

Item wise ranked information needs of tomato growers in Junagadh district of Gujarat

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ABSTRACT

Tomato cultivation requires enough care right from nursery raising to post harvesting operations. Necessary package of practices must be followed for the better yield. It demands complete knowledge of methods and same must be followed by the tomato growers in right manner and at right time. The methodological procedure consisted of dependent and independent variables, setting and selection of the respondents, analysis of data and various statistical measures used to test the hypothesis. The information needs of tomato growers was availed on a three point continuum ranging from "Most Needed", "Needed" and "Not Needed". The information needs were worked out for each of the major areas considering the total score for information needs acquired by the respondents. The present investigation was carried out with 120 randomly selected samples of Junagadh district of Gujarat state in n India. The data were collected with the help of structured schedule by personal interview method. The most important aspects of information needs nursery management, seeds or high yielding varieties, fertilizer applications, pests and diseases management etc. were revealed in the study.

INTRODUCTION

Agriculture has been and will continue to be the lifeline of the Indian economy. As the largest private enterprise in India, agriculture contributes nearly one-fifth of the national G.D.P. and sustains livelihood of about two third of the population and is the backbone of agro-based industries. Though the update of modern agricultural technology, India has moved from an era of chronic food shortage and begging bowl status up to 1960 to food self-sufficient and even food exports. Since 1950, the productivity gain is nearly 3.3 times in food grain, 1.6 times in fruits, 2.1 times in vegetables, 5.6 times in fish, 1.8 times in milk and 4.8 times in eggs (Anonymous, 2004). Horticulture is prominent sector among agriculture and allied activities as a means of diversification for making agriculture more profitable through efficient land use, optimum utilization of natural resources and creating skilled employment for rural masses.

Tomato is one of the most important protective foods because of its special nutritive value. It is one of the most versatile vegetables with wide usage in Indian culinary tradition. Tomatoes are used for soup, pickles, ketchup, puree, sauces and in many other ways. It is also used as a salad vegetable. Tomato has very few competitors in the value addition chain of processing. Tomato is the world's largest producing vegetable crop after potato and sweet potato, but it tops of the list of canned vegetables. The total global area under tomato is 4582 lakh ha. and the global production is to the tune of 1505 lakh tones. Tomato is rich source of vitamin A, vitamin C, potassium, minerals and fibres.

The productivity is 36.43 t/ha. Looking to the vegetable scenario in the world china is dominated as it produced 28 per cent of the world vegetable production followed by India as it contributes 11 per cent (Table A). In Gujarat, the area, production and productivity of tomato are being gone-up year by year. This can be seen from the data presented in Table B. In India

total area under tomato cultivation is 865000 ha, total production is 16826000 tonnes and the productivity is 19.5 t/ha, area under tomato cultivation is 3567 ha. and production is 129940 tonnes. in Gujarat shown in Table B.

MATERIAL AND METHODS

The present investigation was undertaken in Junagadh district of Gujarat State in India. Gujarat state has 27 district out of which Junagadh district was selected for this study. In Junagadh district Talala taluka was selected purposively because large area and more number of tribal tomato growers are available. From selected taluka 12 villages under tomato cultivation were selected purposively. Thus, total twelve villages were selected for the study and from each selected villages 10 farmers were randomly selected. Thus, purposively random sampling procedure was used to constitute the sample. The sample size was decided on the basis of co-efficient of variability existing in the population by carrying out the pilot study. A well-structured, pre-tested interview schedule was prepared in view of the objectives of the study and data were collected by personal interview of selected tomato growers. The information needs of the tomato growers were assessed for the areas right from the requirements for the climate, soil

and soil preparation, variety, nursery management, planting time, planting distance, fertilizer management, irrigation management, inter culturing, weed management, plant protection, harvesting, grading and marketing of the produce. Various related items were selected for these areas by reviewing the literature and final shape was given after getting the opinion of the experts. Thus, the information needs of tomato growers about various aspects of tomato cultivation were ascertained. The extent of information needs of tomato growers was availed on a three point continuum ranging from "Most Needed", "Needed" and "Not Needed". The three categories were assigned with 3 score, 2 score and 1 score, respectively. The information needs were worked out for each of the major areas considering the total score for information need acquired by the respondents. On the basis of Mean score, the ranks to the major areas of information needs were assigned. Based on mean and standard deviation of each aspect, the respondents were categorized into three groups *viz.*, Low (Below Mean – S.D.), medium (in between Mean \pm S.D.) and high (above Mean + S.D.). Then, three point rating scale was employed to measure the information needs hierarchy. For high, medium and low level of information needs, again 3, 2 and 1 score was assigned and on the bases that, ranks were assigned from higher to lower mean score. The statistical tools used were percentage,

