Critical Analysis of Knowledge Level of the Farmers about Horticultural Recommendations

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Abstract: Vegetables are grown in almost all the states in the country under varied agro-climatic and soil conditions in plains as well as hilly regions. Currently, vegetables are being grown in India in 8.5 million hectares accounting for 146.55 million tonnes of production, which is second highest in the world next only to China. The present study on knowledge of the vegetable growers about vegetable recommendations was undertaken in Pune as leading vegetables growing district in Maharashtra where, vegetable crops is maximum in Junnar, Ambegaon and Indapur tahsils so these three tahsils were selected as the basis of highest area under vegetable crops for present research study with sample size of 120 respondents from 6 villages. Data were collected on personal, socio-economic, communicational and psychological profile of farmers and knowledge of vegetable recommendations certain by using exploratory design of social research. Data from the respondents were collected by personally interviewing with the help of present and well- structured interview schedule. It was observed from present study a 64.17 per cent of respondent vegetable growers had medium level knowledge, while 18.33 per cent had low level of knowledge. Only 17.50 per cent of vegetable growers had high level of knowledge.

Keywords: Critical analysis, Horticultural Recommendations, Knowledge level, Vegetable recommendations.

INTRODUCTION

India has a diversified climate and soil type on which a large number of horticultural crops such as fruits, vegetables, spices, ornamentals, medicinal and aromatic plants are grown. Among these, vegetable farming is the major attraction for the farmers since it is comparatively more remunerative than field crops. The wider adaptability of vegetables to

different kinds of abiotic stresses like water, soil, weather, etc. offers enormous scope for growing vegetables in stress prone areas of dry land, desert, high altitudes, high rainfall and saline waste land areas. Vegetable crops playing an important role in commerce and economy of nation, particularly through processing and export trade. (Anonymous, 2015).

METHODOLOGY

For the present study three tahsils from Pune district were purposively selected as the basis of area under vegetable crops viz., Indapur, Ambegaon and Junnar. Thus, total six villages were selected for the study. From each village 20 respondents vegetable growers were selected by proportionate random sampling method. Thus total 120 respondent vegetable growers for the study.

RESEARCH FINDINGS

Overall Knowledge Level of Vegetable Growers

The knowledge level of the farmer about vegetable recommendations was studied. The data regarding the overall knowledge level of farmer were collected and analyzed. The result presented in Table 1.

Table 1
Distribution of the respondents by their level of overall knowledge

| Sr. No. | Knowledge level | Respondents (N = 120) | |
		Frequency	Percentage
1.	Low (up to 58 scores)	22	18.33
2.	Medium (59 to 67 scores)	77	64.17
3.	High (68 and above scores)	21	17.50
	Total	120	100.00

The data presented in table 1 indicate that majority of the respondent vegetable growers 64.17 per cent had medium level of knowledge followed by 18.33 per cent and 17.50 per cent with low and high level of knowledge about vegetable recommendations respectively.

Recommendations-wise Knowledge of Vegetable Growers

The information pertaining to the knowledge of respondents about the different vegetable recommendations under eighteen major heads *viz.* brinjal, bitter gourd, cabbage, chilli, cowpea, okra, onion, potato, French bean, broccoli, lettuce, sweet potato, tomato, pea, drumstick, dolichos bean, garlic.

Table 2
Distribution of respondents according to their knowledge about Brinjal recommendations

| | | Knowledge (N = 120) | | |
Sr. No.	Vegetable Recommendations	Complete	Partial	No
	Brinjal			
1.	Application of the recommended fertilizer dose.	43 (35.80)	62 (51.60)	15 (12.50)
2.	Dipping of seedlings in Imidaclopride 200 SL @ 1 ml/lit. Before transplanting.	23 (19.10)	55 (45.80)	42 (35.00)
3.	Spraying NSKE 4% at fortnightly interval for 6 times from flowering.	82 (68.30)	28 (23.30)	10 (8.33)
4.	Phule Arjun (RBH-9) variety.	18 (15.00)	38 (31.60)	64 (53.33)

The Table 2 revealed that majority of 51.60 per cent of respondents having partial knowledge about application of the fertilizer dose, while 35.81 per cent and 12.50 per cent of the respondents had complete and no knowledge about application of fertilizer dose to brinjal, respectively.

