

THE ROLE OF AGRICULTURE IN RURAL DEVELOPMENT (WITH SPECIAL REFERENCE TO THE STATE OF CHHATTISGARH)

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Abstract

Agriculture in rural areas serves not only as a source of sustenance but also as a vital economic activity that aids in establishing livelihoods and entrepreneurship. The main objective of this research paper is to present innovative perspectives on improving agriculture and development in rural areas, thereby advancing rural prosperity and development. This paper presents an entrepreneurial proposal for utilizing local resources appropriately to achieve prosperity and social well-being.

This research paper examines the crucial issues of agriculture and development in rural areas and highlights possibilities for rural development from an innovative perspective. It delves deeply into how innovations, technology, community collaboration, and government policies can be utilized to enhance agriculture and rural development, facilitating social and economic improvements in rural areas. Through the study of this research paper, we learn how innovations can be encouraged for agriculture and development in rural areas, which can provide direction for prosperity by utilizing local resources effectively.

Keywords: Agriculture, Agricultural Development, Rural Areas, Rural Development

Introduction

Agriculture and rural development are vital components in the direction of prosperity and social well-being. In rural areas, agriculture serves not only as a source of food security but also as a major economic activity, providing livelihoods to millions of people. The contribution of agriculture to the development of rural areas is crucial for achieving social and economic prosperity.

In this research paper, we will delve deeply into the important aspects of agriculture and rural development and analyse their impacts, which are significant for rural prosperity. We will discuss measures through which agriculture and development in rural areas can be promoted effectively, such as innovative farming techniques, technology, and evolving governmental policies.

Through this paper, we aim to highlight the importance of innovative perspectives for agriculture and rural development and endeavour to demonstrate how progress can be made towards prosperity in rural areas. The study presented in this paper helps us understand the challenges that lie ahead in

agriculture and rural development, such as climate change, guidelines for innovation in farming, and more. We will analyze how updates and improvements can address these challenges so that progress towards prosperity in rural areas can be achieved.

The construction of the framework for agriculture and development in rural areas is not only through farming but also through collaboration in various sectors, including social, economic, and technological advancements. We will also explore how governmental schemes and technological advancements can bring about improvements in rural areas.

Literature review:

Nandini Francis (2015) about how farming can help villages in India grow better. It says farming is very important for people living in villages to earn money. It also says that for villages to improve, we need to focus on things like education, starting businesses, and making better roads and buildings. The document also talks about how everyone√ government, businesses, and people√ needs to work together to make villages better.

Gustavo Anríquez, Kostas Stamoulis (2007) Agricultural growth is seen as really important for helping to reduce poverty and make rural areas better, especially in places where the basic facilities like roads and electricity are good. In the past, people didn't always think farming was that important, but now they're realizing it's crucial for making life better in poorer countries, especially in rural areas. This change in thinking shows how farming is super important for making the economy stronger, reducing poverty, and making rural areas develop more overall.

Bhabesh Gogoi(2019) The paper talks about the many problems that farming faces in the North-Eastern part of India. Even though farmers there have small pieces of land, not enough good roads or other basic things, and sometimes natural disasters happen, the region has lots of different resources that could be really useful. To make things better, each state needs its own plans that fit its special situation, and farmers need to learn better ways to farm. The paper also says it's important to find a balance between making money and taking care of the environment, and it suggests using smarter systems and making less waste. Overall, it gives us good ideas about how farming, development, and taking care of nature are all connected in this part of India.

Satish S Uplaonkar, Sharanagoud S Biradar (2015) The study looks at how farmers who start their own businesses (Agripreneurs) can help make farming better in India. It says that when the economy is not doing well, these kinds of businesses become even more important. The study suggests that we need special programs to help farmers start their businesses, especially in areas where farming is the main way people make a living. It also talks about how we need people who are willing to take risks and know a lot about farming to make these businesses successful and help more people.