Table A : World major tomato producers and its share in world tomato production

Major tomato producing countries in the world (2010-11)				
Country	Area ('000ha)	Production ('000 Tons)	Productivity (tons/Ha)	% Share of world production
China	871235	41879684	48.1	28
India	865000	16826000	19.5	11
USA	159200	12902000	81.0	9
Turkey	304000	10052000	33.1	7
Egypt	216385	8544990	39.5	6
Italy	118822	6024800	50.7	4
Iran	146985	5256110	35.8	3
Spain	58300	4312700	74.0	3
Brazil	60772	3691320	60.7	2
Mexico	98189	2997640	30.5	2
Others	1683550	38026569	22.6	25
World (Total)	4582438	150513813	32.8	100

Table B : Area, production and productivity of tomato in Gujarat state

Year	Area (00ha)	Production (00MT)	Productivity (MT/ha)
2007-2008	2960	88800	30.00
2008-2009	3040	98800	32.5
2009-2010	3192	111720	35
2010-2011	3511	126396	36.00
2011-2012	3567	129940	36.43

Source: Directorate of Agriculture, Gandhinagar, 2012

mean score and standard deviation and arbitrary method for categorization.

OBSERVATIONS AND ANALYSIS

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Item wise information needs of the tomato growers :

Information needs about nursery management :

Information needs about type of land and its preparation :

It is obvious from the Table 1 that the most important information needs about nursery management of the tomato growers were type of soil which rank first with mean score 2.28, followed by ideal seedbed size for nursery (2.18), requirement of drainage (2.16), soil testing facility (1.78) and soil solarisation in nursery (1.71), rabbing practices in nursery (1.34) with rank II, III, IV, V and VI, respectively. Thus, it can be concluded that most important information needs realized by the tomato growers about type of land and its preparation for nursery were information on type of soil, ideal seedbed size for nursery, requirement of drainage, soil testing facility, soil solarisation and rabbing practices in nursery.

Sr. No.	Areas of information	Mean score	Rank
1.	Type of soil	2.28	I
2.	Soil testing facility	1.78	IV
3.	Soil solarisation in nursery	1.71	V
4.	Rabbing practices in nursery	1.34	VI
5.	Ideal seedbed size for nursery	2.18	II
6.	Requirement of drainage	2.16	III

Information needs about variety and seeds :

The data presented in Table 2 indicate that major areas of information needs experienced by the tomato growers in case of improved seeds or high yielding varieties were suitable high yielding variety which rank first with mean score 2.35, followed by rate of seed/acre (2.22), time of nursery raising (2.15), sowing method (1.79), treatment of seed (1.75) and mulching (1.45) with rank II, III, IV, V and VI, respectively. It is understandable that seed and high yielding varieties are the prime factors in deciding crop production. Thus, to understand all the aspects of seed and high yielding varieties common needs realized by the tomato growers were suitable high yielding variety, rate of seed/acre, time for nursery raising, sowing method, treatment of seed and mulching.

Sr. No.	Areas of information	Mean score	Rank
1.	Suitable high yielding variety	2.35	I
2.	Rate of seed/acre	2.22	II
3.	Time of nursery raising	2.15	III
4.	Treatment of seed	1.75	V
5.	Sowing method	1.79	IV
6.	Mulching	1.45	VI

Information needs about fertilizer application :

The data accessible in Table 3 indicate that main areas of information needs experienced by the tomato growers in case of fertilizer applications in nursery were selection of proper fertilizer which rank first with mean score 2.22, followed by recommended dose of FYM in nursery (2.12), recommended dose of chemical fertilizer in nursery (1.93) and calculation of fertilizer doses as per recommendation (1.38) with rank II, III, and IV, respectively. Besides other factors, fertilizer or application of nutrients in nursery of tomato seedlings plays significant role in producing healthy and vigorous seedlings for tomato. Thus, to be acquainted with useful aspects of fertilizer, the general information needs experienced by the tomato growers were selection of proper fertilizer, recommended dose of FYM in nursery, recommended dose of chemical fertilizer in nursery and calculation of fertilizer doses as per recommendation. This information can help them in growing vigorous seedlings for the transplanting.

