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ANALYSE THE IMPACT OF CLIMATE CHANGE ON AGRICULTURE OF MARATHWADA REGION, MAHARASHTRA

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Abstract:

Agriculture is the backbone of Indian economy. Around 58% population of India depends on agriculture. India rank second worldwide in farm output. In India agriculture contributes about 16% of total GDP and 10% of total exports. The present research paper covers the agriculture in Marathwada region, soil quality, which crops are produced in this region, and impact of climate change on agriculture and farmers, and farmers suicide.

Introduction:

India's agriculture sector is a cornerstone of its economy and sustains the livelihoods of millions of people across the country. With a rich history spanning thousands of years, Indian agriculture has evolved through various phases, from traditional subsistence farming to modern commercial agriculture.

Agriculture contributes significantly to India's economy, accounting for a substantial share of the Gross Domestic Product (GDP) and employing larger portion of the workforce, particularly in rural areas. It also serves as a source of raw materials for various industries, including food processing, textiles, and agro-based manufacturing.

Marathwada is the region of the Indian state of Maharashtra. Theward 'Marathwada' has been used since the times of the nizams.The region coincides with the Aurangabad division of Vidarbha and east of Khandesh regions of Maharashtra. The largest city of Marathwada is Aurangabad its people speak Marathi and Dakhini. Marathwada has total area of 64,590 kilometre square and had population of 18,73,01,872 at the 2011 census of India.

Marathwada region of Maharashtra, located in in the central part of the state, has a unique agricultural landscape shaped by it's semi-arid climate divorce topography, and historical agricultural practices. About 65% of the workers in Maharashtra are dependent on agriculture and related activities two third of the residents of Maharashtra are farmers. To ensure crop production majors like electrification, use of improved seeds, extensive farming and providing facilities to farmers are being taken.

Objective:

- Study the soil quality of Marathwada region.
- Analyse crop production in Marathwada region.
- Analyse the impact of climate change on agriculture.
- To study the farmers suicide in Marathwada region.

Research Meteorology:

In this research paper I have used descriptive and explanatory type of research method. I have data collected from various books, research papers, journals, newspapers, and from websites.

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The Marathwada region covers an area of approximately 64,590 square kilometre and is characterised by semi-arid climate conditions. Marathwada region consists of 8 districts Aurangabad, Beed, Hingoli, Jalna, Latur, Nanded, Osmanabad and Parbhani.

The topography of Marathwada varies, with some areas being relatively flat while others have undulating terrain. The Godavari and its tributaries, such as the Manjra River flow through parts of the region, providing water for irrigation and other agricultural activities.

Marathwada has a rich historical and cultural heritage, with several historical sites, monuments, and temples, including the world renowned Ellora and Ajanta caves, which are UNESCO World Heritage sites.

Marathwada is an agriculturally significant region of Maharashtra, known for its diverse crops, traditional farming practices, and historical landmarks.

Soil Qualify:

The soil quality in the Marathwada region of Maharashtra varies across different areas due to factors such as geology, climate, land use practices, and irrigation patterns. Generally, Marathwada's soil quality faces several challenges, but there are also areas of fertile land. Here are some key aspects of soil quality in the region:

- **Variability:** Marathwada's soil types range from sandy to clayey, with variations in fertility, texture, and depth. The region's diverse topography contributes to soil heterogeneity, with some areas being more fertile than others.
- **Water Scarcity and Irrigation:** Water scarcity is a significant issue in Marathwada, affecting soil moisture levels and agricultural productivity. Intensive irrigation practices, particularly in areas with canal irrigation or groundwater extraction, can lead to waterlogging, salinization, and soil degradation over time.
- **Nutrient Depletion:** Continuous cultivation and inadequate soil management practices can result in nutrient depletion and soil degradation. The excessive use of chemical fertilizers without proper nutrient replenishment strategies may further exacerbate soil fertility issues.
- **Soil Erosion**: Soil erosion is a common problem in Marathwada, particularly in hilly and sloping terrain. Erosion reduces soil fertility, disrupts soil structure, and contributes to sedimentation in water bodies, impacting both agricultural productivity and water quality.
- **Salinity and Alkalinity:** In some areas of Marathwada, soil salinity and alkalinity are prevalent due to factors such as high evaporation rates, inadequate drainage, and irrigation with saline water. Saline and alkaline soils pose challenges for crop cultivation and require remediation measures such as leaching and soil amendments.
- **Organic Matter Content:** Soil organic matter content plays a crucial role in soil fertility, water retention, and nutrient cycling. Practices such as stubble burning, intensive tillage, and deforestation can reduce organic matter levels in the soil, affecting its quality and productivity.
- **Soil Conservation Efforts:** Efforts to improve soil quality and conserve soil resources in Marathwada include the adoption of conservation tillage, agroforestry, and watershed management practices. These approaches aim to reduce soil erosion, enhance soil organic matter content, and improve water retention capacity.