Dr Amrit Patel (2014) The research shows that building things like roads and irrigation systems in

rural areas is really important for making life better and helping farms grow in India. Even though these projects need a lot of money upfront and can be risky, they help farmers sell their crops and get loans. Different kinds of infrastructure, like roads and market access, along with support from banks and research, can make farming more productive and cheaper, which helps the economy grow too.

Anit N Mukherjee & Yoshimi Kuroda (2002) The study looked at rural areas in India from 1973 to 1993. It found that different states had different changes in how productive farming was and how many people worked on farms compared to other jobs. While overall fewer people worked on farms, some states started having more farm jobs in the late 1980s. The study also found that states tended to become more similar to Kerala, a state that was more developed at the start. It suggests that if both farming and other types of work in rural areas grow together, it can make rural areas better off. This supports the idea that less developed areas might catch up over time, leading to balanced development across different regions.

Seema Joshi (2012) study show that India's economy is shifting towards services, but agriculture still employs over 50% of the workforce. However, agriculture is losing its vitality, and India has struggled to reach a 4% growth target in agriculture. This paper stresses the importance of using science and technology in Indian agriculture for sustainable development and food security, aiming to tap into the country's demographic dividend. The author was inspired to undertake this study due to the agricultural crisis in India.

Santanu Panda and Arup Majumder (2013) Rural development aims to uplift the quality of life and economy in sparsely populated areas. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is hailed as a potent tool in alleviating rural poverty and unemployment by providing jobs for tasks like road construction and water conservation. MGNREGA offers an alternative livelihood, curtails migration, reduces child labour, and fosters self-sustainability in villages.

Katar Singh and RS Pundir (2000) The paper shows that Rural development is essential for India's progress, with a significant rural population and GDP contribution. Cooperatives, prevalent across the country, play a crucial role in rural economies by providing agricultural inputs and aiding development. However, challenges such as outdated laws and lack of professional management hinder their effectiveness. To thrive in the modern era, cooperatives need democratic governance, freedom from government interference, and professional management practices.

S. Manjunath & E. Kannan (2017) The study investigated rural infrastructure's influence on agricultural development in Karnataka, using district-level data spanning 30 years. Results from regression analysis indicated that both infrastructure availability and utilization positively impacted agricultural productivity growth, with utilization having a slightly stronger effect.

Additionally, the combined effect of availability and utilization yielded a larger impact on agricultural productivity. Furthermore, the analysis revealed a trend of districts converging in terms of agricultural productivity over time. Prof. Henryk Runowski & Prof. Wojciech Zietara, (2011) The paper discusses the shift in agriculture's role in Poland and other countries, attributed to faster development in non-agricultural sectors and worsening cost-profit dynamics in agriculture. This leads to declining profitability, prompting consolidation of farms. Trends indicate a polarization, with commodity farms and self-subsistence social farms emerging. Agriculture is expected to adopt a dual nature, expanding into environmental and societal service functions alongside production and social services.

Efstratios Loizou, Christos Karelakis, Konstantinos Galanopoulos, Konstadinos Mattas (2019) The study examines how agriculture boosts rural economies during economic crises. It uses a method called Input-Output analysis to show how changes in agriculture, like reforms in policy, affect other sectors. Results reveal that agriculture not only directly impacts the economy but also indirectly influences other sectors, leading to increased local output and household income. For example, a new agricultural policy can contribute around , 300 million to the local economy, with 14% of this benefiting sectors beyond agriculture.

Objectives of the Study

This research paper serves as a medium for in-depth study in the fields of agriculture and rural development, with the primary objective of providing supportive knowledge in the following key areas:

- 1. Achieving Prosperity:** To study measures for achieving prosperity through agriculture and rural development and presenting them.
- 2. Economic Development:** To examine the possibilities of economic development in rural areas through agriculture and rural development.
- 3. Sustained Development:** To ensure the continuity of development in rural areas by incorporating innovative perspectives in the fields of agriculture and development.

Research Proposal:

1. Contribution of Agriculture: Agriculture has made a significant contribution to the development of rural areas.
2. Total state domestic product of Chhattisgarh at current prices increases in last 10 years.
3. Increase in total state domestic product at constant prices in 2017-18 to 2022-23.

