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CONTENTS

S.No.	Paper Title	Page No.
1.	A THUMBNAIL ON THE IMPACT OF COVID-19 PANDEMIC ON MARGINAL LABOUR- Dr. K. Chandrasekhara Rao, Dy. Commissioner (CT)(Retd),	1
2.	THE IMPACT OF THE AGRICULTURE SECTOR ON INDIA'S DEVELOPMENT BEFORE AND AFTER COVID-19-R. Ramu, K. Murali, Prof. G. Nagaraja Department of Economics, Andhra University, Visakhapatnam.	7
3.	Agriculture, Technology and Reforms- Dr. I. Satya Sundaram	17
4.	A STUDY ON ECONOMIC IMPACT AND PREVENTIVE MEASURES ABOUT COVID-19 - Dr. B. Santhosh Kumar, Assistant Professor, Hindusthan College of Arts and Science, Coimbatore, Tamil Nadu.	25
5.	IMPACT OF e-NAM ON AGRICULTURAL MARKETING-Dr.Y.Chinna Rao, Lecturer in Economics, D.John Raj, HOD of Economics YA Govt. Degree College for Women, Chirala, Prakasam Dt.	30
6.	Status of Scheduled Caste population in Andhra Pradesh-A District Wise Analysis- Dr.K.Venu Madhava Rao, Associate professor and Head of the Department of Economics, Government Degree College Tiruvuru, Krishna District	43
7.	Development Patterns of Urbanization in Andhra Pradesh- Smt M.Bhagya lakshmi, Lecturer in Commerce, YAGDC (W), Chirala, Prakasam District. Dr.M.Baburao Lecturer in Economics, GVSMGD College , Ulavapadu, Prakasam Dt.A.P	52
8.	INDIA'S TRADE LIBERALIZATION - ENVIRONMENTAL IMPACT- M.LAKSHMINARAYANA RAJU, Lecturer in Economics, D.N.R.College(A),Bhimavaram	60
9.	IMPACT OF GST ON AGRICULTURAL SECTOR-P.Hari Krishnam Raju, Lecturer in Commerce, D.N.R.College(A), Bhimavaram	64
10	Attitudes of the Women Entrepreneurs in Costal Andhra-SWOT Analysis M.Saradha Lecturer in Economics, SKBR Government Degree College, Macherla.	71
11.	An Economic Analysis of Chillies Cultivation in Guntur District of Andhra Pradesh- Dr.K.Kishore Babu.Guest Faculty, Dept. of Economics, Acharya Nagarjuna University, Nagarjuna Nagar, Guntur, Andhra Pradesh	87
12.	ROLE OF AGRICULTURE SECTOR IN INDIA-Dr.N.M.Mrudula, Lecturer in Economics, Andhra Christian College Guntur	96

