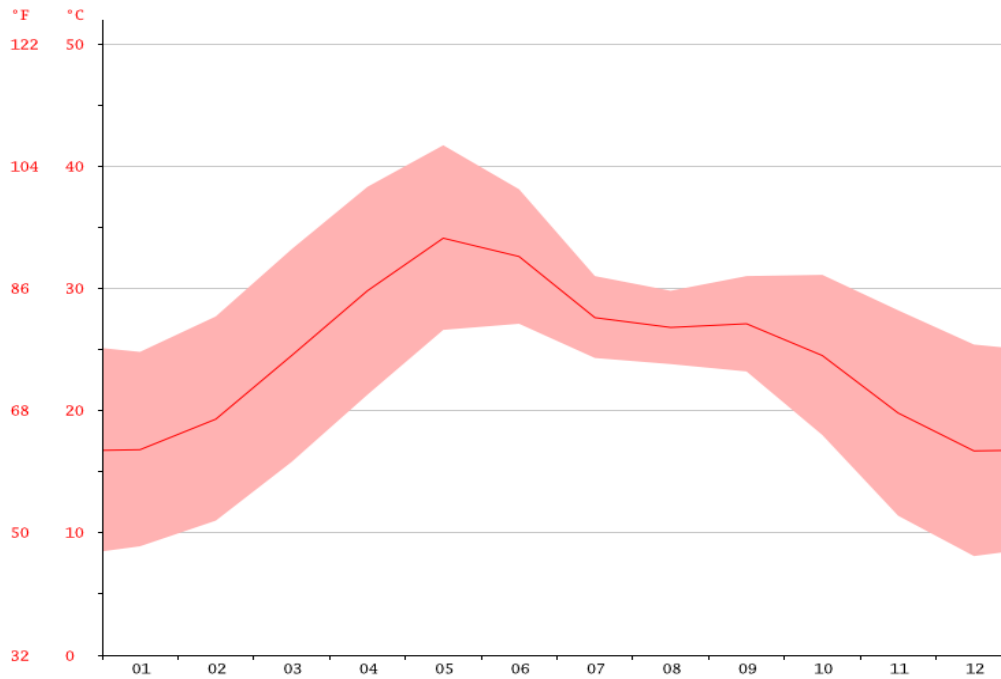


Fig. 3.3 Rain fall of Katni district

### III. AVERAGE TEMPERATURE



**Fig 3.4 Average Temperature**

With an average of 34.1 °C | 93.4 °F, May is the warmest month. At 16.7 °C | 62.1 °F on average, December is the coldest month of the year.

#### **3.10 KATNI WEATHER BY MONTH // WEATHER AVERAGES**

The precipitation varies 382 mm | 15 inch between the driest month and the wettest month. The variation in annual temperature is around 17.4 °C | 63.3 °F.

**CHAPTER - 4**  
**METHODS AND MATERIALS**

## Methods and Materials

This chapter deals with the methodological aspects of the investigation which covers sampling design, methods of data collection and method of analysis as per the objectives of the project. As stated earlier, this project is an attempt to evaluate the potentials of total fertilizer market in Katni district and assessed present status of NFL in the market and suggesting ways means to improve its share.

The methodology employed has been presented under following sub heads:

1. Sample design and collection.
2. Methods of data collection and sources.
3. Reference period.
4. Method of analysis.

### 4.1 Sample design and collection

The present study was confined to 7 blocks in Katni district of M.P. blocks namely badwara, bahoriband, barhi, dhimarkheda, murwara, rithi and vijayraghavgrah. NFL company assigned these blocks of Katni district for details investigation where the fertilizer used by the farmers and dealers.

Company	: National Fertilizer limited
Number of selected blocks	: 7
Number of selected farmer	: 84
Small farmer	: 29
Medium farmer	: 27
Large farmer	: 28

**Table 4.1 Selection of farmers from different block**

S. No.	Block	No. of village selected from each block	No. of farmer selected from each village	Total farmers selected
1	Badwara	3	4	12
2	Bahoriband	3	4	12
3	Barhi	3	4	12
4	Dhimarkheda	3	4	12
5	Murwara	3	4	12
6	Rithi	3	4	12
7	Vijayraghavgrah	3	4	12
<b>Total</b>		<b>21</b>	<b>4</b>	<b>84</b>

All the 84 farmers, further were categorised into three size of groups small, medium, and large. From the sample farmers small 29 medium 27 and large 28 were selected for the study purpose.

**Table 4.2 Name selected villages from different block**

S. No.	Name of block	Name of village	
		S. No.	Village
1	Badwara	1	Sanza
		2	Bharora
		3	Banhara
2	Barhi	1	Godana
		2	Lalpura
		3	Kupia
3	Dhimarkheda	1	Mangali
		2	Rampur
		3	Hardi
4	Bahoriband	1	Chapri
		2	Somakala
		3	Udipura
5	Murwara	1	Papria
		2	Barkheda
		3	Katangikala
6	Rithi	1	Surajpura
		2	Mohani
		3	Kanoar
7	Vijayraghavgrah	1	Surma
		2	Mahagav
		3	Bara

## 4.2 Method of data collection and sources

To fulfil the stated specific objectives, various types of primary and secondary information regarding sales, revenue and sales promotional activities were collected from farmers, dealers and other agencies functioning in study area.

**Primary data** were collected from dealers and farmers at block' and village's level. The company's wise quantities of fertilizer sold in different block were collected from the distributors and dealers. On the basis of this information, the top five companies were analysed by calculating the percentage share to total sales.

A separate questionnaires schedule was prepared for dealer and farmers. The company wise sales figures were taken from distributor and dealers at block level in study area. The selected farmers were interviewed with the help of pre tested questionnaire scheduled for the preferred fertilizer.

**Secondary data** were collected from annual report of Department of Agriculture Katni and report of National fertilizer limited.

### Dealers selected from Katni District:

In Katni district dealers were selected from block wise and these dealers are plays effective role in selling of the fertilizer and about 70 percent fertilizer using in Katni district. Table shows that the major dealers and turnover, market share in the Katni district.

1. Gupta trading company
2. Suhane beej bhandar
3. Krishak jagran
4. Amit traders
5. Aggarwal Krishi kendra

**Table 4.3 Major distributer and their turnover in Katni district**

S. No.	Dealers	Turnover	Percentage	Sub dealers
1	Gupta trading company	11.50	21.41	100
2	Suhane beej bhandar	10.20	18.99	70
3	Krashak jagran	12.50	23.27	75
4	Amit traders	10.00	18.62	70
5	Aggarwal Krishi kendra	9.50	17.69	65
	Total	53.70	100	

### **Top six companies selected from Katni district:**

1. NFL – National fertilizer limited.
2. IFFCO – Indian farmers fertilizer co-operative limited.
3. CFCL – Chambel fertilizer and chemical limited.
4. IPL – Indian potash limited.
5. KRIBHCO – Krishak Bharati co-operative limited.
6. KFL – Kribhco fertilizer limited.