Research Methodology:

The research paper titled "Role of Agriculture in Rural Development" has been studied in the region of Chhattisgarh. Chhattisgarh is an agriculture-dominated region where the majority of the population is engaged in agricultural activities. The study has been conducted using secondary data and descriptive

methods. Data related to rural population, percentage of rural population, people engaged in agricultural activities, and agricultural land-related figures have been collected from the website of the agricultural department and economic surveys.

Study Area:

Study Area - Chhattisgarh lies between the geographical coordinates of 17°46' to 24°5' North latitude and 80°15' to 80°20' East longitude. The total geographical area of this state is 1,35,191 square kilometres, out of which the net sown area is 46.51 lakh hectares, which is 34 percent of the total geographical area. Currently, there are 40.10 lakh farmer families. This research paper presents the major figures related to agriculture and crop production in Chhattisgarh state on an annual basis.

Important statistics related to agriculture in Chhattisgarh.

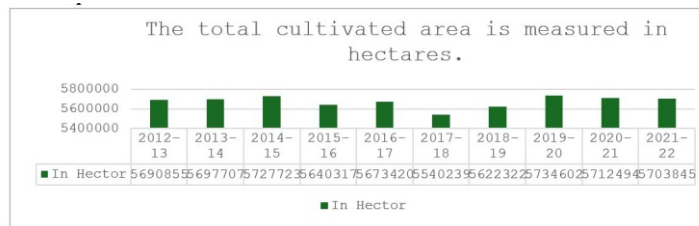


Fig: 1 Total cultivated area in hectares.

The graph above shows the total domestic production (at prevailing rates) of Chhattisgarh state over a period of 10 years, indicating fluctuations in total domestic production due to crop contributions. the percentage increase is as follows:

Table:1 The Percentages change in past 10 years of Total cultivated area in hectares.

F.Y.	Percentage change	Overall CAGR
2012-13	-----	-----
2013-14	0.12%	-----
2014-15	0.53%	-----
2015-16	-1.53%	-----
2016-17	0.59%	-----
2017-18	-2.35%	-----
2018-19	1.48%	-----
2019-20	2.00%	-----
2020-21	-0.38%	-----
2021-22	-0.15%	-----
CAGR	-----	0.0228%

here the overall growth rate is as follows.

$$CAGR = (5703845 / 5690855)^{(1 / 10)} - 1$$

$$CAGR \approx (1.00228)^{(0.1)} - 1$$

$$CAGR \approx 0.0228\%$$

So, the overall growth rate for the "Hector" data over the period from 2012-13 to 2021-22 is approximately 0.0228%.

Graph-2 The percentage share of Chhattisgarh's total state domestic product at

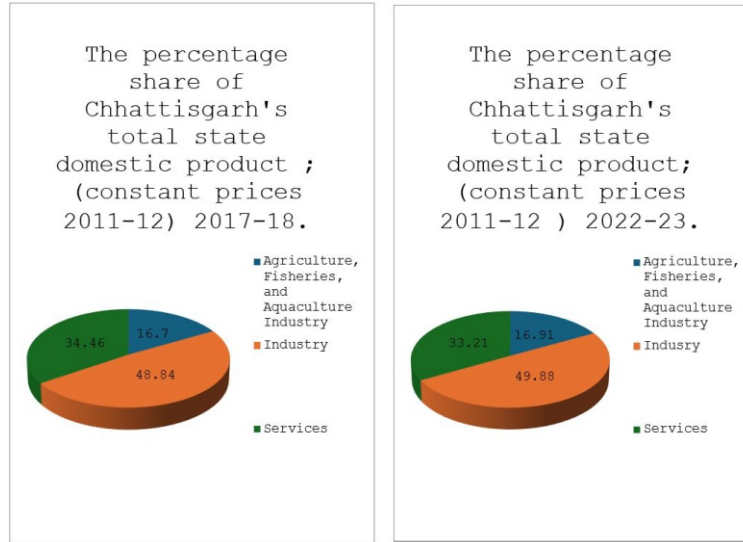


Figure 2.1

Figure 2.2

The above graph shows the contributions of agriculture, forestry and fishing industry, manufacturing industry, and services. To compare the percentage share of Chhattisgarh's total state domestic product (GSDP) across different sectors for the periods 2017-18 and 2022-23, we can analyze the changes in the percentage shares of agriculture, industry, and services. Here are the percentage shares for both periods:

