

<https://doi.org/10.5281/zenodo.22724167>

Natural farming and communicative practices among the farming communities of India: perspectives from Bundelkhand

Devi Prasad*

Assistant Professor, Department of Sociology, Noida International University, G.B. Nagar, Uttar Pradesh.

Email: dpsocio@gmail.com ORCID: 0000-0002-8564-7879

Vikas Singh

Political Editor, Webdunia, Bhopal & Guest Faculty, Department of Electronic Media, Makhanlal Chaturvedi National University of Journalism and Communication, Bhopal.

Email: vikascavs@gmail.com, ORCID: 0009-0002-1466-2470

Ram Awtar Yadav

Assistant Professor, Department of Journalism & Mass Communication, University of Allahabad, Prayagraj, Uttar Pradesh. Email: ramawtar86@gmail.com, ORCID: 0000-0002-3370-3517

Abstract

This paper analyzes the communicative practices of Indian farming communities in adopting and propagating natural farming as a response to these challenges. Drawing on qualitative data from farming collectives, grassroots organizations, and policy interventions, the study explores how knowledge exchange, participatory learning, and traditional wisdom are leveraged to promote sustainable agricultural practices in Bundelkhand regions of India. It investigates how farmer-to-farmer networks, digital platforms, and local institutions play a pivotal role in disseminating techniques like zero-budget natural farming (ZBNF), organic composting, and intercropping. The findings highlight that natural farming not only reduces dependence on chemical inputs but also enhances climate resilience by improving soil health, conserving water, and fostering biodiversity. Moreover, the communicative practices of farming communities reveal the potential for grassroots movements to influence policy and drive systemic change.

Keywords:

Agriculture, climate change, food crisis, natural farming, & NGOs

*Corresponding author

Submitted: August 06, 2026 Accepted: September 7, 2026 Published: September 12, 2026.

1.0 Introduction

By bridging the gap between traditional ecological knowledge and modern science, natural farming emerges as a viable strategy to mitigate climate change and ensure sustainable livelihoods. This study underscores the importance of participatory communication in empowering farming communities, fostering resilience, and creating pathways for scalable, climate-adaptive agricultural solutions in India.

Natural farming has emerged as a sustainable and holistic approach to address the various crises in agriculture. In India, where agriculture sustains a significant portion of the population, the impacts of climate change—erratic rainfall, rising temperatures, and declining soil fertility—have intensified the vulnerabilities of farming communities. Conventional farming practices, heavily reliant on chemical inputs and water-intensive crops, further exacerbate these issues, depleting natural resources and contributing to greenhouse gas emissions. Against this backdrop, natural farming, rooted in indigenous knowledge and ecological principles, offers a transformative alternative (Shankar, 2020).

Alarming Conditions

A recent case of catastrophic flash flood in Nepal shows a glance that our world, today, is passing through a turbulent time triggered by numerous environmental problems. Global warming, climate change, agricultural crisis, extreme weather events, pollution, drying-up of water bodies, human health-related risks etc. issues are related to the environment and climate change. It appears that for those who have not been a victim of climate-related catastrophe, the issue of climate change and environmental degradation seems to be irrelevant (Crist, 2019). Over one hundred species of plants, birds and animals are going extinct every single day. Considering the magnitude of these concerns, efforts are being made all over the world to address them in various ways. Today, a shared understanding has developed that these grave situations that pose a threat to our common future must be handled with the involvement of all the partners and stakeholders. And

headway in this direction could only be made through education, communication and public awareness which can help in redressing the existing trends and practices that are threatening for the future of humanity on earth (UNESCO, 1997).

To sum up, experts and scientists all over the world are of the view that concerns related to climate change and food security are interlinked and, therefore, efforts must be made to address them simultaneously – and not in isolation. As a result of climate change, the capacities of the natural resources like – biodiversity, soil and water – seem to be declining in terms of sustaining food demand of the world's population which is continuously increasing. The increasing frequency of extreme weather events caused by the continuously changing climate has a huge impact on the livelihoods of millions of people all over the world. In India too, hundreds of thousands of people are struggling for livelihood, feeding their families and developing stable homes.

2.0 Methodology

This paper examines interventions to promote natural farming methods under Bundelkhand Kisan Samridhi Abhiyan (BKSA) in the Bundelkhand region of India as a response to the climate change related challenges. The study builds upon the data collected through tools used in qualitative case study-based research methods like in-depth interviews, Focus Group Discussions, participant observation and document analysis.

