SJIF Impact Factor (2025): 8.688| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 3 | March 2025 - Peer Reviewed Journal

IMPACT OF SOIL HEALTH CARD SCHEME ON RURAL DEVELOPMENT IN INDIA- ISSUES AND CHALLENGES

Dr.Padmini S.V.
Associate Professor, Department of Economics, University College of Arts, Tumkur University, Tumkur, Karnataka.

ABSTRACT

A Soil Health Card is used to assess the current status of soil health and, when used over time, to determine changes in soil health that are affected by land management. A Soil Health Card displays soil health indicators and associated descriptive terms. Soil Health Card (SHC) is a Government of India's scheme promoted by the Department of Agriculture & Co-operation under the Ministry of Agriculture and Farmers' Welfare. It is being implemented through the Department of Agriculture of all the State and Union Territory Governments. A SHC is meant to give each farmer soil nutrient status of farmer's holding and advice farmers on the dosage of fertilizers and also the needed soil amendments, that farmer should apply to maintain soil health in the long run. Rural development means method of enhancing the quality of life and financial well-being of individuals, specifically living in populated and remote areas. In the modern era also Rural development has been considered as the core of the overall development of the country. More than two-third of the country's people are dependent on agriculture for their livelihood, and one-third of rural India is still below the poverty line. Therefore, it is important for the government to be productive and provide enough facilities to upgrade their standard of living. Methodology of the study: Overall objective of the study:To examine the soil health card and its impact on rural development. To examine the impact of the ill health of the soil on crop productivity and resource use efficiency.

KEY WORDS: *Soil Health Card, Agro Eco Systems, Artificial Resources, Soil Mocrobial Diversity, Agrochemicals.*

INTRODUCTION

A Soil Health Card is used to assess the current status of soil health and, when used over time, to determine changes in soil health that are affected by land management. A Soil Health Card displays soil health indicators and associated descriptive terms.

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Importance of Rural Development

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Rural development is important not only for the majority of the population residing in rural areas, but also for the overall economic expansion of the nation.

It is a strategy that tries to obtain an improved and productivity, higher socio-economic equality and ambition, and stability in social and economic development.
Objectives of Rural Development
The objectives composed by the government in the sixth five-year plan for rural development are:
To improve productivity and wages of rural people
To guarantee increased and quick employment possibilities
To demolish unemployment and bring a notable decline in underemployment
To guarantee an increase in the standard of living of the underprivileged population
To provide the basic needs: elementary education, healthcare, clean drinking water, rural roads, etc.

NEED OF THE STUDY

The health of soil has a direct influence on the sustainability of agro-ecosystems in different areas. With the help of healthy soil it is possible to expect improved productivity. Fertile soil has a direct influence on the sustainability of agro-eco systems in different areas.

With the help of healthy soil it is possible to expect efficient ecosystem services such as biogeochemical cycling of nutrients,enhanced microbial population and diversity. Maintaining soil health contributes to the sustainable development goals of the United Nations such as alleviating poverty ,reducing hunger,improving health and promoting economic development(Lal, 2016).

Maintaining soil health is now almost important for enhancing crop productivity because of the occurrence of multi-nutritional deficiency in soil (Rattan et al, 2009), increased soil degradation (Bhattacharya et al,2015) and accumulation of harmful pesticide residues in soil that adversely affect soil microorganisms (Meena et al, 2020).

Maintaining soil health also contributes to carbon sequestration,as soil organic carbon is one of the most important criteria for soil health evaluation (Lal, 2016).

Intensification of agriculture with imbalance in the use of artificial resources and less attention on the potential of natural resources adversely affects soil health, productivity and profitability.

CULTIVATION PRACTICES

All the scientific cultivation practices improve soil physical properties and promote soil microbial population and diversity, which ultimately contribute to soil health improvement. The addition of organic matters due to the growing of crops, application of mulches, and suitable microclimate provided by irrigation help in increasing microbial population, thereby improving soil biological health.

METHODOLOGY OF THE STUDY

Overall objective of the study:
To examine the soil health card and its impact on rural development.
To examine the impact of the ill health of the soil on crop productivity and resource use efficiency.
Specific objectives of the study are as follows:
To examine the measures to be taken for the improvement of the soil condition which in turn has its influence on crop productivity which is very much crucial issue for the betterment of farmers of various categories such as marginal,small,medium and large farmers.
To examine impact of agro techniques on productivity of various crops.
Nature and source of data:
The study conducted with the help of secondary data obtained through journals,reports, Government reports and also internet.

RESULTS AND DISCUSSION

Comparison of Soil Types in Karnataka – Pros and Cons for Farming.
When considering the diverse range of soil compositions present in Karnataka, it is important to weigh the advantages and disadvantages each offers for agricultural purposes. The state is home to six main types of soils, including red, lateritic, alluvial, black, sandy and rocky soils. Each type has its unique characteristics that can either be advantageous or disadvantageous when it comes to farming.

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Red soil is one of the most prominent soil types in Karnataka and is known for its fertility levels. It contains a high concentration of iron oxide which gives the soil its characteristic red color. However, this type of soil tends to have low water-holding capacity which can be problematic during long dry spells.

Black soil is another type that can be found throughout Karnataka's northern regions. It has excellent water-retention capability but may become compacted during heavy rainfall leading to reduced crop yields.

The impact of climate change on soil quality in Karnataka cannot be ignored as it may lead to changes in composition and degradation over time resulting in decreased productivity levels. Soil fertility management practices such as crop rotation and adding organic matter are essential ways farmers can ensure sustainable agriculture practices while maintaining healthy soils across the different types present in Karnataka.

