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Research article

THE ROLE OF PLANT CLINICS IN INCREASING KNOWLEDGE, ATTITUDE AND SKILLS OF EXPERTS IN COMBATING PLANT PESTS

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ABSTRACT: Experts were surveyed in order to explore their perception about the role of educational methods in acquiring knowledge, skills and changing attitudes about fighting plant pests in urban green spaces in Tehran. The methodology used in this study involved a combination of descriptive and quantitative research. The total population for this study was 160 experts in the municipality of Tehran. Based on the perception of the respondents, 11.8% of the variance in the perception of experts about the role of educational methods could be explained by two variables of leaflets and seminars.
Keywords: Urban green spaces, Plant pests, Experts, Tehran, Educational methods

INTRODUCTION

The rapid development of urban areas and increasing population has put a tremendous pressure on policy makers to develop cities that provide healthy environment for urban population. Good quality green spaces are an essential element of urban neighborhoods and make a profound contribution to the quality of life of communities. They offer many economic, social and environmental benefits [1]. Konijnendijk, Gauthier and Van Veenhuizen have recognized the importance of green spaces in urban areas and indicated the crucial role of green spaces in ecological and social systems in Europe [2]. Tehran as capital of Iran is the biggest metropolitan area in the country. There are currently 1500 parks and urban green spaces in the Tehran. The amount of green spaces per capita is 7.5 square meters and it is expected would hit 9.5 square meters [3]. However, along with urbanization which resulted in destruction of greens spaces in urban areas, pest and plant diseases also contributed in the process of destruction. In order to protect the green space in urban areas, countries throughout the world have tried different methods such as establishing plant clinics. The clinics are not a technology but an advisory service. They link diagnostic labs with extension workers (plant doctors) and provide regulatory bodies in plant health with up-to date information on current priorities by clinic 'area of influence'. Such clinics have little direct expense. In the long term they need public investment and private support [4]. Uganda has launched mobile 'plant clinics' to travel around the country diagnosing and treating outbreaks of crop pests and diseases. The clinics comprise teams of crop specialists who visit rural areas looking out for signs of pests and diseases, and report information on them and the crops affected to the country's Ministry of Agriculture, Animal Industry and Fisheries [5]. Hosseini [6] citing Rahmani [7] reported that the first plant clinic in the Tehran was established in 1996 with purpose of identifying and combating plant pests, increasing the knowledge of residence about green spaces and promoting their participations in protection of green space. Based on the studies, citizens' perception and behavior towards green spaces appeared to be motivated by different patterns ranging from indifference, or even hostility, to a generic awareness, to specific concern, to active involvement and participation in pro-environmental activities [8]. Training is an important element in any activities in sustainable urban planning and it is important for green space experts to increase their knowledge, attitudes and skills in fighting plant pest. Different teaching methods could be used related to the development of urban green spaces. Skill is better acquired through group contact methods.

These methods have the nature of practical demonstration which will help the clientele from desire stage through conviction and probably into taking action. The individual contact method is considered to be an important tool [9]. Given the importance of urban green spaces, examining the teaching methods in helping experts to combat plant pests can contribute sustainable urban green spaces. The research question for this study is: How knowledge, attitude and skill of experts about combating plant pests could be enhanced through training?

MATERIALS AND METHODS

The research is applied and descriptive/survey methods were used to collect the data. The total population of the study was 160 urban green space's experts in the municipality of Tehran. A series of interviews was conducted by experts and a questionnaire consists of open–ended and close-ended questions were developed to collect the data. Data was collected by using face-to-face method. Variables and their measurement scale are presented in table 1. Measuring respondent's attitudes towards the role of teaching methods in increasing knowledge, attitude and skill of experts to combat plant pest has been achieved by structured questionnaire surveys. The usual questionnaire approach to measure attitude is to include a range of Likert items (ranging from 1 as totally inadequate to 5 as totally adequate) to operationalize the attitude construct. The questionnaire consists of four sections. The first section was developed to measure the attitudes of respondents about role of training in increasing knowledge to combat plant pests. The next section was questions about role of training in changing attitudes to combat plant pests. The third section was questions about role of training in increasing skills to combat plant pests. The last section was used to find out the personal characteristics of respondents. Content and face validity were established by a panel of experts consisting of faculty members at Islamic Azad University and experts in the field of plant pathology. A pilot study was conducted to determine the reliability of the questionnaire for the study. Computed Cronbach's Alpha score was 83.0%, which indicated that the questionnaire was highly reliable. The dependent variable in this study was the respondent's skills (5 statements), attitude (5 statements) and knowledge (10 statements) about combating plant pests. The independent variables were role of training methods in increasing skills, knowledge and attitudes in combating plant pests (9 statements). For measurement of correlation between the independent variables and the dependent variable correlation coefficients have been utilized and include Spearman test of independence. The stepwise regression method was also used to explain the variance in the perception of respondents about role of training methods in increasing their knowledge, skill and attitude in combating plant pests in green spaces.