It was observed that, the 45.80 per cent of the respondents had partial knowledge about dipping of the seedlings in Imidaclopride. While, 35.00 per cent and 19.10 per cent of the respondents have no and complete knowledge about dipping of the seedlings in Imidaclopride.

It was observed that the more than half of (68.30 per cent) respondent had complete knowledge about NSKE application, and only few 23.33 per cent and 8.33 per cent respondents had partial and no knowledge about application of NSKE respectively.

Table 3
Distribution of respondents according to their knowledge about Bitter gourd recommendations

Sr. No.	Bitter Gourd recommendations	Complete	Partial	No
1.	Control fruit fly (*Bactrocera cucurbitae*)	23 (19.10)	46 (38.30)	51 (42.50)
2.	For fruit Fly use Cue lure trap @ 12/ha for male fruit fly	92 (77.00)	20 (16.60)	08 (6.66)
3.	Application of the Malathion 50EC @20 ml +100 g jiggery per 10 lit water on border row vines at every 5 m distance spot application.	80 (66.60)	32 (26.60)	18 (15.00)

It was observed that, the only 19.10 per cent of the respondent had complete knowledge about IPM model to control fruit fly in bitter gourd while, 42.50 per cent and 38.30 per cent respondents had no and partial knowledge about IPM model respectively.

It was revealed that, majority (77.00 per cent) of the respondents had complete knowledge about Cue Lure trap for fruit fly control and only few 16.34 per cent and 6.66 per cent had partial and no knowledge about Cue Lure trap, respectively.

It was revealed that, the more than half (66.66 per cent) of the respondents had complete knowledge about application of Malathion + jaggery on border row vines and only few 26.66 per cent and 6.68 per cent had partial and no knowledge about application of Malathion + jaggery on border row vines, respectively.

Table 4
Distribution of respondents according to their knowledge about Cabbage recommendations

Sr. No.	Cabbage recommendations	Complete	Partial	No
1.	Bio-fertilizer application: Seed treatment with (700g/ha) *Azotobactor, Azospirillum* PSB 5 g each before sowing in the nursery Saving 25% recommended nitrogen dose	85 (70.80)	20 (16.60)	15 (12.50)
2.	Dip seedlings roots for 10 min. in solution of 20 lit of water containing this bio-fertilizer 125 g. Each at transplanting.	63 (52.50)	23 (19.10)	34 (28.33)

It was observed that, the majority (70.80 per cent) of the respondent had complete knowledge about bio-fertilizer application in cabbage while, few 16.66 per cent and 12.50 per cent respondents had partial and no knowledge about bio-fertilizer application respectively.

It was observed that, the more than half (52.52 per cent) of the respondent had complete knowledge about dipping of seedling roots in bio-fertilizer while, 28.33 per cent and 19.15 per cent respondents had no and partial knowledge about dipping of seedling roots in bio-fertilizer, respectively.

It was revealed that, the 39.16 per cent of the respondents had no knowledge about Brinjal-Chilli crop sequence and, 34.10 per cent and 26.66 per cent respondents had partial and complete knowledge about Brinjal-Chilli crop sequence respectively.

It was observed that, (majority 85.00 per cent) of the respondents had complete knowledge about application of the carbendazin for viral disease in chilli and only, 15.00 per cent had partial knowledge about carbendazin application.

