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Research Note

Impact of Soil Health Card in Unnao District of Uttar Pradesh

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ABSTRACT

The impact of soil health cards (SHC) was assessed on 300 farmers in seven different villages of Unnao during the year 2017-19 on judicious use of fertilizers, bio fertilizers, organic fertilizers, soil health, cropping choice, cost reduction, farm profitability and sustainability. As per the adaptation of the SHC scheme, only 70 per cent of the farmers were able to understand the content of the SHC, of which 65 per cent farmers agreed that the recommendations were suitable for their agricultural practices and 60 per cent farmers followed the recommendations of SHC. The major reduction has been recorded in the use of urea by 23 per cent followed by DAP fertilizer by 15 per cent. The major increase was recorded in Zinc fertilizer by 21 per cent especially in paddy. Use of other micronutrients improved up to 25 per cent. Most of the farmers were not using the bio fertilizers because of lack of knowledge and awareness. After SHC scheme a remarkable increase of 50 per cent was recorded in the use of bio fertilizers as seed, root and soil treatment. Overall, the performance of SHC scheme was satisfactory and need focus on quality of soil sample collection, timely distribution and SHCs, knowledge enhancement to farmers through various awareness campaigns and training programmes. To make this scheme successful it was observed that ensuring availability of recommended fertilizers and bio-fertilizers at village level at reasonable prices is key determinant.

Keywords: Fertilizers, Knowledge, SHC, Soil test

INTRODUCTION

Soil health, fertility and productivity are the basis for profitability of the farming. Optimal and balance doses of fertilizers with proper cropping pattern as per the scientific recommendation is the main and initial step towards sustainable farming (Kanhaiya and Singh, 2014). Soil testing is a scientific tool for assessment of the soil fertility status for crop wise nutrients recommendations. It is also useful for the determination of amendments according to soil conditions. These factors play important role in improving the natural condition of soil and profitability of farmers. Soil testing is an important tool for judicious use of fertilizers which is an important component for the optimum crop production (Vedhika *et al.,* 2017). The annual consumption of fertilizers in nutrients terms (N, P & K) has increased from 0.07 million MT in 1951-52 to more than 25.95 million MT in 2016-17 and the per hectare consumption has increased from less than 1 kg in 1951-52 to the level of 130.8 kg in 2016-17 (FPC 2016-17). In India, the current consumption of NPK ratio is 6.7:2.4:1, which is highly skewed towards nitrogen as against ideal ratio of 4:2:1. The gap between recommended fertilizer and actual use of fertilizer is huge and especially larger in case of urea (Ram Fishman *et al.,* 2016). The main factors involve in imbalance use of nutrients are the lack of knowledge among farmers, availability and cost of fertilizers in markets, apart from this most part of the applied nitrogen is being used and lower use of phosphorus and potash by the soil and plants. Excessive and imbalance use of fertilizers not only deteriorating the natural resources but also causing the

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financial losses. As per GOI 2017, the estimated subsidy for net cropped area is about Rs. 5000/ha but the excessive use of fertilizers is resulting it to about Rs. 5100/ha, especially NPK at the cost of micro-nutrients and manure.

Ministry of agriculture introduced the soil health card (SHC) scheme on 5th December 2015 with the objective to guide farmers to apply the recommended doses of nutrients based on soil test values for the improvement of soil health and fertility with low costs and higher profits. Many studies have clearly shown that farmers do adopt soil management strategies (Reddy, 2011) in addition of that adoption of SHC scheme can further improve the sustainable soil health with optimum crop production.

METHODOLOGY

This study was conducted to assess the impacts of SHC scheme on judicious use of fertilizers, bio fertilizers, organic fertilizers, soil health, cropping choice, cost reduction, farm profitability and sustainability. Study was conducted in selected seven villages of Unnao district namely- Dhaura, Buxikheda, Munshikheda, Maljha, Uchdwar, Mirzapur Ajgaon and Arerkala. The cropped area was divided in to grids of 10 ha for rain fed land and 2.5 ha for irrigated land. The soil samples were taken from each grid for soil analysis. After that soil was analysed for different parameters and soil health cards were prepared. SHC contained information regarding soil fertility and provided recommendations of chemical and bio fertilizers application on crops and soil amendments required in the case of saline or alkaline soils. Suggestions were also made regarding integrated nutrient management.