The earlier traditional practices of farming like cultivating drought-resistant cereals, growing both grain and fodder together, mixed cropping (growing two or more cultivars of the same species together in a field), staggered sowing (planting the same crop at different times to obtain vegetables/fruits on a regular interval) etc. have been shunned by the farmers in the rural areas of Bundelkhand due to the new technologies of farming promoted by the competitive markets and emerging economies (Inter-Ministerial Central Team, 2008). The modern markets have forced the farmers to move away from their traditional wisdom in the region as a result of which they have shifted to crops like Bajra, Jowar, BT

Cotton, soyabeans, lentils, mustard etc. that require more inputs and involve higher risks and distress, the report suggested. For instance, the drought-resistant chickpeas (gram) have been replaced by the water-intensive peas even as the region is witnessing severe decline in the groundwater level.

The modern-day approach of intensive agriculture to reap high yields needs, as pointed out by (Earth Observing System, 2020), high inputs and extreme level of exploitation of the land. The increased use of chemical fertilisers not only affects the health of the soil, but it is dangerous to human health as well. On the other hand, the natural farming as propagated under the BKSA campaign is a method of farming that promotes farming practices in alignment with the nature which is also called zero-budget farming by the members of the BKSA as it does not require big investments on seeds, irrigation, chemical fertilisers etc. which does not involve higher financial risks in case of crop failures.

3.0 Impact of Climate Change on Agriculture

Experts and scientists all over the world are of the view that concerns related to climate change and food security are interlinked and, therefore, efforts must be made to address them simultaneously – and not in isolation (FAO, 2019). As a result of climate change, the capacities of the natural resources like – biodiversity, soil and water – seem to be declining in terms of sustaining food demand of the world's population which is continuously increasing. The increasing frequency of extreme weather events caused by the continuously changing climate has a huge impact on the livelihoods of millions of people all over the world. A joint study carried out by Food and Agriculture Organisation (FAO), International Fund for Agricultural Development (IFAD), UNICEF, World Food Programme (WFP) and WHO (2020) revealed that presently, around 690 million people i.e. around 9 percent population of the world are hungry which is an increase by around 60 million in five years.

If we go by the estimates of the World Bank (2021), the challenges related to food security are only going to aggravate in the years to come as by 2050, the

world will need to produce 70 percent more food to feed the approximately 9 billion people. In 1930s, one farmer had to produce food to feed around 26 people whereas in 1960s with improved agricultural techniques and methods, one farmer was able to produce food for around 155 people and if we go by the current estimate, by the year 2050, each farmer will have to feed approximately 265 people (Wright, 2020). The negative impact of the climate change manifested in the form of rising temperature, change in weather patterns, shifting agroecosystem boundaries, increased frequency of extreme weather events, invasive pests etc. is making agriculture more vulnerable (World Bank, 2021).

According to another World Bank Report (2009), the developing countries of the world will have to bear the 70-80 percent costs of the devastations caused by climate change. The Fourth Assessment Report (AR4) of the Intergovernmental Panel of Climate Change (IPCC, 2007), underlines that in terms of impact of the climate change on agriculture and food security, Africa and South Asia are the most vulnerable and susceptible as they are home to a large population of the world who are poor and have less access to the resources like water and fertile land. The South Asian region is, particularly, going to be harshly impacted by the climate change phenomenon as it has started to witness progressive decline in the crop productivity and the effects are going to be more visible in the days to come (IFPRI, 2009).

In the last few decades, the agriculture sector in India too has been grappling with the issue of low productivity. The production of cereal in India (2961.6 kg per hectare) is much less than those of developed regions like North America (6671 kg per hectare), East Asia and the Pacific (5184 kg per hectare) and Euro region (5855.4 kg per hectare) according to the World Bank database (Chakrabarty, 2016). The Impact of climate change on food security could be gauged in complex ways as it does not only affect the crop production but also has its effects on livestock, water resources required for farming and fisheries and aquaculture severely affecting people's incomes, livelihoods, trade and health. In the Indian context, climate change does not only affect the food

production, but it impacts the other aspects of food security – access and utilisation (Chakrabarty, 2016). The productivity aspect of Indian agriculture is marred by the climate change induced water scarcity in many parts of the country.

For instance, Bundelkhand is one of such parts of the country which has been experiencing deficient rainfall continuously for around the last two decades which makes it extremely difficult for the farmers to derive good yield from agriculture. In the light of the aggravating water crisis in the region and the declining crop productivity, some groups of farmers have started to develop some adaptive responses to ensure efficient management of available water resources, conservation of rainwater and to improve the fertility of the agricultural land. As a result of this, many farmers in various pockets of the region have started resorting to the natural-farming practices that seem to be helping the cause to some extent.

