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Impact of Soil Health Card on Soybean Production Technology in Ujjain Block of Ujjain District, M.P

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Abstract: Soybean is known as "golden bean", "miracle crop" etc, because of its several uses, It is an excellent source of protein and oil. It contains good quality protein (43%), carbohydrate (21%), mineral (5%), moisture (8%), fat (20%), fiber (4%) and reasonable amounts of vitamins. Soybean is one of the important crops of the world. It is one of the most economical protein source in the world. It is a versatile crop with innumerable possibilities of improving agriculture and supporting industry (Ali, 2003). Madhya Pradesh is known as the Soybean bowl of India, because major chunk of Soybean production is contributed by Madhya Pradesh State alone. Nutrients are essential for plants' growth and development. When soil nutrients are missing or in short supply, plants suffer from nutrient deficiency and stop growing. Then, application of fertilizers to soils as per requirement is very important to provide balanced nutrients to the plants grown on it. Considering the growing importance of soil testing. The present study undertaken with 120 soybean growers in Ujjain district of M.P. The study showed that out of the total beneficiaries, the highest proportion of Soybean beneficiaries 45.83 percent was found to have medium impact about Soybean production technology followed by high impact 33.33 percent and low impact about Soybean production technology 20.84 percent respectively. Thus, the majority of beneficiaries were found to have medium impact of various components of Soybean production technology followed by high and low impact of various components of Soybean production technology.

Keywords- Soil Health Card- SHC is a simple document, which contains useful data on soil based on chemical analysis

Introduction-

Soybean is one of the important crops of the world. Soybean has tremendous potential to meet the protein – calorie malnutrition of the ever increasing India's population. Soya based food products are also suitable to diabetic patients as they contain less carbohydrates and low cholesterol. Soya protein is also good to people who are allergic to animal protein. Madhya Pradesh is known as the Soybean bowl of India, because major chunk of Soybean production is contributed by Madhya Pradesh State alone. Nutrients are essential for plants' growth and development. When soil nutrients are missing or in short supply, plants suffer from nutrient deficiency and stop growing. Then, application of fertilizers to soils as per requirement is very important to provide balanced nutrients to the plants grown on it. Considering the growing importance of soil testing, the present study entitled, "Impact of Soil Health Card on Soybean Production Technology in Ujjain block of Ujjain District, M.P" was undertaken.

Objective-

To determine the impact of Soil Health Card on Soybean production technology.

Review Literature-

Trivedi and Patel (1994) concluded that fertilizer use efficiency (FUE) was low in India. Soil testing is a basic tool to improve FUE and to reduce adverse effect of fertilizer consumption.

Prasad and Rao (2002) revealed that awareness should be created among the farmers regarding the importance of soil test based fertilizer recommendations. They also concluded that there was a dire need to promote Integrated Nutrient Management Concept among the farming community and thereby making savings in input cost. They observed yield improvement by 5 to 6 per cent and 20 to 30 per cent input saving as a result of improvement in soil health by extension activities done in Andhra Pradesh.

Material & Method-

For fulfilment of these objectives, the multistage sampling technique has been adopted for selection of sample for present study. Ujjain district comprises of six development blocks. All the six development blocks of the district comes under the SHC for Soybean production out of which one block i.e. Ujjain was selected due to higher number of SHC holders in the block .Ujjain block constitutes of twenty five villages out of which four villages, were selected by the SHC Center for improved cultivation practices of Soybean production, namely Undasa, Madhaopura, Narvar and Chandesara villages. List of 300 SHC holders (2015-16) of the selected four villages was obtained from KVK, Ujjain and 120 farmers have been selected randomly for present study.