Crop Production :

The Marathwada region of Maharashtra is known for producing a variety of crops, adapted to its semi-arid climate and diverse agricultural landscape. Some of the major crops cultivated in Marathwada include:

- **Cereals:** Traditional cereal crops such as jowar (sorghum), bajra (pearl millet), and wheat are

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extensively grown in Marathwada. These crops are staples in the local diet and are well-suited to the region's climatic conditions.

- **Pulses:** Pulses like tur (pigeon pea), chana (chickpea), moong (mung bean), and urad (black gram) are important crops in Marathwada. Pulses are valuable for their protein content and play a crucial role in crop rotation and soil fertility management.
- **Oilseeds:** Oilseed crops such as soybeans, groundnuts, and sunflower are cultivated in Marathwada for oil extraction. These crops provide edible oils and contribute to the region's agricultural economy.
- **Cash Crops:** Cash crops like cotton and sugarcane are also significant in Marathwada. Cotton cultivation, in particular, is widespread in the region, with Marathwada being one of the major cotton-growing areas in Maharashtra.
- **Horticultural Crops:** Marathwada produces a variety of horticultural crops, including grapes, pomegranates, oranges, mangoes, and bananas. These high-value crops require adequate water resources and are often grown in regions with better irrigation facilities.
- **Vegetables:** Various vegetables are cultivated in Marathwada to meet local consumption and market demand. Commonly grown vegetables include tomatoes, onions, brinjal (eggplant), okra, and green leafy vegetables.
- **Fodder Crops:** Given the importance of livestock in the region, fodder crops such as sorghum, maize, and berseem (alfalfa) are also grown in Marathwada to meet the nutritional needs of animals

Impact of Climate Change:

The Marathwada region in Maharashtra, India, is highly vulnerable to the impacts of climate change on agriculture. Some of the key effects include:

- **Erratic Rainfall Patterns:** Climate change can lead to irregular and unpredictable rainfall patterns, causing droughts or floods, both of which can adversely affect crop yields.
- **Water Scarcity:** Decreasing rainfall and depleting groundwater levels exacerbate water scarcity issues, making irrigation more challenging and reducing crop productivity.
- **Rising Temperatures:** Increasing temperatures can lead to heat stress in crops, affecting their growth and development. It can also favor the proliferation of pests and diseases, further impacting agricultural output.
- **Changes in Crop Suitability:** Shifts in temperature and rainfall patterns may render traditional crops unsuitable for cultivation in certain areas, necessitating adjustments in crop choices and farming practices.
- **Loss of Biodiversity:** Climate change can disrupt ecosystems and lead to the loss of biodiversity, affecting pollinators and natural pest control mechanisms vital for agriculture.
- Economic Impacts: Reduced crop yields and agricultural productivity can have significant economic ramifications for farmers, leading to income losses and threatening food security in the region.

Farmers Suicide:

Since the Narendra Modi government came to power in the Centre in 2014, an average of 30 farmers have died by suicide per day across the country, according to the National Crime Records Bureau.

1,088 farmers died by suicide in eight districts of the region in Maharashtra in 2023, PTI reported. This is 65 more such deaths than were reported in 2022.Of the 1,088 suicides in 2023, Beed recorded the highest 269 such deaths, followed by 182 in Chhatrapati Sambhajinagar, 175 in Nanded, 171 in Dharashiv and 103 in Parbhani," according to the report.