13.	An Analysis of Sustainable Agriculture Development in India- A.Veera Kumari, Lecturer in Economics, Government Degree College, Avanigadda.	102
14	Women Entrepreneurship: A Tool to Inclusive Empowerment-Dr.D.Thirupathiah, Lecturer in Economics, Dept of Economics, Government Model Degree College, Yerragondapalem, Prakasham District	110
15.	IMPACT OF COVID-19 PANDAMIC ON MIGRANT LABOUR AND ECONOMIC GROWTH- Dr. K. Bhaskar Rao, Assistant Professor, Dept. of Economics, Sri ABR Govt. Degree College, REPALLE, Guntur Dist. A P.	117
16.	Dry-land Agriculture Development through Watershed Development Programme: Reflections from Andhra Pradesh, M. Srinivasa Reddy Faculty Member, CESS, Hyderabad.	123
17.	Legal Provisions for Women Empowerment in India - Impact of Covid-19- Dr.Choppara Bala Kotaiah Associate Professor, Department of Economics, Andhra University-Visakhapatnam ¹ Dr.Y.janaki Ramudu Department of Economics, Andhra University-Visakhapatnam	138
18.	THE POSSIBILITIES AND CHALLENGES FACING THE INDIAN ENERGY DIPLOMACY, - Dr. B. Lilly Grace Eunice Associate professor, Dept. of Economics, College of Arts and Commerce, Andhra University, Visakhapatnam, Mr.M. Narasimha Murthy Research Scholar, Andhra University & Guest faculty of Economics, Dr.B.R. Ambedkar University, Srikakulam	150
19	Production and Marketing of Pulses in Andhra Pradesh: Opportunities and Constraints Faculty Member, Centre for Economic and Social Studies (CESS), N.O.Campus, Begumpet, Hyderabad, Assistant Professor in Economics, Dept of Economics, Maharaja Agrasen College, University of Delhi, Delhi.	158
20	Panchayats of Andhra Pradesh and Telagana on women in Panchayat Dr. A.K.V.S.S.R. Rajasekhar, Research Director, Acharya Nagarjuna University, D. Sonia, Research Scholar, Acharya Nagarjuna University.	173
21	Role of Rural Development- SYANALA.BLANDINA, NAGARJUNA UNIVERSITY, **Dr.A.BHARATHI DEVI NAGARJUNA UNIVERSITY	188
22	Role of Panchayati Raj system in Rural Development- Venkataramanaiah dasari Research scholar Dept of Economics, ANU, Ongole campus, Ongole, Dr.Bharathi Devi Anchula , Assistant Professor, Dept of Economics, ANU, Ongole campus, Ongole	194
23	Agricultural Mechanization in India - A Review- B.Nirmala, Lecturer in Economics, Andhra Christian College, Guntur	198
24	Role of GST on Rural Development- Nagarjuna Talakola , Research scholar ,Dept of Economics, ANU, Ongole Campus, Dr.Bharathi Devi Anchula ,Assistant Professor, Dept of Economics, ANU, Ongole Campus	204

An Analysis of Sustainable Agriculture Development in India

A.Veera Kumari

1. INTRODUCTION

The role of agricultural sector in Indian economy can be seen through its contribution to GDP (Gross domestic Product) and employment. This sector also contributes significantly to sustainable economic development of the country. The sustainable agriculture development of any country depends upon the judicious mix of their available natural resources. But for a country like India, increasing productivity is more important than the rest of the two. This is simply because of increasing urbanization, industrialization and the limited land size of the country.

The productivity can be increased by two ways. First, increasing output by efficient utilization of available resources. Second, increasing output by variation of input. The first method is better with respect to productivity and sustainability. But due to increasing population, this method cannot provide a permanent solution. Thus, we can go for the second method, which may potentially cause environmental degradation in the economy and affect its sustainability. Therefore there is need to tackle the issues related to sustainable agriculture development.

2. OBJECTIVES

1. To study the issues and challenges with status of the agricultural sector and trends.
2. To identify the impact of economic reform on Indian agriculture and key factors those encourage the growth of agriculture sector.

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3. To identify areas of intervention that could achieve sustainable agricultural growth.
4. To find the future prospects and solution for India.

3. SUSTAINABLE AGRICULTURE DEVELOPMENT

The issues of sustainable development can be discussed under three broad types of farming systems viz. traditional production system, modern agriculture system and sustainable agriculture system. Further, we can compare them across three dimensions, ecological, economic, and social sustainability.

3.1. Ecological Sustainability

Most of the traditional and conventional farm practices are not ecologically sustainable. They misuse natural resources, reducing soil fertility causing soil erosion and contributing to global climatic change. But sustainable agriculture has some major advantages over traditional practices:

3.1.1. Soil Fertility

Continuous fall in soil fertility is one of the major problems in many parts of India. Sustainable agriculture improves fertility and soil structure.

3.1.2. Water

Irrigation is the biggest consumer of fresh water, and fertilizer and pesticides contaminate both surface and ground water. Sustainable agriculture increase the organic matter content of the top soil, thus raising its ability to retain and store water that falls as rain.

3.1.3. Biodiversity

Sustainable agriculture practices involve mixed cropping, thus increasing the diversity of crops produced and raising the diversity of insects and other animals and plants in and around the fields.

3.1.4. Health & Pollution

Chemicals, pesticides, and fertilizers badly affect the local ecology as well as the population. Indiscriminate use of pesticides, improper storage etc. may lead to health problems. Sustainable agriculture reduces the use of hazardous chemical and control pests.