Table 2.1 The percentage share of Chhattisgarh's total state domestic product; (constant prices 2011-12) 2017-18:

Sector	Percentage Share
Agriculture, Fisheries, and Aquaculture:	16.7%
Industry:	48.84%
Services:	34.46%

Table 2.1 The percentage share of Chhattisgarh's total state domestic product; (constant prices 2011-12) 2017-18:

Sector	Percentage Share
Agriculture, Fisheries, and Aquaculture:	16.91%
Industry:	49.88%
Services:	33.21%

Table 2.3- Comparing the two sets of data

Sector	Percentage Share (2017-18)	Percentage Share (2017-18)	Effect
Agriculture, Fisheries, and Aquaculture	16.7%	16.91%	Increased
Industry	48.84%	49.88%	Increased
Services	34.46%	33.21%	Decreased

Overall, there is a slight increase in the percentage share of agriculture and a significant increase in the percentage share of industry, while the percentage share of services decreased. This indicates some shifts in the contribution of different sectors to Chhattisgarh's GSDP over the two periods.

S. NO.	Crop	Production of Major Crops								
		2013-	2014-	2015-	2016-	2017-	2018-	2019-	2020-	2021-22
1.0	Cereals									
1.1	Rice	10654.1	11966.6	7731.5	13189.9	8623.5	9762.8	12854.06	13874.53	13238.5
1.2	Wheat	140.8	153.3	142.33	151.08	141.64	446.13	135.89	259.51	203.83
1.3	Sorghum	3.3	4.2	4.36	5.44	4.7	2.81	2.54	1.68	0.76
1.4	Maize	254.1	235.1	237.74	309.32	306.94	303.60	406.82	522.76	430.90
1.5	Kodo Millet	21.0	20.7	11.93	23.05	14.87	22.23	14.49	20.17	25.63
1.6	Barley	2.4	2.7	0.67	1.88	1.96	1.36	1.09	0.79	0.77
1.7	Minor Millets	8.3	8.9	7.87	4.97	5.74	5.76	5.01	4.37	3.19
2.0										
2.1	Pulses	221.6	311.2	218.8	338.32	331.67	680.03	105.82	258.80	260.33
2.2	Chickpeas	29.4	35.1	30.6	39.01	25.74	30.13	22.47	23.90	27.03
2.3	Pigeon Peas	30.0	30.1	28.91	30.57	28.52	26.98	24.84	28.77	29.86
2.4	Black Gram	4.0	4.2	6.56	6.44	4.92	4.85	2.44	2.32	2.16
2.5	Green Gram	14.1	14.3	15.09	16.37	15.76	14.86	10.25	8.80	7.79
2.6	Horse Gram	174.0	297.9	192.1	222.63	129.79	124.23	60.91	121.63	103.99
3.0	Oilseeds	23.8	76.1	46.9	109.58	64.21	93.38	69.90	74.23	69.33
4.0	Sesame	42.3	40.8	37.25	46.93	32.112	78.05	33.68	34.41	42.44

4.2	Sugarcane	11.6	11.1	10.24	11.39	10.69	10.7	6.89	5.94	5.56
4.3	Sesame Seed	4.8	8.0	6.82	7.55	5.19	5.67	6.01	5.99	9.25
4.4	Groundnut	111.9	50.1	40.12	76.13	30.31	52.20	83.00	47.34	24.74
4.5	Castor	11.9	11.2	9.45	10.10	4.57	4.37	4.81	3.79	3.54
4.6	Soybean	27.0	24.6	25.96	18.43	18.35	18.96	15.69	16.46	17.52

Source: Department of Revenue and Land Record, Chhattisgarh

The table above illustrates the crop-wise production over the past 10 years.