Natural Farming in Bundelkhand

Bundelkhand that comes under both Uttar Pradesh (UP) and Madhya Pradesh (MP) provinces consists of a total of fourteen districts seven each from both the states. As noted by National Rainfed Area Authority (NRAA),¹ with erratic monsoons, and declining ponds and tanks, the water scarcity has only been worsening in the region, causing severe agricultural drought.

Due to the recurring droughts triggered by the deficient rainfall and drying water bodies in the Bundelkhand region, agrarian distress has engulfed the region. Incidents of farmers' suicides are rampant in the region. Thousands of people are giving up farming and are becoming daily-wage labourers or are migrating to other cities in search of livelihood. Hundreds of acres of land could be seen lying barren in Bundelkhand during the summer season for the want of irrigation facilities.

¹ Agricultural drought refers to lack of soil moisture due to meteorological drought and climatic factors that leads to decline in agricultural production.

Understanding Community Participation: An Overview

With a view to promote the practice of natural farming at a larger level, the farmers have started an initiative called *Bundelkhand Kisaan Samridhhi Abhiyan* (BKSA) (which means Bundelkhand farmers' prosperity campaign). Shyam Bihari Gupta, the convener of the campaign who himself is a successful natural farming practitioner based at Jhansi, said that through this campaign they are trying to reach out to more and more farmers in Bundelkhand to tell them about the methods of natural farming practices and its feasibility in a given setting.

“We have been able to motivate many farmers to switch to this mode of farming as it requires lesser investment compared to the conventional way of farming wherein, they have to spend a lot of money on fertilizers, pesticides, seeds, machineries etc. The amount of water required for irrigation in this style of farming is also much lesser, so, less investment on irrigation too.” During a workshop on natural ways of farming in September-2017 at Jhansi organised by BKSA and Parmarth which saw the participation of around 75 farmers from different parts of UP and MP, Shyam Bihari Gupta said that the campaign is working on a model of farming which could ensure an annual income of Rs. 1-2 lakh from one acre of land. While elaborating it further to the participating farmers, Gupta enumerated things that should be done to generate manifold income through agriculture.

Gupta said that they have been able to motivate many farmers to switch to this mode of farming as it requires lesser investment compared to the conventional way of farming wherein, they have to spend a lot of money on fertilizers, pesticides, seeds, machineries etc. The amount of water required for irrigation in this style of farming is also much lesser, so, less investment on irrigation too.

Some of the activities included in the natural farming approach can be seen at grassroot level, such as:

- Farm-bunding - so that the farmlands could hold water/rainwater for maximum time and the water could be penetrated in the soil preventing run-off
- Planting trees on the bunds – taller ones on the western side of the farm and smaller ones on the eastern side – these could preferably be fruit trees planted at a distance of around 30 feet – This way the trees and crops will receive sunlight required for their growth
- Cattle-rearing and collection of cow-dung - and urine of cow and other animals like buffalo, goat etc,
- Developing gobar gas plants
- Integrated farming (*sahfasli* as they call it) – which means - all kharif crops suitable in a particular agro-climatic zone be sown together and similarly during rabi season
- Maintenance of a village seed bank
- Producing, processing, packaging and marketing of the produce from one village-level unit instead of taking it to the *mandis* (markets) for maximum profit of the farmers.

Sanjay Singh, the secretary of Parmarth Samaj Sevi Sansthan (PSSS), one of the NGOs trying to promote this mode of farming in the region, says the need of the hour was for the farmers to become good natural resource managers. He said developing seed banks at the village levels would end their dependency on the government and the market for it and would also save farmers' money. He said that for those who think that shifting to this mode of farming could be risky could try it initially on one acre of land then gradually after seeing the benefit could adopt this practice for their entire farmland.

Communicative Practices to Scale-up the Natural Farming

To reach out to more and more farmers of the region, members of the Bundelkhand Kisaan Samridhi Abhiyan keep organizing events and programmes that enable them to hold dialogues and understand the challenges related to agriculture and farming that

they face. The idea behind such events and interventions is to scale up the natural farming practices in Bundelkhand as well as among the farmers in other parts of Uttar Pradesh and Madhya Pradesh. The events and activities that are organised under this campaign on a regular basis include – training programmes for farmers, workshops, meetings both formal and informal, exposure visits etc. that facilitate engagement between the farmers already carrying out natural farming, other farmers and sometimes also the officials from the government departments and institutions.

