THE ANALYZING PSYCHOMOTOR DOMAIN OF TOMATO GROWERS ABOUT INTEGRATED PEST MANAGEMENT IN AHWAZ TOWNSHIP, IRAN

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ABSTRACT
The purpose of the study was the analyzing psychomotor domain of tomato growers about integrated pest management in Ahwaz Township, Iran. The method of research was correlative descriptive. A random sample of tomato growers of Ahwaz Township, Khouzestan Province, Iran (n=162) were selected for participation in the study. A questionnaire was developed to gather information regarding psychomotor domain of tomato growers about integrated pest management. The validity was analyzed by panel of experts. The questionnaire was pilot tested. Questionnaire reliability was estimated by calculating Cronbach’s alpha. Reliability was (Cronbach's alpha=0.89). Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). Based on the results there was a relationship between psychomotor domain of tomato growers about integrated pest management with crop yield, distance to services centers, income, debt, social participation, social status, participation on extension programs, communication channels, and cognitive domain. The results showed based on the regression analysis by stepwise method, predictor variables that were significantly related to dependent variable could be explained 57.3% of the variances of dependent variable.

Keywords: Psychomotor Domain, Tomato Growers, Integrated Pest Management

INTRODUCTION
Integrated Pest Management (IPM) is a comprehensive approach to pest control that uses a combined means to reduce the status of pests to tolerable levels while maintaining a quality environment. The concept of IPM includes (Alston, 2011):
1. IPM has broad application: Integrates management of all pests, Holistic approach; ecologically based, Can be applied to any ecosystem.
2. What does IPM integrate? Integrates multiple pest management tactics (chemical, biological, cultural, mechanical), Integrates management of multiple pests (insects, weeds, disease pathogens, nematodes, vertebrates, etc.), and Integrates pest management tactics on an area wide basis (many pest control situations are better handled on a large-scale or regional basis).
3. Reduces pests to tolerable levels: Does not emphasize pest eradication or elimination.
4. Incorporates economic sustainability.
5. Incorporates environmental and social concerns.

Figure 1: Schematic of IPM Concept (Alston, 2011)
The positive effects of IPM on natural resources and environment by multiple researchers have been studied (Dasgupta et al., 2007; Fernandez-Cornejo, 1996; Williams et al., 2005; Mullen et al., 1997; Trumble et al., 1997; Burkness et al., 2008; Bentley, 2009). Some of researchers identified the positive effect of IPM on profitability (Burkness et al., 2008; Fernandez-Cornejo, 1996; Dasgupta et al., 2007). Pilcher et al., (2001) developed a standardized measurement tool to determine factors that contributed to IPM adoption for corn, soybean, and cotton production in Iowa and Texas but could be accessible to other commodities and regions. They developed a survey instrument from an IPM definition that represented the widest scope of strategies and determined 21 pest management tactics regarded by growers to be IPM oriented. From preliminary results, over 60 percent of participants identified three variables: scouting, economic threshold, and field records of pest population to be significant when implementing an IPM program.

Cuyno (1999) assessed economic evaluation of the health and environmental benefits of an IPM program in the Philippines. Analyzing the benefits from the IPM program is crucial because it affects both the people and the environment, and helping people and the environment is one of the basic objectives of the IPM. This study found that adoption of the IPM practices reduced the risk to human health and farm animals by 64 percent, the risk to beneficial insects by 61 percent, the risk to fish and other aquatic species by 62 percent and the risk to birds by 60 percent.

The purpose of the study was the analyzing psychomotor domain of tomato growers about integrated pest management in Ahwaz Township, Iran.

MATERIALS AND METHODS
The method of research was correlative descriptive. A random sample of tomato growers of Ahwaz Township, Khuzestan Province, Iran (n=162) were selected for participation in the study. A questionnaire was developed to gather information regarding psychomotor domain of tomato growers about integrated pest management. The validity was analyzed by panel of experts. The questionnaire was pilot tested. Questionnaire reliability was estimated by calculating Cronbach’s alpha. Reliability was (Cronbach's alpha=0.89). Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS).

RESULTS AND DISCUSSION
Demographic Profile
The first section described farmers’ demographic profile in Ahwaz Township, Khuzestan Province of Iran. Approximately, the mean of years old was 44.30. The maximum was 70 and minimum was 17 years old. Based on the crop yield 42% had 1-25 ton in hectare, 29.61% had 26-50, 10.5% had 51-75, 11.7% had 76-100, and 6.2% had 101-400. The mean size was 45.28 ton in hectare.