### **Reference period**

The primary data collection for the study relates of the year 2018-2019. While secondary data collection from various publication of KVK and District Agricultural Statistics, Katni to the agriculture year 2018-2019.

### **Method of analysis**

The collected information and data from the various sources were systematically tabulated and analysed with help of simple arithmetic average and percentage.

### **Market potential: -**

It is the entire size of market for a product at a specific time estimates by the multiplying the cropped area under crop with per hectare recommended doses of fertilizer.

### **Market share: -**

It is estimated by taking the company sales over the period and dividing it by the total sales of the industry over the same period. It gives a general idea of size of company to its market and its competitors.

### **SWOC Analysis: -**

With the help of this analysis we are able to find out the performance and strategy of organization could be judged, where:

S = Strength.

W = Weakness.

O = Opportunity.

C = Challenges.

**CHAPTER - 5**  
***DATA FINDING AND PRESENTATION***

## DATA FINDING AND PRESENTATION

Keeping in view of the specific objectives of the study area, required data were collected and the result obtained are presented and discussed in this chapter. In the study area, the present study is an endeavour to focus on performance of selected companies in terms of quantum of fertilizer distributed. The materials in the chapter are presented under the following sub-heads: -

1. Market potential of fertilizer used in wheat crop in the study area.
2. Market share of fertilizer by major companies.
3. Farmers perception for fertilizer in the study area.
4. Promotional activities adopted by major companies.
5. SWOC analysis.

### 5.1 Market potential

Market potential is the entire size of the market for a product at a specific time. It represents the upper limits of the market for a product. Market potential has been estimated by multiplying the total cropped area under crop with per hectare recommended dosage of fertilizer. Market potential is usually measured by sales volumes.

Potential market is important part of business future growth every business has set of target customers that make up its share of the available market.

1. It ensures the future of industry by identifying new customers.
2. Think proactively about ways for business to grow.
3. Increase revenue and help in creating plan "B" as alternative business strategy in emergency or in different market condition or is changing market.

"For estimation of market potential of fertilizer for wheat crop, recommended dose and area under wheat crop in particular block were required. The block wise market potential of NPK nutrient for wheat crop had been given in the table 5.1.1".

**Table 5.1.1 Block wise market potential of NPK nutrients for wheat crop**

<b>S. No</b>	<b>Name of block</b>	<b>Nutrients</b>	<b>Recommended dose kg/ha</b>	<b>Area under wheat (ha)</b>	<b>Market potential of NPK (MT)</b>
1	Badwara	N	120	5799	695.88
		P	60		347.94
		K	40		231.96
2	Barhi	N	120	4450	534.00
		P	60		267.00
		K	40		178.0
3	Dhimarkheda	N	120	8038	964.56
		P	60		482.28
		K	40		321.52
4	Bahoriband	N	120	13690	1642.8
		P	60		821.40
		K	40		547.60
5	Murwara	N	120	5440	652.80
		P	60		326.40
		K	40		217.60
6	Rithi	N	120	6194	743.28
		P	60		371.64
		K	40		247.76
7	Vijayraghavgrah	N	120	12609	1513.08
		P	60		756.54
		K	40		504.36

Table 5.1.1 showed the market potential of NPK nutrient for wheat crop in quantity ( in MT) of the study area. Here we have seen that NPK had more potential of 1642.8 MT, 821.4 MT and 547.6 MT respectively in bahoriband block as it has highest area among all the block.

**Table 5.1.2 Block wise market potential of Urea, DAP, and MOP with recommended dose for wheat crop**

S. No	Name of block	Fertilizer	Dose of fertilizer in Kg/ Ha. (For fulfilment of recommended dose of NPK)	Area under wheat (ha)	Market potential of fertilizer (MT)
1	Badwara	Urea (46%N)	210	5799	1217.79
		DAP (18:46:00)	130		753.88
		MOP (60%K)	67		388.53
2	Barhi	Urea (46%N)	210	4450	934.50
		DAP (18:46:00)	130		578.50
		MOP (60%K)	67		298.15
3	Dhimarkheda	Urea (46%N)	210	8038	1687.98
		DAP (18:46:00)	130		1044.49
		MOP (60%K)	67		538.54
4	Bahoriband	Urea (46%N)	210	13690	2874.90
		DAP (18:46:00)	130		1779.70
		MOP (60%K)	67		917.23
5	Murwara	Urea (46%N)	210	5440	1142.40
		DAP (18:46:00)	130		707.20
		MOP (60%K)	67		364.48
6	Rithi	Urea (46%N)	210	6194	1300.74
		DAP (18:46:00)	130		805.22
		MOP (60%K)	67		414.99
7	Vijayraghavgrah	Urea (46%N)	210	12609	2647.87
		DAP (18:46:00)	130		1639.17
		MOP (60%K)	67		844.80
Total				56220	22881.06

Table 5.1.2 showed that the total market potential for Urea, DAP, and MOP for wheat crop in Katni district is 22881.06MT. Bahoiriband was found to be highest potential block among the all blocks.

**Table 5.1.3 Block wise market potential for Urea DAP and MOP for wheat crop with actual dose of fertilizer**

S. No.	Name of block	Fertilizer name	Actual dose of fertilizer used by farmer in Kg/ha	Area under wheat (ha)	Quantity of fertilizer used by farmer in (MT)
1	Badwara	Urea (46%N)	150	5799	869.85
		DAP (18:46:00)	100		579.90
		MOP (60%K)	20		115.98
2	Barhi	Urea (46%N)	150	4450	667.50
		DAP (18:46:00)	100		445.00
		MOP (60%K)	20		89.00
3	Dhimarkheda	Urea (46%N)	150	8038	1205.70
		DAP (18:46:00)	100		803.80
		MOP (60%K)	20		160.76
4	Bahoriband	Urea (46%N)	150	13690	2053.50
		DAP (18:46:00)	100		1369.00
		MOP (60%K)	20		273.80
5	Murwara	Urea (46%N)	150	5440	816.00
		DAP (18:46:00)	100		544.00
		MOP (60%K)	20		108.80
6	Rithi	Urea (46%N)	150	6194	929.10
		DAP (18:46:00)	100		619.40
		MOP (60%K)	20		123.88
7	Vijayraghavgrah	Urea (46%N)	150	12609	1891.35
		DAP (18:46:00)	100		1260.90
		MOP (60%K)	20		252.18
Total					15179.93

Table 5.1.3 showed that the total quantity of fertilizer used by farmer for Urea, DAP and MOP for wheat crop in Katni district is 15179.93 MT farmers of vijayraghavgrah, bahoriband and dhimarkheda blocks used more fertilizer.