It is observed that, majority (68.30 per cent) of the respondents had complete knowledge about application of the NSKE biological control while,

Table 5

Distribution of respondents according to their knowledge about Chilli recommendations

Sr. No.	Chilli recommendations	Complete	Partial	No
1.	The brinjal-chilli crop sequence (90-180 cm paired row) is recommended for medium deep soil under drip irrigation as an alternative suru sugarcane crop for high yielding.	32 (26.60)	41 (34.10)	47 (39.16)
2.	For effective management of viral diseases of chilli nursery management practices seed treatment with Crabendezin @ 2 g/kg seed.	102 (85.00)	18 (15.00)	–
3.	For biological control 3 spray of NSKE 5% at 15 days interval starting from appearance disease are recommended	82 (68.30)	28 (23.30)	10 (8.33)
4.	For management of thirps and mites seed treated with Thimethoxam 75 sp @ 5/kg seed. Spray alternately NSKE 4% and Abamectin 5 ml/lit at ETL (5 mite/leaf) for mites.	40 (33.30)	58 (48.30)	12 (10.00)

Table 6

Distribution of respondents according to their knowledge about Okra recommendations

Sr. No.	Okra recommendations	Complete	Partial	No
1.	Application of N.P.K FYM 20, t 100 kg n (50% basal and 50% top dressing) 50 kg P_2O_5,50 kg K_2O (Besals) 3 ocm × 20 cm spacing for maximum seed production	93 (77.50)	27 (22.50)	–
2.	For weed management spraying with pre emerging herbicide Pendimethalin @ 1 kg a.i. ha (3.33 lit. in 500 lit. water	82 (68.30)	28 (23.30)	10 (8.33)
3.	Application of the ferrous sulphate + Zinc sulphate @ 2o kg ha each + Borax @ 5 at the time of sowing (Along with FYM 20 t 100:50:50 N:P:K)	103 (85.80)	17 (14.10)	–

only few 23.37 per cent and 8.33 per cent had partial and no knowledge about application of NSKE biological control respectively.

It was observed that, the majority of the respondents (77.50 per cent) had complete knowledge about the application of NPK to okra while, only 22.50 per cent of the respondent had partial knowledge about application of NPK.

The data revealed that, majority of the (68.34 per cent) had complete knowledge about weed management and, only 23.33 per cent and 8.33 per cent of the respondents had partial and no knowledge about weed management respectively.

It was observed that, the majority of the respondents (85.80 per cent) had complete

knowledge about the application of micronutrient with NPK to okra while, only 14.20 per cent of the respondent had partial knowledge about application micronutrient with of NPK.

It was observed that, the majority of the respondents (81.60 per cent) had complete knowledge about the application of ferrous sulphate with NPK in water management while, only 18.40 per cent of the respondent had partial knowledge about application ferrous sulphate with NPK in water management.

It was observed that, the majority of the respondents (80.80 per cent) had complete knowledge about the application of 20 kg zinc sulphate with NPK in water management while, only 19.20 per cent of the respondent had partial knowledge about application 20 kg zinc sulphate with NPK in water management.

It was observed that, the majority of the respondents (72.50 per cent) had complete knowledge about application of 60% recommended fertilizer dose in water soluble form and only, 16.66 per cent and 10.83

Table 7
Distribution of respondents according to their knowledge about Onion recommendations