3.1.5. Land use Pattern

Over-exploitation of land causes erosion, landslides, and flooding clogs irrigation channels and reduces the arability of the land. Sustainable agriculture avoids these problems by improving productivity, conserving the soil etc.

3.1.6. Climate

Conventional agriculture contributes to the production of greenhouse gases in various ways like reducing the amount of carbon stored in the soil and in vegetation, through the production of Methane in irrigated field and production of artificial fertilizers etc. By adopting sustainable agriculture system, one can easily overcome this problem.

3.2. Economic Sustainability

For agriculture to be sustainable, it should be economically viable over the long term. Conventional agriculture involves more economic risk than sustainable agriculture in the long term. Sometimes governments are inclined to view export-oriented production systems as more important than supply domestic demands. This is not right. Focusing on exports alone involves hidden costs: in transport, in assuring local food security, etc. Policies should treat domestic demand and in particular food security as equally important to the visible trade balance. It is a popular misconception that specific commodities promise high economic returns. But market production implies certain risks as markets are fickle and change quickly. Cheap foreign food may sweep into the national market, leaving Indian farmers without a market. As a World Trade Organization signatory, the Indian government is under pressure to deregulate and open its economy to the world market so it cannot protect its farmers behind tariff walls.

3.3. Social Sustainability

Social sustainability in farming techniques is related to the ideas of social acceptability and justice. Development cannot be sustainable unless it reduces poverty. The government must find ways to enable the rural poor to benefit from agriculture development. Moreover, sustainable agriculture practices are based on traditional know-how and local innovation. Local people have the knowledge about their environment crops and livestock.

Traditional agriculture is more gender oriented, where woman bear the heaviest burden in terms of labour. Sustainable agriculture ensures that the burden and benefits are shared equitably between man and woman. While conventional farming focuses on a few commodities, sustainable agriculture improves food security by improving quality and nutritional value of food, and by producing bigger range of products throughout the years. Traditional farming was also driven by the caste and wealth oriented people.

4. INDIAN AGRICULTURE SECTOR

Agriculture is one of the most preeminent sectors of the Indian economy. In India about 75% people are living in rural areas and are still dependent on agriculture, about 43% of India's geographical area is used for agriculture activities. The estimated food grain production is about 211.17 metric tons in the country. India is a vast country with variety of landforms, climate, geology, physiography, and vegetation. India is endowed with regional diversities for its uneven economic and agriculture development because of

1. Agro-Climate Environment.
2. Agro-Ecological Regions.
3. Agro-Edaphic regions.
4. Natural resource Development.
5. Human Resource Development.
6. Level of Investment.
7. Technological Development.

5. AGRICULTURAL PRODUCTION IN INDIA

Indian Agriculture production in most part of the country is close related to the optimum use of available natural and human resources of the country. Therefore, riding on the back of agro climatic condition and rich natural resource base, India today has become the world's largest producer of numerous commodities. The country is a leading producer of coconuts, mangoes, milk, bananas, dairy products, ginger, turmeric, cashew nut, pulses and black pepper. It is also the second largest producer of rice, wheat, sugar, cotton, fruit and vegetables.

Indian agriculture production is closely related to sufficient and wise water management practices. Most of the agriculture practices in India confined to a few monsoon months. During the monsoon season, India is usually endowed with generous rainfall; although not infrequently, this bountiful monsoon turns into terror, causing uncontrollable floods in different parts of the country and ultimately affecting agriculture production.

6. MILE STONES IN INDIAN AGRICULTURE

Policy makers and planners, concerned about national independence, security and political stability realized that self-sufficiency in food production was an absolute pre requisite for sustainable agriculture development. The policies considered to be a mile stone in agriculture development of the country are:

