RESEARCH NOTE

Impact of soil health card on productivity of selected crops of Dharwad district of Karnataka

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The study was conducted in Dharwad district of Karnataka. Out of 5 taluks, two taluks namely Dharwad and Navalagund were purposively selected and from each taluk, three villages were selected based on maximum number of soil health cards distributed to the farmers under soil health card scheme. The total soil health card distribution in Dharwad district is (32,361). Among the different taluks of Dharwad, Navalgund (8695) recorded highest SHC distribution followed by Dharwad (7453), Kalghatgi (6781), Kundagol (5136) followed by Hubballi (4296). Paired 't' test was used to know the impact of soil health card on productivity of crops and cropping pattern. The results revealed that significant increase in productivity of cotton, soybean and chickpea crops (q/ha) after soil health card distribution in Dharwad taluk. Similarly, significant increase in productivity of cotton, green gram and maize crops (q/ha) were observed after soil health card distribution in Navalgund taluk.

Keywords: Dharwad, Impact SHC, Paired 't' test, Soil health card scheme

Soil health card scheme was introduced by Prime Minister Narendra Modi on 17th February 2015. A sum of approximately ₹ 568 crore for a period of three years was allocated by the government for the scheme. Under the scheme, the government plans to issue soil cards to farmers which will carry crop-wise recommendations of nutrients and fertilizers required for the individual farm to help farmers to improve productivity through judicious use of inputs. All soil samples are to be tested in various soil testing labs across the country. There after the experts will analyse the strength and weaknesses (nutrients deficiency) of the soil and suggest measures to deal with it. The results and suggestion will be displayed in the cards. The government plans to issue the cards to 14 crore farmers.

Under cycle-1, 2.54 crore samples were collected, 2.36 crore samples tested, 9.62 crore soil health cards printed, but only 9.33 crore SHCs distributed. It indicates that 100 per cent target achieved in sample collection, 93 per cent of the target achieved in soil testing, but only 80 per cent of the target achieved in SHC printing. About 97 per cent of the SHCs printed were distributed among the farmers as on 24th September 2017 (Amarender, 2017).

The cycle-II is already started across many states and is under progress. Overall, the progress of SHC scheme in terms of coverage is satisfactory, now we have to give more focus on quality of soil sample collection and testing and timely distribution of SHCs to farmers. However, the progress is highly skewed. Some states like Karnataka, Tamil Nadu, Chhattisgarh, Uttar Pradesh, Maharashtra, Telangana and Andhra Pradesh were better performers compared to other states (Amarender, 2017).

Cycle-2 gathered 2.70 crore samples, 2.51 crore samples tested, 9.21 crore soil health cards printed, and distributed 8.47 crore soil health cards. It indicated that 99.60 per cent of the target achieved in soil testing, 99.42 per cent of the target achieved in soil health card printing and 99.15 per cent of the soil health cards printed were distributed among the farmers during the period from 2017-19.

The total soil health card distribution in Dharwad district was (32,361). Among the different taluks of Dharwad, Navalgund (8,695) recorded the highest SHC distribution followed by Dharwad taluk (7,453) and Kalghatgi (6,781). The lowest SHC distribution was noticed in Kundagol (5,136) and followed by Hubballi (4,296) (Anon., 2017).

For evaluating the specific objectives of the study, necessary primary data was collected from the farmers of Dharwad district through personal interviews with the help of well-structured schedule. The data collected from the respondents included general information about fertilizer usage, cropping pattern, micronutrients, yield, *etc*.

Primary data was collected from two taluks of Dharwad district. From each taluk three villages were selected for the study. From each village 25 farmers were selected randomly thus, total sample constituted 150 farmers.

The paired samples t-test was used to compare the means between two related groups of samples. Crop production and pattern before and after soil health card distribution was studied through paired t-test. Paired t-test was used to compare the mean before and after treatments (Rangaswamy, 1995).

