

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	A STUDY ON THE IMPACT OF CELEBRITY ENDORSED ADVERTISEMENTS ON THE BUYING BEHAVIOUR OF CONSUMERS IN SALEM DISTRICT WITH REFERENCE TO FMCG PRODUCTS <i>DR. R. RAJESWARI & M. RUBIA BEGAM</i>	1
2.	HOUSEHOLD ENERGY CHOICE AND DEMAND IN URBAN ETHIOPIA: CASE OF WOLAITA ZONE <i>TADELE TAFESE HABTIE & BELAYNESH TAMRE DEMBEL</i>	5
3.	CUSTOMERS' PERCEPTION OF ATM USAGE, QUALITY OF SERVICE AND SATISFACTION: REFLECTIONS ON INDIAN BANKING <i>DR. LAKSHMINARAYANA BHAT. A</i>	11
4.	MAKE IN INDIA: AN INITIATIVE OF REVIVING INDIAN ECONOMY: A CASE STUDY <i>DR. JASKARAN SINGH DHILLON & TEJBIR KAUR</i>	15
5.	AN ANALYSIS OF LEVEL OF SATISFACTION TOWARDS EXPORT OF PRINTING PRODUCTS <i>K. SOUNTHARA PRIYA & DR. (MRS.) M. JAYALAKSHMI</i>	23
6.	DETERMINANTS OF FARMERS WILLINGNESS TO PAY ON WATER HARVESTING TECHNOLOGIES: A CASE STUDY IN EAST GOJJAM ZONE, ETHIOPIA <i>DERAJEW FENTIE & DAGNE MINALU</i>	28
7.	MEASUREMENT OF ENVIRONMENTAL VALUES <i>DR. ROHTASH KUMAR GARG & RIMA ALAGH</i>	35
8.	VALUES AND IMPLICATIONS OF KNOWLEDGE MANAGEMENT <i>BIJAL M. SHAH & BHAVANA K. PATEL</i>	41
9.	EXCHANGE RATE VOLATILITY IN INDIAN FOREIGN EXCHANGE MARKET WITH SPECIAL REFERENCE TO THE UNITED STATES DOLLAR <i>AMIT BHATI</i>	44
10.	PUBLIC DISTRIBUTION SYSTEM IN WEST BENGAL: A BRIEF STUDY <i>DR. ARNAB GHOSH & BARNANA BHATTACHARYA</i>	48
11.	NATIONAL INCOME IN INDIA: CONCEPTS, MEASUREMENT AND TRENDS <i>SHIV KUMAR</i>	56
12.	A STUDY ON THE IMPACT OF MICROFINANCE ON POVERTY ERADICATION WITH SPECIAL REFERENCE TO KANHIRAPUZHA GRAMA PANCHAYAT, KERALA <i>CAMILLO JOSEPH & NINU MARIA JOY</i>	61
13.	ASSESSING THE EFFECTIVENESS OF GROUP BASED BORROWING OF OROMIYA CREDIT AND SAVING SHARE COMPANY, JIMMA ZONE, ETHIOPIA <i>ENDALEW GUTU, WENDAFAERAW MULUGETA DEMISSIE & YILKAL WASSIE AYEN</i>	66
14.	MARKETING MARGIN OF ONION MARKETER'S IN SOME SELECTED AREAS OF PABNA DISTRICT <i>MD. DIN-LL-ISLAM & AIRIN RAHMAN</i>	73
15.	EFFECT OF JANANI SURAKSHYA YOJANA ON WOMEN: A STUDY IN BOUDH DISTRICT <i>SARBANI SANKAR PANIGRAHI</i>	80
16.	GROWTH OF SPICES PROCESSING INDUSTRY IN TIRUCHIRAPPALLI DISTRICT, TAMIL NADU <i>DR. R. RAJANBABU</i>	83
17.	INTERNATIONAL INSTITUTIONS FOR FOREIGN TRADE DEVELOPMENT: A THEORETICAL VIEW IN THE CONTEXT OF INDIA <i>DR. BHUPINDER SINGH & SUKHVINDER SINGH</i>	87
18.	IMPACT OF NEW TECHNOLOGY ON AGRICULTURAL PRODUCTION <i>SUNITA SOLANKI & GOURA JAMRA</i>	91
19.	A LITERATURE REVIEW ON GROWTH AND DEVELOPMENT AND THE FINANCIAL HEALTH OF CO-OPERATIVE CREDIT SYSTEM WITH REFERENCE TO JHARKHAND <i>POMPI DAS SENGUPTA</i>	94
20.	IMPACT OF FISCAL DECENTRALIZATION ON MAJOR ECONOMIC INDICATORS IN INDIA <i>FERNANDA DE XAVIER ANDRADE</i>	97
	REQUEST FOR FEEDBACK & DISCLAIMER	103