- 1. Green Revolution (1968):** This revolution includes packages of programs like, Intensive Agriculture District Program (IADP), which eventually led to the Green Revolution. The National Bank for Agriculture Development (NABARD) was set up. The emphasis was on high yielding varieties along with other modern inputs like chemicals, fertilizers, pesticides, and mechanization and on how productivity could be raised in agriculture sector without having substantial influences on increasing area under cultivation.
- 2. Ever Green Revolution (1996):** Father of India's Green revolution, Prof. M.S. Swaminathan claims to be pro-woman, pro-nature, and pro-poor. The conservation of biodiversity, maintaining soil fertility, increasing the climate resistance of food crops combined with better and more education and technological innovation are the key to the ever green revolution. The main aim of this revolution is to produce more using less land, less water and less fertilizer. The recent visit of US President in New Delhi in March 2010, announced a new partnership with India in an agriculture sector for an evergreen revolution to achieve global food security.
- 3. White and Yellow Revolution:** The Green Revolution generated a mood of self-confidence in our agriculture capability, which led to the next phase characterized by the Technology Mission. Under this approach, the focus was on conservation, consumption,

and commerce. An end-to-end approach was introduced involving attention to all links in the production-consumption chain, owing to which progress was steady and sometimes striking as in the case of milk and egg production.

4. Blue Revolution (Water, Fish): It has been brought about in part by a trend towards healthier eating which has increased the consumption of Fish. Additionally the supply of wild fish is declining. This revolution could give landless laborers and women a great opportunity for employment which empowered them.

5. Bio-Technology Revolution: India is well positioned to emerge as a significant player in the Global Biotech Arena. Agriculture biotech in India has immense growth opportunity and the country could become the forerunner in the transgenic production rise and several other genetically engineered vegetables by 2010. In agro-biotech sector India has been growing at a blinding rate of 30% since the last five years. The food processing sectors which is considered to be prime drivers of Indian economy is currently growing at 13.5%.

7. IMPACT OF ECONOMIC REFORM ON INDIAN AGRICULTURE

The Indian agriculture sector has been undergoing economic reform since 1990s in a move to liberalize the economy to benefit from globalization. India, which is critical for raising living standards, alleviating poverty, assuring food security, making substantial contribution to the national economic growth. Since agriculture continues to be a tradable sector, this economic liberalization, and reform policy has a far reaching effect on

1. Agricultural exports and imports
2. Investment in new technologies
3. Pattern of agricultural growth
4. Agricultural income and employment
5. Agricultural price
6. Food security

Reduction in Commercial Bank credit to agriculture, in lieu of this reforms process and recommendations of Khusro Committee and Narasimham Committee resulted in fall in farm investment and impaired growth. Liberalization of agriculture and open market operations enhance competition in "resource use" and "marketing of agriculture

production”, which forces the small and marginal farmers to resort to “distress sale” and seek off farm employment for supplementing income.

8. ISSUES & CHALLENGES

The central issue in agricultural development is the necessity to improve productivity, generate employment, and provide a source of income to the poor segments of population. Studies by FAO have shown that small farms in developing countries contribute around 30-35% to the total agricultural output. The pace of adoption of modern technology in India is slow and the farming practices are too haphazard and unscientific. Some of the basic issues for development of Indian agriculture sector are revitalization of cooperative institutions, improving rural credits, research, human resource development, trade and export promotion, land reforms and education.

9. FUTURE PROSPECTS AND SOLUTION FOR INDIA

Agriculture sector is an important contributor to the Indian economy around which socio-economic privileges and deprivations revolve and any change in its structure is likely to have a corresponding impact on the existing pattern of social equity. Sustainable agricultural production depends upon the efficient use of soil, water, livestock, plant genetics, forest, climate, rainfall, and topology. Indian agriculture faces resource constraints, infrastructural constraints, institutional constraints, technological constraints and policy induced limitations.

The sustainable development in India can also be achieved by full utilization of human resources. A large part of poor population of the country is engaged in agriculture, unless we increase their living standard, overall growth of this country is not possible.

10. CONCLUSION

The agricultural technology needs to move from production oriented to profit oriented sustainable farming. The conditions for development of sustainable agriculture are becoming more and more favourable. New opportunities are opening the eyes of farmers, development workers, researchers, and policy makers like agro related businesses, dairy farming, poultry farming, cattle farming and fisheries. Now the time is to see the potential

and importance of these practices not only for their economic interest but also as the basis for further intensification and ecological sustainability. To conclude, a small-farm management to improve productivity, profitability and sustainability of the farming system will go a long way to ensure all round sustainability.

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