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PERCEIVED EFFECTIVENESS OF INFORMATION SOURCES REGARDING IMPROVED PRACTICES AMONG CITRUS GROWERS IN PUNJAB, PAKISTAN

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Citrus is leading and globally competitive fruit of Pakistan. However, matter of concern is low production than the potential. Enhanced production is directly associated with adaptations of site specific technologies. In this context reliable information sources document significant importance. Considering information availability and information sources reliability vital, present study was conducted to analyze the effectiveness of information sources on improved production practices among citrus growers. Study was conducted in Sargodha, major citrus producing area of Pakistan. Multistage sampling technique was used to select 120 respondents for the study. A well structured interview schedule was used to collect information on variables such as socio-economic characteristics, effectiveness of information sources on agricultural production and problems militating against citrus production. The data collected were analyzed using descriptive analysis such as frequency distribution and percentage, while Pearson Product Moment Correlation was also used as the statistical tool for in-depth analysis. The results revealed that most of the respondents are in their middle age, with land holding size of 5–10 acres and 71% respondents were having education of different level with prominent category of primary to middle. Information from fellow farmers, pesticide agencies, and extension field staff (EFS) were ranked to be the most effective sources; Moreover inadequate technical knowledge and income were ranked 1st and 2nd among the problems militating against citrus production. The result of Pearson product moment correlation shows that there was no significant relationship found between the socio-economic characteristic of the respondents and effectiveness of information sources. It is suggested on the basis of results that farmers are needed to be motivated to utilize modern information sources like ICT tools rather than traditional sources. EFS also should use updated sources to foster information delivery. Moreover, subsidy should be provided on inputs to facilitate production practices and to increase growers' income.
Keywords: Kinnow, extension services, information sources, ICT, EFS

INTRODUCTION

Information may be defined as organized data of ideas or skills that were served as raw resource for knowledge (Ochieng, 2003). Information is obtained through a valuable source called information source such as male farmers generally utilizes sources like fellow farmers, friends, pesticide dealers and public extension workers. In case of audio visual aids, radio and TV were the main sources of information (Nazam, 2000; Cheema, 2000; Barkat, 2002). The information sources are divided into two categories; one was conventional, and other was non-conventional or modern. The conventional methods include personal contact methods and modern contains the mass contact methods (Cheema, 2000). The dream of rural development cannot become true until the farmers earn benefit from the existing sources and relevant information. Some time inadequacy of information source could be hazardous and turn to become a major constraint to agricultural development (Adeola, 2008) as it is supported by Abbas *et al*. (2003) that most of the farmers are not fully aware of the recommended agricultural practices resulting in low yield per acre. Mele (2000) reported that lack of information due to deficient information sources is the major constraint in establishing an IPM program from citrus plants protection. Due to lack of adequate information about farmer's knowledge, perceptions and practices (KPP) regarding pest management, most of the farmers face reduction in citrus production and fruit quality. Therefore, for the effective and valid outcome, the effective use of various information sources is vital. These sources are useful in obtaining information that relates to crops cultivation practices, land development, pesticides, diseases control details, marketing details and many other functions (Alex *et al.,* 2002). Shamsi (2006) pointed out that media have become part and parcel of our life and the way through which component technologies information is disseminated among the farming community, it is considered the main organizational vehicle (Cernea *et al.,* 1984; Khanna, 2001) and now a day's electronic media is playing key role as information source. Extension agents are using audio visual