Graph-3 Total state domestic product of Chhattisgarh (at current prices)

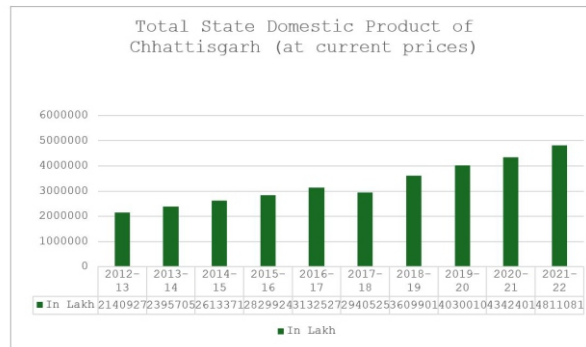


Table-3 Percentage change and overall CAGR of Total GDP (at current prices)

	Initial Year Value 2012-13 (Lakh Rs.)	Final Year Value 2021-22 (Lakh Rs.)	Increase (Lakh Rupees)	Percentage Increase	Overall CAGR
Total GDP (at current prices)	21,40,927	48,11,081	26,70,157	124.70%	8.43%

The above table illustrates the total state domestic product (at current prices) of Chhattisgarh. It is evident that while it was 214,092 lakh rupees in the year 2012-13, it increased to 481,108 lakh rupees in 2021-22, indicating a significant growth in the state's total domestic product (at current prices) by 267,017 lakh rupees. To calculate the percentage increase:

$$\text{Percentage Increase} = ((\text{Final Value} - \text{Initial Value}) / \text{Initial Value}) * 100$$

Percentage Increase = $((4,811,081 - 2,140,927) / 2,140,927) * 100$

Percentage Increase $\approx ((2,670,157) / 2,140,927) * 100$

Percentage Increase $\approx 1.247 * 100$

Percentage Increase $\approx 124.7\%$

So, the total state domestic product of Chhattisgarh at current prices increased by approximately 124.75% from 2012-13 to 2021-22.

To calculate the overall growth rate (Compound Annual Growth Rate, CAGR):

$CAGR = ((\text{Final Value} / \text{Initial Value})^{(1 / \text{Number of Years})}) - 1$

Number of Years = 2021-22 (final year) - 2012-13 (initial year) = 10 years

$CAGR = ((4,811,081 / 2,140,927)^{(1 / 10)}) - 1$

$CAGR \approx 8.4337\%$

So, the overall growth rate (CAGR) of the total state domestic product of Chhattisgarh at current prices from 2012-13 to 2021-22 is approximately 8.4337%.

The schemes implemented by the government for agricultural development include:

1. Godhan Dhan Nyay Yojana:

The Godhan Nyay Yojana is a scheme initiated by the Chhattisgarh government on July 20, 2020. Under this scheme, cow dung is purchased from livestock owners, and it is used to produce organic fertilizers. The main objectives of this scheme are:

- Encouraging organic farming and sustainable agriculture.
- Strengthening the livestock industry and increasing the income of livestock owners.
- Creating new employment opportunities in rural and urban areas.
- Ensuring the welfare of cows and their progeny.

2. Shakambhari Irrigation Scheme:

- Objective: To improve agricultural productivity and ensure better utilization of resources.
- Under the scheme, various sources are utilized, such as wells, canals, reservoirs, tubewells, pump sets, solar pumps, sprinklers, drip irrigation, etc.
- Main Beneficiary: The main beneficiary of this scheme is the farmer who is affected by water scarcity.

-Management: The management of this scheme is carried out through the central government, state governments, regional committees, local self-government institutions, agricultural cooperative societies, farmer organizations, etc.

3. Micro Irrigation Scheme:

About the Scheme: The Micro Irrigation Scheme aims to promote water conservation, protection, and management in the agricultural sector.