Sr. No.	Areas of information	Mean score	Rank
1.	Selection of proper fertilizer	2.22	I
2.	Recommended dose of FYM in nursery	2.12	II
3.	Recommended dose of chemical fertilizer in nursery	1.93	III
4.	Calculation of fertilizer doses as per recommendation	1.38	IV

Information needs about pests and diseases management :

The data available in Table 4 indicate that main areas of information needs experienced by the tomato growers in case of pests and diseases management in nursery were control of white fly which rank first with mean score 2.12, followed by control of spotted wilt (1.93), control of leaf curl (1.79), control of leaf minor (1.45) with rank II, III and IV, respectively. The major pests and diseases observed in the tomato nursery are white fly, leaf minor, spotted wilt and leaf curl. This might be the reason to show more interest by the tomato growers in knowing control measures of important pests and diseases observed in the tomato nursery.

Table 4 : Distribution of the respondents according to their information needs about pest and disease management (n=120)

Sr. No.	Areas of information	Mean Score	Rank
1.	Control of white fly	2.12	I
2.	Control of leaf minor	1.45	IV
3.	Control of spotted wilt	1.93	II
4.	Control of leaf curl	1.79	III

Information needs about after transplanting operations :
Information needs about transplanting :

The data presented in Table 5 designate that main aspects of information needs realized by the tomato growers in case of key practice of transplanting were age of seedling which rank first with mean score 2.35, followed by transplanting time (2.22), distance between two plants (2.21), gap filling (2.15), telephone system / support system (2.12) with rank II, III, IV and V, respectively. Thus, it can be concluded that most important information needs realized by the tomato growers about age of seedling, transplanting time, distance between two plants, gap filling, telephone system / support system for transplanting.

Table 5 : Distribution of the respondents according to their information needs about transplanting (n=120)

Sr. No.	Areas of information	Mean score	Rank
1.	Age of seedling	2.35	I
2.	Transplanting time	2.22	II
3.	Distance between two plants	2.21	III
4.	Gap filling	2.15	IV
5.	Telephone system / support system	2.12	V

Information needs about fertilizer management :

The data presented in the Table 6 disclose that main aspects of information needs recognized by the tomato growers in case of fertilizer management were time of application of chemical fertilizers which rank first with mean score 2.40, followed by quantity of chemical fertilizers (2.28), calculation of fertilizer doses as per recommendation (2.22), method of chemical fertilizer management (2.21), deficiency of micro nutrients (2.12), application of fertilizer by drip irrigation (1.78), nutrient added by green manuring (1.34) with rank II, III, IV, V, VI and VII, respectively. Besides other factors, fertilizer or application of nutrients play significant role for healthy plant of tomato. Thus, to be acquainted with useful aspects of fertilizer, the general information needs experienced by the tomato growers were time of application of chemical fertilizers, quantity of chemical fertilizers, calculation of fertilizer doses as per recommendation, method of chemical fertilizer management, deficiency of micro nutrients, application of fertilizer by drip irrigation and nutrient added by green manuring. This information can help them for better fruit size, colour and shape.

Table 6 : Distribution of the respondents according to their information needs about fertilizer management (n=120)

Sr. No.	Areas of information	Mean score	Rank
1.	Nutrient added by green manuring	1.34	VII
2.	Quantity of chemical fertilizers	2.28	II
3.	Time of application of chemical fertilizers	2.40	I
4.	Deficiency of micro nutrients	2.12	V
5.	Method of chemical fertilizer management	2.21	IV
6.	Calculation of fertilizer doses as per recommendation	2.22	III
7.	Application of fertilizer by drip irrigation	1.78	VI

Information needs about irrigation management :

The data presented in the Table 7 revealed that major aspects of information needs documented by the tomato growers in case of irrigation management were time of irrigation which rank first with mean score 1.93, followed by methods of flood irrigation (1.79), schedule of irrigation (1.71) and method of micro irrigation (1.37) with rank II, III and IV, respectively. Adequate moisture promotes faster growth and early maturity. A light irrigation at transplanting time will often improve establishment and early growth in light soils. Therefore, a compromising situation would be advisable to give frequent irrigations to the crop. However, the interval and number of irrigations depends upon soil type, weather, cultivation and variety to be grown. Thus, information on irrigation aspect plays important role in crop production. The major aspects of information needs accepted by the tomato growers in case of irrigation management were time of irrigation, method of flood irrigation, schedule of irrigation and methods of micro irrigation.

