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THE IMPACT OF MODERN WAYS OF FARMING ON AGRICULTURE PRODUCTION

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ABSTRACT -:

Agriculture provides a source of income for more than two-thirds of India's population. However, prior to 1950, India's agricultural system was not as strong as it is now, and as a result, production was insufficient to meet the growing need for food. The Green Revolution, which began in the late 1960s, was a huge success storey for Indian agriculture, which incorporated some modern farming technologies. This is why, prior to the green revolution, the country was constantly plagued by famines and various food shortages, and why, today, we are confronted with the problem of overabundance.With the advancement of diverse agricultural technologies,Todaythe development of various agricultural technologies/systems, such as organic farming, genetic manipulation of crop plants, vertical farming, precision agriculture (PA), and others, has increased crop production, allowing India to combat current agricultural production issues and meet current and future food demand worldwide.Unlike wealthy countries, agriculture is our country's backbone, and it is likely to contribute to the Indian economy. Because India has a wide range of environmental conditions throughout the year, its agriculture includes a diverse range of crops, with rice and wheat serving as the key food staples. Indian farmers additionally raise cereals, sugarcane, tubers, legumes, oilseeds, and non-edible goods like coffee, jute, cotton, rubber, and tea.However, diverse biotic and abiotic stress, water scarcity, and an expanding worldwide population have been recognized as challenges to these crops' development. Increasing grain yield per unit area is a priority.

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Keywords-: Green Revolution, late, 1960s, huge, success, Indian agriculture, modern farming technologies, recognized, overabundance.

INTRODUCTION-:

In India, technology and modern systems have a wide range of applications; Indian agriculture is progressively experiencing transformation since the advent of green revolution technology. The recent liberalization and globalization approach has opened up new options for farm modernization. It has emphasized not just the improvement of farm inputs and infrastructure in rural areas, but also the production of agricultural product for domestic and global markets. Modern agriculture proved extremely effective in meeting a rising demand for food as the world's population grew in the latter half of the twentieth century. Day by day Changing environmental conditions have raised the pressure and occurrence of new diseases and pests infesting crop plants, reducing crop production. As a result of the significant increase in world population, the amount of land under cultivation has decreased day by day; consequently, it is vital to increase the amount of land under cultivation. Today in order to boost agricultural yields the application of contemporary agricultural technologies/systems resulted in rapid increases in yields of important crops such as rice and wheat, lower food prices, and a minor reduction in the number of people who go hungry on a regular basis. Scientific advances and the application of new technologies, such as the development of new crop varieties using molecular breeding technologies, organic farming, genetically modified crop systems, and the construction of large irrigation systems, have all contributed to this increase in food production.

MODERN FARMING TECHNOLOGY-:

When we used traditional agricultural systems, we faced several obstacles such as climate change, biotic and abiotic stress conditions during the peak season of the crop, and natural calamities, all of which reduced crop output. Farmers apply new techniques and systems, but due to a lack of understanding among farmers in some rural areas, the rate of adoption of new technology by farmers is slow. Precision agriculture (PA) using satellites and multi-crop farming is increasing to include organic farming, polytonal farming, green house farming, genetically modified crops, vertical farming, and other unique ways.Organic farming: Ecological agriculture

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or biodynamic agriculture are two terms used to describe organic farming because it works in harmony with nature, meaning that whatever agricultural practices are used in organic agriculture do not harm the environment's living population.

Increasing crop productivity by using Organic farming is a viable alternative to chemical fertilizer and pesticide-based farming that is environmentally beneficial. Over using of chemical-based pesticides and fertilizers has recently sparked worries about environmental and health dangers to human and animal populations, as well as soil micro-flora. The utilization of resistant varieties, crop rotation, green manure, compost, and bio-fertilizers like Trichoderma and Pseudomonas, as well as biological pest control, are all part of this system. Vertical farming: In recent years, as the world's population and urbanization have grown,the area under cultivation has shrunk. The necessity to handle the double-edged challengeof reducing farmed land while also producing food for an ever-increasing population is critical. As a result, the ground-breaking concept of vertical farming was developed to boost agricultural yield while using less area. By understanding the nutritional and temperature requirements of the crop, the farm uses soilless farming technology such as hydroponics and aeroponics to generate larger yields faster throughout the season. These methods not only increase the crop by 3-5 times, but they also improve the quality of the harvest.

Development of PA technology:

The introduction and application of contemporary technologies in Indian agriculture is expected to address the challenges of the current competition. To satisfy the massive food grain demand of 480 million tons (Mt) by 2050, advances in space technology (thanks to the Indian Space Research Organization (ISRO)) and information technology (IT) have opened up new possibilities for farm sectors. Different constellations of satellites are used in the positioning system.

