



THE ROLE OF AGRICULTURAL EXTENSION SERVICES IN TOMATO PRODUCTION IN DISTRICT MANSEHRA KHYBER PAKHTUNKHWA

Ahmad Abrar Khan¹, Muhammad Zafarullah¹, Muhammad Mumtaz¹, Inamullah¹ Laila Khurshid¹, Muhammad Binyamin², Fazal Rabi³ and Nadia Bostan³

¹Department of Agricultural Extension Education and Communication, the University of Agriculture, Peshawar, Pakistan

²Institute of Development Studies, the University of Agriculture, Peshawar, Pakistan

³Department of Horticulture, the University of Agriculture, Peshawar, Pakistan

E-Mail: fazal_rabi10@yahoo.com

ABSTRACT

The present study was initiated to investigate the role of agricultural extension services in the area, regarding tomato. The study was conducted in four villages of Pakkhal plain of district Mansehra. The sample of 120 respondents was selected through proportional allocation sample technique. The respondents were categorized in different groups on the basis of their age, education, land holding size. It was revealed that majority (33%) of the respondents were belonged to age group of 25-35 year. In the category of literate farmers majority (28%) of respondents were those who got their education up to middle level. In the field study it was observed that majority (55%) of farmers were unsatisfied from the role and services of agricultural extension department. The main source of information / awareness of majority farmers about tomato cultivation was due to their ancestral and relatives. The agricultural extension services and role was found poor in the study area.

Keywords: agricultural extension, production, tomato, Mansehra, Pakkhal.

INTRODUCTION

Tomato is an herbaceous plant belonging to the Solanaceae or Nightshade family. Tomatoes are consumed fresh in salads and as flavoring ingredients in soups, meat, fish and almost all dishes. Various processed forms include pastes, sauces, purees, juices and ketchup. Ideally, tomato requires a relatively cool, dry climate for optimum yield and quality. The optimum temperature range for proper growth and development is 21 - 24 °C while fruit set is enhanced below 21°C (Tomato Production Guide, 2011). According to Ministry of Food, Agricultural and Livestock area under tomato cultivation since 2005 to 2010 in Punjab increased from 5.3 to 6.0 hectares, In Khyber Pakhtunkhwa (KPK) it was decreased from 16.1 to 13.1 hectares, In Baluchistan it was increased from 15.4 to 18.8 hectares and in Sindh area it was increased from 9.4 to 12.2 hectares. It is observed that in a short tenure of five years from 2005 to 2010 the area under tomato cultivation was increased in three provinces i.e. Punjab, Baluchistan and Sindh but decreased in Khyber Pakhtunkhwa. But still Khyber Pakhtunkhwa had the 2nd largest land under tomato cultivation, next to Baluchistan (GoP, 2010). In Pakistan production of tomato crop from 2005 to 2010 was raised from 468.1 to 476.8 tonnes which is still below from consumption line. According to Ministry of Food, Agricultural and Livestock in 2005-2010 tomato production was raised from 64.6 to 77.9 tonnes in Punjab, in Khyber Pakhtunkhwa production was decreased from 161.6 to 119.3 tonnes, In Baluchistan production was also decreased from 193.6 to 179.2, while in Sindh production was raised from 48.3 to 100.4. Heavy rain fall with hailing, decrease in area under tomato cultivation, unawareness about modern agriculture practices and diseases etc. are the main causes for decrease in production (GoP, 2010). District Mansehra is on 7th position by tomato production in Khyber Pakhtunkhwa

with a production of 1594 tonnes per year. Yield per hectare in the district is 5 tonnes which is healthier as compared to other districts of the country but not so much inspiring because of not increase in per hectare yield from last five years which is still on 5 tonnes per hectare (GoP, 2010). Agricultural Extension is a system of introducing appropriate agricultural techniques and ideas to the farmers for incorporating them into their farming practices. The extension services therefore, not only to persuade farmers to improve their lands and prepare a cropping pattern, but also motivate them to use improved agricultural implements and adopt the modern agricultural practices according to their social economic status. The government of Pakistan realizes the need for Agricultural development to increase Agricultural productivity in the country to meet the food requirement of our increasing population (Safdar, 2005).

