

REGENERATIVE FARMING IN PAKISTAN: A PATHWAY TO SUSTAINABLE AGRICULTURE

By
Mir Sher Baz Khetran

*Research Fellow
Centre for Strategic Perspectives (CSP), ISSI*

Edited by
Dr Neelum Nigar

November 5, 2024

(Views expressed in the brief are those of the author, and do not represent those of ISSI)



Introduction

Regenerative agriculture is a transformational form that restores and enhances ecosystem health while maintaining food production. According to proponents, regenerative agriculture does not challenge the climate, planetary health, and food security. In place of conventional farming methods that degrade soil health or biodiversity among others, regenerative practices rebuild ecological systems, enhance fertilization of the soil, and provide resilience against climate change.¹

The Ministry of Climate Change says that three-fourths of the land in Pakistan is degraded. Droughts and floods, deforestation, overgrazing of pastures, monoculture farming, and overusing chemical fertilizers and pesticides also contribute greatly to land degradation.² According to the World Wide Fund for Nature (WWF) Pakistan, these challenges should be urgently addressed using regenerative farming practices.³

¹ Ravjit Khangura, David Ferris, Cameron Wagg, and Jamie Bowyer, "Regenerative Agriculture—A Literature Review on the Practices and Mechanisms Used to Improve Soil Health," *Sustainability*, January 27, 2023, <https://www.mdpi.com/2071-1050/15/3/2338>

² "Terrestrial Ecosystem," MOCC, accessed on October 7, 2024, https://mocc.gov.pk/SiteImage/Misc/files/Chapter-03_3.pdf

³ "New collaborative launches to drive regenerative agriculture practices in Pakistan," WWF, May 2, 2024, <https://www.wwpak.org/?385055/New-collaborative-launches-to-drive-regenerative-agriculture-practices-in-Pakistan>

Principles of Regenerative Farming

The foundation of regenerative farming is based on: improving soil health, enhanced biodiversity, efficient water handling, and capturing carbon. This will go a long way in improving soil health through the use of cover cropping, which prevents soil erosion besides improving nutrient cycling, and no-till or reduced tillage methods that minimize soil disturbance. These methods protect the soil organic matter and its beneficial microbial activity, which is essential for sustainable agricultural systems.⁴

It improves biodiversity through crop rotation, reducing pest and disease pressures and improving soil health. The addition of polycultures and agroforestry—planting multiple crops together or incorporating trees and shrubs—continues to raise biodiversity and ecosystem services. Water management is an effective strategy involving the utilization of methods such as contour ploughing and rain gardens to reduce runoff. Managed grazing systems can be of help in achieving water infiltration and minimizing soil erosion. Managed grazing systems are effective tools for improving water infiltration and reducing soil erosion. By promoting healthy vegetation, minimizing soil compaction, and preventing overgrazing, they help maintain a healthy balance in ecosystems, ensuring that rainwater is absorbed rather than running off and that soil is held in place rather than eroded.⁵

Carbon sequestration, under regenerative farming, is one of the most critical aspects. Farming practices of all kinds that improve organic carbon in the soil are highly valued in mitigating climate change because they reduce atmospheric CO₂ levels. Organic matter added through compost, manure, or otherwise from bio char improves soil structure and fertility; agro ecological practices contribute to reductions in greenhouse gas emissions.⁶

Benefits of Regenerative Farming

The benefits of regenerative farming encompass more than just environmental sustainability to cover economic viability and climate resilience. Improved soil health increases fertility and resilience

⁴ Parmodh Sharma, Atinderpal Singh, Charanjit Singh Kahlon, Amandeep Singh Brar, Kulbhusan K. Grover, Mahendra Dia, Robert L. Steiner, "The Role of Cover Crops towards Sustainable Soil Health and Agriculture," Scientific research, American journal of plant sciences, August 2018, <https://www.scirp.org/journal/paperinformation?paperid=86907>

⁵ Richard Teague, Urs Kreuter, "Managing Grazing to Restore Soil Health, Ecosystem Function, and Ecosystem Services," Frontiers, September 29, 2020, <https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2020.534187/full>