Sr. No.	Onion recommendations	Complete	Partial	No
1.	Application of the ferrous sulphate along with the recommended fertilizer dose (100:50:50 kg NPK/ha + 1t FYM in water management for high yielding.	98 (81.60)	22 (18.30)	–
2.	For zinc deficiency apply 20 kg zinc sulphate along with recommended fertilizer dose.	97 (80.80)	23 (19.60)	–
3.	Soybean (Kharif)-onion (Rabi) cropping sequence.	36 (30.00)	52 (42.33)	32 (26.66)
4.	Application 60% recommended fertilizer dose in water soluble form in 10 equal weekly split starting from transplanting through micro sprinkler.	87 (72.50)	20 (16.66)	13 (10.83)
5.	Application of water at 75% of crop evapro-traspiration at 3 day interval through drip.	26 (21.60)	65 (54.16)	29 (24.16)
6.	Spraying of 19:19:19 water soluble fertilizer 0.5 per cent @ 30 and 45 days after transplanting along with basal dose of fertilizer (50:50:50,$N:P_2O_5:K_2O$ for obtaining higher green top onion yield.	120 (100)	–	–
7.	Adoption of drip irrigation.	120 (100)	–	–
8.	During kharif season for control of onion Thrips three sprays of Deltamethrin 1EC + Trizophos 35Ec. @ 0.0072 per cent (2ml/lit) at an interval 15 days.	44 (36.60)	27 (22.50)	49 (40.83)
9.	Four spray of fungicide Tebucozale @ 0.1 per cent (along with sticker) at 10 interval control of purple blotch and *collatotrichum* blight in kharif.	76 (63.30)	35 (29.16)	09 (7.50)
10.	Variety Phule Samarth	91 (75.80)	20 (16.66)	09 (7.50)

per cent of the respondents had partial and no knowledge about application of recommended fertilizer dose in water soluble respectively.

The data revealed that, the 100.00 per cent of the respondents had complete knowledge about application of 19:19:19 with basal fertilizer dose.

It was observed that, the 100.00 per cent of the respondents had complete knowledge about use of drip irrigation.

It was observed that, 40.83 per cent respondents had no knowledge about sprays of Deltamithrin+ Trizophos for control of onion trips in kharif. And only, 36.60 per cent had complete knowledge.

It was observed that, the majority of the respondents (63.33 per cent) had complete knowledge about the application of fungicide Tubucozale for control of purple blotch of onion while, only 29.16 per cent and 7.50 per cent of the respondent had partial and no knowledge about application of fungicide Tubucozale for control of purple blotch of onion, respectively.

It was observed that majority of (75.80 per cent) respondents had complete knowledge about Phule Samarth variety of onion while, only 16.66 per cent and 7.5 per cent of the respondents had partial and no knowledge about Phule Samarth variety of onion, respectively.

Table 8
Distribution of respondents according to their knowledge about Potato recommendations

Sr. No.	Potato recommendations	Complete	Partial	No
1.	Sprinkler method of irrigation with 35 mm depth of irrigation at 25 CPE is recommended for potato crop.	67 (55.80)	42 (35.00)	11 (9.16)
2.	After harvest Rabi crop soil should cultivated sub soiler then deep ploughing and one rotavator tillage practice for plantation kharif potato.	93 (77.50)	27 (22.50)	–
3.	Release of Copidosoma Koehleleri mummies in perforated plastic vials (2-3 mummies/vial of size 2 cm × 1.5 cm) hung at 5 m distance @ 1250 mummies ha per release four time (total 5000 mummies ha) at weekly interval commencing from 45 days after planting of potato crops is recommended for control of tuber moth in potato.	18 (15.00)	37 (30.83)	46 (38.33)
4.	Application of bio-fertilizer Seed treatment with(20q/ha) *Acetobacto*r before planting in suspension of 100 lit water, 5oo ml *Acetobactor* liquid formulation and 2.5 kg *Azotobactor* (1 lit/200 lit water ha) one month after planting is recommended for increasing yield, and reduce 25% recommended fertilizer dose.	85 (70.80)	20 (16.66)	15 (12.50)
5.	In potato sett treatment to the two eye bud 30000 sets/ha) with fungicide, Carbendazim (10%) + gibbrelic acid (100 ppm) dipping for 15 minutes.	83 (59.10)	18 (15.00)	19 (15.83)

It was observed that more than half of the respondents (55.88 per cent) had complete knowledge about sprinkler method of potato irrigation while, only 35.00 per cent and 9.16 per cent of the respondents had partial and no knowledge about sprinkler method of potato irrigation respectively.

