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Awareness among Farmers towards Importance of Water, Soil and Crop production in the Jhansi district of the Bundelkhand region

¹Ajay Kumar, ²Babulal Tiwari and ³RL Bhojak

¹Jai Bundelkhand Mahavidyalaya, Kulpahar, Mahoba, Uttar Pradesh, India.

²Swami Vivekanand Degree College, Nagra Premnagar, Jhansi, Uttar Pradesh, India.

³Shri Jagdish Prasad Jhabarmal Tibrewala University, Jhunjhunu, Rajasthan, India.

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Corresponding Author: Ajay Kumar

Abstract

Bundelkhand region is tough place to farm due to being semi-arid, crazy monsoons, and complicated land. This study looks article reveals that how much farmers in Jhansi district of Bundelkhand region in Uttar Pradesh understand the importance natural resource management. In agricultural practices People's livelihoods depend on working around several challenges. The main goal here is to see how well rural farmers know about conserving resources and using modern farming methods. The study includes the local extension data and field reports to get a sense of actually happening on the ground. Farmers know water is scarce droughts hit often, so everyone gets that part. There is a real gap between what scientists recommend and what farmers end up doing, especially with things like irrigation and fertilizer use. High costs and complex technology make it tough for many to keep up. For betterment to close this gap its cutting edge need to bring in more digital support to strengthen local farmers. Farmers need to move for availing the climate-smart practices and strong support from good institutions.

Keywords: Bundelkhand region, semi-arid, natural resource management, Jhansi district, rural farmers, water scarcity, irrigation, fertilizer use, digital support, climate-smart practices, agricultural extension

Introduction

Jhansi is the part of heartland of Bundelkhand with a tough place for farmers. Agriculture is the backbone here, but the weather doesn't make it easy rain is unpredictable, and the land is rough. Most farming depends on rainfall, so managing natural resources isn't just good practice; its survival (Narain *et al.*, 2016) ^[1]. Farmers face several constraints to use new technology. It depends a lot on how much land they own and if they can get loans (Srivastava & Gupta, 2016) ^[7]. Over the years, droughts have hit hard, draining groundwater and wearing down the soil. Even though farmers know the climate is changing and they need to adapt, shifting to modern methods hasn't happened quickly (Dwivedi & Bajpai, 2017) ^[20]. This study digs into how aware farmers are about saving water, keeping soil healthy, and growing better crops—and points out where support and outreach still fall short (Gupta *et al.*, 2017) ^[2].

Water Resource Management Awareness and Environmental condition

Water is the number one problem for Jhansi's farmers. People used to depend on old tanks and "Chandel" ponds to recharge water, but most of these have fallen apart. Now, folks rely on borewells and seasonal rivers (Singh & Singh, 2018) ^[3]. As groundwater keeps dropping, there's a real need for better recharge methods. But not everyone knows how or has the means to maintain check dams and stop silt from building up (Agrawal & Sharma, 2021) ^[18]. Lately, rainwater harvesting has started to catch on again, mostly thanks to government programs. It's tough to get farmers to switch to micro-irrigation like drip and sprinkler systems in most of the area. They know these methods save water, but high upfront costs and unreliable electricity scare people off (Mishra *et al.*, 2020) ^[4]. Environmental condition of Bundelkhand Region is diverse in nature (Table 1) Front Line Demonstrations (FLDs) have helped show the long-term value, but we need more focus on building "Khet Talabs" (Figure1 and 2) not just for storing water, but for providing extra irrigation during dry spells (Kumar *et al.*, 2019) ^[4].

