

Our Ancestors, Soils, and We

Dr Tapas Bhattacharyya

Vice-Chancellor (Formerly),
Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth,
Dapoli, Ratnagiri, Maharashtra, India ([http:// www.drtpasb.com](http://www.drtpasb.com))

Prologue

Our predecessors conceptualized caring soils through the relationships of human/nature (*yagna*), human/divine (*tapas*), and human/human (*dana*) to stitch human beings and nature through *soil*, *soul*, and *society*. This suggests a high level of realization to connect these three (*yagna*, *tapas* and *dana*) to harmonize with nature and sustain human civilization through appropriate techniques to measure, monitor, and manage soils/mother Earth. According to our old belief, soil (matter, nature) is considered divine and respected as Mother. Soil is seen as a feminine donor, attributed predominantly to chthonic (Ancient Greek word: khthon, meaning Earth or soil). Soil is often referred to as *Dharti/Bhoo mata* (Mother Earth) and is related to cosmic elements.

Background: World Soil Day

The International Union of Soil Sciences (IUSS) recommended an international day to celebrate soil in 2002. Under the Kingdom of Thailand's leadership and within the Global Soil Partnership framework, FAO has supported the establishment of WSD as a global awareness-raising platform. The FAO Conference unanimously endorsed World Soil Day in June 2013 and requested its official adoption at the 68th UN General Assembly. In December 2013, the UN General Assembly responded by designating 5 December 2014 as the first official World Soil Day. This year's theme on World Soil Day is *Caring for Soils: measure, monitor, manage*. Since soil is the starting point for procuring food, what should we do? What's our role? Can we make our contributions contemporary to suit the present situation regarding furthering research, keeping in view the teachings of our ancestors? How are we placed in understanding soils based on the concepts postulated by our predecessors in providing appropriate soil education for the next generation to measure, monitor and manage soil resources? Can our efforts be sincere, religious, and pious to help the planners develop programmes for education on soils and their proper use?

Concept of Soils/Land: Past

Soil is the foundation of life on Earth, and its significance in sustaining human civilization cannot be overstated. The scientific study of soil has been a topic of interest for centuries, but humans' cultural and spiritual connections with soil are often overlooked. The Vedas, Upanishads, Puranas, and other Hindu texts contain numerous references to the soil, its properties, and its role in human life. Various aspects of soil, such as its physical, chemical, and biological properties, and its role in agriculture and food production have been explored by our predecessors since time immemorial. A unique perspective on soil and its importance in the world's spiritual and cultural traditions can help develop a more holistic and sustainable approach to soil management and deepen our appreciation of the natural world and its interconnectedness with human society.

Humans belong to nature, and when cultivating soil, they always measure, monitor, and manage it as a natural resource that provides them food, fodder, and shelter. Soils are part of Godly reverence, justifying certain rituals to sustain their fertility. However, the modern-day approach to soils considers environment, ethics, and ecology more essential. Human ecology is related to human concepts of nature and destiny, which always cautioned about its use and abuse and recommended its preservation for posterity with a strong belief in the environment and ecological sustenance, which aligns with the modern-day vision of sustainable soil management.

Concept of Soils/Land: Present

Earlier concepts of soils/land centred around soil fertility since tiling land was primarily practiced to produce grains for food. With the growing population pressure to feed more people, soil fertility is now discussed in conjunction with its quality. The subject of soil quality and its assessment, soil erosion, organic matter loss, low fertility, soil contamination, and water and air quality deterioration are major critical issues during modern times.

Defining soil quality conceptually, let alone quantitatively, is a complex task. Some have argued that we should assess soil health in much the same manner as physicians evaluate human health, using the six-step processes to (a) identify symptoms, (b) identify and measure vital signs, (c) make a

provisional diagnosis, (d) conduct tests to verify the diagnosis, (e) make a prognosis, and (f) prescribe a treatment of the land. Soil quality, dependent on soil fertility, is assessed by measuring the Soil Quality Index (SQI). A particular method may not apply to all conditions to measure the soil quality index. In some places, it might require seeking an expert opinion (EO) with vast working experience with soils, their use, crop, and natural resource management.

Concept of Soils/Land: Future

Modern-day farming is heavily dependent on technologies that are born through research. These techniques are transferred to farmers through extension education and to Gennext through agricultural education in various state agricultural universities (SAUs) and others. The SAUs should ideally be the hub of all such activities and continuously be fed through other agriculture-related institutions. Natural resource management, particularly agriculture, is an extremely important subject and should be handled by professionals only. The suggestive Plan might help the planners and administrators to dovetail it with the New Agricultural Education Policy (NAEP) for future research programmes. It will boost the agricultural education and research policy with special reference to the soils and natural resources of the country. It might enable our SAUs to reach the dream level of international standards (Figure 1).