aids to increase the learning but also facing some problems as reported by Ajayi (2003) that major problems in the use of mass media by extension agents were lack of technical language and follow up of farm information. Rural areas lag in modern facilities that are why rural areas remain behind urban areas in their access to information. This difference endangers the ability of rural people to realize their full potential and improve their livelihoods (Alex *et al.,* 2002). Wilson *et al*. (2000) reported that use of source of information also influence with the land holding size as younger framers holding large farm size and higher educational level, preferred to receive information from different sources i.e. literature, exhibitions, conferences, private sector, public sector and fellow farmers while in case of elder farmers having small land holding size and lower educational level they receive information from fellow farmers and local peoples. In these unreceptive conditions where farmers are using old information pattern and fellow farmers as a source and where irrelevant programs are broadcast on TV and radio how it is possible to gear up the process of development by neglecting these constraints of the farmers. Therefore, the present study was conducted to analyze the effectiveness of information sources regarding dissemination of information of citrus production. Constraints being faced by the respondents were also probed. The specific objectives of the study were to identify the socio-economic characteristic of citrus growers, investigate the information sources available to the citrus growers and identify the problems militating against citrus production.

METHODOLOGY

Citrus is produced in four provinces of Pakistan but the Punjab holds 95% of the total production (Sharif, 2005; PBIT, 2012). Sargodha mainly comprises flat, fertile plains, which are the ideal conditions for cultivation of the land. Climate varies from extreme heat and cold with maximum temperature 50°C (122°F) in the summer whiles the minimum temperature as low as freezing point in the winter. Therefore, it is the Pakistan's best and leading citrus producing area (Sarwar *et al*., 2012). Therefore, study was carried out in tehsil Kot Momin of district Sargodha where major occupation of people is also citrus farming.

***Sampling procedure and sample size*:** A multistage sampling technique was used in selecting the respondents for the study. On first stage Tehsil Kot Momin was selected as study area purposively as area is one of the major citrus producers of district Sargodha. Study area consists of total 24 union councils. Out of total 24 union councils, 22 were rural and the remaining 2 are urban. On 2nd stage, from the 22 rural union councils, 5 union councils were selected using simple random sampling technique. On 3rd stage, from the selected 5 union councils, 10 villages were selected using simple random sampling. In this context, 2 villages were opted from each selected union council. From each selected village 12 citrus growers were selected using simple random sample technique thereby making a sample size of 120 citrus growers. Sampling framer containing list of union councils, villages and citrus growers was obtained from office of District Agricultural Officer, Sargodha.

***Measurement of variable*:** The independent variable of the study is the socio-economic characteristics such as age, educational level and landholding size. while the dependent variable is the effectiveness of information sources on improved citrus practices which was measured on a 5 point scale-very low effective, low effective, medium, high and very high effective.

***Data analysis*:** Descriptive statistics were used including frequencies, percentages, and mean, while Pearson Product Moment Correlation was used to determine the relationship between selected demographic, level of awareness and effectiveness of the information sources. In this regard all the information sources were computed into single factor named as effectiveness of the information source and was correlated with the demographic characteristics of the respondents.

RESULTS AND DISCUSSION

It appears from the data in Table 1 that almost half (48.4%) of the respondents belong to middle age category. The results of the findings also show that majority (71%) of the citrus growers received some level of formal education while the remaining 29% had no formal education. This indicates the relative high literacy level of the area. This might help the farmers in faster adoption of improved citrus production practices and also can help extension work.

Table 1. Distribution of respondents by demographic characteristics (n=120).

Age (Year)	Frequency	Percentage
Young (<35)	46	38.3
Middle (35-50)	58	48.4
Old (> 50)	16	13.3
Educational Level		
Illiterate	29	24.2
Up to primary	23	19.2
Primary to middle	36	30.0
Middle to matric	17	14.1
Above matric	15	12.5
Size of land holding (acre)		
< 5	47	39.1
5-10	39	32.5
> 10	34	28.3

Regarding issue of land holding size, most of the farmers (39.1%) claimed up to 5 acre land holding size followed by the farmers (32.5%) with 5-10 acres. The above 10 acre land holders percentage was found relatively lower than the

above mentioned categories. However, most of the respondents belonging to these three categories had maximum cultivation of citrus fruit on their lands.

***Effectiveness of information sources on citrus production*:** Citrus growers may use number of sources information for getting information regarding citrus production and protection technologies. These information sources play vital role in minimizing the communication gap regarding citrus production and protection technologies among farmers. Therefore, the farmers were asked about their information sources to assess the effectiveness.

