



# INDIA AGRICULTURE ANALYTICS PLATFORM

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# Overall Crop Production Analysis of India

Kerala

Top Producing State



47.87

Average Production Per Area

141.18bn

Total Production

Season

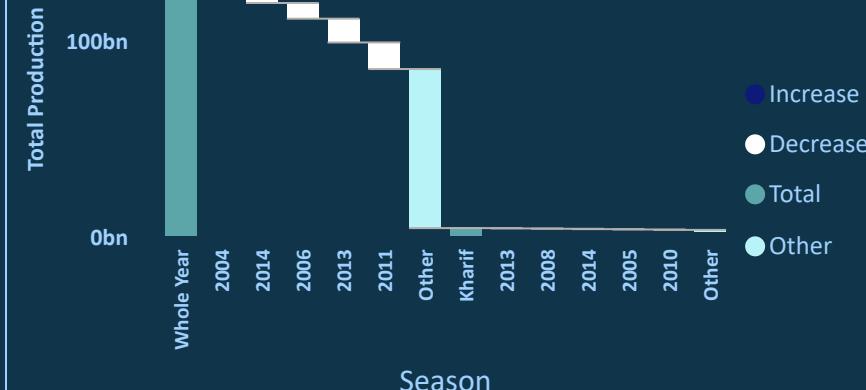
Autumn

Kharif

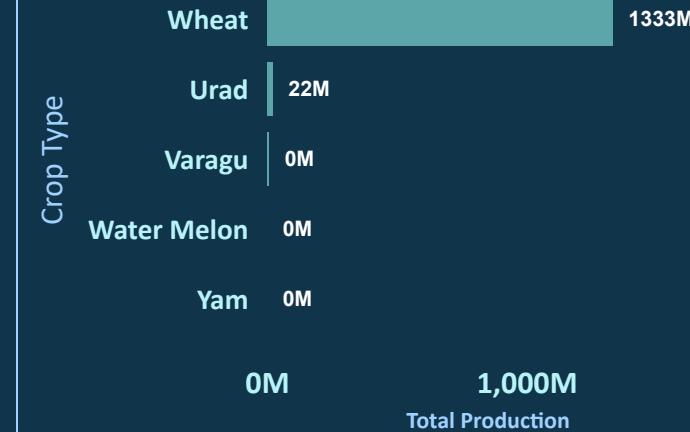
Rabi

Summer

## Total Production by Season and Year



## Total Production by Crop Type



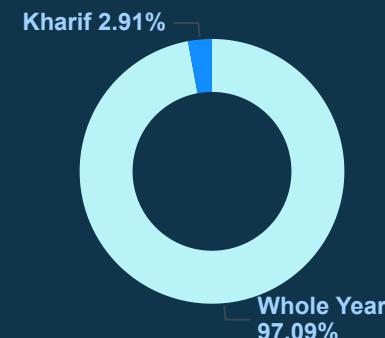
## Top 10 District by Total Production



## Top 10 years by Total Production



## Total Production by Season



# Crop Production Analysis of India

124

Crop Diversity Index

44.08

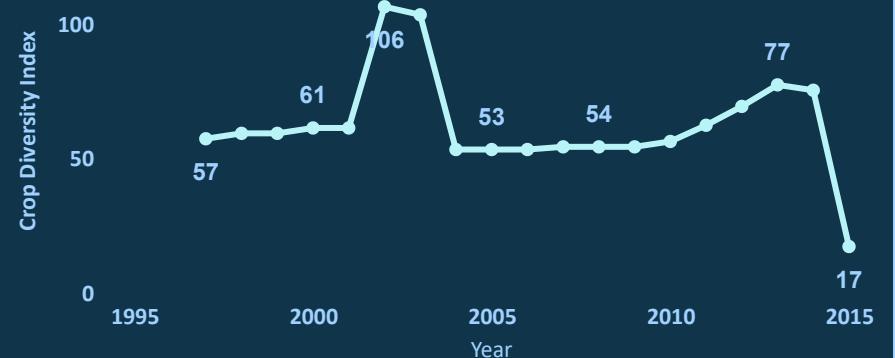
Crop Efficiency

Coconut

Top Crop



Crop Diversity Index by Year



Total Production by State and Crop Type

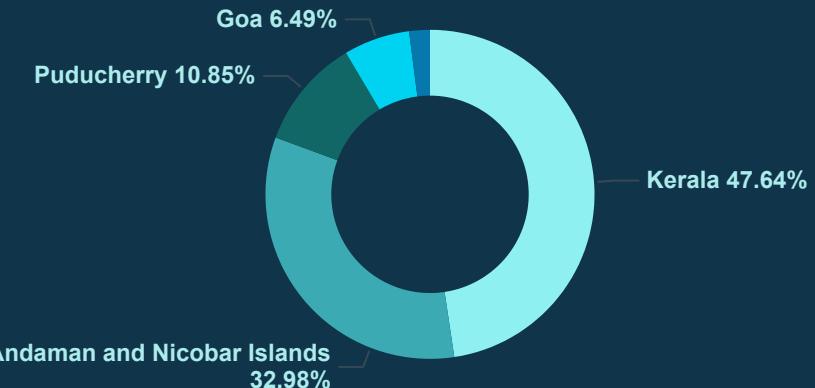
State

○ Andaman and Nico...

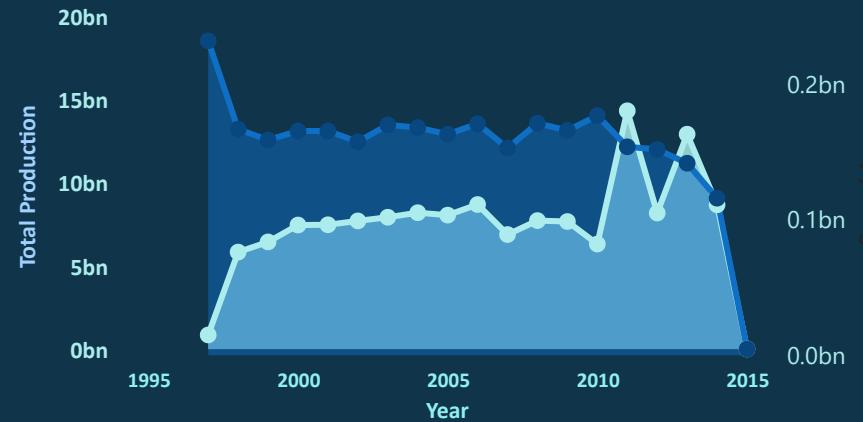
○ Andhra Pradesh

○ Arunachal Pradesh

Average Production Per Area by State