GENETIC MANIPULATION OF CROP PLANTS:

Crop production has recently increased as a result of advances in a vast variety of molecular breeding and biotechnological tools used in modern agriculture. Marker-assisted selection (MAS), QTL mapping, and gene pyramiding technologies were used to generate hybrid cultivars

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resistant to a variety of biotic and abiotic stressors in several major crops.When compared to traditional breeding approaches, these strategies aid in the early introduction of varieties and provide more precise ways.Genetically modified (GM) crops are created in vitro by modifying the genetic make-up of a host organism. This is usually accomplished by transferring one or more genes or altering the genome of selected plants using various gene manipulation techniques. BT (Bacillus thuringiensis) cotton, which has the genes Cry1Ac and Cry2Ab, is the best-known and most popular example of a GM crop in India. A large variety of GM crops have been created, with tolerance to both biotic and abiotic stress, reducing the usage of chemical fertilizers and pesticides and thereby reducing pollution.

GENETIC MANIPULATION OF CROP PLANTS:

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WHAT IS MODERN FARMING?

Modern agriculture is a changing approach to agricultural advancements and farming practices that helps farmers enhance efficiency while reducing the amount of natural resources required to meet the world's food, fuel, and fiber demands. Modern agriculture also goes by the titles of agribusiness, intensive farming, organic farming, and sustainable agriculture.

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ENVIRONMENTAL EFFECTS OF MODERN AGRICULTURE

As we all know, modern agriculture has boosted food affordability, expanded supply of food, enhanced food safety, effective alternatives, and generated greater biofuels.It does, however, generate environmental difficulties because it is built on a high input–high output strategy that uses hybrid seeds of high-yielding kinds, and also enough of irrigation water, fertilizers, and pesticides. The following are some of the environmental effects of modern agriculture-:

EROSION OF THE SOIL

Due to the increased water flow, the top productive soil of the farmland is removed. As a result, nutrient-rich soil is lost, reducing yield. Silt in water bodies stimulate the production of soil carbon from particle organic matters, which contributes to global warming.

GROUNDWATER CONTAMINATION

Groundwater is among the most significant sources of irrigation water. Nitrogenous fertilizers leak into the soil from agricultural areas, eventually contaminating groundwater. When nitrate levels in groundwater exceed 25 mg/l, it can cause a serious medical issue called "Blue Baby Syndrome," that primarily affects newborns and can prove fatal.

SALINITY AND WATERLOGGING

One of the reasons for low production is salt in the soil, which is caused by poor farm drainage management. Since the roots of plants do not get enough air to breathe in this condition, crop yield and mechanical strength suffer. It refers to the introduction of synthetic or natural substances, like nitrates and phosphate, into a freshwater system via fertilizers or wastewater. It creates a phytoplankton bloom, or an increase in the water body's primary production. Excessive nitrogen and phosphorus fertilization causes over nutrition of lakes and aquatic bodies, resulting in eutrophication

PESTICIDE USE THAT IS EXCESSIVE

Many insecticides are used to kill pests and increase crop output. Previously, pesticides such as arsenic, sulfur, lead, and mercury were employed to kill them. Pesticides including Dichloride Diphenyl Trichloroethane (DDT), for example, were utilized, but they also targeted beneficial

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pests. Most significantly, many pesticides are non-biodegradable, which means that they are related to food chains that are toxic to the humankind. Since the dawn of the industrial revolution, farming's relative importance has waned, and in 2006, the services sector surpassed agriculture as the economic sector employing the most people on the planet for the first moment in decades. However, we overlook the fact that if we are to survive, we must rely on agriculture. Modern farming technologies is often used by farmers to enhance a huge spectrum of production strategies. Hybrid seeds from a single crop type, cutting-edge equipment, and a host of energy subsidies in the manner of irrigation water, fertilizers, and pesticides are all used.

MODES:

Water Pollution through Modern Agricultural Practices. Many additional agricultural activities, including dairy farming, cattle farming, fish farming, tree and vine crop processing enterprises, animal slaughtering, and field lot operating, have generated a considerable amount of waste by-product that has mostly gone unchecked. Agricultural non-point source (NPS) pollution has adjudged to be the leading cause of decline in water quality impacts on rivers and lakes. Nitrogen is converted to nitrite and nitrate by fertilizers, manure, garbage, and ammonia. High amounts of these poisons reduce oxygen levels in the water, killing all wildlife. Nitrates can also be found in drinking water after soaking into the earth.

STUDY OBJECTIVE-:

The goal in writing this article was to cover the impact of modern ways of farming on agriculture production, modern farming technology, Development of PA technology, Genetic manipulation of crop plants, what is modern farming and Environmental Effects of Modern Agriculture, Groundwater contamination, Salinity and water logging etc.