During one of the workshops organised at the Indian Grassland and Fodder Research Institute (IGFRI), Jhansi, Shyam Bihari Gupta told the farmers, “If you practice natural farming on one acre land, it will serve as school and college for yourself in terms of transforming your way of looking at farming and for the others too which happened to me when I first started to shift to this method of farming.” As the workshop progressed, he also prepared charts and pictures, with the participation of the farmers attending the workshop, to lay down the whole planning for doing natural farming in an efficient way on one acre of land. And he also listed out a range of crops and plants/trees that farmers could sow and plant both on the bunds and in the fields in Bundelkhand. He asked the farmers to grow millets in their fields as they are sold on higher prices than the traditional crops that they grew in their agricultural fields. “Earlier, millets were the food for the poorer in the villages which would provide them good nutrition and keep them healthy. On the contrary, these days, millets are being consumed by the rich classes of our society because of which their prices have shot up immensely”, he pointed out.

RK Agrawal, a scientist at the institute stated that there was a need to develop a broader vision in farming if it is to be done in a healthy and sustained way as many areas in India are becoming dark or grey zones in terms of agricultural productivity. He said that cattle raising and farming are interrelated and doing one thing better could result in yielding better results in the other. There are many kinds of fodders available in the market and if the farmers select the

fodder for their animals in a scientific way, it could help them earn more in attaining prosperity. He told the farmers that green fodders are the best for the good health of the livestock which would result in better productivity from them.

During one of the exposure visits, farmers were taken to the Nadia village of Jatara block of Tikamgarh district where a farmer named Amarchand Prajapati had switched to a natural farming method around 4 years ago after attending one of such training programmes organised by PSSS. He was trying to bring everything he learned and observed during the training workshops into application in his 3 acres agricultural field. It was there for everyone to see how he was practicing integrated farming in his farmland as one could see several vegetables and fruits being grown together in his field like brinjal, chilly, cucumber, bottle-gourd, water-melon, papaya, tomato etc. He informed that he had completely shunned the use of chemical fertilizers for the last few years and was preparing his own organic manure, pesticides with neem leaves, compost etc. for using them in the field. While talking about his story of success Prajapati said that he immediately realised after attending the first training workshop on natural farming that it has the potential to change the lives of the farmers.

Further while talking about his motivation to do natural farming, Prajapati said that the condition for doing farming in Bundelkhand is so harsh that the government schemes are like a drop in the ocean. Those depending on the government for earning livelihood through farming would certainly have to give up the occupation sooner or later. “We the farming community would have to come together to become self-dependent by adopting new and innovative ways of farming and irrigation like mulching, drip-irrigation, sprinkler etc. If we fail to do so, we will be forced to shun agriculture and do *mazdoori*”, he said. “We call *dharti* (land) as *maa* (mother) which feeds us and gives us everything and when we do farming with a holistic approach, we are respecting it and taking care of it. This feeling that I am not harming the land rather making it more fertile gives me immense satisfaction from inside”, he says.

Prajapati is also working to promote the practice among maximum farmers. In his own village, many farmers who saw the successful model of Amarchand have switched to natural ways of farming and are reaping more benefits. One of such farmers, Lakhanlal Ahirwar says, “We did not know anything. We saw Amarchand doing farming differently and we followed his practices. He is always happy to help the farmers and also travels to far-flung areas to help them if they invite him.” He said that Amarchand was also awarded by the district collector for his new ways of farming. Amarchand, on being asked about the details of the award, said that he was recognised as the Best Farmer of Mohagarh tehsil in 2013 and the same year he went to represent the Tikamgarh district of Madhya Pradesh at an International Agri Expo in Gujarat where he was felicitated as the best progressive farmer in September 2013 by the then chief minister of Gujarat, Narendra Modi.