**5.1.2 Market gap:** Gap in the market represent opportunities for companies to explained their customer base by increasing awareness and creating targeted offers or advertising, campaign to reach the untapped market. There for market gap in Katni district was analysed and presented in table 5.1.4

**Table 5.1.4 Block wise market gap for Urea, DAP and MOP in wheat crop**

S. No	Name of block	Fertilizer name	Market potential of fertilizer (MT)	Quantity of fertilizer used by farmer in (MT)	Market gap (MT)
1	Badwara	Urea (46%N)	1217.79	869.85	347.94
		DAP (18:46:00)	753.88	579.90	173.98
		MOP (60%K)	388.53	115.98	272.55
2	Barhi	Urea (46%N)	934.50	667.50	267.00
		DAP (18:46:00)	578.50	445.00	133.50
		MOP (60%K)	298.15	89.00	209.15
3	Dhimarkheda	Urea (46%N)	1687.98	1205.70	482.28
		DAP (18:46:00)	1044.49	803.80	240.69
		MOP (60%K)	538.54	160.76	377.78
4	Bahoriband	Urea (46%N)	2874.90	2053.50	821.40
		DAP (18:46:00)	1779.70	1369.00	410.70
		MOP (60%K)	917.23	273.80	643.43
5	Murwara	Urea (46%N)	1142.40	816.00	326.40
		DAP (18:46:00)	707.20	544.00	163.20
		MOP (60%K)	364.48	108.80	255.68
6	Rithi	Urea (46%N)	1300.74	929.10	371.64
		DAP (18:46:00)	805.22	619.40	185.82
		MOP (60%K)	414.99	123.88	291.11
7	Vijayraghavgrah	Urea (46%N)	2647.87	1891.35	756.52
		DAP (18:46:00)	1639.17	1260.90	378.27
		MOP (60%K)	844.80	252.18	592.62
Total			22881.06	15179.93	7701.63

Table 5.1.4 showed the market gap for Urea, DAP and MOP for wheat crop in Katni district. The recommended of NPK was 22881.06MT and the farmers used the NPK was 15179.93MT in the Katni district. The market gap is 7701 MT.

**Table 5.1.5 The gap between recommended and actual dose of Urea, DAP and MOP applied by farmer.**

S. No.	Name of crop	Fertilizer name	Recommended dose of fertilizer Kg	Dose of fertilizer used by farmer Kg/ha	Gap in %
1	Wheat	Urea (46%N)	210	150	28.58
		DAP (18:46:00)	130	100	23.08
		MOP (60%K)	67	20	70.42

The 5.1.5 shows that there is big percentage gap between the recommended dose and dose actually applied by the farmer in wheat crop. It was found that Urea gap 28.58 percentage, DAP gap is 23.08 percentage and MOP gap is 70.42 percentage.

## **5.2 Market share**

Market share is a key indicator of market competitiveness, it enables executives to judge total market growth or decline identify key trends in consumer behaviour and see their market potential and market opportunity.

Market share is calculated by dividing the total sales of one particular product or industry by the company over the same period of time or market share (also known as absolute market share) is the percentage of total sales in market or industry contribution by one company. This is typically determined by revenue but is often calculated based on unit sale.

In this section the effort has been made to estimate the market share of different companies which are engaged in study area.

### **5.2.1 Company wise market share of the Urea**

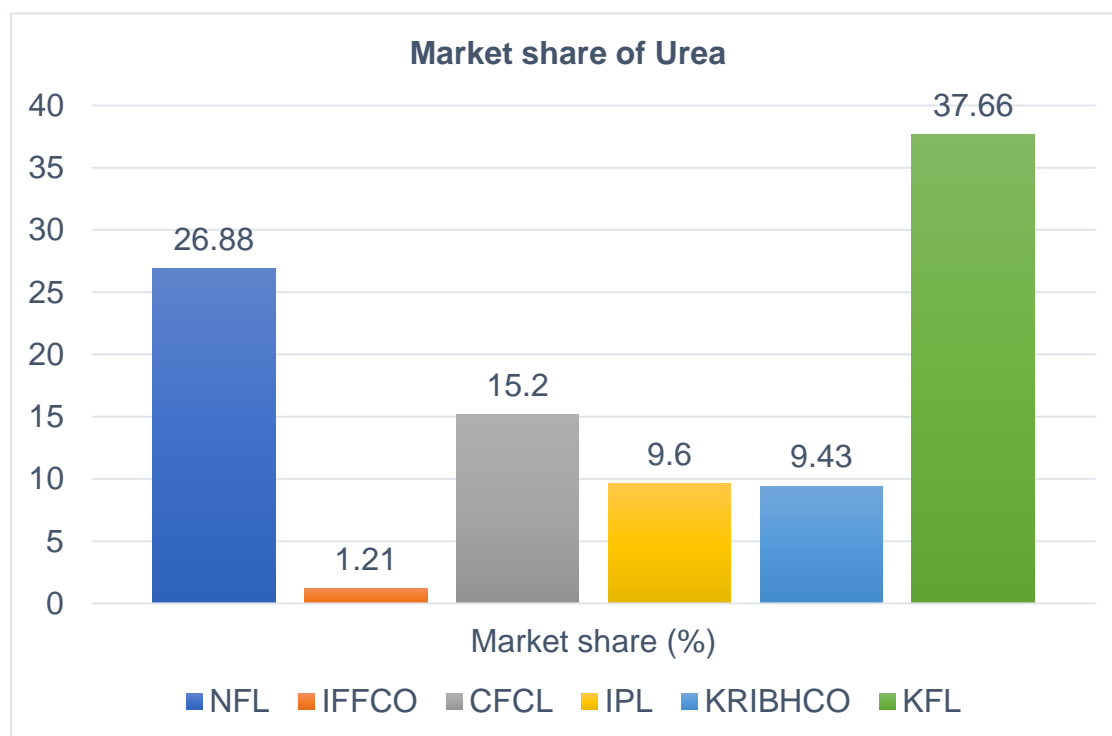
The table 5.2.1 showed that highest market share in fertilizer market of Katni district was reported by KFL Urea of KFL which was 37.65 percent followed by Kisan Urea of NFL with 26.88 percent of market share. The Uttam Urea of CFCL was at third position with 15.20 percent of market share. The market IPL Urea of Indian potash limited company was 9.60 percent and KRIBHCO Urea of Krishak Bharati co-operative Ltd. was 9.42 percent during

the same period. The IFFCO Urea of Indian farmers fertilizer co-operative Ltd. reported very small market share i.e. 1.21 percent.