RESULTS

Table 2 shows the personal characteristics of respondents. Majority of respondents were between 31to 40 years old (40.6%) and average age was more than 34 years old. It was also reported that majority had a bachelor degree (66.3%) and 56 respondents indicated their field of study was agronomy. Majority of respondents had between 5 to 10 years working experience (36.4%) with average of more than 9 years. Table 3 shows the perception of respondents about their knowledge about fighting plant pests in green spaces. Respondents were asked to respond to ten statements and results show that the highest mean refers to knowledge about plant pests in green spaces (mean=3.54) and the lowest mean refers to knowledge about proper methods of spraying (mean=2.08). Table 4 shows the means of respondents' views about their skill level in combating plant pests in green spaces of Tehran. As can be seen from this table, the highest mean refers to skills in using new methods in combating plant pests (mean=2.64) and the lowest mean refers to success in controlling plant pests (mean=2.23). Table 5 shows the perception of respondents about their attitude about fighting plant pests in green spaces. Respondents were asked to respond to five statements and results show that the highest mean refers to their attitudes about effectiveness of training methods in combating plant pests in green spaces (mean=3.31) and the lowest mean refers to effectiveness of integrated pest management in combating pests (mean=2.67). In order to finding the means of respondent's view about the educational methods which would help them to acquire knowledge, skills and change attitudes, respondents were asked to express their views (Table 6). As can be seen the highest mean number refers to short term training courses (mean=3.69) and lowest mean number refers to SMS (men=1.52). Spearman coefficient was also employed for measurement of relationships between perceptions of experts about the role of independent variables in acquiring skills, knowledge and changing attitudes about fighting plant pests as dependent variable. Table 7 displays the results which show that there was relationship between perception of respondents about the role of short term visits, seminars, field visits and leaflet and acquiring skills, knowledge and changing attitudes about combating plant pests. Table 8 shows the result for regression analysis by stepwise method.

Independent variables that were significantly related to perception of experts about role of educational methods in acquiring their knowledge, skills and changing attitudes about fighting plant pests were entered. The result indicates that 11.8% of the variance in the perception of experts could be explained by the leaflets and seminars.

Table 1: Variables and their measurement scale

Variables	Scale
Skills about combating pests	Likert
Knowledge about combating pests	Likert
Attitudes about combating pests	Likert
Teaching methods	Likert

Table 2. Personal characteristics of respondents

Variable	Group	Frequency	Percentage
Age	20-30	61	38.1
	31-40	65	40.6
	41-50	29	18.2
	More than 50	5	3.1
	Total	160	100
Educational Level	Associate degree	4	2.5
	Bachelor Degree	106	66.3
	Master	45	28.1
	Doctoral	5	3.1
	Total	160	100
Working Experience	0-5 years	39	24.2
	5-10	58	36.4
	10-15	21	13.2
	15-20	8	5
	20-25	33	30.6
	Non response	1	.6
	Total	160	100
Field of Study	Horticulture	29	18.1
	Agronomy	56	35/0
	Soil Science	15	9.4
	Animal science	7	4.4
	Plant Pathology	53	33.1
	Total	160	100

Table 3: Means of respondents' views about their knowledge about combating plant pests in green spaces of Tehran (1=totally inadequate; 5=totally adequate)

