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Trends of Agriculture Production in Food Grain with Special Reference to India-An Economic Analysis

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Abstract

Agriculture is the science, art, or practice of cultivating the soil, growing crops, and raising livestock for food, fiber and other products used to sustain and enhance human life. it includes not only crop production but also animal husbandry, forestry, and aquaculture. agriculture is foundational to human civilization, providing the food and raw materials necessary for survival and economic activity.

Food grains are the edible seeds or kernels of cereal plants and pulses that are cultivated primarily for human consumption and animal feed. These include staple crops such as wheat, rice, maize, barley, oats, rye, millets and pulses. Food grains are major sources of carbohydrates and Proteins and play vital role in food security and nutrition worldwide in 2023-24 agriculture contribution to India's GDP 16% at current prices.

The importance of food grains in India for several reasons, agriculture covering about 80% of the cropped area and serving as the main staple food source for the population. Playing a critical role nutrition and food security, livelihoods of large portion of the rural population, providing employment and income opportunities etc.

This paper mainly focused on the important of food grains selected in rice, wheat, coarse, cereals, pulses and trends of food grains production in India. this paper used secondary data on published by various government department reports during the years of 2014-15 to 2023 -24.

Key Point: Agriculture Production & Nutrition Level in India

I.INTRODUCTION

Agriculture is the science, art, or practice of cultivating the soil, growing crops, and raising livestock for food, fiber and other products used to sustain and enhance human life. it includes not only crop production but also animal husbandry, forestry, and aquaculture. Agriculture is foundational to human civilization, providing the food and raw materials necessary for survival and economic activity food grains are the edible seeds or kernels of cereal plants and pulses that are cultivated primarily for human consumption and animal feed. These include staple crops such as wheat, rice, maize, barley, oats, rye, millets and pulses. Food grains are major sources of carbohydrates and proteins and play vital role in food security and role nutrition worldwide in 2023-24 agriculture contribution to India's GDP 16% at current prices respectively. The importance of food grains in India for several reasons, agriculture covering about 80% of the cropped area and serving as the main staple food source for the population. Playing critical role nutrition and food security, livelihoods of large portion of the rural population, providing employment and income opportunities etc

Objective of the Study

(i) To analysis the importance of food grains production in India,
(ii) To analysis the trends of rice, wheat production in India
(iii) To analysis the coarse & cereals & pulses production in India
(iv) To analysis total food grains production in India.

Methodology

This paper used secondary data on published by various government department reports during the years of 2014-15 to 2023 -24 food grain production in India and Econometric linear regression model test applied for the trends of food grain production.

Review of Literature

1. Mamta Rani (2023). Growth of food grain production in India. This study focused in. analyzes the trends in food grain production in India, across the current status of food grain production in India, and identify the factors that affect the growth of food grain production. She is concluded

rice and wheat are the major food crops grown in India. The production of rice crops has increased significantly during the study period wheat production also shows significant improvement during the research period.

2. Krishna Kutty.V. (2022) Growth trends of food grains In India: Yield, Area, and production: An approach to structural stability regression model. in this study focused to analyze the growth. and trends of in the production, area, and the yield of food grains in before and after the policy. He concluded that the agricultural production, the area and the yield have a growth pattern in India during in both periods. after the new agricultural policy there is having an increasing trend in the average production of cereals ie. rice, wheat, and coarse cereals. the average area under cultivation has an increasing trend in total though there is no statistically significant difference in output exists between period i and ii. Also, there are no significant variations in the yield per hectare, which shows Indian agricultural sector doesn't have much change during these years.
3. Neelam Kumari (2020) "Food grains production in India: Trend and Decompositions Analysis" This study focused in area, production productivity of major food grains crops in India. She concluded that, India there is positive and significant growth rates for production and productivity of all major food grains except jowar.