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IMPACT OF NEW TECHNOLOGY ON AGRICULTURAL PRODUCTION

SUNITA SOLANKI
RESEARCH SCHOLAR
DEPARTMENT OF ECONOMICS
VIKRAM UNIVERSITY
UJJAIN

GOURA JAMRA
RESEARCH SCHOLAR
DEPARTMENT OF ECONOMICS
VIKRAM UNIVERSITY
UJJAIN

ABSTRACT

Agriculture is the most important sector of our economy which contributes about 45% of the national income, provides employment to about 70 % of our population and contributes substantially to under export earnings only with mass production being aided by modern technology. The volume of production depends not only on the capital investments and marketing strategies but also on the technical capacity used during the production and processing stage. In fact, technology has come to play a very significant role for the development of agriculture production and also plays a significant role even in marketing these days. Paper is conceptual in nature and tries to know the new Agriculture technologies in India and their impact on agriculture production.

KEYWORDS

agricultural production, use of technology.

INTRODUCTION

Agriculture is considered to be mainstay of the Indian economy. At the same time, this statement needs to be examined with due diligence. Today Indian agriculture is at crossroads with an approximate 2.5 % all crop - output growth rates in 10th five-year plan (FVP) as against estimated 4.0 - 4.5 % growth rate earmarked by national agriculture policy in the year of 2000. With a significant contribution, 50 % in 1950s to Indian GDP by agriculture and allied sectors has sharply declined to 25 % in 1999 and further, has come down to a mere 17.5 % in 2008-2009 in fact, we try to correlate the workforce engagement with agriculture, which shows a decimal relationship. From 70 % involvement of manpower in agriculture, it has decreased to 51 % (approximately) as of now. Besides Indian consuming classes show a strong tendency of "consumerism" towards packaged food and ready to eat products after the resurgence of organized relating in 2004 -05.

Only with mass production being aided by modern technology and intensive marketing can the agriculturist exploit both the domestic market as well as the international market to the fullest extent. The volume of production depends not only on the capital investments and marketing strategies but also on the technical capacity used during the production and processing stage. In fact, technology has come to play a very significant role even in marketing these days.

During the past five decades, technological changes in agriculture and allied sectors backed by massive investment in irrigation, infrastructure and institutions have propelled many food - insecure, import - dependent developing countries including India, into food self - sufficiency. The adoption of biochemical and mechanical technologies in India have led to near - tripling of food grain production and four - fold increase in production of fruits and vegetables during the period 1966 -97 to 2011- 12. There has also been an unprecedented increase (6- 10 times) in the production of animal food products during this period. Milk production has increased six - fold, egg production 12 - fold and aquaculture production 8 - fold. Agriculture production systems will come under the confluence of biotic and abiotic stresses. Land will emerge a strong limiting factor to food and agricultural production. India's net cropped area almost stagnates at around 140 million hectares; and the scope to increase food and agricultural production through area expansion is limited. According to an estimate, about 120 million hectares of land in the country suffers from one or the other form of degradation. Water is a critical input in agriculture, which uses over 80 per cent of available water. Ground water in the intensively cultivated north western food basket of the country has already reached its limit of exploitation. The agricultural production will become more energy intensive but with a concomitant shift from the use of renewable to fast exhausting non renewable sources. Intensification of agriculture will further strain these natural resources. Increasing competition for land, water and energy will intensify due to their pressing demands for housing and industrialization; and thus there is a high probability of their diversion away from agriculture. These challenges will be aggravated further by increasing frequency of extreme climatic events, such as droughts, floods, cyclones, heat waves etc. Slow growth in agriculture will adversely impact farm incomes, food security, and even growth of non -farm sector which has strong backward and forward linkages with agriculture. In view of the challenges, the future growth in agriculture has to come and from acceleration in the rate of technological change and sustainable intensification of the production system.