Table 2. Ranking of various information sources regarding their effectiveness.

Information Source	Mean	Order	S.D
Friends /Fellow farmers	4.02	1	0.77
Pesticide agencies	3.60	2	1.03
Extension field staff	3.01	3	1.23
Fertilizer agencies	2.54	4	1.30
Television	2.45	5	1.41
Radio	2.41	6	0.81
Printed material	2.07	7	0.74
Research organizations	1.15	8	0.36
Agricultural Universities	1.05	9	0.21

Source: Field Data 2012 n=120

Table 2 shows the analysis of the effectiveness of information sources on citrus production using a 5 point likert scale. It appears from the data that friends/fellow farmers was considered most effective information source (Mean: 4.02) by citrus growers. Moreover, pesticide agencies (Mean: 3.60) and extension field staff (Mean: 3.01) were ranked as 2nd and 3rd effective sources of information. It implies that extension worker who is professionally trained for information dissemination to farmers is not a major source of information. But reality is that growers need to be trained adequate by the extension worker and field staff for a maximum adoption of improved citrus practices through effective utilization of contact methods such as individual, group and mass contact method. This is necessary to save farmers from being misguided, as Oladosu (2004) pointed out that adoption and utilization of appropriate technology is largely dependent on the effectiveness and relevance of information dissemination and the ability of agents to convince the farmers. Generally, overall look on the effectiveness indicates that fellow farmer as a information source was ranked 1st followed by the pesticides agencies as 2nd and extension field staff as 3rd. Diversified overall impression revealed by Malik (2000), Abbas *et al*. (2003), Hanif, (1992), Chaudhary *et al*. (2008) and Saleem (2010) coincides with identified results as fellow farmers and relatives are the most frequent and useful sources of information for farmers while no prominent study was identified dealing particularly with citrus. Regarding international researches and results these results also in line with Squire (2000) where he indicated the fellow farmers as a major source of information regarding adoption of food production technologies. More researchers such as Alerx *et al*. (2002), Adomi *et al*. (2003) and Manohari (2002) reported that males used to trust more on friends for acquiring information. Highly educated farmers may acquire more easily technical information as their capacity to digest information from various sources is larger (Gervais *et al*., 2001). Furthermore, in a study Wilson *et al*. (2000) also reported that aged growers, who had small land size and had not received higher education prefer receiving information from the fellow farmers.

Pesticide agencies such as Auriga, Ali Akbar, Syngenta etc. are the 2nd best information source for the farmers followed by EFS. It is reflected from data that private sector is actually involved in providing agri. Information sources. Private sector has created good image among farmers through their field staffs extraordinary work. EFS was the 3rd best source as field staff facilitated farmers with latest information's through farmers meeting, lectures, and group discussions.

Couple of years ago television was considered best information source because audio visual demonstration always remains helpful for any learner. But broadcasting of poor quality and non-agricultural programs along with immense load shedding were creating decline in interest of farmers toward information acquisition from TV. Regarding particular study of citrus conducted by Ghafoor *et al*. (2008) top most problem faced by citrus growers regarding availability of information were improper and irrelevant programs broadcast on TV. However, TV was considered better than radio and these results are in line with those of Irfan (2005), Ashraf (2008), and Muhammad *et al*. (2008) who reported TV more effective than radio as an agri. information source regarding diversified fields in different research areas. Majority of the farmers demanded the effective role of radio and TV by broadcasting the agricultural programs which indicates the desire of farmers to receive relative information through TV channels and programs. To get benefit from printed material it is necessary to be educated and having a lot of interest but both of these were below average in study area therefore the respondents were failed to attain the benefit from printed material and it was also revealed by Nosheen *et al*. (2010) that sources like books/booklets received the least consideration may be due to low level of education. Rest of the information sources didn't appeared as the effective information sources therefore, they got lowest mean and rank.