<table>
<thead>
<tr>
<th>Crop yield (ton/hectare)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25</td>
<td>68</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>26-50</td>
<td>48</td>
<td>29.6</td>
<td>71.6</td>
</tr>
<tr>
<td>51-75</td>
<td>17</td>
<td>10.5</td>
<td>82.1</td>
</tr>
<tr>
<td>76-100</td>
<td>19</td>
<td>11.7</td>
<td>93.8</td>
</tr>
<tr>
<td>101-400</td>
<td>10</td>
<td>6.2</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>162</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Participation in Extension Courses
Based on the results, 46.3% of farmers not participated in extension courses. Also, 5.7% of farmers that participated on extension programs believed the effectiveness of extension programs was very low, 20.7% believed was low, 24.1% believed was moderate, 31% believed was high and 18.4% was very high.
Research Article

Table 2: Effectiveness of extension programs about IPM (n=162)

<table>
<thead>
<tr>
<th>Effectiveness level</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>5</td>
<td>5.7</td>
<td>5.7</td>
</tr>
<tr>
<td>Low</td>
<td>18</td>
<td>20.7</td>
<td>26.4</td>
</tr>
<tr>
<td>Moderate</td>
<td>21</td>
<td>24.1</td>
<td>50.6</td>
</tr>
<tr>
<td>High</td>
<td>27</td>
<td>31</td>
<td>81.6</td>
</tr>
<tr>
<td>Very high</td>
<td>16</td>
<td>18.4</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>162</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Correlation Study

For analyzing correlation between variables was used Spearman correlation coefficient. Based on the results of Table 3 there was a relationship between psychomotor domain of tomato growers about integrated pest management in Ahwaz Township with crop yield, distance to services centers, income, debt level, social participation, social status, participation in extension programs, communication channels, and cognitive domain.

Table 3: Correlation coefficient between psychomotor domain of tomato growers about integrated pest management and independent variables

<table>
<thead>
<tr>
<th>Variable 1</th>
<th>Variable 1</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>psychomotor domain of</td>
<td>-0.130</td>
<td>0.098</td>
</tr>
<tr>
<td>Level of Education</td>
<td>tomato growers about</td>
<td>0.056</td>
<td>0.485</td>
</tr>
<tr>
<td>Land size</td>
<td>integrated pest management</td>
<td>0.50</td>
<td>0.530</td>
</tr>
<tr>
<td>Crop yield</td>
<td></td>
<td>0.239**</td>
<td>0.002</td>
</tr>
<tr>
<td>Distance to services centers</td>
<td></td>
<td>-0.213**</td>
<td>0.006</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td>0.130</td>
<td>0.099</td>
</tr>
<tr>
<td>Total land</td>
<td></td>
<td>0.085</td>
<td>0.281</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td>0.285**</td>
<td>0.000</td>
</tr>
<tr>
<td>Debt</td>
<td></td>
<td>0.252**</td>
<td>0.001</td>
</tr>
<tr>
<td>Social participation</td>
<td></td>
<td>0.322**</td>
<td>0.000</td>
</tr>
<tr>
<td>Social status</td>
<td></td>
<td>0.154*</td>
<td>0.049</td>
</tr>
<tr>
<td>Extension participation</td>
<td></td>
<td>0.303**</td>
<td>0.004</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td>0.375**</td>
<td>0.000</td>
</tr>
<tr>
<td>Cognitive domain</td>
<td></td>
<td>0.715**</td>
<td>0.000</td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01

Table 4: Multivariate regression analysis

<table>
<thead>
<tr>
<th>Multivariate regression analysis</th>
<th>B</th>
<th>Beta</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>12.360</td>
<td>-------</td>
<td>4.949</td>
<td>0.000</td>
</tr>
<tr>
<td>Cognitive domain</td>
<td>0.374</td>
<td>0.670</td>
<td>9.247</td>
<td>0.000</td>
</tr>
<tr>
<td>Distance of services centers</td>
<td>-0.394</td>
<td>-0.285</td>
<td>3.849</td>
<td>0.000</td>
</tr>
<tr>
<td>Crop yield</td>
<td>0.049</td>
<td>0.257</td>
<td>3.450</td>
<td>0.000</td>
</tr>
</tbody>
</table>

R=0.757 \quad R^2=0.573 \quad R^2_{Adj}=0.553 \quad F=37.153 \quad \text{Sig} \quad F=0.000

Y=12.360+0.374X_1+0.394X_2+0.049X_3

Regression Analysis

Table 4 shows the result for regression analysis by stepwise method. Predicator variables that were significantly related to psychomotor domain of tomato growers about integrated pest management were
entered. The result indicates that 57.3% of the variances in the psychomotor domain of tomato growers about integrated pest management could be explained by the cognitive domain, distance to services centers and crop yield.

**Conclusion**

Based on the results there was correlation between psychomotor and cognitive domains of tomato growers about integrated pest management. Thus, it is recommended that extension experts and education and extension services to enhance the technical knowledge of tomato growers regarding integrated pest management. Based on the results there was correlation between psychomotor domain of tomato growers about integrated pest management and social participation. Thus, it is recommended that accomplish extension programs based on needs of farmers. Based on the results there was correlation between psychomotor domain of tomato growers about integrated pest management and communication channels. Thus, it is recommended that extend the different communication channels in rural area.

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**REFERENCES**