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Farmers in the Marathwada region of Maharashtra face various challenges that contribute to the issue of suicide. These challenges include:

- **Drought:** Marathwada is prone to drought, which leads to water scarcity and crop failure, affecting farmers' livelihoods.
- **Debt:** Many farmers in the region incur heavy debts due to borrowing money for agricultural inputs, such as seeds, fertilizers, and pesticides. Crop failures worsen their financial burden, making it difficult for them to repay loans.
- **Crop Failure:** Erratic weather patterns, coupled with inadequate irrigation facilities, often result in crop failures, leading to financial losses for farmers.
- **Lack of Alternative Income Sources:** Agriculture is the primary source of livelihood for many farmers in Marathwada. The lack of viable alternative income sources exacerbates their financial distress during periods of crop failure.
- **Market Instability:** Fluctuating market prices for agricultural produce can affect farmers' income and profitability, making it challenging for them to sustain their livelihoods.
- **Psychological Stress:** Persistent financial difficulties, coupled with social and familial pressures, can lead to psychological stress and mental health issues among farmers, contributing to the risk of suicide.

Addressing these underlying issues requires comprehensive strategies focused on improving water management, providing financial support and debt relief, enhancing agricultural infrastructure, promoting crop diversification, and offering mental health support services for farmers.

Conclusion:

Marathwada's soil quality faces challenges such as erosion, salinity, and nutrient depletion, there are opportunities for sustainable soil management practices to enhance fertility, resilience, and long-term productivity in the region. Effective soil conservation measures, combined with integrated water management strategies, are essential for promoting agricultural sustainability and resilience to environmental stressors.

The cultivation of diverse crops in Marathwada reflects the region's agricultural resilience and adaptation to its agro-climatic conditions. These crops contribute to food security, rural livelihoods, and the overall agricultural economy of Maharashtra.

Addressing these challenges requires a combination of adaptation strategies, including the adoption of drought-resistant crops, efficient water management practices, agroforestry techniques, and the promotion of climate-smart agriculture practices. Additionally, policy interventions and investment in rural infrastructure are crucial for building resilience in Marathwada's agricultural sector against the impacts of climate change.

Suggestions:

Addressing the impacts of climate change on agriculture requires a multi-faceted approach involving various strategies and interventions.

- **Crop Diversification:** Promoting the cultivation of diverse crops that are resilient to varying climatic conditions can help mitigate risks associated with climate change. Farmers can be encouraged to grow a mix of traditional and climate-resilient crops to spread their risk.
- **Improved Water Management:** Implementing efficient irrigation techniques such as drip irrigation, rainwater harvesting, and water-saving technologies can help conserve water and mitigate the effects of water scarcity caused by climate change.
- **Agroforestry:** Integrating trees and shrubs into agricultural landscapes through agroforestry practices can help enhance soil fertility, conserve water, and provide additional sources of income for

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farmers while also sequestering carbon from the atmosphere.

- **Climate-Smart Agricultural Practices:** Adopting climate-smart agricultural practices such as conservation tillage, crop rotation, intercropping, and integrated pest management can improve soil health, increase resilience to climate extremes, and reduce greenhouse gas emissions.
- **Promotion of Sustainable Practices:** Encouraging the adoption of sustainable farming practices that focus on soil conservation, organic farming, and the use of biofertilizers and biopesticides can help mitigate the environmental impact of agriculture and enhance resilience to climate change.
- **Capacity Building and Knowledge Transfer:** Providing farmers with access to information, training, and resources on climate-smart agriculture practices, weather forecasting, and risk management can empower them to adapt to changing climatic conditions more effectively.
- **Policy Support and Financial Incentives:** Governments can play a crucial role in supporting climate-resilient agriculture through the implementation of policies that incentivize sustainable practices, provide financial support for adaptation measures, and strengthen agricultural extension services.

References:

1. Indian Agriculture: Yesterday Today and Tomorrow by Dr. Ramesh B. Thakre
2. Farmer Suicide in Marathwada Region of Maharashtra State: A Geo Political View by Vikas Ade
3. Decadal Research Achievements in Dryland Farming for Marathwada Region by B. V.Asewar.
4. Profile of the Farmers in Disadvantage Districts of Marathwada Region in Relation with Indigenous Technology Knowledge by S. P. Dhoke, J. V. Klale and P. S.Kapse
5. Suggestions Given by Awardee Farmers for Marathvada Region of Maharashtra State, India by A. R. Mergewar.

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