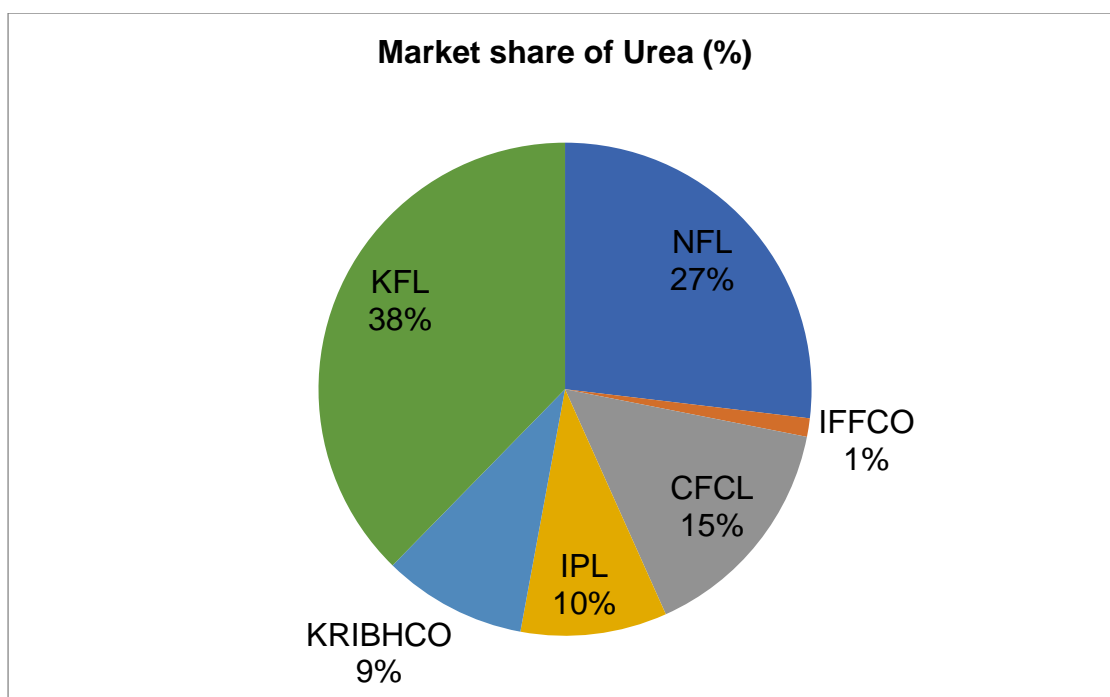
**Table 5.2.1 Company wise market share of the Urea (2019-20)**

S. No.	Name of company	Brand name	Qty. in (MT)	Market share (in percentage)	Rank
1	KFL	KFL Urea	19208.38	37.65	1
2	NFL	Kisan Urea	13713.93	26.88	2
3	CFCL	Uttam Urea	7754.98	15.20	3
4	IPL	IPL urea	4900.51	9.60	4
5	KRIBHCO	KRIBCHO Urea	4809.87	9.42	5
6	IFFCO	IFFCO Urea	621.99	1.21	6
Total			51009.66	100.00	

(Source- mfms.nic.in)



**Fig. 5.1 Company wise market share of the Urea**



**Fig. 5.2 Company wise market share of the Urea**

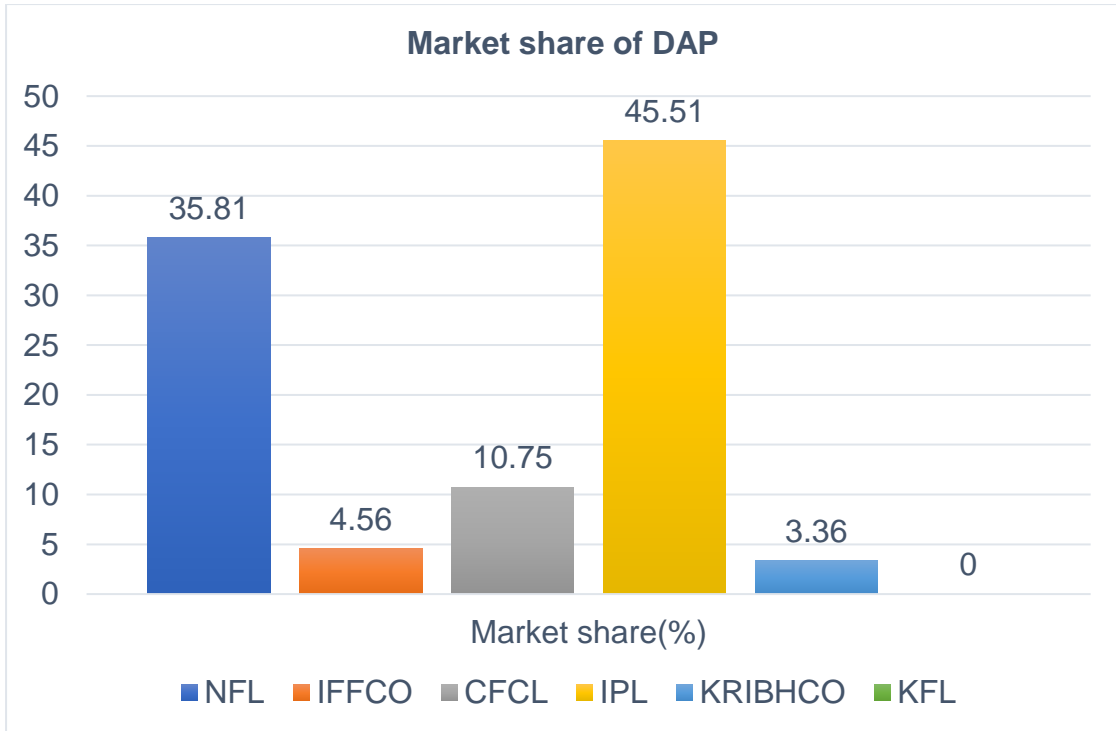
### 5.2.2 Company wise market share of the DAP

The table 5.2.2 showed that highest market share in fertilizer market of Katni district was reported by IPL DAP of Indian potash Ltd. which was 45.36 percent followed by Kisan DAP of NFL with 35.70 percent of market share. The Uttam DAP of CFCL was at third position with 10.72 percent of market share. The market IFFCO DAP Indian farmers fertilizer co-operative Ltd. was 4.55 percent during the same period. The KRIBHCO DAP of Krishak Bharati co-operative Ltd. reported very small market share i.e.3.32 percent.