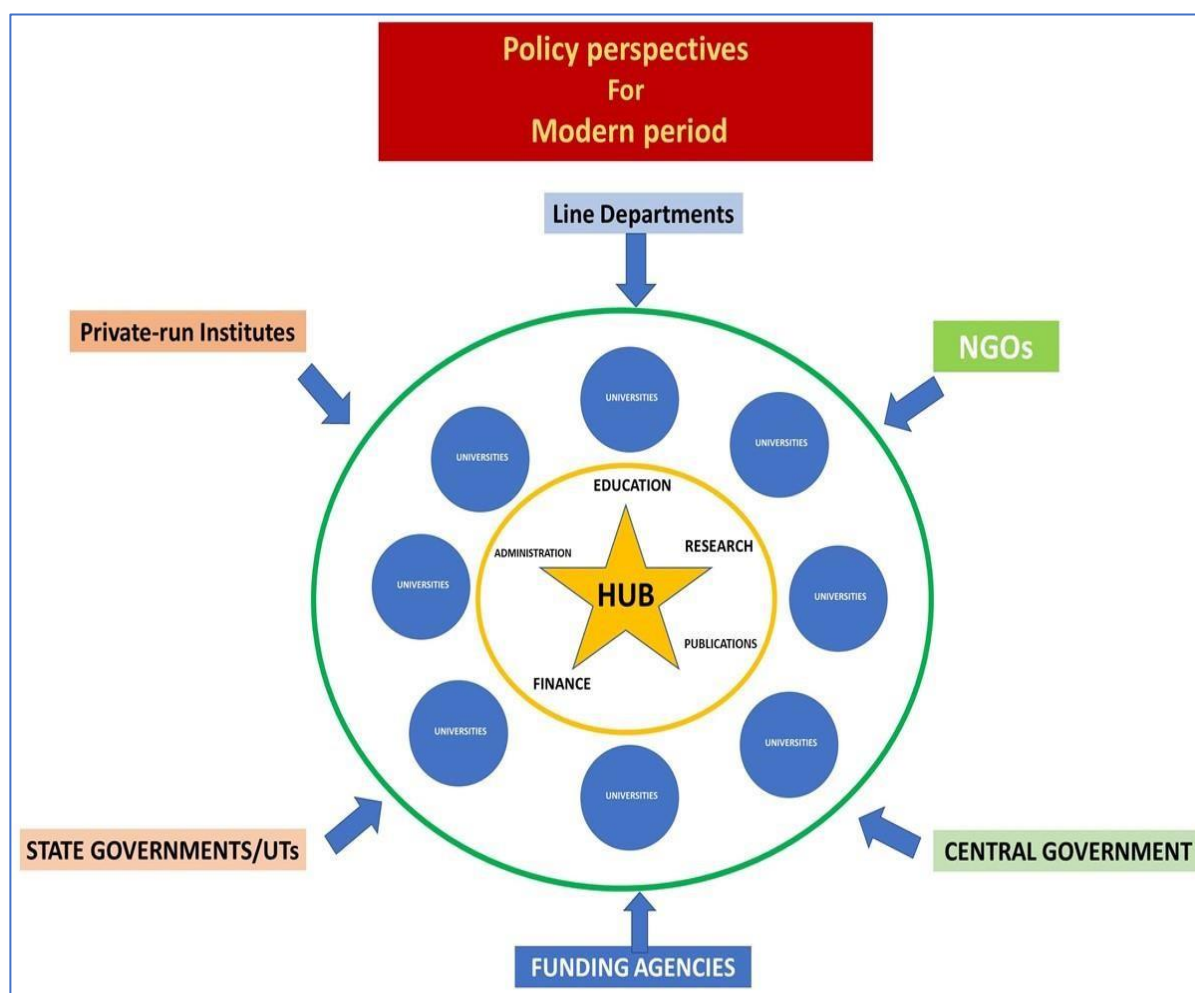


Figure 1. Suggestive Plan to strengthen research, education, and extension in State Agricultural Universities (SAUs) for empowering farmers in India: a futuristic model to bring Indian research systems to the international level (Bhattacharyya 2024)

Epilogue

Our ancestors suggested following the path of the Vedic farmers who knew the art of soil conservation. They were also aware of controlling natural calamities and preserving agricultural produce for bad days. The Vedic agricultural system was the base of the rural economy. The advancement of any field work depends on long experience. Hence, the Vedic agricultural system is the pioneer of the modern agricultural system in India, which provides adequate food to every person in this country. This is why people should think about returning to basics to learn more about agriculture and soil management to save nature. The present-day digital media and e-extension systems amalgamated with Vedic agriculture may solve most of modern civilization's natural and anthropogenic problems (Figure 2). Studying the history of any field of research provides insight into how modern understandings and strengths have arrived in that field. Scientists and professors search for truth to understand and comprehend soils as a part of nature for posterity. Since the future lies in the hands of the students, researchers, professors, and research managers must understand the demands of students and society regarding the knowledge of soils. Changes may be imminent in this journey in the educational system, research agenda, and other issues. This will help in nation-building when our country is proudly the pioneer in bridging the human mind and science to excel in this modern era. Our ancient knowledge of soils/land could be a wealth of information. This will help in nation-building to make our country a proud torch-bearer for other nations.