Table 7 : Distribution of the respondents according to their information needs about irrigation management (n=120)

Sr. No.	Areas of information	Mean score	Rank
1.	Method of flood irrigation	1.79	II
2.	Schedule of irrigation	1.71	III
3.	Time of irrigation	1.93	I
4.	Methods of micro irrigation	1.37	IV

Information needs about inter culturing :

A perusal of data presented in Table 8 reflect that most important features of information needs identified by the tomato growers in case of inter-culturing were suitable time of inter-culturing which rank first with mean score 2.11, followed by first inter-culturing after sowing (1.95), methods of inter-culturing (1.78) and numbers of inter-culturing (1.71) with rank II, III and IV, respectively.

Sr. No.	Areas of information	Mean score	Rank
1.	Methods of inter culturing	1.78	III
2.	First inter-culturing after sowing	1.95	II
3.	Numbers of inter-culturing	1.71	IV
4.	Suitable time of inter-culturing	2.11	I

Information needs about weed management :

The data presented in Table 9 indicate that hand weeding which rank first with mean score 2.40, followed by chemical weed control (1.30) with rank II. Weeds are generally kept under check by summer cultivation and three or four intercultural given during period of crop growth. When weeds become a problem they can be brought under control by use of herbicide. Some of the chemical weed control has some adverse effect on the chemical and physical attributes of crop plant. The respondents might be not aware about the type and quantity of herbicide used for tomato crop hence the farmers prefer hand weeding.

Sr. No.	Areas of information	Mean score	Rank
1.	Hand weeding	2.40	I
2.	Chemical weed control	1.30	II

Information needs about pests and diseases management :

A searching look into the Table 10 revealed that major aspects of information needs documented by the tomato growers in case of pests and diseases management were preparing solution as per recommendation which rank first with mean score (2.34), followed by methods of spraying insecticide / pesticide (2.28), control measure of insects (2.25), nature of damage of insects (2.22), identification of diseases (2.19), control measure of leaf curl disease (2.17), nature of damage of diseases (2.16), identification of spotted wilt disease (2.11), control measure of spotted wilt disease (2.09), identification of root-knot nematodes (2.07), control measure of root-knot nematodes (2.05), identification of fruit borer (2.04), control measure of fruit borer (2.00), integrated pest management of fruit borer (1.97), identification of white fly (1.95), control measure of white fly (1.89), Integrated pest management of white fly (1.86), identification leaf curl disease (1.84), identification of mosaic disease (1.76), control measures of mosaic disease (1.73), identification of spodopteralitura (1.71), control measures of spodopteralitura (1.70), integrated pest management of spodopteralitura (1.68), identification of serpentine leaf minor (1.62), control measure of serpentine leaf minor (1.57), integrated pest management of serpentine leaf minor (1.50), economic threshold level of insects (1.47) with rank II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, XVI,

Table 10 : Distribution of the respondents according to their information needs about pests and diseases management (n=120)

Sr. No.	Areas of information	Mean score	Rank
Diseases and nematodes control			
1.	Identification of diseases	2.19	V
2.	Nature of damage of diseases	2.16	VII
3.	Identification of spotted wilt disease	2.11	VIII
4.	Control measure of spotted wilt disease	2.09	IX
5.	Identification leaf curl disease	1.84	XVIII
6.	Control measure of leaf curl disease	2.17	VI
7.	Identification of mosaic disease	1.76	XIX
8.	Control measures of mosaic disease	1.73	XX
9.	Identification of root-knot nematode	2.07	X
10.	Control measure of root-knot nematode	2.05	XI
Insects control			
11.	Nature of damage of insects	2.22	IV
12.	Control measure of insects	2.25	III
13.	Economic threshold level of insects	1.47	XXVII
14.	Identification of fruit borer	2.04	XII
15.	Control measure of fruit borer	2.00	XIII
16.	Integrated pests management of fruit borer	1.97	XIV
17.	Identification of white fly	1.95	XV
18.	Control measure of white fly	1.89	XVI
19.	Integrated pest management of white fly	1.86	XVII
20.	Identification of spodopteralitura	1.71	XXI
21.	Control measures of spodopteralitura	1.70	XXII
22.	Integrated pest management of spodopteralitura	1.68	XXIII
23.	Identification of serpentine leaf minor	1.62	XXIV
24.	Control measure of serpentine leaf minor	1.57	XXV
25.	Integrated pest management of serpentine leaf minor	1.50	XXVI
26.	Preparing solution as per recommendation	2.34	I
27.	Methods of spraying insecticide / pesticide	2.28	II

XVII, XVIII, XIX, XX, XXI, XXII, XXIII, XXIV, XXV, XXVI and XXVII, respectively.