Total Production and Sum of Area by Year



# Farmer Production Analysis of India



21.99

Average Experience (Years)

12.04

Avg Pesticide Usage (KG/Acres)

54.55

Avg Fertilizer Usage (KG/Acres)

44.35

Average Age

0.50

Market Access %

9250

Total Farmers

110.75K

Productivity Index

8.48

Average Land Size (Acres)

₹ 276.83K

Average Annual Earning

Average Annual Earning by Crop Type



Avg land and earning of farmers by state



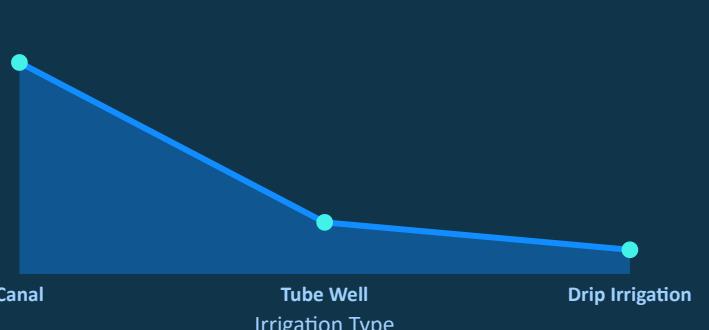
Crop Type

- Cotton
- Grapes
- Mustard
- Rice

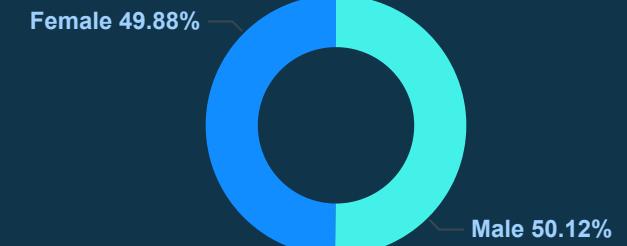
State

- Bihar
- Gujarat
- Maharashtra

Productivity Index by Irrigation Type



Productivity Index by Gender



# Climatic Effect on Crops

64.90

Avg Soil Health



15.24

Average temperature

2.24

Avg Crop Yield

16.12M

Total Rainfall

1.38

Weather Risk Index

6.74M

Total Economic Impact

Yield Efficiency Score(YOY)

0.00 40.28

Yield Efficiency Score(YOY) by Year

0.022K

0.020K

2000 2020

Adaptation\_Strategies

Crop Rotation

Drought-resistant Cr...

