

# MicroSave – India Focus Note #140

## Is Soil Health Card the Magic Pill for Agricultural Woes?

Arshi Aadil and Vijay Ravi  
April 2017

### Key Points:

1. *GoI introduced SHC in 2016 to promote judicious use of chemical fertilizers and maintain soil quality.*
2. *SHC is a great idea but has limited uptake in the farming community due to lack of understanding around its concept, design, and utility.*
3. *There is a need to push on the softer aspects of SHC to ensure its acceptance and understanding among farmers.*

Despite the fact that nearly 60 percent of India's population is directly or indirectly engaged in agriculture, agricultural productivity remains one of its most chronic problems. The country's average cereal per hectare yield is lower than that of many under-developed nations<sup>1</sup>. One of the most common reasons for declining productivity is deteriorating soil quality due to excessive use of chemical fertilisers. [Punjab has the highest fertiliser consumption \(210kg\) per hectare amongst all states, followed closely by Andhra Pradesh \(200kg\).](#) Over-use of chemical fertilisers degrades soil quality, and to offset the resulting productivity loss, farmers further increase the application of fertiliser next season, creating a vicious spiral. Even for farmers who realise this pattern, the trend is not easy to break, as chemical fertilisers are easily available, when compared to alternatives, at highly subsidised rates.

As one of the potential solutions to reduce overuse of fertilisers, the Government of India introduced Soil Health Cards<sup>2</sup> (SHC) for farmers in 2016 under the National Mission for Sustainable Agriculture. SHCs were designed to:

- Make agriculture more productive, sustainable, and climate resilient
- Conserve natural resources
- Encourage the adoption of comprehensive soil health management practices
- Optimise use of water resources

The primary aim of SHC was to promote judicious use of chemical fertilisers (in line with the Fertiliser Control Order, 1985) to improve and maintain soil quality.

In November 2016, *MicroSave* conducted a study<sup>3</sup> on "Farmers and Fertilisers" in Krishna and West Godavari districts<sup>4</sup>.

The objective of the study was to understand the farmers' fertiliser use patterns and their perceptions of SHCs. The study detailed generation, format, distribution, acceptance, and use of SHCs. In this Note, we discuss the major findings of the study.

### SHC Generation Process

Soil samples are taken from identified grid locations<sup>5</sup>, and sent to labs where experts diagnose the soil to identify its composition, highlight nutritional deficiencies and suggest recommended composition and dosage of fertilisers. A physical SHC is then issued to the farmer.

### Format and Content of SHC

The format of the soil health card is like a typical blood test report. It contains information on the various soil parameters<sup>6</sup> of the sample tested and compares them with acceptable levels so that any deficiency can be suitably addressed. In addition to information on soil condition, the SHC also mentions the composition and quantity of fertiliser that needs to be applied for cultivating the crop of choice.

While SHCs look like a great idea, they seem to have very limited uptake in the farming community. The easy conclusion would be to blame lack of education among farmers, dogmatic or archaic practices, the inability to understand the long term effects, etc., but a closer inspection reveals that the farmers' side of the story presents valid and practical arguments.



<sup>1</sup>Average yield per hectare is 39% below than that of China and for rice this figure is 46%. Even Bangladesh, Vietnam and Indonesia fare better than India in case of rice yield per hectare. <https://thewire.in/52228/what-is-the-future-of-agriculture-in-india/>

<sup>2</sup><http://www.soilhealth.dac.gov.in/>

<sup>3</sup>This was purely a qualitative study and the team covered 87 farmers in the form of focussed discussion groups and personal interviews. Additionally, we covered a mix of different stakeholders viz. agriculture officers, agri extension officers, primary agriculture cooperative society (PACS), and private fertiliser retailers

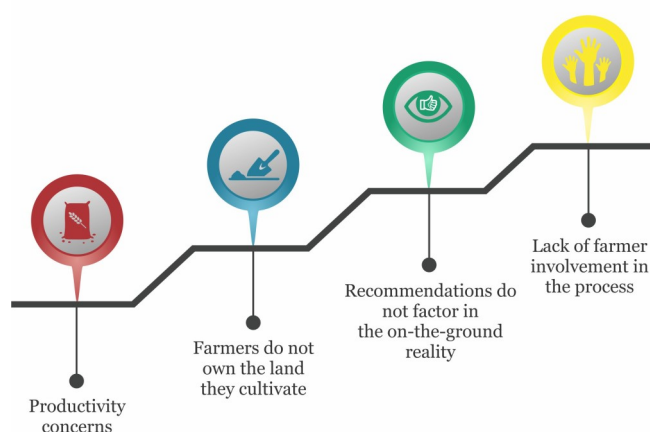
<sup>4</sup>Krishna and West Godavari were chosen because they were the first districts in the country to begin distribution of SHC

<sup>5</sup>Soil samples are drawn from a grid of 2.5 ha in irrigated areas and 10 ha in rain-fed areas with the help of GPS tools and revenue maps

pH of the soil; electrical conductivity; type of soil (viz. loamy/clayey/sandy); water retention; macronutrients-organic carbon, nitrogen, potash and phosphorous; secondary nutrient- sulphur; micro nutrients- zinc, iron, manganese, copper and boron.