Key Points to Consider:

- The scheme provides subsidies to farmers for irrigation equipment such as sprinklers, drip systems, pipelines, pumps, motors, solar panels, etc.
- The management of this scheme is carried out through the central government, state governments, agricultural cooperative societies, farmer organizations, local self-government institutions, etc.

4.Minor Irrigation Scheme:

Basic Information and Main Objectives:

- The main objective of this scheme is to make farmers self-reliant so that they can increase agricultural production by creating their own irrigation facilities.
- Under this scheme, farmers receive subsidies ranging from 50% to 80% for solar pumps, sprinklers, pipelines, etc.
- This scheme promotes water savings per hectare and utilizes precision irrigation and water-saving techniques.

5.Certified Seed Production and Distribution Scheme:

- Objective: The state government has made special efforts to ensure the availability of sufficient quantities of certified seeds to farmers in the state, which provide high-quality and high-yielding crops.
- Provision: Under this scheme, there is a provision to provide grants ranging from ₹500 to ₹2500 for certified seed production and distribution.

6.State-supported Organic Farming Mission:

- Introduction: Since 2014, the State-supported Organic Farming Mission has been initiated in the state to promote organic farming. Additionally, since 2016, the Central Government-initiated Paramparagat Krishi Vikas Yojana (Traditional Farming Development Scheme) has also been implemented.
- Implementation: Programs are being conducted to convert each development block in five districts into fully organic zones, along with other districts, as part of the efforts to promote organic farming.
- Objectives: The main objectives of the State-supported Organic Farming Mission include promoting organic farming, improving the quality and standards of organic products, developing markets for organic products, and enhancing the income of farmers.

7.Prime Minister's Crop Insurance Scheme:

- Introduction: Under the Prime Minister's Crop Insurance Scheme, the government attempts to cover the financial losses incurred by farmers due to natural calamities to some extent.
- Premium Amount: The premium amount payable by farmers under this scheme has been kept very low, allowing even small farmers to benefit from it.

- Premium Rates: Farmers are required to pay only 2% premium for all Kharif crops and 1.5% premium for all Rabi crops. In the case of annual commercial horticultural crops, the premium to be paid by farmers is only 5%.
- Optional Enrollment: Initially, this scheme was mandatory for all loanee farmers, but since 2020, the Centre has made it optional for all such farmers.
- Coverage: Losses incurred after harvesting are also included under this scheme. If the crop is in the field for up to 14 days after harvesting and suffers damage due to any disaster during this period, farmers can receive the claim amount.

8. Prime Minister's Agriculture Irrigation Scheme:

The "Prime Minister's Agriculture Irrigation Scheme" is a program initiated by the Government of India with the aim of enhancing irrigation facilities in the agricultural sector. The scheme was launched in 2015 with the objective of improving water resource management, irrigation systems, and increasing farmers' income. It endeavors to improve farmers' irrigation facilities by providing subsidies on irrigation equipment.

Key Points of the Prime Minister's Agriculture Irrigation Scheme:

- Objective: The scheme aims to increase agricultural productivity and income of Indian farmers by providing subsidies on irrigation technologies and equipment.
- Irrigation Facilities: Under the scheme, farmers are provided subsidies on various types of irrigation facilities such as drip irrigation, river and pond irrigation, and farmer irrigation pumps.
- Benefits to Farmers: Through the scheme, farmers receive subsidies on various types of irrigation equipment, which reduces their financial burden and provides them with irrigation facilities at affordable prices.
- Utilization of Technologies: Farmers are encouraged to use appropriate irrigation technologies under the scheme, enabling them to utilize water efficiently and improve their productivity.

9. Agricultural Mechanization:

Agricultural mechanization aims to increase productivity by facilitating various agricultural tasks efficiently and timely, thereby providing an increase in production. It also aims to make advanced agricultural machinery available on rent to small-scale marginal farmers and to provide self-employment opportunities to rural youth by establishing agricultural machinery service centers and farm machinery banks.