Result & Discussion-

Impact of Soil Health Card beneficiaries on Soybean production technology by the respondents:

The impact of SHC on soybean production technology was measured in terms of production of soybean by the beneficiaries, as the followed the recommendations mentioned in soil health card for enhancing the soybean production and other economic gain through strengthening their technology, resources and risk bearing ability. The distribution of beneficiaries according to their perception regarding realization of enhancement in soybean production through Soil Health Card has been presented in the Table

Table - Distribution of SHC beneficiaries according to their statement they perceived different level of impact about Soybean production technology: (n=120)

S.No	Aspects of Soybean production	Level of impact realized		
		Low	Medium	High
1.	Satisfaction regarding cultivation practises of soybean recommended by KVK	19 (15.83)	45 (37.50)	56 (46.67)
2.	Selection of crop variety based on SHC	22 (18.33)	40 (33.33)	58 (48.33)
3.	Increase in production	17 (14.16)	47 (39.16)	56 (46.67)
4..	SHC as beneficial schemes	13 (10.84)	48 (40.00)	59 (49.16)
5.	Availability of nutrients at due time	23 (19.16)	41 (34.16)	56 (46.67)
6.	Inspiration for other experimental activities	25 (20.83)	47 (39.17)	48 (40.00)
7.	Enhancement in knowledge regarding other agricultural activities	24 (20.00)	43 (35.83)	53 (44.17)
8.	Crop rotation based on SHC	16 (13.33)	48 (40.00)	56 (46.17)

(*Figure in parentheses shows percentage)*

The data presented in the table indicates the statement of beneficiaries under SHC scheme that they realized the level of impact of SHC on different agricultural practises used to show the enhancement of soybean production. The data also revealed the information about the contribution of individual agriculture production confronted by the beneficiaries.

i. The statement of beneficiaries regarding "Satisfaction regarding cultivation practises of soybean recommended by KVK" the higher number of beneficiaries realized high impact of SHC confronted by (46.67%) followed by (37.50%) beneficiaries realized medium impact of SHC and (15.83%) beneficiaries realized low impact of SHC.

ii. The statement of beneficiaries regarding "Selection of crop variety based on SHC" the higher number of beneficiaries realized high impact of SHC confronted by (48.33%) followed by (33.33%) beneficiaries realized medium impact of SHC and (18.33%) beneficiaries realized low impact of SHC.

iii. The statement of beneficiaries regarding "Increase in production**"** the higher number of beneficiaries realized high impact of SHC confronted by (46.67%)followed by (39.16%) beneficiaries realized medium impact of SHC and (14.16%) beneficiaries realized low impact of SHC.

iv. The statement of beneficiaries regarding "SHC as beneficial schemes" the higher number of beneficiaries realized high impact of SHC confronted by (49.16%) followed by (40.00%) beneficiaries realized medium impact of SHC and (10.84%) beneficiaries realized low impact of SHC.

v. The statement of beneficiaries regarding "Availability of nutrients at due time" the higher number of beneficiaries realized high impact of SHC confronted by (46.67%) followed by (34.16%) beneficiaries realized medium impact of SHC and (19.16%) beneficiaries realized low impact of SHC.

vi. The statement of beneficiaries regarding "Inspiration for other experimental activities" the higher number of beneficiaries realized high impact of SHC confronted by (40.00%) followed by (39.17%) beneficiaries realized medium impact of SHC and (20.83%) beneficiaries realized low impact of SHC.

vii. The statement of beneficiaries regarding "Enhancement in knowledge regarding other agricultural activities" the higher number of beneficiaries realized high impact of SHC confronted by (44.17%) followed by (35.83 %)beneficiaries realized medium impact of SHC and (20.00%) beneficiaries realized low impact of SHC.

viii. The statement of beneficiaries regarding "Crop rotation based on SHC" the higher number of beneficiaries realized high impact of SHC confronted by (46.17%) followed by (40.00%) beneficiaries realized medium impact of SHC and (13.33%) beneficiaries realized low impact of SHC.

Overall Impact of Soil Health Card beneficiaries about Soybean production technology:

The detail distribution of beneficiaries according to the overall Impact of SHC regarding Soybean production technology has been presented in table.