The data revealed that, the majority of the respondents (77.50 per cent) had complete knowledge about after harvest Rabi crop tillage practices in potato.

It was observed that, the majority (70.80 per cent) of the respondent had complete knowledge about bio-fertilizer application in potato while, few 16.66 per cent and 12.50 per cent respondents had partial and no knowledge about bio-fertilizer application in potato respectively.

The data revealed that, the majority of the respondents (59.10 per cent) had complete knowledge about seed treatment with fungicide.

Table 9
Distribution of respondents according to their knowledge about French bean recommendations

Sr. No.	French bean recommendations	Complete	Partial	No
1.	Spacing 30 cm × 15 cm long with fertilizer dose 25:50:40 N:P:K/ha	47 (39.10)	34 (28.33)	39 (32.52)
2.	For deep black soil under rainfed condition for economic benefit intercropping of Pigeon pea + French bean.	35 (29.17)	40 (33.33)	45 (37.50)
3.	Variety Phule Suyash (Gk-7)	43 (35.83)	35 (29.16)	42 (35.00)

It was observed that, the 39.16 per cent respondents had partial knowledge about spacing and fertilizer dose of French bean.

It was observed that, majority of the respondents (70.83 per cent) had no knowledge about sweet broccoli fertilizer application method.

Table 10
Distribution of respondents according to their knowledge about Broccoli recommendations

Sr. No.	Broccoli recommendations	Complete	Partial	No
1.	With view to reduce the application of the chemical fertilizer to broccoli it is recommended to apply 130 N + 20 P_2O_5 + 30 K_2O + 2.5 Azatobactor + 2.5 PSB kg/ha along with 20 t FYM	11 (9.16)	24 (20.00)	85 (70.83)
2.	Variety Ganesh Broccoli	11 (9.16)	24 (20.00)	85 (70.83)

Table 11
Distribution of respondents according to their knowledge about Lettuce recommendations

Sr. No.	Lettuce recommendations	Complete	Partial	No
1.	In plain zone of western Maharashtra leafy vegetable type lettuce spacing of 30 cm × 20 cm spacing.	45 (37.52)	32 (26.66)	43 (35.83)

The data revealed that, the 37.50 per cent respondents had complete knowledge about spacing of lettuce while, 26.66 per cent and 35.83 per cent of the respondents had partial and no knowledge about spacing of lettuce, respectively.

It was observed that, the 49.10 per cent respondents had partial knowledge about sweet potato irrigation methods.

It was revealed that, the 46.66 per cent respondents had complete knowledge about fertilizer dose for Dhanashree variety of tomato while, 30.80 per cent and 24.16 per cent of the respondents had partial and no knowledge about fertilizer dose for Dhanashree variety of tomato respectively.

It is observed that, majority of the respondents (80.00 per cent) had complete knowledge about application 80% fertilizer dose trough water soluble.

Table 12
Distribution of respondents according to their knowledge about sweet Potato recommendations

Sr. No.	Sweet potato recommendations	Complete	Partial	No
1.	For sweet potato high yield sprinkler method of irrigation at 25 mm CPE (Oct-6 day, Nov.-7days, December-9 days, January-8 days, February-6 days and March 4 days) with 2.5 depth of irrigation is recommended during Rabi season with 15 per cent saving of water over surface irrigation.	24 (20.00)	59 (49.18)	37 (30.82)

It is revealed that, the 100 per cent of the respondents had complete knowledge about the use of nylon net in tomato.

It is observed that, more than half per cent of the respondent had no knowledge about the biological control with *Trichodermaviride*.

It was revealed that, 46.66 per cent respondents had partial knowledge about seed treatment with Matalaxy while, 37.50 per cent and 15.83 per cent of the respondents had complete and no knowledge about seed treatment with Matalaxy respectively.

It was observed that, the majority of the respondents (61.66 per cent) had no knowledge about the variety of pea Phule Priya.