Discussions & Result

Table:1

Rice Production in India from 2014-15 to 2023-24

S.NO	Year	Rice Production (MT)	Growth in Index Number
1	2014-15	104.32	100.00
2	2015-16	105.75	101.37
3	2016-17	112.53	107.87
4	2017-18	112.89	108.21
5	2018-19	112.08	107.43
6	2019-20	117.47	112.60
7	2020-21	120.84	115.83
8	2021-22	120.95	115.94
9	2022-23	135.76	130.13
10	2023-24	137.82	132.11

Sources: Handbook of statistics on the Indian Economy 2024-25

Table 1: Shows that Rice Production in India from 2014-15 to 2023-24. Gradual rise from 2014-15 to 2017-18 (104->112.89 MT). A slight dip in 2018-19 (112.08 MT), Steady recovery and strong growth thereafter, peaking at 137.82 MT in 2023-24 The major Jump in 2022-23(135.76MT) bumber harvest in India. The Index grows steadily with minor fluctuations, showing resilience, the sharpest rise is seen in 2021-22 to 2022-23 (115.94->130.13). This table observed to overall growth of 32 % in Rice production over the decade.

Table:2

Wheat Production in India from 2014-15 to 2023-24

S.NO	Year	Wheat Production (MT)	Growth in Index Number
1	2014-15	92.78	100.00
2	2015-16	93.52	100.79
3	2016-17	98.03	105.65
4	2017-18	99.45	107.18
5	2018-19	101.52	109.42
6	2019-20	103.60	111.66
7	2020-21	107.08	115.41
8	2021-22	108.90	117.37
9	2022-23	110.55	119.15
10	2023-24	113.29	122.10

Sources: Handbook of statistics on the Indian Economy 2024-25

Table:2 shows that wheat production in India from 2014-15 to 2023-2024. the wheat production grows almost every you're without major dips, small increases in the early years 2014-16, followed by faster growth after 2016-17, the highest output is recorded in 2023-24 (113.29 MT). The index shoves as smooth, uninterrupted, upward, trajectory, the index grow this stable and predictable, reflecting wheat's status as a well-supported and irrigated crop. this table observed that overall growth of 22%. in wheat production over the decade.

Table:3

Coarse & Cereals Production in India from 2014-15 to 2023-24

S.NO	Year	Coarse &Cereals (MT)	Growth in Index Number
1	2014-15	39.35	100.00
2	2015-16	38.27	97.25
3	2016-17	39.03	99.18
4	2017-18	39.00	99.11
5	2018-19	38.40	97.58
6	2019-20	40.10	101.90

7	2020-21	42.00	106.73
8	2021-22	42.70	108.51
9	2022-23	43.90	111.56
10	2023-24	44.50	113.08

Sources: Handbook of statistics on the Indian Economy 2024-25

Table: 3 shows that Coarse & cereals production in India from 2014-15 to 2023-24.the production path is fluctuating in the initial years decline in 2015-16(38.27 MT) and 2018-19 (38.40 MT), a significant recovery begins from 20l9-20 onward, peaking at 44.50MT in 2023-24.the index falls below 100 in 2015-16 (97.25) and 2018-19 (97.58) -> indicating stagnation or contraction in those years, from 2019-20 onward; the index raises steadily to 113.08 in 2023-24, consistent growth momentum. This table observed that represents a growth of 13.1% over the decade.

Table: 4

Pulses Production in India from 2014-15 to 2023-24

S.NO	Year	Pulses (MT)	Growth in Index Number
1	2014-15	17.30	100.00
2	2015-16	18.00	104.04
3	2016-17	18.50	106.93
4	2017-18	19.40	112.13
5	2018-19	18.80	108.67
6	2019-20	19.20	110.98
7	2020-21	20.00	115.60
8	2021-22	22.00	127.16
9	2022-23	26.06	150.63
10	2023-24	24.50	141.61