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LITERATURE REVIEW:

1. The researcher finds that they have farmers' expectations of increased earnings from technology deployment, as well as the accessibility and cost of technologies, are two critical prerequisites for effective agricultural technology in developing nations.
2. Study finds the availability of land, it is thought, serves to alleviate household liquidity restrictions while also lowering risk aversion. Possession of huge expanses of land, on the other hand, can simplify the testing of new farming techniques and also decide the rate of adoption, as huge landholders are more likely to be early investors.
3. The researcher predicted better yields, land quality could be an important factor in selecting whether to employ essential inputs like chemical fertilizers or adopt enhanced crop types.
4. The researcher studied a number of African nations have developed various sorts of "smart subsidies" that identify particular farmers in order to solve the financial and availability restrictions that poor farmers face when it comes to adoption of technology.
5. The study has the profitability of agricultural operations is a critical factor in the long adoption, and shifting agricultural commodity prices have been found to be a large determinant in agricultural technology adoption.

METHODOLOGY DESIGN-:

Agricultural farming is India's economic backbone, accounting for more than half of the country's GDP. Farmers in India have been using modern agricultural systems/techniques to increase crop yield for many years and continue to do so today. Traditional agricultural methods, on the other hand, are no longer fully effective in meeting the always increasing demands of modern food market due to a number of issues, such as disease and pest management, which make it economically unproductive. It is critical to transition from traditional to contemporary farming practices. Using new technological technology, farmers may increase agricultural output while using less land.

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DATA COLLECTION-:

In order to conduct examination and evaluation in this study onthe impact on modern ways of farming on agriculture production., we collected required information from newspaper.We took an advice from experts, journalists, and institutions working on relevant sciences on the effects of contemporary agricultural methods on agriculture productivity to learn more about the topics. In addition, we provided links to a number of scholarly, research-based resources to help enhance and assess information quality.The data and information presented in this study are believed to be accurate to the extent that they are declared in the corresponding source.

STUDY AREA -:

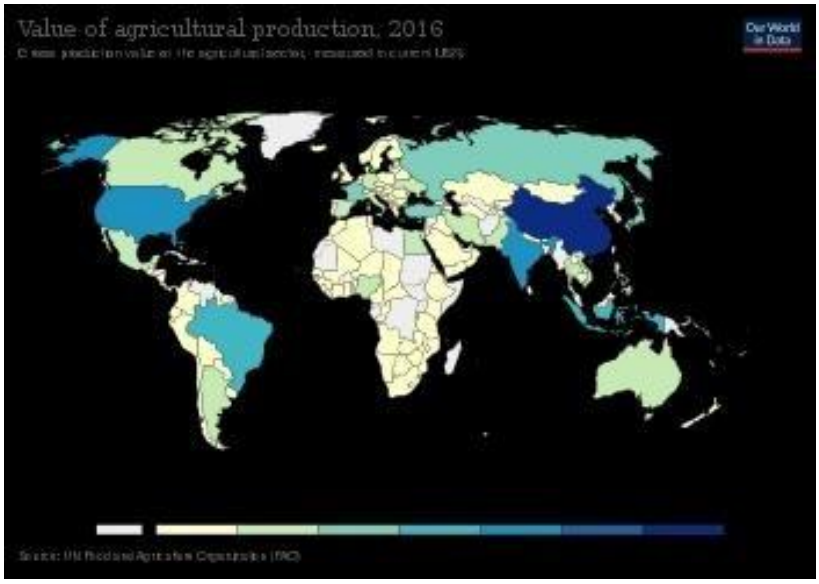

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Table 1: Number of villages covered under various Agricultural Development Schemes in study area, Bihar during 2008-09.

Head	ATMA	Agri. Department	KVK	Total
Horticulture Mission	19	28	--	47
Front line department	--	1	55	56
ISOPOM	3	9	11	23
NFSM	4	272	--	276
RKVY	--	381	--	381
Macro-mode	--	9	--	9
Micro-irrigation	--	2	--	2
Total	26	702	66	792

Table 2: Adoption of Modern Technology by Sample Farm Households in study villages in Bihar.

