



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



Educational Needs of Corn Farmers Regarding Biological Control Bracon Parasitoid of Corn Caradrina in Dezful Township, Khuzestan Province, Iran

Ahmad Reza Ommani^{1} and Ali Jafar Khadem²*

*Received: 10 February 2011,
Revised: 25 March 2011,
Accepted: 28 March 2011.*

Abstract

The purpose of research was analyzing educational needs of corn farmer's regarding biological control Bracon parasitoid of corn Caradrina in Dezful Township, Khuzestan province, Iran. The method of research was correlative descriptive. A random sample of Dezful township corn farmers of Khuzestan province, Iran (n=350) were selected for participation in the study. A questionnaire was developed to gather information regarding educational needs of corn farmer's regarding biological control Bracon parasitoid of corn Caradrina. The questionnaire was pilot tested in Shoushtar Township. Questionnaire reliability was estimated by Cronbach's alpha. Reliability was 0.85. Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). The results indicated 53.4% of corn farmers had low and very low knowledge regarding biological control Bracon parasitoid of corn Caradrina. Based on results, farmers need to education regarding all subject area of biological control. Also, there was significant correlation between knowledge of corn farmer's with social participation, level of education, income, technical knowledge and extension activity. The result of regression indicated that 53% of the variances in the knowledge of respondents could be explained by the social participation, level of education, income, technical knowledge and extension activity.

Keywords:
Educational needs, Biological Control, Caradrina, Braconidae, Corn Farmers, Dezful.

¹Assistant Professor, Islamic Azad University, Shoushtar Branch, Shoushtar, Iran.

²Graduate Student, Islamic Azad University, Shoushtar Branch, Shoushtar, Iran.

* Corresponding author's email: ommani75451@yahoo.com. Tel: 00986114457786. Fax: 00986114439062

INTRODUCTION

Farmers' adoption of biological control package depends on many factors, such as their technical skill and socioeconomic conditions as well as psychological and cultural factors, etc (Singh *et al.*, 2008).

Using improper pesticides have resulted in crop and environmental contamination and detrimental effects on humans. Hence, many of the techniques or practices collectively referred to integrated pest management (IPM) have been designed to address some of the health and environmental concerns of pesticide use. IPM is defined as a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks (Niyaki *et al.*, Radjabi and Allahyari, 2010). Abeydeera (1994) reported that biological control application decrease total control cost compared to farmer that did not use biological agent. This study presents a single case study on effective social factors of adoption of biological control by rice farmer in north of Iran. Biological control is often divided into three categories. All of these can be part of an integrated pest management program. The three categories are: classical biological control, augmentative biological control and conservation biological control.

The purpose of research was analyzing educational needs of corn farmer's regarding biological control Bracon parasitoid of corn Caradrina in Dezful Township, Khuzestan province, Iran.

MATERIALS AND METHODS

This study was carried out by survey during July and August 2010. The method of research was correlative causal comparative. A random sample of Dezful Township corn farmers of Khuzestan province, Iran (n=350) were selected for participation in the study. A questionnaire was developed to gather information regarding adoption biological control of Caradrina by Braconidae in corn farms Dezful Township of Khuzestan province. The questionnaire was pilot tested in Shoushtar Township. Questionnaire reliability was estimated by calculating Cronbach's alpha. Reliability was (Cronbach's alpha=0.85). Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). Appropriate statistical procedures for description (frequencies, per cent, means, and standard deviations) were used.

RESULTS

Demographic Profile

The first section described farmers' demographic profile in Dezful Township, Khuzestan Province of Iran. Approximately, 56% of respondents were between 36 to 50 years of age and 31.7% of them between 22 to 35 years of age (Table 1). Most respondents (46.6%) reported work experience, including 1 to 15 years and the vast majority of them were male (89.04%).