Information needs about harvesting and post harvesting technology :

It is evident from the data presented in Table 11 that most important aspects of information needs recognized by the tomato growers in case of management of harvesting and post harvesting technology were time of harvesting which rank first with mean score (2.22), followed by, method of harvesting (2.12), care taken at the time of fruits picking (1.93), care taken after

picking of fruits (1.79), characteristics of maturity of fruits (1.37) with rank II, III, IV and V, respectively.

Sr. No.	Areas of information	Mean score	Rank
1.	Time of harvesting	2.22	I
2.	Method of harvesting	2.12	II
3.	Characteristics of maturity of fruits	1.37	V
4.	Care taken at the time of fruits picking	1.93	III
5.	Care taken after picking of fruits	1.79	IV

Information needs about market management :

A perusal of data presented in Table 12 reflected that most essential areas of information needs recognized by the tomato growers in case of marketing management of tomato were source of cash payment provider markets which rank first with mean score (2.30), followed by place of nearest market (2.22), market price (1.94), transport facility (1.93), commission (1.90), carat Facility for tomato transport (1.71), packaging material (plastic/wooden board carat) and facility of telephone, internet etc. (1.37) with rank II, III, IV, V, VI, VII and VIII, respectively.

Sr. No.	Areas of information	Mean score	Rank
1.	Place of nearest market	2.22	II
2.	Market price	1.94	III
3.	Source of cash payment provider markets	2.30	I
4.	Commission	1.90	V
5.	Carat facility for tomato transport	1.71	VI
6.	Packaging material (plastic/wooden board carat)	1.61	VII
7.	Transport facility	1.93	IV
8.	Facility of telephone, internet etc.	1.37	VIII

Information needs about supportive matters :

From the above result in Table 13 observed that most important areas of information needs recognized by the tomato growers in case of supportive facts about tomato were information on subsidies for tomato cultivation which rank first with mean score (2.33), followed by insurance scheme (2.22), information provider organizations (2.08), credit facility (1.81), training provider organizations (1.71), tomato related government schemes (1.63) and damage by animals (1.55) with rank II, III, IV, V, VI and VII, respectively. Similar work related to the topic was also done by Jahagirdar, and Sundaraswamy (2002); Marimuthu (1998) and Sangeetha, (2009).

Table 13 : Distribution of the respondents according to their information needs about supportive matters (n=120)

Sr. No.	Areas of information	Mean score	Rank
1.	Subsidies for tomato cultivation	2.33	I
2.	Credit facility	1.81	IV
3.	Insurance scheme	2.22	II
4.	Tomato related government schemes	1.63	VI
5.	Information provider organizations	2.08	III
6.	Training provider organizations	1.71	V
7.	Damage by animals	1.55	VII

Conclusion :

The most important information needs about nursery management to satisfy by tomato growers were type of soil rank first with mean score 2.28, improved seeds or high yielding varieties were suitable high yielding variety rank first with mean score 2.35, fertilizer applications in nursery were selection of proper fertilizer rank first with mean score 2.22, pests and diseases management in nursery were control of white fly rank first with mean score 2.12, key practice of transplanting were age of seedling rank first with mean score 2.35, fertilizer management were time of application of chemical fertilizers rank first with mean score 2.40, irrigation management were time of irrigation rank first with mean score 1.93, inter-culturing were suitable time of inter-culturing rank first with mean score 2.11, control measures by hand weeding rank first with mean score 2.40, pests and diseases management were preparing solution as per recommendation rank first with mean score 2.34, management of harvesting and post harvesting technology were time of harvesting rank first with mean score 2.22, marketing management of tomato were source of cash payment provider markets rank first with mean score 2.30, supportive facts about tomato were information on subsidies for tomato cultivation rank first with mean score 2.33, fertilizer application ranked first with mean score 2.85. Effort should be made to concentrate information needs of the tomato growers in area of tomato nursery management, plant protection and time and quantity of fertilizer, irrigation and weed management. The findings of this study would serve as a guideline for extension agencies, training institutions and concerned organization in formation of effective realistic and need based training programme to assist the tomato growers for cultivation of tomato crop successfully.

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