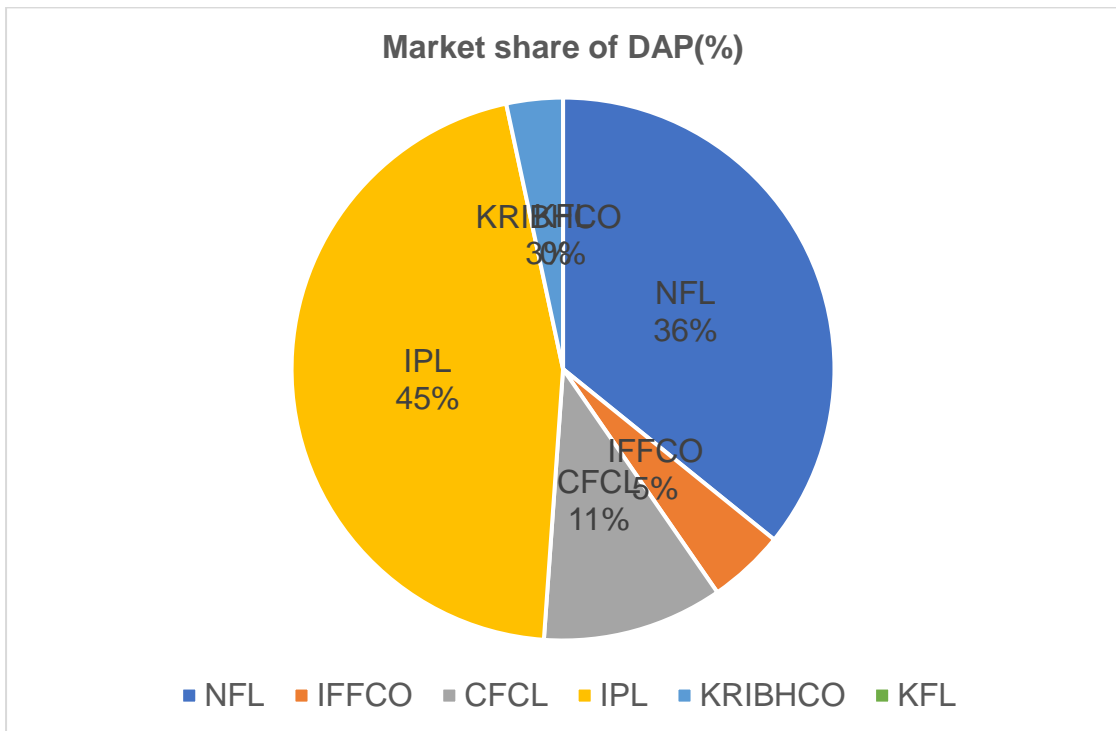
**Table 5.2.2 Company wise market share of the DAP (2019-20)**

S. No.	Name of company	Brand name	Qty.in (MT)	Market share (in percentage)	Rank
1	IPL	IPL DAP	8584.60	45.36	1
2	NFL	KISAN DAP	6755.80	35.70	2
3	CFCL	UTTAM DAP	2029.15	10.72	3
4	IFFCO	IFFCO DAP	861.80	4.55	4
5	KRIBHCO	KRIBHCO DAP	692.20	3.32	5
6	KFL	KFL DAP	00.00	00.00	
Total			18923.55	100.00	

(Source- mfms.nic.in)



**Fig. 5.3 Company wise market share of the DAP**



**Fig. 5.4 Company wise market share of the DAP**

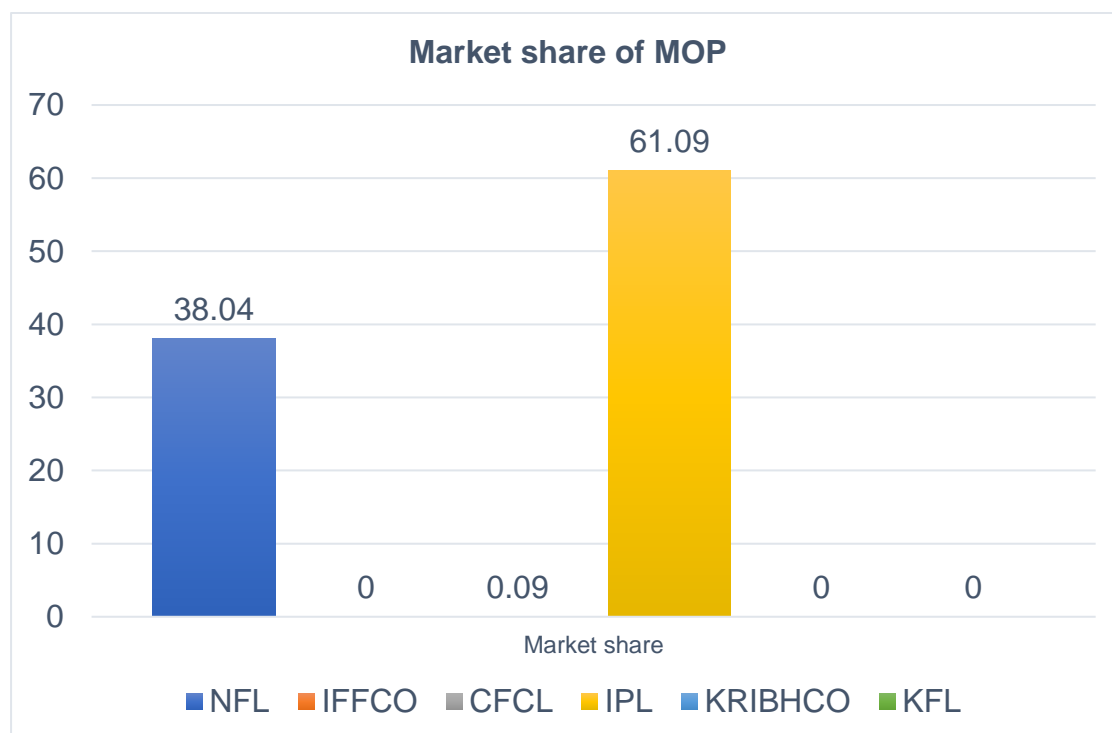
### 5.2.3 Company wise market share of the MOP

The table 5.2.3 showed that highest market share in fertilizer market of Katni district was reported by IPL MOP of Indian potash Ltd. which was 61.02 percent followed by Kisan MOP of NFL with 38.04 percent of market share. Uttam MOP of CFCL reported very negligible market share i.e. 0.94 percent.