Prem Singh, another natural farmer based in the Banda district of Uttar Pradesh said that today, the average income of a farmer with one acre of land is somewhere around Rs. 5,000 to Rs. 15,000 a year. And under such circumstances, even if their income is doubled by 2022 as promised by the present government, it will still be very challenging for the farmers to sustain farming for a long period. Echoing similar concerns, Amit Rai a 36 years old farmer from Balia district of Uttar Pradesh who had come to Jhansi to attend a three-day natural farming workshop organised at Indian Grassland and Fodder Research Institute (IGFRI), Jhansi by BKSA said that the condition of the farmers are so vulnerable that they were forced to leave their produce in the field itself last year as it was not even going to return them the cost that they would bear to transport them to the market. “The potatoes’ price dipped so low in the market that we did not find it worth selling and thus, we distributed it among the drought victims of Eastern Uttar Pradesh free of cost”, Rai said. Another farmer, Jayshankar Singh who had come to attend the workshop from Bahraich district of eastern Uttar Pradesh said that a daily-wage labourer earns more money than a farmer with 1-2 acres of farmland and has a better and stress-free life. “Just because we don’t want to sell our land or leave it barren, we are

stuck in a difficult situation. Even as we are the producer of the food for the country, there is none to think for us. We have heard of natural farming practices in some pockets of the country and hope that it is an alternative model which could help farmers like us deal with the growing amount of distress we have come here to participate in the workshop”, he added.

Manju Pathak, a Mahoba-based woman farmer informed that during the Kharif season if one takes into account the expenditure incurred by a farmer on purchasing items like fertilisers, fuel for pumping water through motors for irrigation, seeds, rent for tractors for ploughing, harvesting and labour done in the field on a daily basis, the profit comes down to zero or negative. Farmers do not count the cost of the hours of work that they do at different stages of a crop cycle, they simply calculate the amount spent on purchasing required items and paying rents for machineries and the amount received after selling the produce that’s why they continue farming, Pathak said. As more and more people have started realising that they could make Rs. 8,000-10,000 even while working as labourers in cities like Delhi, Lucknow, Bhopal, Indore etc. for 8 hours a day, they are quitting their lands and migrating to these places, she said. Rakesh Ahirwar, a farmer from Chhatarpur district of Madhya Pradesh who too came for attending the workshop, adding to Manju Pathak’s observations said that these days farmers have to pay a very heavy price for being farmers. They have to spend a lot of time in the agricultural field both day and night, take loans from banks and local moneylenders and return with hefty interests, cope with natural calamities like droughts, floods, untimely rainfall, hailstorms etc., he said. Farmers have to invest heavily both monetarily, and physically and mentally to be in the occupation of farming that too for very small returns as most of them have small landholdings as a result of which many of them become debt-ridden and this circle of borrowing money and returning with interests

become vicious in their lives, which is also why so many cases of farmers’ suicide are reported from the region, Ahirwar said.²

On the other hand, farmers like Amarchand Prajapati of Tikamgarh district of MP who had shifted to natural farming methods a few years ago were able to make around Rs. 6-8 lakh annually on a 3-acre land. Such results of the natural farming being practiced by farmers like Amarchand, Prem Singh of Banda, Shyam Bihar Gupta himself, Lakhanlal Ahirwar and Mohanlal Prajapati of Tikamgarh have shown that switching to this mode of farming could help them write a different story of farming altogether and generate better income as compared to the conventional modern day farming practices.

As a means of communicating and promoting the natural farming practices among the farmers, the workshops, exposure visits and training programmes serve as great platforms among the farmers to interact among themselves, hold dialogue with the farmers who are already into natural farming and other relevant stakeholders who motivate and inspire them to switch to this mode of farming. As a method of communicating the processes of natural farming suitable in various geographical and agro-climatic zones, those facilitating the workshops and training programmes also publish relevant material like booklets, pamphlets, leaflets etc. to be distributed among the participating farmers. And these communicative practices are helping the progressive groups of farmers in the region to scale up this practice among more and more farmers. The activities and events being carried out under the BKSA campaign could be seen as communicative actions that help in breaking down silos among the farmers and build synergies that build confidence and trust among the farmers to take up new ways of farming that could help them get better results. The campaign plays an important role in bringing farmers, other stakeholders like civil society groups

² In Madhya Pradesh 51% farmers are marginal with an average landholding of 0.4 hectare as per 2000-01 agriculture census of Government of India (<https://farmech.dac.gov.in/FarmerGuide/MP/index1.html>).

and government authorities together via various events that helps in scaling up the practice in the region.

4.0 Conclusion

So, in conclusion, it could be reiterated that the belief among the scientific community world over is only getting stronger about climate change endangering our abilities to produce enough food for the future generations. Therefore, the immediate need of our time is to initiate and sustain actions that help us deal with the challenge of climate change in effective ways. And these ambitions could only be realised with effective communication strategies that could facilitate platforms for continuous dialogues and learning atmosphere which could ultimately help in taking the required actions at collective and individual levels.