No Adaptation



Avg Crop Yield, Total Rainfall and YoY Economic Impact % by Year

Avg Crop Yield

0.002K

0.001K

0.000K

1990

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# Soil Quality and Fertility Analysis

18.43

Average of Nitrogen



3.92

Average of Potassium

59.21

Average of Humidity

43.58

Average of Moisture

30.34

Average of Temperature

18.51

Average of Phosphorous

Soil Health Score

0.04K  
0.00 78.56

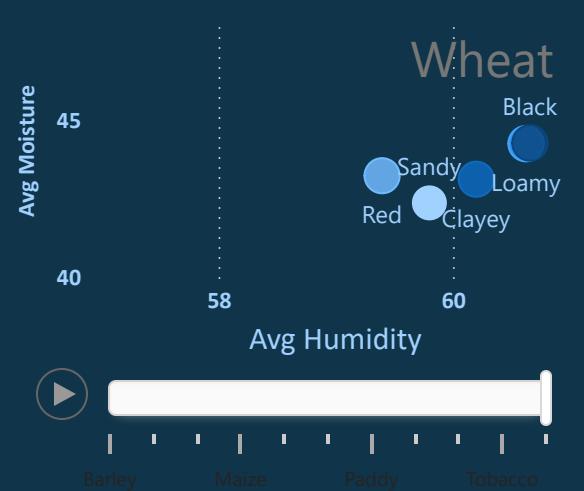
Poor 

Soil Condition

Soil Type

- Black
- Clayey
- Loamy
- Red
- Sandy

Moisture vs Soil Health Plot



crop wise soil health

● Soil Health Score ● Soil Fertility Index ● Soil Stress Index



overall soil health by NPK



# Crops and Farmer detailed Analysis



## 1. Crop Production Analysis :

### -->Production & Crop Trends

The dataset shows clearly defined top-performing crops, with Wheat, Rice, and Maize leading in overall production. Years with stable rainfall correlate strongly with higher output, indicating that India's crop performance is highly climate-driven. Some states show high cultivation area but low productivity, pointing to inefficient farming practices, soil limitations, or water scarcity.

### -->State-wise Yield Performance

States like Punjab, Kerala, and Karnataka display stronger yield per hectare, indicating.

- Better soil quality
- More efficient irrigation
- Higher adoption of improved farming strategies

In contrast, central and eastern states show more variability, likely due to inconsistent rainfall and nutrient imbalance.

## 2. Farmer Production Analysis :

### -->Demographics & Experience

- Farmer experience shows a positive correlation with productivity and annual income — experienced farmers manage resources better.
- Land size plays a role, but irrigation access and fertilizer balance influence productivity more than acreage alone.

### -->Input Usage Patterns

- Some farmers are overusing pesticides, especially in rice and cotton regions, which may impact soil health in the long term.
- Fertilizer usage varies widely, and in some regions it does not match the soil requirement — leading to lower efficiency.

### --> Economic Insights

- Farmers with drip or tube-well irrigation show higher income consistency.
- Market Access (Yes/No) strongly differentiates income:
  - Farmers with market access show significantly higher annual earnings.
  - Those without access face inefficiencies and pricing disadvantages.

# Climate and soil detailed Analysis



## 3. Climatic Effect on Crops – Key Insights

### --> Temperature & Rainfall Impact

- Higher temperature deviations lead to a clear drop in yield, especially for rice and maize.
- Regions with monsoon irregularity show greater year-to-year swings in productivity.

### --> Extreme Weather Events

- Extreme events (floods, droughts, heatwaves) correlate with:
  - Lower yield
  - Higher economic losses
  - Higher climate risk index
- As extreme events increase, yield efficiency decreases.

### --> Economic Loss Patterns

- Crops with low climate resilience (soybean, pulses) show the highest economic loss per event.
- Stable crops like wheat and sugarcane show less decline despite weather changes.

## 4. Soil Health & Fertility Analysis

### --> Nutrient Balance (NPK)

- Black and loamy soils show high fertility due to better NPK balance.
- Sandy soil types have low nutrient density, leading to higher soil stress.
- Nitrogen is consistently lower in many districts — a major reason for moderate soil health scores.

### --> Moisture, Humidity & Temperature

- Soil moisture is a key differentiator of soil scoring:
  - High moisture + moderate temperature = best soil health
  - Low moisture + high temperature = high stress level
- Humidity supports nutrient absorption but varies by region.

### --> Soil Stress Index

- High stress occurs where:
  - Nitrogen is low
  - Temperature is high
  - Moisture is insufficient
- These areas need targeted soil improvement plans.