Objectives of the study

In District Mansehra since long tomato production is stagnate; on the other hand the population is increasing with an alarming rate, which accounts for low per acre yield. The main causes of low production are unawareness of farming communities about seasonal need, price and use of appropriate technology. Agriculture extension staff is mandated for awareness and transfer of technology. If this task is done timely and efficiently then the production can be increased and cost benefit ratio would be justified. The present study is aimed to evaluate the role of extension services in tomato productivity and farmers perception about agricultural extension services. The outcome of study would provide us the guidelines for future in enhancing tomato production. Moreover this research work will enrich the planners, policy makers and researchers in decision-making process. The study was conducted with the following main objectives: (i) To



assess the role of agricultural extension services in creating awareness about improved technology for enhancement of tomato production in the study area (ii) To study the existing situations of tomato production in the study area (iii) To find the main constraints faced by farming communities in the tomato cultivation (iv) To formulate suggestions and recommendations to concern agencies for increasing of tomato cultivation.

Hypothesis

H0 = There is no significant association between the agricultural extension services and production of tomato crop.

H1 = There is significant association between the agricultural extension services and production of tomato crop.

MATERIALS AND METHODS

Universe of the study

Only one-fourth of the total area of the district Mansehra is constituted of plains. The climate of Pakkhal plain in the district is suitable for tomato production and most of the tomato growers are exist here. Therefore this study was initiated in Pakkhal plain of district Mansehra to find out the role of extension department and problems faced by farmers in tomato cultivation.

Selection of respondents

A list of farmers was prepared from four selected villages, who were involved in tomato cultivation. For selection of respondents from each village proportional allocation method was used. The total number of respondents was 120. Formula for selection of sample size from each village through proportional allocation method is as following;

$$n_i = \frac{N_i \times n}{N}$$

Whereas,

n_i	=	Number sampled farmers in the i th village
i	=	Number of villages in the study area
N_i	=	Total number of farmers in the i th village
n	=	Total sample size
N	=	Total number of farmers in research area

Analysis of data

The collected data was analyzed by using statistical package for social sciences students SPSS.

Chi-square test

In order to investigate the association between any two selected variables of the study, Chi-square test was applied.

RESULT AND DISCUSSIONS

This section explains the results of the research study obtained from the analysis of data which was taken in the field.

Age of the respondents

Age varies from individual to individual in every society. Age is important factor for getting and understanding new knowledge skills, and problems solving. Individuals with high age have more experience but high age may also decrease physical manpower as compared to the physical power of young individuals. Individuals in young age are considered more adoptive to new innovations. Age role can't be neglected in development and getting the targets. Therefore, the data about the age of respondents was collected in the field.

Table-1 shows that 23% of respondents were below 25 years of age, while 33% of respondents were between 25-35 years. In the range of 36-45 years there were 31% of respondents and 14% were above 45 years of age which shows that maximum respondents were fall in the range of 25-35 years, who were engaged in tomato farming.

Table-1. Distribution of respondents regarding their age.

Village Names	Age in years				Total
	Below 25	25-35	36-45	Above 45	
Baffa Mera	12(35)	9(26)	7(21)	6(18)	34(100)
Dambra Eid Gah	7(27)	4(15)	13(50)	2(8)	26(100)
Bajna	6(17)	15(42)	10(28)	5(14)	36(100)
Bajna Mera	2(8)	11(46)	7(29)	4(17)	24(100)
Total	27(23)	39(33)	37(31)	17(14)	120(100)

Source: Field Survey 2012. The values in parenthesis are percentages

**Educational status of respondents**

Education is considered as main pillar in the development of nations. All developed countries have more than 90% literacy ratio. Now day's illiterates are considered as paralyzed and unsound people. Education plays vital role in diffusion of new agricultural innovations, ideas and useful information. No one can deny the importance of education in agricultural development.