It was observed that, 43.34 per cent respondents had no knowledge about pruning practices of drumstick while, 39.16 per cent and 17.50 per cent of the respondents had partial and complete knowledge about pruning practices of drumstick respectively.

It was observed that, the majority of the respondents (60.00 per cent) had complete knowledge about dolichos bean variety, spacing and fertilizer dose while, 28.16 per cent and 11.67 per cent of the respondents had partial and no knowledge about dolichos bean variety, spacing and fertilizer dose, respectively.

Table 13
Distribution of respondents according to their knowledge about Tomato recommendations

Sr. No..	Tomato recommendations	Complete	Partial	No
1	For Dhanashri variety of tomato recommended dose.20 t FYM and 200:100:100 kg NPL/ha.½ NPK and full FYM at the time of planting.	54 (45.00)	37 (30.80)	29 (24.20)
2.	Application of 80 % recommended dose (240:100:100) kg NPK/ha from water soluble through drip.	96 (80.00)	24 (20.00)	–
3.	Application of the boric acid (foliar application 100 ppm) along with recommended fertilizer dose.	103 (85.84)	17 (14.16)	–
4.	Seed treatment with Capton @0.2 %. Soil application of Carbofuron @ 1 kg a.i./ha before sowing.	82 (68.37)	28 (23.33)	10 (8.33)
5.	After transplanting spray Mancozeb (0.5 %) 15 days interval for control of fungal disease early Blight, Late blight and powdery mildew.	106 (88.35)	14 (11.66)	–
6.	For the biological control it is recommended to four spray of *Trichodema Viride* (0.6 %) at 15 days interval.	17 (14.14)	39 (32.52)	64 (53.33)
7.	Variety Phule Raja	24 (20.00)	54 (45.00)	42 (35.00)

Table 14
Distribution of respondents according to their knowledge about Pea recommendations

Sr. No.	Pea recommendations	Complete	Partial	No
1.	Seed treatment of Matalaxyl 35.5 D @ 5 kg per seed is recommended	45 (37.54)	56 (46.66)	19 (15.83)
2.	Variety Phule Priya	12 (11.60)	34 (28.33)	74 (61.62)

Table 15
Distribution of respondents according to their knowledge about Drumstick recommendations

Sr. No.	Drumstick recommendations	Complete	Partial	No
1	For getting higher yield and pods from drumstick it is recommended to prun main stem at a height 50 cm from ground and keeps 4 branches of 80 cm on it.	21 (17.54)	47 (39.16)	52 (43.33)

Table 16
Distribution of respondents according to their knowledge about Dolichos bean recommendations

Sr. No.	Dolichos bean recommendations	Complete	Partial	No
1.	High yielding Sowing dolichos bean (brush type) variety Phule Suruchi at 30 cm × 30 cm spacing and application of 60:60:40 kg NPK/ha is rec.	72 (60.00)	34 (28.33)	14 (11.66)
2.	Phule Ashwini (RHRWL-2) variety	34 (28.32)	42 (35.00)	44 (36.66)

Table 17
Distribution of respondents according to their knowledge about Garlic crop recommendations

Sr. No.	Garlic recommendations	Complete	Partial	No
1.	Variety Phule Baswant.	47 (39.14)	64 (53.33)	09 (7.52)

It was observed that, the more than half respondents (53.33 per cent) had partial knowledge about Baswant variety of the garlic while, 39.10 per cent and 7.50 per cent of the respondents had complete and no knowledge about Baswant variety of Garlic respectively.

CONCLUSION

It was found that large number of vegetable growers (64.17 per cent) had medium level of knowledge about various vegetable recommendations. It was revealed that majority of the respondents had knowledge about vegetable recommendations of crops like brinjal, bitter gourd, cabbage, chilli, cowpea, okra, onion, potato, French bean, fenugreek, broccoli, lettuce, sweet potato, tomato, pea, drumstick, dolichos bean, garlic.

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