Soil Health Card is a printed report that a farmer will be handed over for each of his holdings. It will contain the status of his soil with respect to 12 parameters, namely N,P,K (Macro-nutrients) ; S (Secondary- nutrient) ; Zn, Fe, Cu, Mn, Bo (Micro - nutrients) ; and pH, EC, OC (Physical parameters). Based on this, the SHC will also indicate fertilizer recommendations and soil amendment required for the farm.

The card will contain an advisory based on the soil nutrient status of a farmer's holding. It will show recommendations on dosage of different nutrients needed. Further, it will advise the farmer on the fertilizers and their quantities he should apply, and also the soil amendments that farmer should undertake, so as to realize optimal yields.

It will be made available once in a cycle of 2 years, which will indicate the status of soil health of a farmer's holding for that particular period. The SHC given in the next cycle of 2 years will be able to record the changes in the soil health for that subsequent period.

Soil samples will be drawn in a grid of 2.5 ha in irrigated area and 10 ha in rain- fed area with the help of GPS tools and revenue maps.

The State Government will collect samples through the staff of their Department of Agriculture or through the staff of an outsourced agency. The State Government may also involve the students of local Agriculture / Science Colleges.

Soil Samples are taken generally two times in a year, after harvesting of Rabi and Kharif Crop respectively or when there is no standing crop in the field.

Soil Samples will be collected by a trained person from a depth of 15-20 cm by cutting the soil in a "V" shape. It will be collected from four corners and the centre of the field and mixed thoroughly and a part of this picked up as a sample. Areas with shade will be avoided. The sample chosen will be bagged and coded. It will then be transferred to soil test laboratory for analysis.

It is a facility for testing the soil sample for 12 parameters as indicated in reply to question number 2. This facility can be static or mobile or it can even be portable to be used in remote areas.

Soil Health and Its Impact on Rural development

Further, Soil is essential input,an important natural resource providing water,nutrient and mechanical support for plant growth. At present, the extent of the degraded area in the world is 1,036 to 1,470 million ha.This urges the need for maintaining soil health rather than the more addition of input for various crop production. By adopting different agronomic approaches it is possible to maintain the physical, chemical and biological properties of soil which inturn helpful to promote rural development. To improve soil health condition the diversification of nutrient sources with emphasis on organic sources,adoption of principles of conservation agriculture,enhancement of soil microbial diversity,efficient resource recycling through integrated farmimng system and amendment addition of principles of conservation agriculture, enhancement of soil mocrobial diversity ,efficient resource recycling through the integrated farming system and amendment addition for correcting soil reactions have been considered as potential options.

Moreover by adopting the agro-techniques such as green and brown manuring in arable land and agroforestry on degraded and marginal land have considered for economic gain. The use of crop residue, agro-industrial waste, and untreated mineral or industrial waste (basic slag, phosphogypsum, etc.) as soil amendments has a huge potential in maintaining healthy soil along with serving as sources of crop nutrition. Furthermore, emphasis is given to innovative approaches for soil health management rather than mere application of manures and fertilizers for crop nutrition.

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Issues Related With Soil Health

Factors that cause deviation of healthy soil are issues related with soil health, and the level of impact of these factors on soil health decides their order of significance and make them a concern.

CONCLUSIONS

In the modern era, soil no more remains a medium for plant growth but it turns into a valuable resource for mankind to meet its requirement of provisional services from plants and animals receding in agroecosystems. Considering the present level of land degradation, there is a need to develop and implement novel approaches to maintain soil health with a similar or even higher level of production from agroecosystems. Concepts such as diversification of nutrient sources with emphasis on the use of organic manures and other alternatives to compliment and supplement the chemical fertilizer-based approach will have the potential to contribute significantly to the improvement of soil health. The diversification of production systems through the adoption of conservation agriculture and organic farming is worth considering their role in soil health improvement. The closed system of nutrient cycling achieved through an integrated farming system, will be the self-sustained option of soil health management, along with improvement in resource use efficiency. There is a need to give attention to soil biological health, with the involvement of attempts to enhance soil microbial diversity and curtailment of soil pollution caused by the extensive use of agrochemicals (such as chemical fertilizers).

Area of Further Research

Awareness campaigns need to be organized on content of SHCs, use of recommended practices, reduction in fertilizer use and costs and increase in profitability.

There is no significant bias against socio-economically vulnerable sections. In contrast, small and marginal farmers benefit more in some cases. ⎫ There is some reduction in fertilizer use, especially nitrogen and increase in bio-fertilizers and other micro-nutrients use. This is a good sign as N: P: K ratio was highly skewed towards nitrogen. Costs were reduced due to low fertilizer use. Crop yields have also increased for majority of the crops, although only moderately. A significant impact is the increase in the use of gypsum and other micro nutrients to some extent. There is a need for strengthening the Soil Health Card related extension services to provide better advisories. Two-thirds of the sample farmers indicated that SHC is beneficial which is encouraging, given the short span of the programme. ⎫ Main complaint from the farmers is the timeliness of providing the results. This, however, is linked to the infrastructure (soil testing labs) and human resources. However, after the introduction of the SHC scheme, the time lag is significantly reduced. Results needs to be disseminated before sowing season, so that farmers will practice recommended crop choice and fertilizers. It is important to address these issues to gain confidence of the farmers in adoption of the fertilizers as per the recommendation in the SHC.The scheme has a poor backing of infrastructure and human resources, with significant gaps. Although some southern and western states performed better, some states are even allocated resources are not being spent or utilized due to lack of capacities. This is the urgent need of the day. By implementing effectively soil health card scheme it is possible to expect successful rural development in India.

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