Prem Singh of Banda a farmer who has been carrying out natural farming for over a decade now has inspired several farmers of the area to switch to this mode of farming with kind of economic gains that he has witnessed. Singh says that it's a method of farming that has multiple benefits and is also a good way of caring for the nature and our environment. "Unfortunately, the modern means of farming that even the university graduates and agriculture scientists are promoting is extremely exploitative that only encourages the farmers to exploit the natural resources like land and water without paying anything back to the nature which provides us all these resources", he said. With a concern towards the nature that farmers need to protect, Singh has set up a farmer's school (*Kisan Vidyapeeth* as he calls it) at his agricultural farmland so that any farmer willing to come and learn this way of farming can come stay there, understand the approaches and the practices, and go and replicate the same in their respective regions. One can see farmers coming to him on a regular basis not only from Uttar Pradesh but from other states as well to understand the process through live demonstrations and practically working on the agricultural field of Prem Singh. Singh and other farmers like him from Banda are not only getting good produce through natural farming but are also

selling them at higher price in market as their quality is far more superior than those obtained from conventional chemical-based farm practices. "People are selling costlier food products in the market in the name of organic products whereas we are selling completely naturally grown food items which anyone can come and see. Therefore, people have started purchasing our products in the market and many food processing companies are also taking food grains, vegetables and fruits from us", Singh said.

Another farmer from Datia district of Madhya Pradesh, Saurav Kumar during another workshop on natural farming in Jhansi said that the issues of climate change and global warming could be dealt with only by aligning ourselves with the laws of nature. "The modern day agricultural practices are quite violent and go against the laws of nature. Natural ways of farming not only teaches us to get better outputs from our agricultural fields but also to develop natural resources like water conservation structures along our fields, growing fruit forest etc. which ultimately help the farmers fight issues like drought and also the cause of the concerns like climate change and weather events", Kumar said.

The case of Bundelkhand Kisan Samriddhi Abhiyan (BKSA) could be seen as an initiative which is bridging the knowledge-uptake gap among the farming communities of the region who have been the victims of climate-change related weather events for the last around two decades. Their interventions are also helpful in brokering the much-needed partnerships between the farmers, civil society groups and the government authorities which make the transition from conventional farming methods to the natural farming ones in smooth way for many farmers who wish to do so.

References

- Chakrabarty, M. (2016). *Climate Change and Food Security in India*. New Delhi: Observer Research Foundation.
- Crist, M. (2019, April 9). *Down to Earth: Why is the story of climate catastrophe so hard to tell?* Retrieved May 2, 2019, from The New Republic:

<https://newrepublic.com/article/153505/case-climate-alarmism-nathaniel-rich-david-wallace-wells-review>

Earth Observing System. (2020, December 4). Industrial Agriculture: Benefits And Risks Mitigation. Retrieved October 24, 2021, from Earth Observing System: <https://eos.com/blog/industrial-agriculture/>

FAO. (2019). Agriculture and Climate Change: Challenges and Opportunities at the Global and Local Level Collaboration on Climate-Smart Agriculture. Rome: Food and Agriculture Organization of the United Nations.

FAO, IFAD, UNICEF, WFP & WHO. (2020). The State of Food Security and Nutrition in the World-2020. Retrieved September 28, 2021, from Key Messages: http://www.fao.org/3/ca9692en/online/ca9692en.html#chapter-Key_message

IFPRI. (2009). Climate Change: Impact on Agriculture and Costs of Adaptation. Washington, DC: International Food Policy Research Institute.

Inter-Ministerial Central Team. (2008). Report on Drought mitigation strategy for Bundelkhand region of Uttar Pradesh and Madhya Pradesh. Inter-Ministerial Central Team.

IPCC. (2007). Climate Change 2007: Impacts, Adaptation and Vulnerability. Cambridge: Cambridge University Press.

Shankar, A. (2020). *State of Organic and Natural Farming in India: Challenges and Possibilities*. Centre for Science and Environment.

UNESCO. (1997). Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action. UNESCO.

World Bank. (2021, April 5). Climate Smart Agriculture. Retrieved September 20, 2021, from The World Bank: <https://www.worldbank.org/en/topic/climate-smart-agriculture>

World Bank. (2009). World Bank Development Report-2010. Washington: World Bank.

Wright, J. (2020, April 10). Eco Talk: How farmers innovate, adapt in face of growing challenges. Retrieved October 1, 2021, from Eco Talk: https://auburnpub.com/lifestyles/eco-talk-how-farmers-innovate-adapt-in-face-of-growing-challenges/article_b81fc4cc-3f76-5797-b5e1-1b8d40629dbc.amp.html