The above Table-2 shows that 43% of respondents were illiterate and rest of respondents were literate. In which 14% of respondents got their education up to primary, 28% up to middle, 13% up to metric and only 3% were intermediate. Most of literate respondents fall in the category of middle level education, which is 28%. The farmers with some extent of education should be provided the literature on modern practices of tomato cultivation. So that farmers' educational talent can be utilize for better production of tomato.

Table-2. Distribution of respondents regarding to their Educational status.

Village names	Educational status of the respondents.					Total
	Illiterate	Primary	Middle	Matric	Intermediate	
Baffa Mera	7(21)	2(6)	16(47)	7(21)	2(6)	34(100)
Dambra Eid Gah	14(54)	6(23)	4(15)	2(8)	0(0)	26(100)
Bajna	17(47)	6(18)	8(22)	4(12)	1(3)	36(100)
Bajna Mera	14(58)	3(13)	5(21)	2(8)	0(0)	24(100)
Total	52(43)	17(14)	33(28)	15(12)	3(3)	120(100)

Source: Field Survey 2012. The values in parenthesis are percentages

Chi-square test

In order to investigate the association between any two selected variables of the study, Chi-square test was applied.

Degree of freedom = 8
Chi square = 11.381
Alpha = 0.05
P value = 0.18

Result:

As the P value 0.181 which is greater than 0.05, it shows that there is no significant association between Education level of respondents and their main source of information (awareness) about tomato cultivation.

Degree of freedom = 6
Chi square = 4.272
Alpha = 0.05
P value = 0.640

Result:

As the P value 0.640 which is greater than 0.05, it shows that there is no significant association between land tenural status of respondents and their total income from tomato cultivation.

(awareness) about tomato cultivation.

Degree of freedom = 3
Chi square = 0.490
Alpha = 0.05
P value = 0.921

Result:

As the P value 0.490 which is greater than 0.05, it shows that there is no significant association between

farming experience of respondents and their satisfaction from agricultural extension services.

Degree of freedom = 2
Chi square = 1.198
Alpha = 0.05
P value = 0.549

Result:

As the P value 0.549 which is greater than 0.05, it shows that there is no significant association between future prospects of tomato crop and farmers satisfaction from agricultural extension services.

Degree of freedom = 6
Chi square = 11.262
Alpha = 0.05
P value = 0.081

RESULT

As the P value 0.081 which is greater than 0.05, it shows that there is no significant association between area under tomato crop cultivation and frequency of agricultural extension agent visit to farmers.

CONCLUSIONS AND RECOMMENDATIONS

Gathering information and knowledge is a lifelong process starts from first breath to last. These knowledge and information brings change in human behavior. The result shows that highest age category of respondents was 36-45 years. History of developed nations shows that they concentrated on education. Education brought human from stone era to this modern world. In the study area majority (28%) of respondents got education up to middle level and 43% of respondents were illiterate, which is a huge barrier in transferring the modern



agricultural technologies to the farmers. Majority farmers had small piece of land holdings i.e. below six kanals. Majority of farmers were owner cultivated, some of them were owner cum tenants and a few were tenants. More than half of respondents told that they were unsatisfied from role of agricultural extension department and its services moreover they argued that extension agent visits them on annual basis. Disease affected the production of tomato crop. Every respondent reported that they faced disease on their tomato crop. Although farmers applied more than one method to control the disease but still did not control it fully. In the response of questions i.e. satisfaction from agricultural extension department, majority of farmers reported that they are unsatisfied from the role and services of agricultural extension department. It is concluded that extension services were poor in the study area.