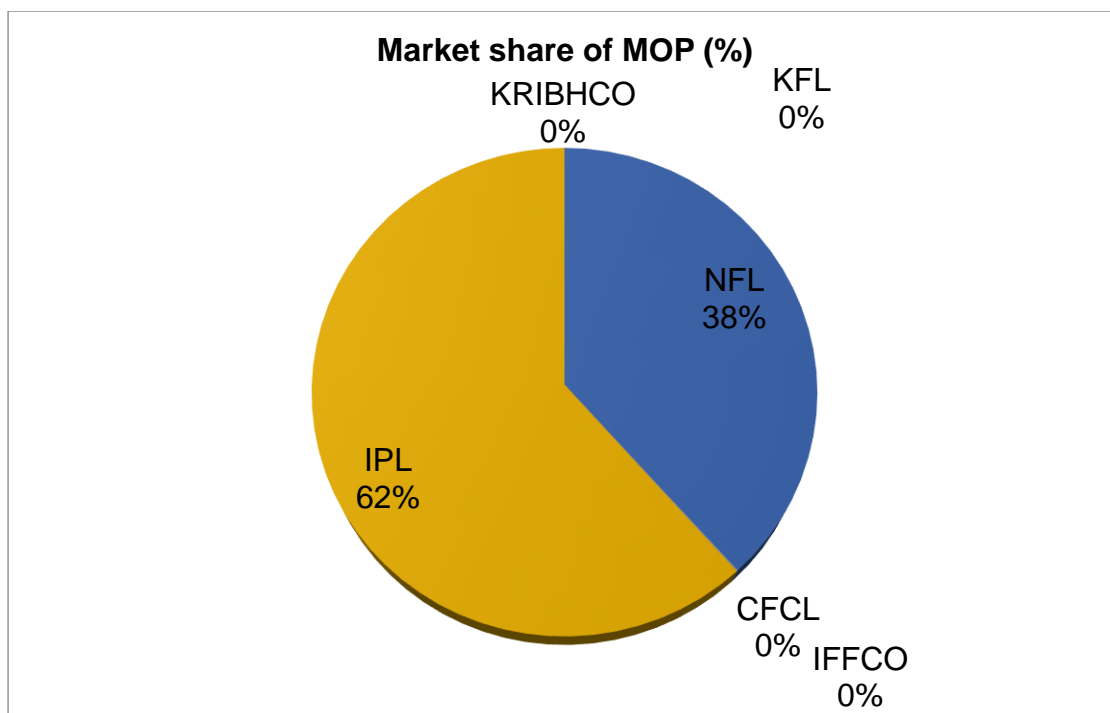
**Table 5.2.3 Company wise market share of the MOP (2019-20)**

S. No.	Name of company	Brand name	Qty.in (MT)	Market share (in percentage)	Rank
1	IPL	IPL MOP	323.90	61.02	1
2	NFL	KISAN MOP	202.00	38.04	2
3	CFCL	UTTAM MOP	5.00	0.94	3
Total			530.90	100.00	

(Source- mfms.nic.in)



**Fig. 5.5 Company wise market share of the MOP**



**Fig. 5.6 Company wise market share of the MOP**

### 5.3 Farmer's perception

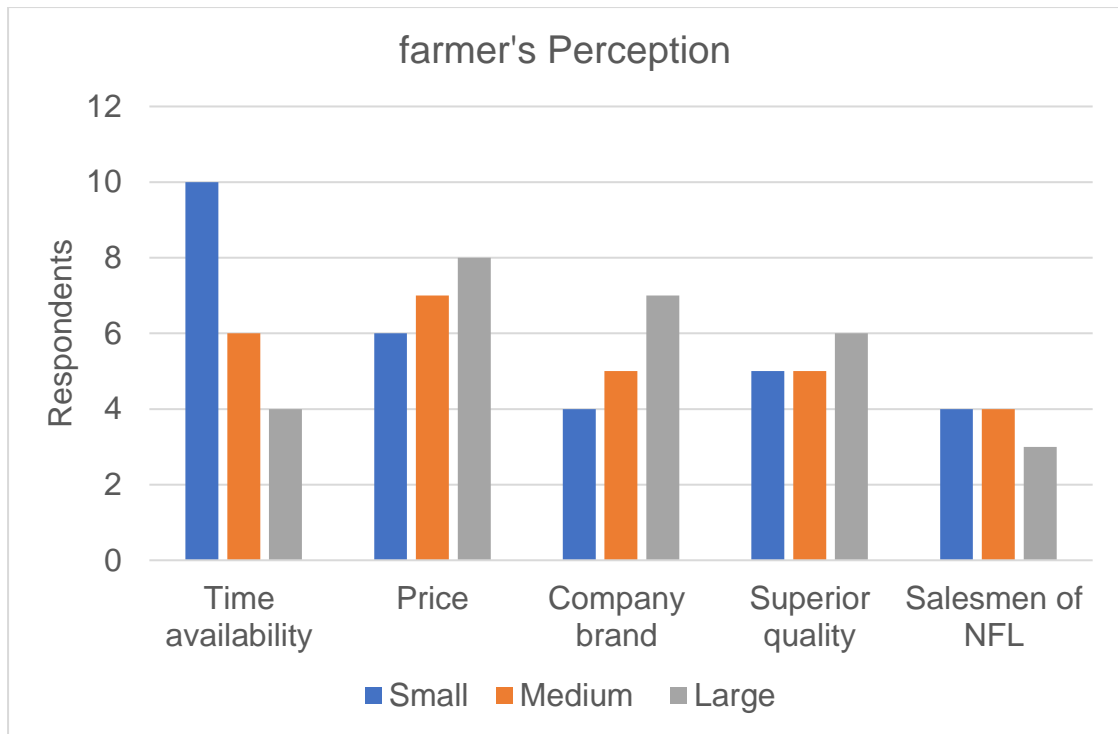
Farmer's perception is one of the important factors which decide the course of action for any producers.

Farmer's preference in purchasing of fertilizer in Katni district has been given sector.

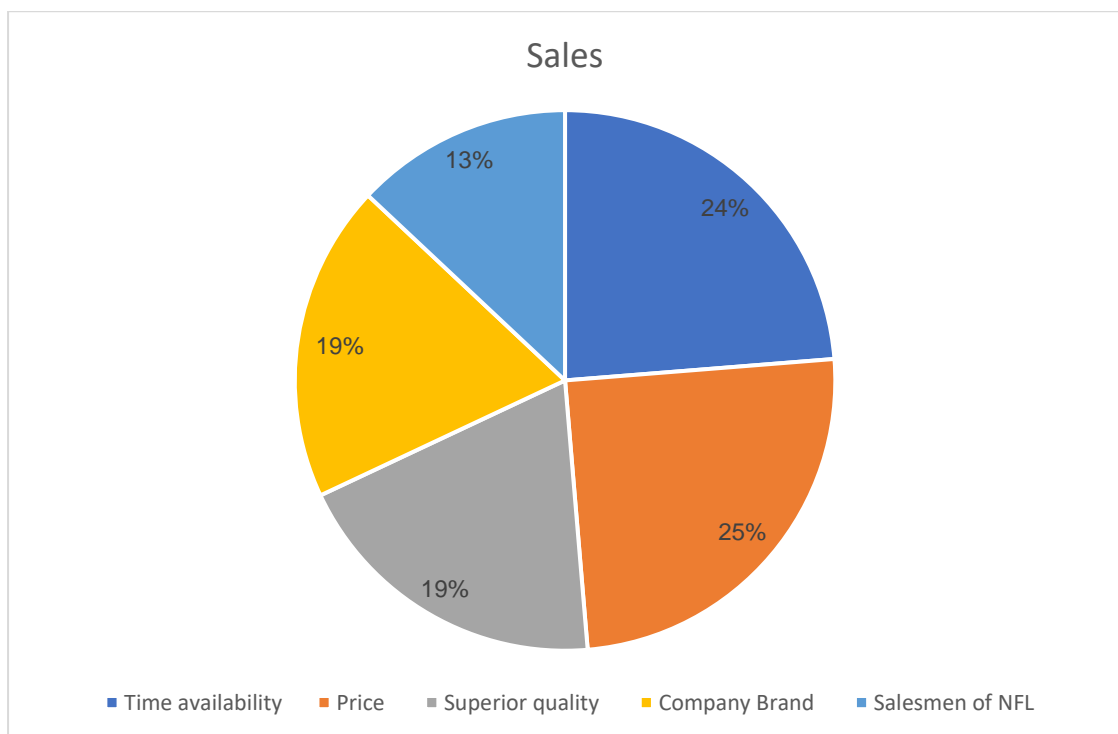
The table 5.3.1 showed the farmer's perception in purchasing of fertilizer in Katni district. For small and medium farmers, the timely availability and price of the product were the main attributes for purchasing fertilizer while in case of large farmers the company brand name of the product becomes the main.