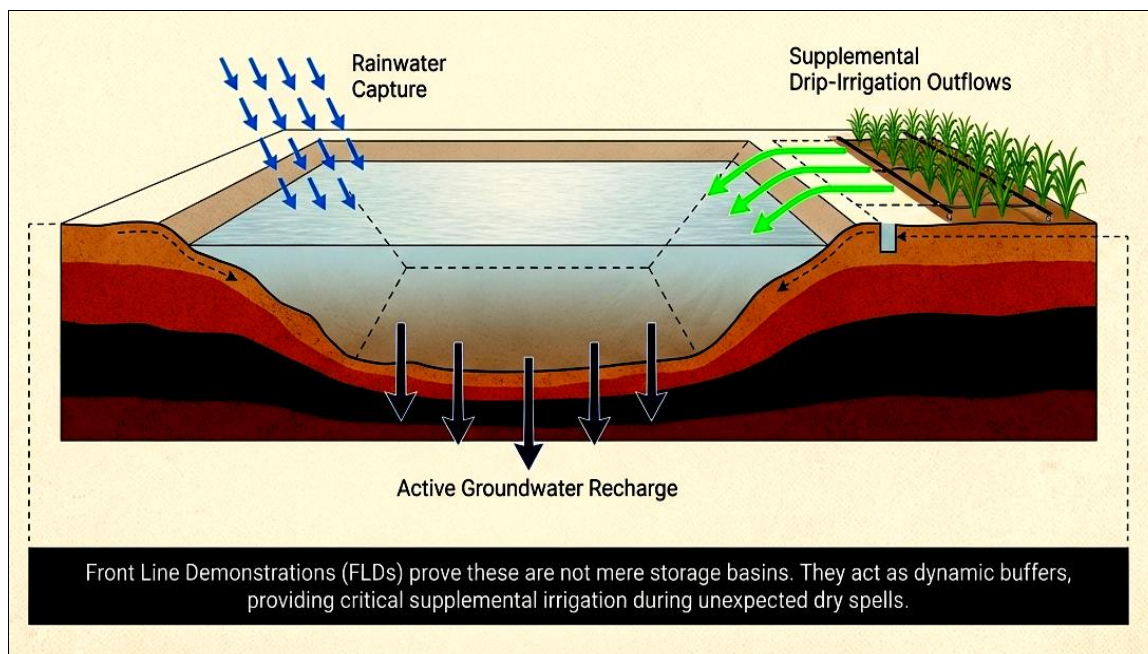


Fig 1: Integrated hydro ecosystem for water conservation and judicious use



Fig 2: Soil Profile and properties of Jhansi

Soil Health and Conservation Awareness

Soil profile of Jhansi is diverse and complex. There are four main types—Mar (rich black soil), Kabar (dark clayey), Parwa (sandy loam), and Rakar (red, gravelly). Managing them right takes specific know-how. Right now, technical

awareness just isn't where it needs to be when it comes to the different hydro-physical properties each soil type brings. The diverse type of topography is seen in the region for agricultural practices (Table 2).

Table 1: Bundelkhand Region Environmental Condition

Sr no	Parameters	Regional Condition
1.	Average annual rainfall	Medium rain to scares
2.	Irrigation coverage	Majority rainfed
3.	Major rivers	Betwa, Ken, Dhasan, Yamuna tributaries
4.	Major Kharif crops	Sorghum, pearl millet, sesame, groundnut, moong, urad
5.	Major Rabi crops	Wheat, chickpea, mustard, lentils
6.	Farming type	Predominantly smallholder and subsistence farming

Table 2: Agriculture System in Bundelkhand Region

Type of Soil (Local Name)	Soil Characteristics	Water Availability / Sources	Major Crops Grown	Farming Characteristics
Rakar Soil (Red sandy soil)	Coarse in nature, shallow, low organic matter, poor fertility	Mainly rainfed; limited groundwater retention	Millets, sorghum (Jowar), pulses	Mostly marginal farmers practicing rainfed agriculture
Parua Soil (Alluvial grey soil)	Moderately fertile, calcareous deposits	River irrigation and wells	Wheat, rice, vegetables	Small and medium farmers with partial irrigation
Kabar Soil (Black clay loam)	Good moisture retention, clayey texture	Rainwater retention and farm ponds	Gram, jowar, oilseeds	Mixed cropping and traditional farming
Mar Soil (Fine black clay)	High clay content, good water holding capacity	Seasonal irrigation and soil moisture conservation	Cotton, pulses, wheat	Farmers adopt moisture-conservation practices
Alluvial Soil (River valleys)	Fertile, loamy soils	Irrigation from rivers like Betwa and Ken	Wheat, rice, sugarcane, vegetables	More intensive agriculture
Mixed Red-Black Soil	Moderate fertility, porous structure	Mostly rainfed with occasional well irrigation	Pulses (arhar, moong), oilseeds (sesame, groundnut)	Dominance of small and marginal farmers