Table -Distribution of beneficiaries according to their overall Impact of SHC about Soybean production technology:

S. No.	Impact level	Frequency	Percentage
1.	Low	20	16.67
2.	Medium	45	37.50
3.	High	55	45.83
Total		**120**	**100**

The result presented in Table showed that out of the total beneficiaries, the highest proportion of SHC beneficiaries (45.83%) was found to have high level of Impact about soybean production technology followed by medium level of Impact about soybean production technology (37.50%) and low level of Impact about soybean production technology (16.67%).

Thus, the majority of beneficiaries were found to have high level of Impact about various components of soybean production technology followed by medium and low level of Impact about various components of Soybean production technology.

Impact of SHC beneficiaries about Soybean production technology:

Impact of Soil health card in this study refers to use of soil health card regarding improved practices of soybean production. The impact level of selected beneficiaries related to improved practices of Soybean cultivation was assessed and presented in Table below-

Table-Distribution of SHC beneficiaries in terms of impact about Soybean production technology:

S. No	Component of package of practices	Level of impact		
		Least	Partial	Full
1.	**Field preparation:**			
a)	Time and number of ploughing	25 (20.84)	54 (45.00)	41 (34.17)
b)	Soil treatment through chlorpyriphos	20 (16.67)	42 (35.00)	58 (48.33)
2.	Improved Soybean variety (JS-9305 and JS-335)	26 (21.66)	56 (46.67)	38 (31.67)
3.	Seed rate- 75-80 kg/ha	21 (17.50)	50 (41.67)	49 (40.83)
4.	Seed treatment- Carbendazim+captan@ 3 gram/kg seed	29 (24.17)	57 (47.50)	34 (28.33)
5.	Time of sowing:- 15 June- 15 July(in kharif)	15 (12.50)	51 (42.50)	54 (45.00)
6.	Sowing spacing- 20-22.5 cm. (in kharif) & 30- 45 cm.(in summer)	17 (14.17)	61 (50.83)	44 (36.67)
7.	Method of sowing (By Seed-Drill & acc. to the availability of machinery)	29 (24.17)	51 (42.50)	40 (33.33)
8.	FYM/Bio fertilizer application (5-10 Tonne/ha. & Rhizobium culture 2-2.5gm/kg seed)	38 (31.66)	57 (47.50)	25 (20.83)
9.	Fertilizers- N:P:K:S:Zn (20:40:20:25:20 kg/ha)	32 (26.67)	55 (45.83)	33 (27.50)
10.	Irrigation and drainage	25 (20.83)	53 (44.17)	42 (35.00)
11.	**Weed management:**			
a)	By Weeding	20 (16.67)	54 (45.00)	46 (38.33)
b)	By weedicides	29 (24.17)	57 (47.50)	34 (28.33)

12.	Plant protection measures			
a)	Identification of Major Diseases and pest	27 (22.50)	53 (44.17)	40 (33.33)
b)	Control measures of diseases and pest	32 (26.66)	50 (41.66)	38 (31.67)
13.	Method of harvesting (Picking of pods and whole plant cutting	22 (18.33)	52 (43.33)	46 (38.33)
14.	**Post harvest technology:**			
a)	Threshing	35 (29.17)	46 (38.33)	39 (32.50)
b)	Drying	15 (12.50)	60 (50.00)	45 (37.50)
c)	Storing	24 (20.00)	57 (47.50)	39 (32.50)
d)	Making Dal	75 (62.50)	30 (25.00)	15 (12.50)

(Figure in parentheses shows percentage)

The above table describes the distribution of beneficiaries as per their obtained mean score of impact in the sub components of the programme.

Regarding impact level of field preparation out of the total beneficiaries, majority of the beneficiaries (45.00%) pertained partial level of impact followed by full impact (34.17%) and least impact (20.84%). Under field preparation, time and number of ploughing and majority of beneficiaries (48.33%) pertained full level of impact followed by partial impact (35.00%) and least impact (16.67%) respectively about treatment through soil chlorpyriphos.

Regarding impact level of improved soybean varieties (JS-9305 and JS-335) showed, the majority of beneficiaries (46.67%) pertained partial level of impact followed by full impact (31.67%) and least impact (21.66 %).