In reference to the frequency of respondents' social participation, 64% of farmers had moderate level. About 32 % of corn farmers had reached primary school level. Based on the results of this study, the income of 68.9% of corn farmers

Table 1: Personal, Social and Economical Characteristics of Corn Farmers.

| Characteristics | Frequency | Percent | Cumulative Percent |
|-----------------------------|-----------|---------|--------------------|
| Age | | | |
| 20-35 | 111 | 31.7 | 31.7 |
| 36-50 | 196 | 56 | 87.7 |
| 51-65 | 40 | 11.4 | 99.1 |
| 66-80 | 3 | 0.9 | 100 |
| Social Participation | | | |
| Low | 67 | 19.1 | 19.1 |
| Moderate | 224 | 64 | 83.1 |
| High | 59 | 16.9 | 100 |
| Level of education | | | |
| Uneducated | 40 | 11.4 | 11.4 |
| Primary school | 114 | 32.6 | 44 |
| Secondary school | 106 | 30.3 | 74.3 |
| High school | 90 | 25.7 | 100 |

Table 2: Knowledge of Biological Control Bracon Parasitoid of Corn Caradrina (1=Very Low, 2=Low, 3=Moderate, 4=High, 5= Very High)

| Dimension | 1 | | 2 | | 3 | | 4 | | 5 | | Mean | sd |
|--|-----|----|-----|----|-----|----|----|----|----|----|------|------|
| | f | % | f | % | f | % | f | % | f | % | | |
| Time of biological control | 123 | 35 | 104 | 30 | 65 | 18 | 23 | 7 | 35 | 10 | 2.27 | 1.09 |
| Life cycle of Bracon and Carad | 109 | 31 | 118 | 34 | 87 | 25 | 13 | 4 | 23 | 6 | 2.20 | 1.08 |
| How using biological control | 89 | 25 | 102 | 29 | 98 | 28 | 49 | 14 | 12 | 4 | 2.40 | 0.98 |
| Awareness of economic benefits biological control | 78 | 22 | 121 | 35 | 68 | 19 | 54 | 15 | 29 | 8 | 2.52 | 0.88 |
| Awareness of environmental benefits biological control | 98 | 28 | 99 | 28 | 101 | 29 | 23 | 7 | 29 | 8 | 2.39 | 1.07 |

were between ten million to one hundred million Rials in year (Table 1).

Educational Needs

The dependent variable of research was knowledge of corn farmer's regarding biological control Bracon parasitoid of corn Caradrina in Dezful township, Khouzestan province, Iran. The dependent variable was assessment with a Likert scale (1=Very Low, 2=Low, 3=Moderate, 4=High, 5= Very High). Based on the table 2, farmers basically need to education regarding biological control Bracon parasitoid of corn Caradrina. Therefore educational needs are vital items that affect on adoption of biological control. Also farmers were stratified to five strata. The results indicated 53.4% of corn farmers had low and very low knowledge regarding biological control Bracon parasitoid of corn Caradrina (Table3). Based on results, farmers need to education regarding all items of biological control that noted in research.

Table 3: Knowledge of Biological Control Bracon Parasitoid of Corn Caradrina (1=Very Low, 2=Low, 3=Moderate, 4=High, 5= Very High)

| levels | f | % | Cun% |
|-----------|----|------|------|
| Very low | 97 | 27.7 | 27.7 |
| Low | 90 | 25.7 | 53.4 |
| Moderate | 72 | 20.6 | 74 |
| High | 45 | 12.8 | 86.8 |
| Very high | 46 | 13.2 | 100 |

Correlation Study

Table 4 displays the results which show that there is a relationship between knowledge of corn farmer's regarding biological control Bracon

parasitoid of corn Caradrina in Dezful township, Khouzestan province, Iran and . Spearman coefficient was employed for measurement of relationships between independent variables independent variables.

Based on the results there is significant correlation between knowledge of corn farmer's with social participation, level of education, income, technical knowledge and extension activity.

Regression analysis

Table 5 shows the result for regression analysis by stepwise method. Predictor variables that were significantly related to the knowledge of corn farmers about biological control of Caradrina by Braconidae were entered. The result indicates that 53% of the variances in the knowledge of respondents could be explained by the social participation, level of education, income, technical knowledge and extension activity.