***Problem militating against citrus growers*:** Inadequacy of the information may be harmful which can militate the farmers (Table 3). Therefore, problems were probed out and the results show that lack of technical knowledge was ranked

1st among the various problems being faced by citrus growers. This inadequacy of technical knowledge also promotes the non-adoption of recommendations. Each farmer tends to boost his financial condition therefore he invests in his field for better return. This better return makes him financially sound but if returns face a decline then it becomes a major hurdle for farmer. In this regard finance problem was ranked 2nd as the militating factor followed by the high costs of inputs as 3rd militating factor. This finance shortage and non-affordability of inputs on time pushes farmer towards non-adoption. It is well known fact now a days in Pakistan that inputs prices are too high and most of the farmers are unable to afford the inputs on time because of their unstable financial condition. Market condition was ranked after the high costs of inputs. Sound market can help farmer a lot and can boost the interest of farmer in farming but when market is unstable it becomes immense hurdle and same thing was observed during data collection. There was not developed market in study area and farmers were depended on middle man along with his monopoly. Cooperation of extension field staff and natural calamities got the lowest means and were ranked last. Most of the farmers were satisfied of their role but meanwhile they also suggested to diversify their role in various practices such as role in managing market and to control adulteration of inputs especially insecticides and pesticides.

Table 3. Distributions of the respondents based on problem militating against citrus growers (n=120).

Problems related to	Mean	S.D	Rank
Technical knowledge	4.37	0.87	1
Finance	4.21	1.00	2
High costs of inputs	3.91	1.25	3
Market conditions	4.21	1.11	4
Adulteration in pesticides	3.99	1.34	5
Interest of citrus growers	3.01	1.70	6
Illiteracy	2.70	0.60	7
Harvesting	2.11	0.51	8
Cooperation of EFS	1.33	0.66	9
Natural calamities	1.12	0.36	10

***Test of hypothesis*:** Ho1: There is no significant relationship between the selected demographic characteristics of the respondents and effectiveness of information sources. Data in Table 4 reflect a negative correlation between age and effectiveness of information source. This indicates that as the age increases the effectiveness of information source goes down. Moreover, during data collection it was observed that farmers especially of old age were inclined toward traditional information sources such as fellow farmers instead of modern tools Positive correlation was found between education, size of land holding and effectiveness of information source. Farmers with higher education can get maximum benefits from the information perceived from the information source which motivates their adoption of modern techniques. Educated farmers also can utilize printed material effectively. When this higher education blends with the large land size it becomes more effective in the context of latest techniques adoption. The farmers having less land size remain dependent on fellow farmers instead of extension field staff or electronic media such as TV and Radio. These results are contradictory with Ayoade (2010) who reported significant and positive correlation between age and effectiveness of information source while negative relationship between education and effectiveness of information source. Further Chaudhary *et al*. (2008) also indicated a significant relation between age and sources of information.

Table 4. Relationship between selected demographic characteristics and effectiveness of information source (n=120).

Characteristic	Pearson correlation	Significant level
Age*	-0.028	0.763
Education**	0.177	0.052
Size of land holding***	0.057	0.535

*r=-0.028 (p>0.05), **r=0.177(p≤0.05), ***r=0.057 (p>0.05)

***Conclusions and recommendations*:** Study concluded that information is vital to improvement of farm productivity. Inadequate access to information may cause decline in expected production. It is inevitable to increase the production of citrus in Pakistan to stabilize the producers' livelihoods and national economy as well. However, producers are not getting production according potential. Among several factors inadequate access to information and reliability on traditional information sources are significant factors affecting the production potential. Producers were facing some major problems like inad3eqaute technical knowledge, awareness, high cost, illiteracy, lowering interest and marketing conditions. Information sources can cope up these problems through its diversified information delivery approach and extensive penetration among rural masses. In this regard, considering the significance, updated information sources are need of the hour. Extension field staff should utilize maximum information sources to disseminate updated information about good agricultural practices throughout the country. Utilization of ICT tools and power of social media can be alternative to the traditional information sources.

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