Sources: Handbook of statistics on the Indian Economy 2024-25

Table 4 shows that pulses production in India from 2014-15 to 2023-24. the production fluctuates growth from 2014-15 to 2017-18 is steady (17.3→19.4 MT), a dip occurs in 2018-19 down to (18.8 MT), a recovery follows, with sharp growth in 2021-21(22MT) and especially 2022-23 (26.06MT), a slight decline is seen in 2023-24 (24.5 MT). the index rises from (100) 2014-15 to (150.63) 2022-23, showing a 50% growth in less than a decade. The final year 2023-24 shows a drop to (141.61) reflecting a decline in production compared to 2022-23, this table observed that as overall increase of 41.6% in pulses production over the decade.

Table:5
Food grain Production in India from 2014-15 to 2023-24

S.NO	Year	Food grain Total Production (MT)	Growth in Index Number
1	2014-15	253-75	100.00
2	2015-16	255.54	100.70
3	2016-17	268.09	105.65
4	2017-18	270.74	106.69
5	2018-19	270.80	106.71
6	2019-20	280.37	110.49
7	2020-21	289.98	114.25
8	2021-22	294.55	116.07
9	2022-23	329.65	129.91
10	2023-24	332.03	130.84

Sources: Handbook of statistics on the Indian Economy 2024-25

Table 5 shows that food grains production in India from 2014-15 to 2023-24. Data Analysis is

Econometric Linear Regression model.

1. Model Setup

We Can set up a Simple Linear regression model.

$\mathbf{y_t = \alpha + \beta X_t + t_t}$

Where y_t = Foot grain total Production in (MT)

$\mathbf{X_t}$ **= Growth rate Index**

$\mathbf{E_t}$ = Error term

This tests whether changes in the growth Index significantly explain changes in food grain Production.

2. Hypotheses.

Null Hypothesis (Ho). β=0

→ Growth ratio index has no significant effect on food grain production 2013

Alternative Hypothesis (H1) β = ∦0

- ➔ Growth rate index has a significant effect on food grain production
  We would run regression, check the **P-Value of β** and see if it is <0.05(5.1. Significance level)

3 Expected Results (Based on Data Trend).

- ➔ From 2014-15 to 2023-24, Production. Increased from 253.75 MT -> 332.03 MT (a steady upward trend).
- ➔ Growth index also rose from 1000 ->1100 130.84 in The Same Period.
- ➔ This indicates a strong positive relationship

$\rightarrow \beta > C$

Thus, Regression is likely to show significant positive correlation between growth index and Production.

II.CONCLUSION

India 's agricultural food grain production in the study period from 2014-15 to 2023-24 positive growth trends viz the following of rice, wheat , coarsel & cereals ,pulses and total food grain .the trend of growth in rice production of 32% over the decade ,wheat production overall growth of 22%, coarsel & cereals production represents a growth of 13%, pulses production overall growth 41.6% and over all food grain production increased from 253.75 MT to 332.03 MT with 30.8% a steady upward trends. The ICMR (Indian Council of Medical Research) (2020) requirement of cereal average valves viz adult men (moderate activity) 460 gram per day, adult women (moderate activity) 400 gram per day, children (1-9 years) 150-200 gram per day and adolescents 300-400 gram per day. India's current (2023-24) total food grain production (132.03 MT) is insufficient for its 142 crores Indian population as per ICMRs recommended dietary intake. Currently (2023-24) available in 255 gram per day person, so falls short of the required 400-460 gram per day for adults, therefore men 45% food grain deficit, women 36% deficit and children may be sufficient for younger ones, but inadequate for older children/adolescents. Thus, India faces a food grain availability deficit relative to nutritional needs.This imbalance creates food insecurity price inflation and fiscal stress, making it a key economic challenge. I suggest that (i) Boost productivity in hybrid seeds, irrigation expansion, precision farming. (ii) Crop diversification in promote pulses, coarse & cereals for nutrition security. (iii) Reduce wastage in better storage, cold chains and logistics.

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