<sup>6</sup>pH of the soil; electrical conductivity; type of soil (viz. loamy/clayey/sandy); water retention; macronutrients-organic carbon, nitrogen, potash and phosphorous; secondary nutrient- sulphur; micro nutrients- zinc, iron, manganese, copper and boron.

## Reasons for Non-Acceptance of SHC



**Productivity Concerns:** The primary concern of every farmer is the productivity of his/her standing crop. The standing crop represents a huge portion of any farmer's investment; both in terms of resources and effort. Asking farmers to blindly follow SHC recommendations, of which they know very little, is akin to asking a salaried employee to liquidate all his assets and invest the money in a chit fund.

### **Farmers do not Own the Land They Cultivate:**

The SHC aims to maintain long term productivity of the soil by asking farmers to take a (perceived) risk with their present yield. In a scenario where half of the farmers in the country are tenant farmers,<sup>7</sup> who cultivate a different patch of land every season, SHC recommendations do not seem to make commercial sense.

Also, many tenant farmers do not get any information around SHCs as these are issued only to landowners and it is entirely the discretion of landowners to share the cards with the tenant farmers. As a result, tenant farmers feel SHCs hold value only for the large pieces of land and do not follow its recommendations.

### **Recommendations do not Factor in the On-the-Ground Reality:**

The SHC mentions the quantity of fertilisers, chemicals in combination with organic fertiliser, required to grow the crop of choice. There are three major drawbacks in this format.

First, due to shrinking area of pastures and thus the decline in livestock, organic fertiliser (manure) is not easily available.<sup>8</sup> Hence, advocating the use of organic manure along with chemical fertilisers automatically prevents farmers from following the recommendations. The alternatives are not to follow the recommendations or simply substitute organic fertiliser with chemical fertiliser, going against the intention of the SHC.

Second, crops require fertiliser doses at different stages of the cycle. However, the SHC only mentions the total (cumulative) quantity of fertiliser required for a specific crop and does not define the amounts required at each stage of the cropping cycle. If a farmer applies the correct fraction of the total recommended quantity in the first dosage and notices that his crop growth is not at par with others,<sup>9</sup> he will automatically shift to a higher quantity in the next application and discard SHC recommendations.

### **Lack of Farmer Involvement in the Process:**

While the SHC has been scientifically designed using GIS gridlines to map similar areas and test samples, most farmers feel left out from the process. This is because communication about soil sampling drives is not given beforehand, and sometimes it is even done without the farmer's presence. Also, farmers have no say in the whole process (for example, from which areas of the land to pick sample) and are mere spectators. As a result, they do not feel involved or have any ownership in the process. So many farmers do not use the SHC because they feel it is not tailored for their specific patch of land.

Many arguments can be made for-and-against these issues, and multiple solutions can be proposed for each. However, if we look at the issues collectively, all of them point to one single thing: an apparent mentality-mismatch between policy makers and those that their policies affect.

While the SHC, like many others, is undoubtedly an excellent initiative, it has been not able to bring about a paradigm shift in agricultural practices because it is, fundamentally, a top-down solution. Also, the communication around the concept, detail, utility and benefits of SHCs needs to be improved. SHCs will only be accepted and used if farmers have adequate understanding of them. Policy makers should look to:

- ensure greater farmer involvement in the soil testing process;
- demonstrate cultivation using SHCs on a local patch of land;
- ensure better availability of organic fertilisers; and
- re-format the SHC and its recommendations in line with the farmers' feedback.

In conclusion, if policy makers want to bring about a change that could well be the second green revolution, then involving the end-users is not an option, but a necessity.

<sup>7</sup><http://economictimes.indiatimes.com/industry/indl-goods/svs/chem-/-fertilisers/government-mulls-rolling-out-dbt-scheme-for-fertiliser-subsidy-ananth-kumar/articleshow/55069780.cms>

<sup>8</sup><http://www.internationalgrasslands.org/files/jgc/publications/1997/iii-333.pdf>

<sup>9</sup>Chemical fertilisers, especially urea, show immediate results. Within a couple of days of applying urea, plants begin to look more succulent and green.