References

- Narain S, Gupta S, Kumar S. Information sources used by farmers of Bundelkhand region. *Indian J Extension Educ.* 2016;52(3-4):111-116.
- Gupta S, Sharma R, Jain A. Water management strategies in the semi-arid regions of Uttar Pradesh. *J Soil Water Conserv.* 2017;16(2):45-52.
- Singh RK, Singh AK. Traditional water harvesting systems in Bundelkhand: A review. *J Agri-Search.* 2018;5(1):12-18.
- Kumar V, Pandey S, Maurya SK. Impact of farm ponds on groundwater recharge in Jhansi district. *Int J Curr Microbiol Appl Sci.* 2019;8(4):1234-1242.
- Mishra P, Dixit AK, Rai SK. Barriers to adoption of micro-irrigation systems in Bundelkhand. *Indian J Agric Sci.* 2020;90(5):889-894.
- Tiwari R, Singh B, Katore S. Soil nutrient status of Jhansi district: A spatial analysis. *J Indian Soc Soil Sci.* 2015;63(3):310-317.
- Sharma M, Srivastava P. Awareness and utilization of Soil Health Cards among farmers in Uttar Pradesh. *Indian Res J Ext Educ.* 2021;21(1):56-61.
- Pande RK, Singh S, Tomar RS. Erosion control and land leveling practices in the undulating terrains of Bundelkhand. *J Rural Dev.* 2018;37(2):201-215.
- Rao CS, Gopinath KA, Prasad JVN. Climate resilient villages for sustainable food security in Bundelkhand. *Indian Farming.* 2017;67(1):03-07.
- Yadav RS, Singh VP. Integrated pest management awareness among pulse growers of Jhansi. *J Food Legumes.* 2019;32(4):245-250.
- Verma OP, Kumar N, Lal K. Post-harvest management practices and awareness in Bundelkhand region. *J Community Mobil Sustain Dev.* 2022;17(1):88-95.
- Dubey AK, Singh D, Pathak RK. Role of digital extension in transforming Bundelkhand agriculture. *J Agric Ext Manag.* 2020;21(2):41-55.
- Prasad L, Kumar D. Future of smart farming in semi-arid zones of India. *Int J Agric Innov Res.* 2023;11(3):302-315.
- Srivastava S, Gupta VK. Socio-economic determinants of technology adoption in Jhansi district. *Indian J Econ Dev.* 2016;12(1):167-174.
- Singh J, Singh P. Impact of Krishi Vigyan Kendras on farmer awareness in Bundelkhand. *J Prog Agric.* 2017;8(2):112-119.
- Chauhan SS, Singh RP. Diversification of agriculture in Bundelkhand: Status and prospects. *Econ Aff.* 2018;63(3):675-682.
- Maurya S, Singh G. Constraints in adoption of organic farming in Jhansi district. *J Pharmacogn Phytochem.* 2019;8(3):2231-2235.
- Agrawal M, Sharma DK. Ground water depletion and recharge strategies in Bundelkhand region. *J Geol Soc India.* 2021;97(4):412-418.
- Bhargava A, Shrivastava S. Performance of FPOs in Uttar Pradesh: A case study of Jhansi. *Int J Manag Soc Sci.* 2020;12(2):45-58.
- Dwivedi S, Bajpai A. Climate change awareness and adaptation strategies among farmers in Bundelkhand. *J Agrometeorol.* 2017;19(2):156-161.