Technology has been the key drive of agricultural growth. Only with mass production being aided by modern technology and intensive marketing can be agriculturist exploit both the domestic market as well as the international market to the fullest extent. The volume of production depends not only on the capital investments and marketing strategies but also on the technical capacity used during the production and processing stage. In fact, technology has come to play a very significant role even in marketing these days.

Agriculture Technology includes wide range of improved techniques, methods, equipments, processes and products by which farmers can increase their production, productivity, input profit and overall quality of life. Generally, technology is used to improve the human condition, the natural environment or to carry out other socio - economic activities. Agriculture technology is a complex blend of materials, processes and knowledge. Agriculture technology may be classified in to two major categories

1. Hardware (Material technology); where knowledge is embodied into a technological product such as tools, equipments, agrochemicals, seed materials, medicines etc.
2. Software (Knowledge based technology); It includes technology knowledge, management skills and other processes that farmers and rural people need for better production in their enterprises.

NEW AGRICULTURE TECHNOLOGIES IN INDIA

Technologies play an essential role in agricultural production and impact upon the life of farmers everywhere. Technical innovations such as the plough, irrigation, mills, crop rotations, fertilizers and much more have shaped the history of mankind time and time again.

PLOUGH

Ploughing is the first preparation for planting. The plough is primarily designed to prepare the ground for cultivation by turning it over, thus burying the weeds and loosening the earth in effect, a hand held hoe was used in which the user scratched at the earth to form a tilt where corn could be sown. Over a period of time,

these hand held hoes soon developed in to simple ploughs. These primitive ploughs eventually pulled by animals like oxen, camels and elephants. Animals enabled the land to tilled more easily and faster; thus more food was produced.

HARROW

After ploughing, other implements were used. The harrow was necessary to smoothen the soil in areas where the soil remained rough. It consists of a wooden or metal framework bearing metal disks, teeth or sharp projecting points, called tines, which are dragged over plowed land to crush the clods of earth and level the soil. Harrow also used to uproot weeds, aerate the soil and cover seeds.

SEED DRILLER

Seed driller is an innovation that allowed seeds to be easily planted deep into the soil instead of on top where the majority were washed away or otherwise lost. The machine was pulled by horses and consisted of rotating drills or runners that planted seeds at a set depth.

HORSE HOE

It is horse - drawn machine which loosened the soil and killed weeds.

REAPER

The first reapers cut the standing grain and with a revolving reel, sweeping it on to a platform from which it was raked off into piles by a man walking alongside. The reaper could thus harvest more grain than five men using the earlier cradles. The reaper was eventually replaced by the self - propelled combine, operated by one man, which cuts, gathers, threshers and sacks the grain mechanically.

THRESHING MACHINES

Threshing machine is designed for rapidly removing the husk from grain. The machines could be driven by wind or water power or by horses, but the steam powered threshers became the most familiar sight.

TRACTOR

Tractor is a vehicle particularly crafted to exert, traction at slow speeds, for the purpose of hauling a trailer or machinery used in agriculture

IRRIGATION TECHNOLOGY

Water is undoubtedly the sine qua non for all irrigation activities, worldwide. Particularly in India, an unpredictable monsoon coupled with an increasing demand for food production (at the self - sustenance as well as commercial levels) has induced an imperative need for irrigation options other than those that are either extremely laborious and time consuming or simply too expensive for small and marginal farmers. Electric and diesel pumps can be used to extract groundwater for irrigating any large areas of land; however, some effective technologies that are being availed by a major section of farmers are as follows:

TREADLE PUMP

It is a foot operated water lifting device that can irrigate small plots of land of small holders in regions that have higher water table (not deeper than 25 feet).

