Knowledge of Tomato Growers Using Polly Plastic in Thi-Qar Province of Iraq

Hakeem S. Abd[1] and Dipak De[2]

1. Ph. D Scholar 2. Prof . (Agil. Ext. Edu.), Banaras Hindu University, U. P, Varanasi, India.
Corresponding author e-mail: hakeem_abd24@yahoo.com

ABSTRCT

The present study was conducted in Thi-Qar province of southern Iraq where the use of Polly plastic has become popular. The study was carried out on 430 tomato growers. To conduct the study a multistage simple random sampling technique was followed to draw a sample of 86 tomato producers (20% of the total number of tomato growers). The questionnaire technique and interview with tomato producers were adopted to collect data from June 2012 to July 2012. This study revealed that the highest percentage (47.674%) belonged to the low category level of knowledge about modern agricultural technology use in tomato production in Polly plastic. The relationship of the independent variables with knowledge level of tomato producers was positive and significant relationships at one percent level of probability. Furthermore, regression analysis was carried out with eleven variables namely age, education ,social class , family size, farm power, family type , number of Polly plastic installed, experience in the Polly plastic , source of information utilization , social participation and exposure to extension methods. The study contributed a significant level of variation to the knowledge about modern agricultural technology in tomato production using Polly plastic (R^2=60.39).

***Keywords:** Knowledge; Tomato growers; Polly plastic; Agricultural technology;*

The Tomato is one of the most important vegetables in the world. World tomato production in 2001 was about 105 million tons of fresh fruits from an estimated 3.9 million hectare. As it is a relatively short duration crop and gives a high yield, it is economically attractive and the area under cultivation is increasing daily (*Naika 2005*). Many farmers have chosen to grow tomatoes using their Polly plastic rather than other crops because of the ready market as well as high yield. Open grown tomatoes are susceptible to diseases and thus require the application of pesticides but with Polly plastic technology (peri-urban green house 2011). Consumers need huge quantities of tomatoes daily in Iraq. Thus tomato cultivation using Polly plastic has become widespread in Iraq. In the beginning, the farmers used Polly plastic sparingly, but after 2008 they started to use more. Tomato crop productivity with Polly plastic rose to (8.5 t/h), compared with the productivity in traditional cultivation which amount to (3 t/h) in same season (*Shammari 2011*). Tomato growers in Thi-Qar province of Iraq need to adopt the modern agricultural technology of Polly plastic. A study entitled 'Knowledge Level of Tomato Growers Using Polly Plastic as Modern Agricultural Technology in Thi-Qar Province of Iraq ' was undertaken with the following objectives:

1. To determine the level of knowledge among Polly plastic users of the modern agricultural technology of Polly plastic of Thi-Qar province.

2. To determine the factors influencing respondents' level of knowledge about the modern agricultural technology use of Polly plastic.

METHODOLOGY

The present study was carried out in Thi-Qar province in southern Iraq. The use of Polly plastic has become widespread in this province due to the increase in population and the growing demand for vegetable crops in the province. Also because of the easiness of management the Polly plastic is not needed many laborers. The total number of farmers in year 2012 was 430. The respondents' sample of the study for purpose of collecting data was selected on the basis of a simple random sample (it was 20 %). The number of the sample for the study was specified as 86 farmers. The data

was collected through personal interview and questionnaire method. Statistical methods were used to analyze the data for this study. The knowledge level of farmers was measured with the help of knowledge test developed for this purpose. The number of questions was 20. The questions were divided into four groups namely (i) the operations of constructing the Polly plastic. (ii) Operation for the cultivation process and operation for the service of agricultural crop in Polly plastic. (iii) Operation for the harvesting and marketing of agricultural crops from Polly plastic. (iv) Combat agricultural pests inside the Polly plastic. The sum of score obtained on all the knowledge items in the knowledge test was considered as the knowledge score of the respondents. The knowledge score of the individual respondent was converted into the knowledge index as follow-

Where

$$KI = \frac{X}{Y} \times 100$$

KI= Knowledge index

X= Knowledge score obtained by respondents

Y= Maximum obtainable knowledge score

The knowledge level categories were formulated as low, medium and high on the basis of mean ± SD. The correlation analysis was carried out to find out the relationship between socio–economic, communication and psychological variables with knowledge. To explain the contribution of selected factors on knowledge level, stepwise multiple regression analysis was carried out.

RESULTS AND DISCUSSION

To determine the level of knowledge among Polly plastic users of the modern agricultural technology: The level of knowledge of respondents has been classified into three categories (low, medium and high). It is clear from Table 1 that the high percentage of respondents (47.67 %) was under the first category (low), followed by (39.54 %) within the second category (medium), the lowest percentage was within the third category (12.79 %).

Table 1: Distribution of farmers as per their level of knowledge about modern agricultural technology used in Polly plastic

Level of Knowledge	Knowledge Index	No.	%
Low	50 and below	41	47.67
Medium	51-65	34	39.54
High	Above 65	11	12.79
Total		86	100

Mean =10.43   SD = 9.29

In other words, more than half of the farmers (87.21%) possessed low-to –medium level of knowledge using modern agricultural technology of Polly plastic. Furthermore, the overall mean knowledge about modern agricultural technology use in Polly plastic was observed to be (10.43) quite low (*Lal 2006*). It can be noticed from the data in table 1, that the level of knowledge using modern agricultural technology does not meet the prospective, it can be concluded that the farmers still fear to use the modern technology of Polly plastic (pesticides, fertilizers and chemical control methods**).** The farmers don't prefer to for modern technology because it needs a lot of money. The level of education is low; some efforts are needed to the high level of education. Selling price of agricultural production is low in most cases. The price of imported crops is very low as compared with the domestic crops. Iraq imports around 100000 tons per day of agricultural crops from Jordan, Syria, Iran and turkey.