Test results were distributed before sowing season to all the farmers whose lands fall under the particular grid, so that farmers can practice recommended crop choice and fertilizers. After distributing the SHC all content were elaborated among farmers through training sessions and queries were entertained individually. Trainings were also conducted on use of specific bio fertilizers and other organic inputs on the basis of soil parameters and crop. A structured questionnaire among 300 sample farmers from selected seven villages of Unnao was administered to receive feedback other than group discussions

RESULT AND DISCUSSION

The main finding of the study was reduction in use of fertilizer especially nitrogen and increase in the use of bio-fertilizers and micro- nutrients by the farmers. This is a good sign as N: P: K ratio was highly skewed towards nitrogen. There was remarkable increase in the use of halophilic bio fertilizers as three selected villages fall under sodic soil regions. In most of the cases, cost of production has come down due to reduction in use of fertilizer. Growth in crop production has been recorded in most of the crops. The most significant impact has been increase in the use of zinc as micronutrient fertilizer to some extent.

As per the adaptation of the SHC scheme only 70 per cent of the farmers were able to understand the content of the SHC of which 65 per cent farmers agreed that the recommendations were suitable for their agricultural practices and 60 per cent farmers followed the recommendations of SHC. The farmers who could not follow the recommendations cited personal reasons like shortage of money or resources. Other researchers also reported such problems that despite the recommendations provided in SHC farmers fail to adopt them (Fishman *et al.*, 2016).

As per the cropping pattern the main crops taken into consideration were paddy and wheat (Figure 1). The major reduction has been recorded in the use of urea by 23 per cent followed by DAP fertilizer by 15%. On the other hand the major increase has been recorded in Zinc fertilizer by 21 per cent especially in paddy. Use of other

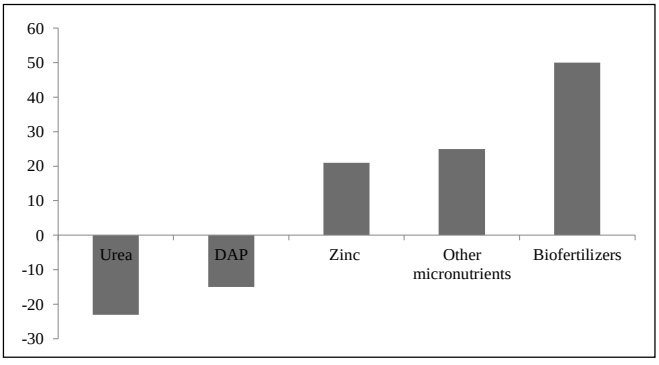

Figure 1: Change in Fertilizer use pattern

micronutrients has also been improved up to 25 per cent. Most of the farmers were not using the bio fertilizers because of lack of knowledge and awareness. After SHC scheme a remarkable increase of 50 per cent was recorded in the use of bio fertilizers as seed, root and soil treatment. Green manuring and pulses crops were also introduced by 40 per cent of farmers.

Change in fertilizer use pattern increased the crops production by 13 to 20 per cent. Chander *et al*. (2014) also reported significantly higher yield under the balanced nutrition treatment based on soil test as compared to traditional farmer's practices. With the result of adoptions of all these practices the net incomes of farmers increased between 19 to 25 per cent after SHC scheme. It was noticed that many farmers did not understand the content, hence unable to follow the recommended practices. Some farmers were not satisfied with the soil test values, whereas some farmer shown their limitation for adopting the instructions due to personal reasons such as shortage of money for buying inputs.

To overcome from the limitation of SHC scheme there is need to distribute SHC and arrange awareness campaigns before sowing seasons. To build trust, samples should be collected in presence of all GRID farmers. There is a need to give appropriate training to farmers to understand the content of SHC. Other extension workers also given such recommendations to make this scheme more effective (Sunil *et al*., 2019). To make this scheme more popular among farmers there is need to introduce some awards for the farmers who grow green manure crops, use vermicompost and for them whose farms' soil fertility increased over the years based on Soil Health Card. Other than this the most importantly, Government should ensure availability of recommended fertilizers and bio-fertilizers at village level at reasonable prices.

CONCLUSION

Overall, the performance of SHC scheme was satisfactory and having significant impact on improving soil health. There is need of more focus on quality of soil sample collection, testing, timely distribution and SHCs knowledge enhancement for farmers is required. Regular meetings, trainings, involvement of local leaders and follow up by agriculture and extension representative on SHC can increase utility of SHC.

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