Challenges in Agricultural and Rural Development:

- **Uncertainty of Rainfall:** The uncertainty of rainfall is a significant factor contributing to the backwardness of agriculture, which is the foundation of rural development. The lack of capital and the unpredictability of rainfall are the primary reasons for the lag in rain-fed agriculture in India. While rainfall is the main source of irrigation in India, its uncertainty directly affects agricultural production.

- **Efficient Marketing System:** An efficient marketing system is key to rural development. It involves all activities from agricultural production to reaching the final consumers. The management services in agricultural distribution systems are often considered inefficient. Additionally, the lack of financial facilities, estimation of losses, and inadequate market information are major factors.
- **Traditional Agricultural Practices:** Traditional agricultural methods are a significant cause of low agricultural productivity. Many areas still practice agriculture traditionally, resulting in lower productivity. Traditional methods require more time and labor, leading to lower yields.
- **Credit Crisis in Agriculture:** Credit crisis is a significant issue in agriculture because the lack of credit facilities hinders farmers from investing in farming-related activities, directly impacting agricultural output. Lengthy procedures for obtaining loans at high interest rates make it difficult for farmers to access credit facilities for agricultural work.
- **Lack of Diversification:** The lack of diversification in agriculture is also a major cause of agricultural problems. Due to traditional farming practices, attention is not given to diversification.

Suggestions:

- **Improvement in Agricultural Credit Facilities:** Improving agricultural credit facilities can provide a new direction to agriculture and rural development. Resolving this issue can be achieved by providing farmers with affordable credit facilities.
- **Market Access for Agricultural Products:** Access to markets for agricultural products can solve many problems. Agricultural marketing is a major source of income, and apart from food supply, farmers need access to markets for the sale of surplus produce to earn profits.
- **Adequate Irrigation Facilities:** Talking about the 1950s, irrigation was limited to wells. Pump sets or tube wells were the only means, and they were also government-controlled. Currently, irrigation facilities such as canals, tube wells, etc., are being developed around fields, providing assistance to farmers.
- **Fair Pricing for Crops:** Farmers should receive fair and proper prices for their crops. If fair prices are not obtained, it directly affects the farmers' economic condition. Therefore, concepts like minimum support price have been introduced to ensure that farmers receive a minimum standardized price for their produce and do not incur losses.
- **Utilization of Modern Farm Machinery:** Even today, agriculture is practiced using ancient methods in many areas, whereas modern machinery has been invented in this field, which can definitely lead to an increase in production. The government provides arrangements for renting out machinery, and emphasis should also be placed on promoting organic farming to enhance agricultural productivity.
- **Diversification of Agriculture:** Agricultural diversification refers to a farming system where instead of growing just one crop or specializing on a large scale, various crops are grown, and

livestock farming, fish farming, poultry farming, etc., are promoted. Undoubtedly, specialized farming benefits from the use of tangible assets, and diversification not only provides relief from dependency on a single occupation but also offers benefits in terms of business diversification.

Conclusion:

– It is evident from the overview that there has been a significant fluctuation in the overall cultivated area. After reaching its lowest point in 2017-18, there has been a consistent increase in subsequent years.

There is an overall growth rate for the "Hector" data over the period from 2012-13 to 2021-22 is approximately 0.0228%.

– The contribution of Chhattisgarh's total state domestic product (at constant prices 2011-12) to the household sector also increased from the expectation of 2017-18 to 2022-23.

– The contribution of agriculture to the total state domestic product (at current prices) has also been consistently observed. We can see the overall growth rate (CAGR) of the total state domestic product of Chhattisgarh at current prices from 2012-13 to 2021-22 is approximately 8.4337%.

It is apparent that alternative strategies are being embraced. Certainly, the contribution of agriculture to the economy has increased, providing new directions for rural development. However, the pace is still slow, and concerted efforts by farmers and the government are needed to further enhance it. This will ensure the comprehensive development of agriculture and rural areas.

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