Statement	Mean	SD
Knowledge about natural pests	3.54	0.690
Knowledge about methods to combat pests	3.17	0.693
Knowledge about biological control	3.06	0.670
Knowledge about new methods of fighting pests	3.15	0.693
Knowledge about specific time to combat pests	3.20	0.742
Knowledge about equipment to combat pest	2.90	0.762
Knowledge about main plant pests in green spaces	2.85	0.771
Knowledge about training courses by municipality to combat pest	3.31	0.904
Knowledge about integrated pest management	2.98	0.925
Knowledge about proper method of spraying	2.08	0.971

Table 4: Means of respondents' views about their skill about combating plant pests in green spaces of Tehran (1=totally inadequate; 5=totally adequate)

Statements	Mean	SD
Skills in using new methods in combating plant pests	2.64	1.005
Skills in using safety device during spraying	2.42	0.928
Skills in using varieties resistance to pests	2.40	0.998
Ability in recognizing plant pests of green space	2.35	1.047
Success in controlling plant pests of green space	2.23	1.003

Table 5: Means of respondents' views about their attitudes about combating plant pests in green spaces of Tehran (1=totally inadequate; 5=totally adequate)

Statements	Mean	SD
Attitudes about impact of training methods in combating plant pests	3.31	0.959
Attitudes about damages caused by plant pests	3.22	1.001
Attitudes about replacing chemical pesticides to combat pest	3.10	1.004
Attitudes about ability of municipality to combat plant pests	2.93	1.161
Attitudes about impact of integrated pest management	2.67	1.086

Table 6. Means of respondents' views about the role of educational methods in acquiring knowledge, skills and changing attitudes about combating plant pests (1=Too little; 5=Too much).

Methods	Mean	SD
Short term training courses	3/69	0/848
Field visits	3/64	0/887
Seminar	2/92	0/727
Printed materials	2/73	0/707
Internet	3/55	0/950
Leaflets	2/88	0/788
Face to face meeting	2/77	0/91
Telephone	1/89	0/956
SMS	1/52	0/920

Table 7. Correlation measures between independent variables and perception of respondents about role of educational methods in acquiring knowledge, skills and changing attitudes about fighting plant pests

Independent variables	Dependent variable	Experts	
		r	Sig.
Short term training courses	Acquiring knowledge, skills and changing attitudes	0.166	0.036*
Field visits	Acquiring knowledge, skills and changing attitudes	0.283	0.000**
Seminar	Acquiring knowledge, skills and changing attitudes	0.270	0.001**
Printed materials	Acquiring knowledge, skills and changing attitudes	0.696	0.031
Internet	Acquiring knowledge, skills and changing attitudes	0.213	0.099
Leaflets	Acquiring knowledge, skills and changing attitudes	0.279	0.000**
Face to face meeting	Acquiring knowledge, skills and changing attitudes	0.785	0.022
Telephone	Acquiring knowledge, skills and changing attitudes	0729	0.028
SMS	Acquiring knowledge, skills and changing attitudes	0.245	0.093

**p<0.01, *p<0.05.

Table 8. Multivariate Regression Analysis (Acquiring knowledge, skills and changing attitudes about combating plant pests as dependent variable).

	B	Beta	T	Sig.
Constant	2/421	----	19/899	0/000
Leaflets	0/154	0/287	3/771	0/000
Seminars	0/112	0/193	2/510	0/013

R^2=0.11

DISCUSSION

The perception of experts about the role of educational methods in acquiring knowledge, skills and changing attitudes about combating plant pests in green spaces of Tehran was discussed in this article. Nine methods were evaluated based on the perception of experts. As the regression analysis showed, leaflet and seminars caused 11.8% of variance on the perception of experts. This result is consistent with Okunade conclusion [9]. Nabawi Salem also in a study about selecting the appropriate teaching methods for agents in Egypt reported that the most preferred methods concerning knowledge change were mass methods. The respondents pointed out in this study that the most preferred methods related to skill change were group extension methods [10].

CONCLUSION

Based on the results of the mean score, experts indicated that the short term training courses were considered as the most appropriate group teaching methods. This educational method provides an opportunity to discuss, test and evaluate new methods of combating plant pests in green spaces. The results demonstrated that specialists preferred group and mass teaching methods compared with individual methods. It seems that either the individual method is not effective or respondent tend not to use individual methods.

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