DRIP IRRIGATION TECHNOLOGY

Drip irrigation is water - saving technology which enables slow and regular application of water directly to the roots of the plants through a network of economically designed plastics pipes and low discharge emitters. It maximizes crop productivity through increase in the crop yield and also the area for cultivation and protects the environment through conserving soil, water and fertilizer resources, thus increasing the farmer income. Currently, this is being promoted by the government of India in the form of kits in the water scarce regions in India. They include: 1. Drum kit. 2. Bucket kit. 3. Family Nutrition kit.

Timely receipt of relevant expert advice / information / market information can help the farmers in following ways.

- (1) Information on schemes and programs of Government of India can help every farmer to reap benefits out of these schemes thus widening the footprints of these schemes.
- (2) Weather forecast can help the farmer in planning farm operation effectively on the onset of any adverse weather conditions; advice can be provided to the farmers on effective resources to be adopted.
- (3) Outbreak of disease /pests can be controlled as advisories can be provided immediately to the farmers in and around the area of initial report of the disease /pest.
- (4) Crop advisory will lead to the adoption of more appropriate technologies suited to local situation.
- (5) Selection of suitable and better variety /breed by the farmer based on the information /advisory can be provided to him /her.
- (6) Timely market information will give better bargaining power to the farmer.
- (7) Soil test results in his mobile will help in selecting the right fertilizer and the dosage.

USE OF MACHINES ON FARMS

Now a farmer can cultivate on more than 2 acres of land with less labor. The use of planters and harvesters makes the process so easy. In agriculture, time and production are so important; you have to plant in time, harvest in time and deliver to stores in time. Modern agricultural technology allows a small number of people to grow vast quantities of food and fiber in a shortest period of time.

MODERN TRANSPORTATION

This helps in making products available on markets in time from the farm. With modern transportation, consumers in Saudi Arabia will consume a fresh carrot from India with in the same day that carrot lives the garden in India. Modern transportation technology facilities help farmers easily transport fertilizers or other farm products to their farms, and it also speeds the supply of agricultural products from farms to the markets where consumers get them on a daily basis.

COOLING FACILITIES

These are used by farmers to deliver tomatoes and other perishable crops to keep them fresh as they transport them to the market. These cooling facilities are installed in food transportation trucks, so crops like tomatoes will stay fresh upon delivery. This is a win-win situation for both the consumers of these agricultural products and the farmers. How? the consumers get these products while still fresh and the farmer will sell all their products because the demand will be high.

GENETICALLY PRODUCED PLANTS

like potatoes, can resist diseases and pests, which rewards the farmer with good yields and saves them time. These crops grow very fast they produce healthy yields. Since they are resistant to most diseases and pests, the farmer will spend less money on pesticides, which in return increases on their (RIO) return on investment.

DEVELOPMENT OF ANIMAL FEEDS

This has solved the problem of hunting for grass to feed animals, now these feeds can be manufactured and consumed by animals. The price of these feed is fair so that a low income farmer can afford them. Most of these manufactured animal feeds have extra nutrition which improve on the animal's health and the output of these animals will also increase. In agriculture, the health of an animal will determine its output. Poorly feed animals are always unhealthy and they produce very little results in form of milk, meat, or fur.

BREEDING OF ANIMALS WHICH ARE RESISTANT TO DISEASES

Most of these genetically produced animals will produce more milk or fur compared to normal animals. This benefits the farmer because their production will be high. Cross breeding is very good in animal grazing; cross breed animals are more strong and productive.

CONCLUSION

Agriculture is considered to be mainstay of the Indian economy. Technology has been the key driver of agriculture growth. It plays a very significant role in agriculture production and marketing. Slow growth in agriculture will adversely impact farm incomes, food security, and even growth of non - farm sector which has strong backward and forward linkages with agriculture. Agriculture technologies includes wide range of improved techniques, methods, equipments, processes and products by which farmers can increase their production, productivity, input profit and overall quality of life. Technology is used to improve the human condition, the natural environment or to carry out other socio-economic activities.

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