The paired t-test calculated as:

$$t = \frac{\overline{d}}{S_d / \sqrt{n}}$$

where

n = Sample size

d = Sample mean of the differences

S_d = Standard deviation of the differences

In Dharwad taluk, after introduction of soil health card there was a significant effect on the production of crops in different villages. The result indicated that, all the three villages with 25 farmers followed the cropping pattern of cotton-soybean-chickpea. In Narendra, after adoption of soil health card by the farmers, yield of cotton, soybean and chickpea was significantly increased from 5.74, 6.80 and 6.96 q/ha to 6.44, 7.70 and 7.80 q/ha, respectively. In Garag, after adoption of soil health card by the

farmers, yield of cotton, soybean and chickpea were significantly increased from 5.64, 8.04 and 5.32 q/ha to 6.28, 8.84 and 5.96 q/ha, respectively. In Kotabagi, after adoption of soil health card by the farmers, yield of cotton, soybean and chickpea were significantly increased from 5.88, 7.36 and 6.80 q/ha to 6.72, 8.08 and 7.48 q/ha, respectively (Table 1).

After introduction of soil health card there was a significant effect on the production of crops in different villages of Navalgund taluk. It was observed from the study that, all the three villages with 25 farmers followed the cropping pattern of cotton-green gram-maize. In Morab, after adoption of soil health card by the farmers, yield of cotton, green gram and maize yield was significantly increased from 5.24, 2.42 and 27.5 q/ha to 5.92, 2.94 and 29.10 q/ha, respectively. In Shirur, after adoption of soil health card by the farmers, yield of cotton, green gram and maize were significantly increased from 5.60, 2.22, and 30.20 q/ha to 6.16, 2.48 and 32.10 q/ha, respectively. In Shirkol, after adoption of soil health card by the farmers, yield of cotton, green gram and maize were significantly increased from 5.28, 2.94 and 29.4 q/ha to 5.82, 3.28 and 32.10 q/ha, respectively (Table 2).

Table1. Impact of soil health card on productivity of crops in Dharwad taluk

Dharwad	Crops	Mean productivity (q/ha)		Paired
		Before	After	t-test
Narendra (N=25)	Cotton	5.74	6.44	5.05**
	Soybean	6.80	7.70	6.11**
	Chickpea	6.96	7.80	4.67**
Garag (N=25)	Cotton	5.64	6.28	4.67**
	Soybean	8.04	8.84	6.19**
	Chickpea	5.32	5.96	5.01**
Kotabagi (N=25)	Cotton	5.88	6.72	5.25**
	Soybean	7.36	8.08	5.30**
	Chickpea	6.80	7.48	4.92**

**Significant at 1 % level

Table 2. Impact of soil health card on productivity of crops in Navalgund taluk

Navalgund	Crops	Mean productivity (q/ha)		Paired
		Before	After	t-test
Morab (N=25)	Cotton	5.24	5.92	5.05**
	Green gram	2.42	2.94	3.96**
	Maize	27.50	29.11	3.94**
Shirur (N=25)	Cotton	5.60	6.16	4.80**
	Green gram	2.22	2.48	2.83**
	Maize	30.20	32.10	3.91**
Shirkol (N=25)	Cotton	5.28	5.82	3.67**
	Green gram	2.94	3.28	3.30**
	Maize	29.40	31.10	3.98**

**Significant at 1 % level

The present findings are in accordance with Padmaja and Angadi (2018) who reported that soils in study area are deficient in micronutrients and soil amendments. This scheme gave more emphasis for organizing awareness programmers on the importance of micronutrients and soil amendments. Due to the application of micronutrients and soil amendments as per recommendation, their crop productivity was enhanced resulting in better yields. Similarly, Anil Kumar *et al.* (2019) opined that, because of good profits, the farmers started motivating fellow farmers to adopt soil test-based fertilizer application in different crops to get more crop productivity and sustaining soil health.

The present study also gets support by Ministry of Agriculture and Farmer Welfare, Govt of India (Anon., 2018) who reported that before use of SHC, 2-3 bags of DAP/Complex, 3 bags of urea, and one bag of potash were applied to field. After using SHC, FYM / bio fertilizers and chemical fertilizers and micro nutrients were applied, according to the soil status using neem-coated urea and balanced fertilizer application as per the soil fertility level recorded in the card. Presently they are expecting 10 to 15 per cent increase in the production of green gram, chilli, Bengal gram, *rabi* jawar, and onion.

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