**Table 5.3.1 Farmer's perception on purchase of NFL fertilizer**

S. No.	Attribute	Farmer Category			Total
		Small	Medium	Large	
1	Time availability	10 (34.48)	6 (22.22)	4 (14.28)	20 (23.80)
2	Price	6 (20.68)	7 (25.92)	8 (28.57)	21 (25.00)
3	Superior quality	5 (17.24)	5 (18.51)	6 (21.42)	16 (19.04)
4	Company brand name	4 (13.74)	5 (18.51)	7 (25.00)	16 (19.04)
5	Salesmen of NFL	4 (13.74)	4 (14.81)	3 (10.71)	11 (13.04)
Total		29(100)	27 (100)	28 (100)	84 (100)



**Fig. 5.7 Products of NFL fertilizer of different categories of the respondents.**



**Fig. 5.8 Share of NFL fertilizer of different categories of the respondents.**

#### 5.4 Sales promotional activities adopted by major companies

It is another way of promoting or increasing sales. Sales promotion activity consists of display shows exposition demonstration and other special effects such as off-season discount advance booking scheme, coupons etc. which creates more sale of the product. It helps the traders and sale force to represent the product to the consumer.

**Table 5.4.1 Promotional activities adopted by major players**

Company name	Promotional activities	Dealers	Farmers
NFL	Calendar, pamphlets	Dealers training, dealers meeting	Farmer training, field demonstration, soil testing, Krishi mela and Exhibitions, kisan suvidha Kendra
IFFCO	Wallpapers, magazine, holding	Dealers meeting, dealers training,	Farmer training, field demonstration, exhibition
KRIBHCO	Calendar, pamphlets,	Dealers conference, group discussion,	Farmer meeting, field demonstration, field days, soil sampling,
IPL	Calendar, posters, wallpapers,	Dealers meeting, group discussion	Farmer meeting, exhibition
CFCL	Wallpapers, magazine, posters	Dealers meeting, dealer's incentive	Field demonstration, farmer training, soil testing, crop seminar
KFL	Wallpapers, magazine, holding	Dealers meeting, dealers training,	Farmer training, field demonstration, exhibition

#### 5.5 SWOC ANALYSIS

A SWOC analysis is a structured planning method used to evaluate strengths, weakness, opportunities and challenges involved in a project or in a business venture. In the SWOC analysis, appropriate strategies where choosing by the organisation with the consideration of strengths, weakness, opportunities and challenges of the company. The detailed information about

SWOC analysis of National Fertilizer Limited is provided in the following section.

1. Strength: - Strength is the characteristics of the business or a project that give it an advantage over others.
  - Company has high reputation in the market.
  - R&D activities of company are very strong.
  - Large geographical coverage.
  - Dispatch & coordination cell is high effective.
  - Distribution efficiency is higher.
2. Weakness: - weakness is the characteristics that place the business or project at a disadvantage relative to other.
  - Inadequate supply of urea especially in peak season.
  - Promotional effectiveness.
  - Lack of field programme and non-availability of product during required time.
  - Weak innovation effectiveness.
3. Opportunities: - is the element that the business or project could exploit to its advantage.
  - Company must increase market share through effective sales promotional activities like personal contact.
  - Huge market potential.
  - Company can introduce new reasonable product at lower price for farmers.
4. Challenges: - are the elements that could be effectively increase the business given period the time.
  - Competitors distribution strategies.
  - Competitors promotional activities.
  - The proposed GST rates may create new challenges.

**CHAPTER - 6**  
**SUMMARY, CONCLUSIONS AND**  
**RECOMMENDATION**

## **SUMMARY, CONCLUSIONS AND RECOMMENDATION**

### **6.1 Summary**

Agriculture has an important role to play in economic development of an agrarian economy like that India. The progress made by agriculture in last four decade, increase in agriculture production has been brought about by extension of irrigation facilities, the use of high yielding variety of seeds, insecticide, and plant protection measured through judicious use of Fertilizer.

There is a vital role of fertilizer for improving the productivity of crops which shows that fertilizer business having good potential. Every manufacturing unit / business man always interested to improve the market share and assess the market potential of surplus with the considerable of these aspects the project work is taken under consider with specific objective.

1. To access market share of fertilizer in study area.
2. To estimate the market potential of fertilizer for wheat in the study area.
3. To study the farmer perception about the use of fertilizer
4. To work out SWOC analysis of National Fertilizer Ltd.

The study is confined to Katni district of Madhya Pradesh. There are seven blocks in Katni district and present investigation purpose I selected total seven block. A sample of 84 farmers comprise 29 small, 27 medium and 28 large farmers where selected 3 villages from each block. Simple arithmetic tools as ratio, percentages and average have been used for evaluating market share, potential and impact assessment.

### **6.2 Conclusions**

Following conclusion are made from the finding of the area.

1. The leading company in the sales quantum of fertilizer in case of urea in the Katni district was highest market share in fertilizer market of Katni district was reported by KFL which was 37.65 percent followed by NFL with 26.88 percent of market share. The CFCL was third with 15.20 percent of market share. The market of Indian potash limited company was 9.60 percent and Krishak Bharati co-operative Ltd. was

- 9.42 percent during the same period. The Indian farmers fertilizer co-operative Ltd. reported very small market share 1.21 percent.
2. In Katni district major companies' total sales of fertilizer in case of DAP highest market share in fertilizer market was reported by Indian potash Ltd. which was 45.36 percent followed by NFL with 35.70 percent of market share. The CFCL was third with 10.72 percent of market share. The market Indian farmers fertilizer co-operative Ltd. was 4.55 percent during the same period. The Krishak Bharati co-operative Ltd. reported very small market share 3.32 percent.
  3. The leading company in the sales quantum of fertilizer in case of MOP in the Katni district was reported by Indian potash Ltd. which was 61.02 percent followed by of NFL with 38.04 percent of market share. CFCL reported very small market share 0.94 percent.
  4. The total requirement of fertilizer in Katni district based on per hectare recommended doses and area estimated to be 22881.06MT of NPK on per hectare recommended dose.
  5. The farmer opinion reveals that at the time of purchasing the fertilizer most of the small size farmer preferred time availability of the product while in case of medium size of farmers, they consider prize and the brand product of company and large size of farmers preferred prize of the product and timely availability.