On the basis of conclusion and observations during the study following recommendations are made: (i) Agricultural extensions agents must be bound for regular visit to farmers. (ii) If possible, extension department should provide inputs to farmers, if such resources are not

available in extension department; they should try to manage it by coordinating with other relevant departments, NGOs for provision of inputs (iii) It is suggested that small loans with help of banks and other departments should be provided to the farmers that they could be able to fulfill their seasonal needs of inputs (iv) Disease is a common problem of all farmers, trainings/workshops should be conducted on preventive measures and methods to teach farmers about selection of suitable method, pesticides and its application methods to control the disease (v) Extension staff must be given opportunities of trainings and exposure visits about new and advanced agricultural technologies like new mechanizations, latest inputs, modern farming practices etc. for the purpose that they could transfer these technologies to the farming community for adoption which will enhance the farmers' confidence in agricultural extension department and improve their production as well (vi) Literature about new research and innovations in the field of agriculture should be provided to the literate farmers.

Table-3. Chi-square test was applied to test the hypothesis between Educational level of the respondents and their main source of information about tomato cultivation.

Educational level	Main Source of Information about tomato cultivation			Total
	Agricultural Extension Department	Other farmers	Ancestors/Relatives	
Illiterate	14	9	29	52
	11.7%	7.5%	24.2%	43.3%
Primary	4	5	8	17
	3.3%	4.2%	6.7%	14.2%
Middle	15	1	17	33
	12.5%	.8%	14.2%	27.5%
Matric	7	2	6	15
	5.8%	1.7%	5.0%	12.5%
Intermediate	2	0	1	3
	1.7%	.0%	.8%	2.5%
Total	42	17	61	120
	35.0%	14.2%	50.8%	100.0%



Table-4. Chi-square test was applied to test the hypothesis between lands tenural status of the respondents and their total income from tomato crop.

Tenural status of land	Total Income from tomato crop				Total
	51000-100000	101000-150000	151000-200000	Above 200000	
Owner Cultivated	25	14	11	28	78
	20.8%	11.7%	9.2%	23.3%	65.0%
Owner-cum-tenant	8	1	4	10	23
	6.7%	.8%	3.3%	8.3%	19.2%
Tenant	6	5	3	5	19
	5.0%	4.2%	2.5%	4.2%	15.8%
Total	39	20	18	43	120
	32.5%	16.7%	15.0%	35.8%	100.0%

Table-5. Chi-square test was applied to test the hypothesis between Farming experience and satisfaction from agricultural extension services of respondents.

Farming experience in years	Agricultural Extension service satisfaction		Total
	Yes	No	
1-5	15	15	30
	12.5%	12.5%	25.0%
6-10	16	20	36
	13.3%	16.7%	30.0%
11-15	17	22	39
	14.2%	18.3%	32.5%
Above 15	6	9	15
	5.0%	7.5%	12.5%
Total	54	66	120
	45.0%	55.0%	100.0%



Table-6. Chi-square test was applied to test the hypothesis between future prospects and respondents' satisfaction from extension services.

Future prospects	Agricultural Extension services satisfaction		Total
	Yes	No	
Good	38	43	81
	31.7%	35.8%	67.5%
Average	12	14	26
	10.0%	11.7%	21.7%
Less	4	9	13
	3.3%	7.5%	10.8%
Total	54	66	120
	45.0%	55.0%	100.0%

Table-7. Chi-square test was applied to test the hypothesis between area under tomato crop and frequency of agricultural extension visit.

Area under tomato crop in kanal	frequency of Extension agent visit				Total
	Monthly	Annually	On need basis	Don't know	
1-5	8	21	25	18	72
	6.7%	17.5%	20.8%	15.0%	60.0%
6-10	6	13	14	7	40
	5.0%	10.8%	11.7%	5.8%	33.3%
11 and Above	4	3	0	1	8
	3.3%	2.5%	.0%	.8%	6.7%
Total	18	37	39	26	120
	15.0%	30.8%	32.5%	21.7%	100.0%

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