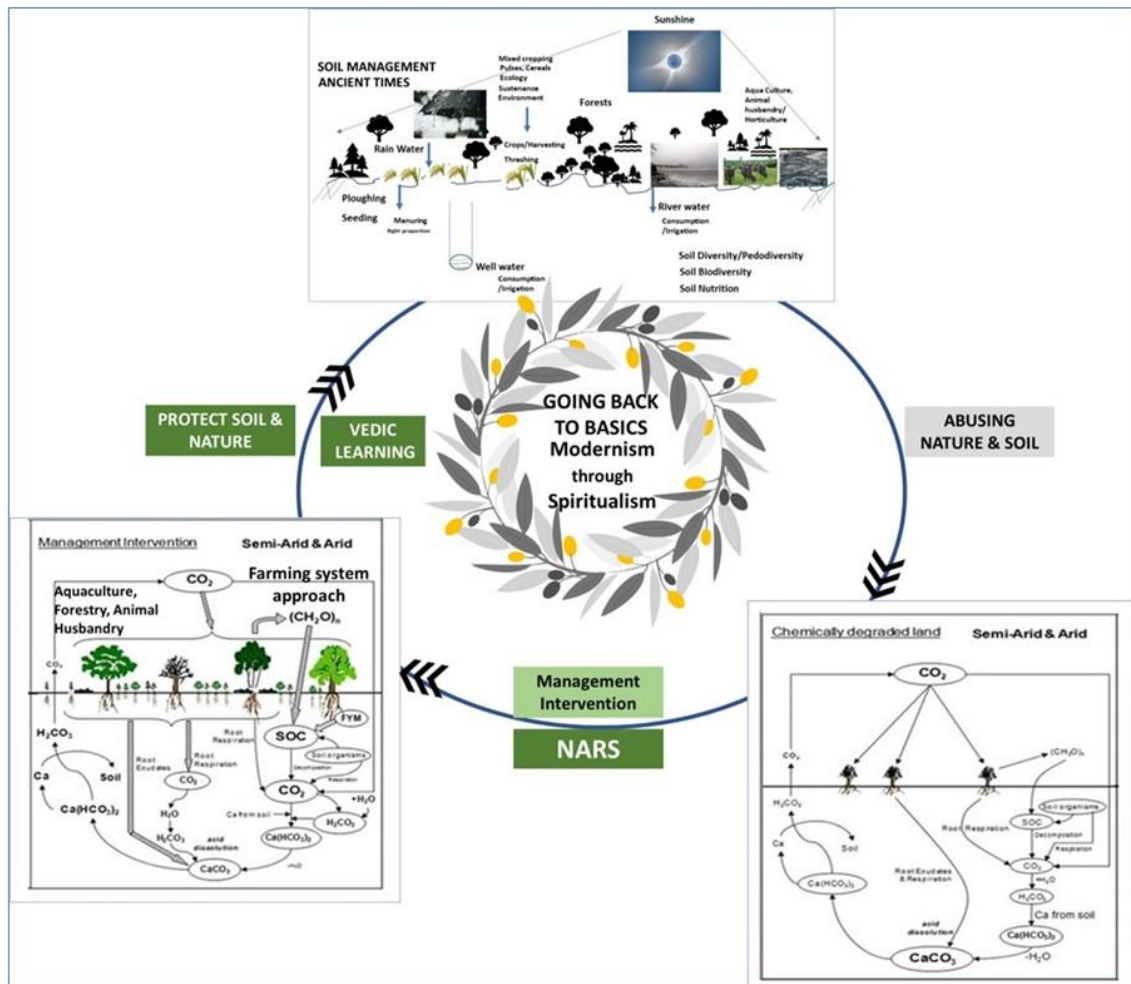


Figure 2. Going back to Vedic Learnings to combat soil abuse to maintain soil fertility to save nature following the path of spiritualism (NARS: National Agriculture Research Service; Bhattacharyya, 2024)

Further Reading

- Bhattacharyya, T., Wani, S. P., Pal, D. K., Sahrawat, K. L., Pillai, Nimje, A., Telpande, B.A., Chandran, P., Chaudhury, Swati (2016) ICRISAT, India soils: yesterday, today and tomorrow, *Current Science* **110**:1652-1670.
- Bhattacharyya, T. (2021a) Soil Studies: now & beyond, Walnut Publishers, India, p.379.
- Bhattacharyya, T. (2022). Soil Science Research, Information & Communication Technology (ICT) and New Agricultural Education Policy (NAEP): Issues and Perspective, *Indian Journal of Fertilisers* **18**: 126-144.
- Bhattacharyya, T. (2024) Soils in Hindu Scriptures (including Jainism, Buddhism, and Sikhism), Published by Chanakya University, Bangalore, India (in press).