Regarding impact level of seed rate (75 kg/ha) showed, the majority of beneficiaries (41.67%) pertained partial level of impact followed by full impact (40.83 %) and least impact (17.50%).

Regarding impact level of seed treatment (Carbendazim + captan @ 3 gm/kg seed) showed, the majority of beneficiaries (47.50%) pertained partial level of impact followed by full impact (28.33%) and least impact (24.17%).

Regarding impact level of time of sowing- 15 june-15 july(in kharif) showed, the majority of beneficiaries (45.00%) pertained full level of impact followed by partial impact (42.50%) and least impact (12.50%).

Regarding impact level of Spacing- 20-22.5cm (in kharif) & 30-45 cm. (in summer) showed, the majority of beneficiaries (50.83%) pertained partial level of impact followed by full impact (36.67%) and least impact (14.17%).

Regarding impact level of Method of sowing (By Seed-Drill & acc. to the availability of machinery) showed, the majority of beneficiaries (42.50%) pertained partial level of impact followed by full impact (33.33%) and least impact (24.17%).

Regarding impact level of FYM/Bio fertilizer application (5-10 tonne/ha. & Rhizobium culture 2-2.5 gm/kg seed) showed, the majority of beneficiaries (47.50%) pertained partial level of impact followed by least impact (31.66%) and full impact (20.83%).

Regarding impact level of Fertilizers (N:P:K:S:Zn) (20:40:20:25:20 kg/ha) showed, the majority of beneficiaries (45.83%) pertained partial level of impact followed by full impact (27.50%) and least impact (26.67%).

Regarding impact level of irrigation and drainage showed, the majority of beneficiaries (44.17%) pertained partial level of impact followed by full impact (35.00%) and least impact (20.83%).

Regarding impact level of weed management showed, the majority of beneficiaries (45.00%) pertained partial level of impact followed by full impact (38.33%) and least impact (16.67%) respectively about weed management by weeding and the majority of beneficiaries (47.50%) pertained partial level of impact followed by full impact (28.33%) and least impact (24.17%) respectively about weed management by weedicides.

Regarding impact level of Plant Protection Measures showed, the majority of beneficiaries (44.17%) pertained partial level of impact followed by full impact (33.33%) and least impact (22.50%) respectively about identification of diseases and pest and the majority of beneficiaries (41.66%) pertained partial level of impact followed by full impact (31.67%) and least impact (26.67%) respectively about control measures of diseases and pest.

Regarding impact level of method of harvesting (Picking of pods and whole plant cutting) and threshing showed, the majority of beneficiaries (43.33%) pertained partial level of impact followed by full impact (38.33%) and least impact (18.33%)

Regarding impact level of post harvest technology showed, the majority of beneficiaries (38.33%) pertained partial level of impact followed by full impact (32.50%) and least impact (29.17%) respectively about threshing, the majority of beneficiaries (50.00%) pertained partial level of impact followed by full impact (37.50%) and least impact (12.50%) respectively about drying, the majority of beneficiaries (47.50%) pertained partial level of impact followed by full impact (32.50%) and least impact 20.00 percent respectively about storing and the majority of beneficiaries (62.50 %)pertained least level of impact followed by partial impact 25.00 and full impact (12.50%) respectively about making Dal.

Overall impact of beneficiaries about Soybean production technology:

The detail distribution of beneficiaries according to their overall impact regarding Soybean production technology has been presented in Table 4.15.

Table - Distribution of beneficiaries according to their overall impact level in terms of Soybean production:

S. No.	Impact level	Frequency	Percentage
1.	Low	25	20.84
2.	Medium	55	45.83
3.	High	40	33.33
Total		**120**	**100**

The result presented in Table showed that out of the total beneficiaries, the highest proportion of Soybean beneficiaries (45.83%) was found to have medium impact about Soybean production technology followed by high impact (33.33%) and low impact about Soybean production technology (20.84%).

Thus, the majority of beneficiaries were found to have medium impact of various components of Soybean production technology followed by high and low impact of various components of Soybean production technology.

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