### **6.3 Recommendation**

- The company needs to appoint a greater number of distributors at the potential pockets of the area, to improve its market share and ensure the timely and adequate supply of the product to the customers/farmer.
- The company should increase their market size in the specified areas by identify the potential customers.
- Conduct the NFL product demo's, show cases at field level and make aware the product utilization and benefits to the farmers at village level.
- For the increase the percentages of respondents which are used the fertilizers dealers and distributors should be continuously encouraged through various schemes such as better margin, tour, leisure and schemes etc.

- Company solve the problem of the farmers at field level by using of company persons, marketing development officers to increase the sale and to maintain the relationship with distributors in the market.
- For improving the result of both financial as well as volume wise, research and development wing of the company should give more emphasis on development of fertilizer.
- More literature should be supply in the area and special booklets to increase the awareness about company's product among distributors/dealers and farmers.
- Conduct the farmers meeting and field day by the company to convince about the company product.
- Marketing pattern should be well developed and strengthen to cover the large area.

# ***ANNEXURE***

## ANNEXURE -1

### QUESTIONNARIE FOR DEALERS

1. Name of the Dealer:-

a) Address:

b) Village:

c) Post:

d) Block:

e) District:

f) Phone No.:

2. No of sub dealers:

3. Area covered:

4. Agro-climatic zone:

Rainfall:

Soil types:

5. No of irrigated village in marketing area?

6. Name of important crops grown in the area?

7. Dealership detail (2019-2020)

<b>Company</b>	<b>Status Dealer Sub dealer</b>	<b>Crop</b>	<b>Variety</b>

8. Last year turn over (2019-2020)

<b>Inputs</b>	<b>Cash</b>	<b>Credit</b>	<b>Total</b>
Seed			
Fertilizers			
Weedicides			
Insecticides			

9. Top five company's sales in the area.

<b>S. NO.</b>	<b>Company</b>	<b>Fertilizer</b>	<b>Sales(MT)</b>
1.			
2.			
3.			
4.			
5.			

10. What facilities does the company provide?

<b>Name of company</b>	<b>Credit limit (Rs.)</b>	<b>Credit period (days)</b>	<b>Promotion</b>	<b>Incentives</b>	<b>Schemes</b>	<b>Any other</b>

11. What farmers preferred while purchasing the fertilizer?

- |                           |               |
|---------------------------|---------------|
| (a) Name/brand of company | (b) Quality   |
| (c) Price                 | (d) Packaging |
| (e) Bag size              | (f) Any other |

12. Company wise availability of fertilizer in the area.

13. What are the strength and weakness of these top 5 company's fertilizer?

S. NO.	Company	Fertilizer	Product Strength	Weakness
1.				
2.				
3.				
4.				
5.				

14. Does the farmer demand NFL brand of?

Fertilizer

Agro-chemical

15. How much is the share of NFL.

16. Company wise field staff at dealer point.

Company

No. of field persons (in area)

17. Company wise promotional work carried out for seed/fertilizer/Agro chemical marketing.

Company	Name/nature of personal activities	Frequency (daily, weekly, monthly, quarterly, half yearly)	Season
	1. Demonstration		
	2. Crop seminar		
	3. Field days		
	4. Farmer meeting		
	5. Distribution of sample		
	6. Dealer meeting		
	7. Product literature		
	8. Gift with product other scheme (discount)		
	9. Exhibition		

18. Product display and advertising.

1. Product display
2. Type of display
3. Frequency of total display
4. Dealer point display
5. Village level display
6. Wall painting
7. Dealer shop painting
8. Tractor/trolley painting
9. Advertising

19. Constraints of fertilizer marketing in the area.

1. Lack of irrigation
2. High price
3. Lack of field work
4. Product availability
5. Lack of awareness
6. Adverse climate
7. Other constraints

20. Future market expectation and expected demand for different fertilizer of NFL.

21. What improvement NFL should do to satisfy your need?

22. What NFL should do to promote his market in fertilizer?

## ANNERUX -2

### Questionnaires for Farmers

No.....

Date.....

1. Name :.....

2. Address :.....

3. Total land : Irrigated Un-irrigated

(A) Source of irrigation

(a) Well (b) Tube well (c) River (D) Any other

(B) Irrigated area (ha.) :.....

(C) Cropping pattern

Season/crop	Variety	Area	Irrigated	Unirrigated

4. Fertilizer used by farmer (last season /year)

Season/Crop	Company	Fertilizer	Quantity used	Area ha.	Performanc e

5. Do you purchase fertilizer from a single company?

6. Which company/ fertilizer you prefer and reason for it:

Season / crop	Fertilizer	Company	Quantity	Reason	Price
K				Price availability productivity crop and other	
R					
S					

7. Whom do you consult before purchasing fertilizer?

8. Is any dealer influence while purchase of fertilizer?

9. Do you get the variety of seed and brand of fertilizer you want? Yes/No

10. Do you get seed and fertilizer at proper time? Yes / No

11. Do you go for new seed and fertilizer and new seed fertilizer and new technology?

12. (a) Do you use the fertilizer of NFL Yes / No if yes

(b) How much quantity of fertilizer you used last year.

Season	Crop	Fertilizer	Quantity
K			
R			
S			

13. Can you narrate 5 fertilizer company's names?

A

B

C

D

E

14. How many promotional of each company you participated during last year  
(2019-20)

15. What point do you consider while purchasing fertilizer?

16. What NFL should do to promote its market in fertilizer?

17. What should NFL do to satisfy your need?

# ***CURRICULUM VITAE***

## CURRICULUM VITAE

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The author of project **Vishnu Kumar**, S/O Shri. Jaypal and smt. Lila davi born on 10<sup>th</sup> November 1995 at Sri Ganganagar (RAJ). He joined the following institutions and successfully completed the degree of MBA (Agri business Management) during the year 2019-20.

S. No.	Institutions
1	College of Agriculture, Jabalpur (MP)
2	Swami Shri Prannath Parnami Agriculture College Padampur (RAJ)
3	Govt. SR. Secondary School Muklawa (RAJ)
4	Shri Guru Jambeshwar Secondary School Udsar (RAJ)

He has got the following degree

S. No.	University/Board	Degree Awarded	Year
1	JNKVV, JABALPUR (MP)	MBA(ABM)	2020
2	SKRAU, BIKANER (RAJ)	B.Sc. (Ag.)	2017
3	BSER AJMER (RAJ)	12 <sup>th</sup>	2013
4	BSER AJMER (RAJ)	10 <sup>th</sup>	2011

For the partial fulfilment of the master's degree programme, he was allotted a project report on "**Market Performance and Farmer's Perception of National Fertilizer Limited in Katni District of Madhya Pradesh**" which has been conduct by him and being submitted in the form of project report.