Farmer's Categories	Percentage of farmers				
	Advanced Horticulture	Modern Seeds	Pesticides	Artificial Insemination of Animal	Advanced Fisheries
Marginal (72)	18.06	13.89	8.33	73.61	1.39
Small (57)	26.32	28.07	3.51	63.16	3.51
Medium (15)	20.00	46.67	0.00	60.00	0.00
Large (16)	50.00	18.75	12.50	56.25	0.00
Total (160)	24.38	22.50	6.25	66.88	1.88

Table 3: Farm Category wise proportion of farmers purchasing seeds from Government sources

Farmer's Categories	Percentage of farmers				
	Wheat	Paddy	Maize	Pulses/Oil seeds	Vegetables
Marginal (72)	25.00	20.83	15.28	6.94	0.00
Small (57)	43.86	29.82	15.79	19.30	5.26
Medium (15)	53.33	26.67	20.00	13.33	0.00
Large (16)	56.25	25.00	6.25	12.50	6.25
Total (160)	37.50	25.00	15.00	12.50	2.50

In Bihar, there are seven major agricultural development programs that have been launched for technology transfer. These programs are particularly important in terms of agricultural productivity and the livelihoods of millions of Bihar's rural households.All of the projects are being implemented by the Department of Agriculture (DOA). Whereas Krishi Vigyan Kendra (KVK) is carrying out front-line demonstrations and ISOPOM is an Integrated Scheme of Oilseeds, Pulses, Oil palm, and Maize (ISOPOM) and Agriculture. The Technology Management Agency (ATMA) is in charge of putting the plan into action. National Horticulture Mission (NHM) and National Food Security Mission (NFSM) programs.

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Technology's Advantages/Pros/Benefits in Agriculture:

1. efforts can be managed by modern machines.

2. They help you save time.

3. Water was used to irrigate the crops.

4. Machines, on the other hand, are useful for sowing seeds.

5. They are employed in the transportation industry.

6. Irrigational technique is a type of irrigation.

7. Synthetic fertilizers are applied.

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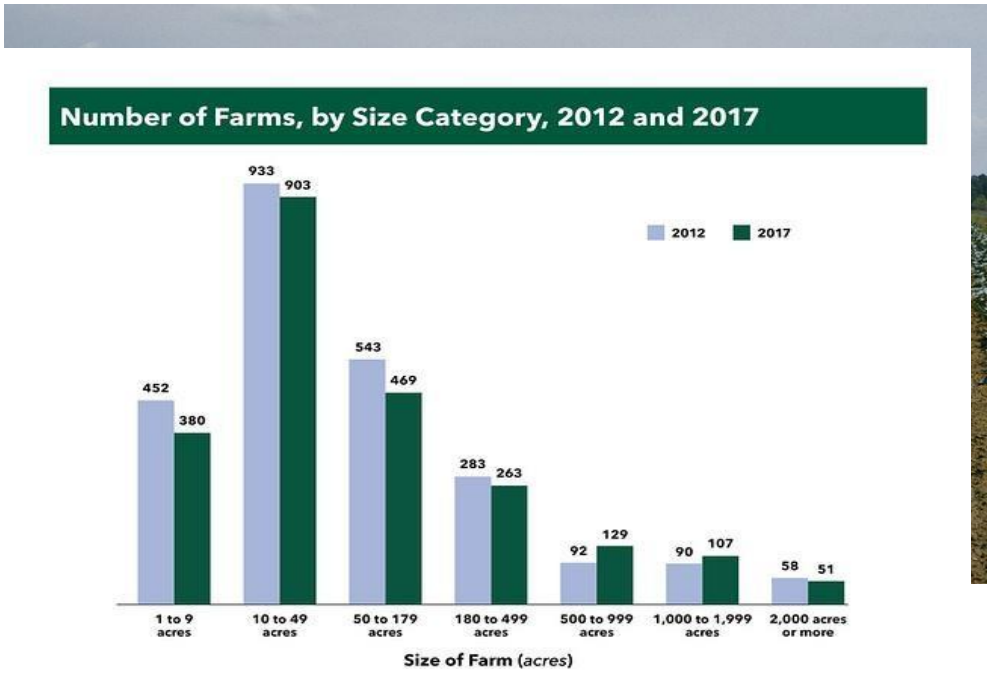

RESULT

Future agricultural output in emerging countries is expected to be risky for the environment, as productivity will have to expand to satisfy rising food demand.Intensification results in increased nutrient inputs in the manner of mineral fertilizers and animal feed. Important portions of these inputs are lost to the atmosphere as nutrient leaching into groundwater and gaseous losses.Growing market for fertile land and degradation of the current farmland may put additional strain on present farmland.Agriculture expansion almost always results in enormous deforestation.The relationship among livestock, crop production, and land use was the emphasis of this report's study.The relationship between livestock and crop production is the requirement for animal feedstuffs. This study presents long-term possibilities demonstrating these linkages and their possible implications on agricultural production and animal waste production.Because the world population is expected to stabilize in the later part of the 21st century, the forecasts must cover a period of 50-100 years to compensate for the consequences of human population expansion.

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