The study was conducted on the four processes applied by the farmers in the Polly plastic namely: (i) the operations of constructing the Polly plastic, (ii) operation for the cultivation process and operation for the service agricultural crop in Polly plastic, (iii) operation for the harvesting and marketing of agricultural crops from Polly plastic and (iv) combat agricultural pests inside the Polly plastic. The data have been presented in the Table 2. The results have shown that the first process operations of constructing the Polly plastic had been done by 60.23 percent respondents, operation for the cultivation process and operation for the service agricultural crop in Polly plastic had been made by 55.35 per cent respondents, operation for the harvesting and marketing of agricultural crops from Polly plastic had been done by 69.30 per cent respondents and combat agricultural pests inside the Polly plastic had been made by 72.79 per cent respondents .

Table 2: Distribution of farmers according the processes of modern agricultural technology used in Polly plastic

Processes	%
The operations of creating the Polly plastic	60.23
Operation for the cultivation process and operation for the service agricultural crop in Polly plastic	55.35
Operation for the harvesting and marketing of agricultural crops from Polly plastic	69.30
Combat agricultural pests inside the Polly plastic	72.79

It can be noticed from the data in Table 2, that collecting information for the first operation the

respondents might be dependent on their personal experiences. For the second operation the respondents might be collecting more information, for the third operation due to economic reasons, fourth operation requires more scientific information to combat pest and disease. Respondents might be looking for more sources of information.

To determine the factors influencing respondents' level of knowledge about the modern agricultural technology use of Polly plastic : For this purpose relationship between the knowledge and independent variables for each respondent were put to correlation analysis. As shown in Table 3, all the 11 variables studied were found to be significantly related with knowledge. **S**imilar finding was also reported by *Singh (2002)* in case of mass media exposure and extension participation. Age ,education, social class , family types , sources information of the respondents showed positive and significant correlation with their of knowledge about modern agricultural technology use to tomato production in Polly plastic (significant at 0.05 level of probability) *Tripathi (2006)* and *Shaky (2008)* also found positive and significant relationships between education level and level of knowledge . *Prakash (2005)* Found positive and significant relationship between family types and source of information level and level of knowledge. The probable reason is that educated farmers used to gather information from various sources in order to increase their knowledge level. According to the results in Table 3, it can be concluded that socio- personal variables of the responders might be helping to seek more information

Table 3: Correlation between Selected Attributes of tomato produces and their Level of Knowledge

Characteristics	r	t-value
Age	0.2103 *	1.9828
Education	0.30033 *	2.207
Social class	0.2246 *	2.1243
Family size	0.33414**	3.268
Farm power	0.47541 **	4.981
Family type	0.2033 *	1.914
Number of Polly plastic installed	0.3594 **	3.55
Experience in the Polly plastic	0.268 **	2.565
Sources of information utilization	0.22 *	2.079
Social participation	0.391 **	3.917
Exposure to extension methods	0.4388 **	4.497

*Significant at 0.05 level   ** Significant at 0.01 level

for modern poly plastic agricultural technology. It will help them to grow vegetable crops in the Polly plastic.

Multiple regressions: To predict important independent variables the technique of multiple regressions was used. The technique was used to determine the effect of these selected variables on the dependent variable namely knowledge level of farmers about modern agricultural technology. All the independent variables were fitted with knowledge level of farmers in the multiple regression equation. The findings have been incorporated in Table 4.

It is evident from the above Table 4 that the eleven independent variables taken together explained to the extent of 60.39 per cent of the variation with level of knowledge .The respective "F" value (significant at 1%

Table 4: Multiple regression analysis of selected independent variables with knowledge level of farmers about modern agricultural technology

Variables	R^2	bi	Ste	t-value
Age	0.22458	0.15042	0.10221^{NS}	1.47163
Education	0.538712	0.31286	0.01958 **	15.9796
Social class	0.950672	0.362902	0.009747**	37.23141
Family size	0.56829	0.48136	0.005775**	83.35932
Farm power	0.888502	0.540015	0.00851**	63.46005
Family type	0.689453	0.714675	0.005789**	123.4595
Number of Polly plastic installed	0.8569349	0.041334	0.011422 *	3.61864
Experience in the Polly plastic	0.4879215	0.15576	0.023755 **	6.556901
Sources of information utilization	0.6703471	0.276749	0.015615 **	17.72367
Social participation	0.435106	0.122696	0.011942 **	10.27404
Exposure to extension methods	0.332429	0.030957	0.014581 *	2.123175

*Significant at 0.05 level of probability: ** Significant at 0.01 level of probability
NS =non significant R^2=0.603904   F value = 3.34 ** d.f (11, 86)   Intercept constant (a) = 9.52

level) at (11,86) degrees of freedom given in parenthesis was 3.34. Thus, the results implied that all the eleven independent variables would account for highly significant amount of variation in level of knowledge of farmers. The coefficients of regression (b-value) are for all the eleven variables are found to be significant with level of knowledge of farmers.

CONCLUSION

The results of this study showed that a large majority of tomato Growers (87.21%) was within the low to medium level of knowledge about modern agricultural technology use in tomato production in Polly plastic. Whereas the overall mean about use of modern agricultural technology in tomato production in Polly plastic was observed at relatively low (10.4). The relationship between the independent variables and knowledge level of farmers was positively and significantly related. The multiple regression test has explained to the extent of 60.39 per cent of variations with the level of knowledge. All the selected independent variables are important to predict the level of knowledge of the respondents.

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