DISCUSSION AND RECOMMENDATIONS

Based on results there is significant correlation between knowledge of corn farmers about biological control of Caradrina by Braconidae with social participation, level of education, income, technical knowledge and extension activity.

According to Singh et al (2008) have shown that technology awareness through formal crop-specific IPM training provided by farmers' field schools is extremely important for wider adoption of IPM in the study area. Hence, investment in IPM education through these programs will have long-term beneficial impact.

Also Niyaki, Radjabi and Allahyari (2010) displayed main important factors of adoption of biological control including education level,

Table 4: Correlation measures between predictor variables and knowledge of corn farmers about biological control of *Caradrina* by Braconidae

| Variable 1 | Variable 1 | r | p |
|----------------------|--------------------------|---------|-------|
| Age | Knowledge of corn | -0.022 | 0.642 |
| Work experience | farmers about bio- | 0.032 | 0.536 |
| Social Participation | logical control of | 0.426** | 0.000 |
| Level of education | <i>Caradrina</i> by Bra- | 0.454** | 0.000 |
| Income | conidae | 0.343** | 0.000 |
| Technical knowledge | | 0.295** | 0.000 |
| Extension activity | | 0.466** | 0.000 |

*p < 0.05; **p < 0.01

Table 5: Multivariate regression analysis

| Multivariate regression analysis | B | Beta | T | Sig |
|----------------------------------|-------|-------|-------|-------|
| Constant | 4.332 | ----- | 3.635 | 0.000 |
| Technical knowledge | 0.523 | 0.324 | 2.287 | 0.000 |
| Social Participation | 0.453 | 0.265 | 2.091 | 0.000 |
| Level of education | 0.456 | 0.266 | 2.335 | 0.000 |
| Income | 0.423 | 0.416 | 3.957 | 0.000 |
| Extension activity | 0.752 | 0.454 | 2.074 | 0.000 |

R²=0.533Y=4.332+0.523X₁+0.453X₂+0.456X₃+0.423X₄+0.752X₅

family size, experience in rice culture, rate of participation in educational-extensional activities.

The results indicated 53.4% of corn farmers had low and very low knowledge regarding biological control Bracon parasitoid of corn *Caradrina*. Based on results, farmers need to education regarding all items of biological control that noted in research.

Cullen *et al.*, (2008) noted that farmers must perceive biological pest control innovations to have economic advantages at an acceptable level of risk when compared to the relatively simple conventional agrichemical control methods. The key finding of this paper is that biological control innovations must be developed in a manner which gives consideration to the realities at the farm level. Also, activities must be focused on educational needs and increasing of farmer's knowledge (Ommani and Chizari, 2010).

According to the obtained results, emphasis on in diffusion of new technology training needs must be considered. Ommani and Chizari (2010) and Hosseini *et al.*, (2010) supported of this result.

REFERENCES

- 1- Cullen R., Warner, K.D., Jonsson, M., & Wratten, S.D. (2008). Economics and adoption of conservation biological control. *Biological Control*, 45, 272-280.
- 2- Hosseini, J.F., Dehyouri S., Mirdamadi M. (2010). The perception of Agricultural Researchers about the Role of Nanotechnology in Achieving Food Security. *African Journal of Biotechnology* Vol. 9(37), pp. 6152-6157.
- 3- Niyaki, A., Radjabi R, Allahyari, M.S. (2010). Social Factors Critical for Adoption of Biological Control Agents *Trichogramma* Spp. Egg Parasitoid of Rice Stem Borer *Chilo suppressalis* in North of Iran. *American-Eurasian J. Agric. & Environ. Sci.*, 9 (2): 133-139.
- 4- Ommani, A., Chizari, M. (2010). Sustainable Water Resources Management and Extension Mechanisms. Islamic Azad University, Shoushtar Branch Press, Shoushtar, Iran
- 5- Singh, A., Vasishtb A.K, Kumara R, Dasc, D.K. (2008). Adoption of Integrated Pest Management Practices in Paddy and Cotton: A Case Study in Haryana and Punjab. *Agricultural Economics Research Review*: 21 July-December 2008 pp 221-226.