⁶ Getachew Agegehu, A.K Srivastava, Michael Bird, "The role of biochar and biochar-compost in improving soil quality and crop performance," Science Direct, October 2017 <https://www.sciencedirect.com/science/article/pii/S0929139316304954>

which reduces the need for synthetic inputs and supports diverse ecosystems. These practices foster a larger range of flora and fauna. Contributing to the more significant sequestration of carbon, these practices support climate change mitigation.⁷

Regenerative farming methods improve climate resilience due to better water management; hence, low vulnerability to droughts and floods. Farmers benefit in terms of reduced inputs: lesser reliance on synthetic fertilizers and pesticides reduces the eventual production costs. As the consumer demand for sustainably produced foods grows, new market opportunities open up for regenerative products, adding to the economic attractiveness of this approach.⁸

Challenges to Adoption

Despite the benefits, there are several serious challenges to the adoption of regenerative farming in Pakistan. One major factor is the lack of skills among farmers; most have no access to information and training in regenerative practices. Change from conventional to regenerative farming involves the learning of new techniques and initial risks to deal with, which can deter farmers from making the shift.⁹

Financial barriers also pose a challenge. The upfront costs associated with investing in new practices and infrastructure can be particularly daunting for small-scale farmers. Besides that, financial stability is threatened by economic uncertainty during the transition period where yields can be lower in the short run. Current policies and support mechanisms further complicate this. Insufficient incentives favour conventional farming practices, making the competition difficult. Exiting regulations might not align or support the regenerative methods and hence become a barrier to the adoption of such methods.¹⁰

Policy Recommendations

Comprehensive policy measures should be taken to foster the adoption of regenerative farming. First, education and training courses need to be developed that keep farmers informed on

⁷ Teodor Rusu, "Global Application of Regenerative Agriculture: A Review of Definitions and Assessment Approaches", MDPI, vol 15, Issue 12, 14th November 2023.

<https://www.mdpi.com/2071-1050/15/22/15941>

⁸ Teodor Rusu, "Global Application of Regenerative Agriculture: A Review of Definitions and Assessment Approaches", MDPI, vol 15, Issue 12, 14th November 2023.

<https://www.mdpi.com/2071-1050/15/22/15941>

⁹ Khalid Saeed, Dr. Waqar Ahmad, "Towards regenerative agriculture", Dawn, August 12, 2024

<https://www.dawn.com/news/1851764>

¹⁰ Farman Ullah Khan, "Constraints to agricultural finance in underdeveloped and developing countries: a systematic literature review," International Journal of Agricultural Sustainability, March 26, 2024, <https://www.tandfonline.com/doi/full/10.1080/14735903.2024.2329388>

regenerative practices—workshops, extension services, and online resources. Experiences and lessons of building a collaborative culture of learning can be shared through catalysing farmer-to-farmer networks and mentorship programs.

Financial incentives are crucial for encouraging farmers to transition to regenerative methods. It is now time to introduce subsidies and grants that offset the initial costs of investment in these practices that take a lot of toll on farmers. Secondly, the full implementation of insurance products and risk management tools will cushion farmers during the transition and help them manage uncertainty.

Policy support is vital as well, as it would ensure long-term sustainability through agricultural subsidy structure revisions for policies supporting regenerative practices. It is important to update regulatory frameworks to include regenerative approaches and incentivize them—for example, by cutting red tape on the complex certification process of organic and other sustainable products. Investments in research and development will enhance the prospects for regenerative farming, particularly relating to new technologies that drive productivity and sustainability.

Conclusion

Regenerative farming has the potential to improve the sustainability of agriculture, environmental health, and resilience related to climate change in Pakistan. Consequently, wide-ranging policy measures are required to create conditions conducive to making this transition from conventional to regenerative practices. By investing in education, financial incentives, policy support, and research, Pakistan can develop resilience and sustainability in the agricultural system—one that works for the farmers, the consumers, and the environment.

Food insecurity, viewed from the perspective of climate change, needs a multisector and integrated mechanism for water management, climate-resilient agriculture, disaster response, and social protection to ensure a secure and sustainable future in food. Only through such concerted efforts will Pakistan develop a more resilient agricultural ecosystem that can withstand the challenges thrown by climate change.