International Journal of Research and Review
Vol.7; Issue: 9; September 2020
Website: www.ijrrjournal.com
Original Research Article *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Effect of Chemical Pesticides and Herbal Extracts On Sesamia Critica and Pyrausta Nubilalis in Sorghum Populations

Mohammad Hassan Sarailoo[1], Farhang Maghsoudloo[2], Abbasali Noirinia[3]

[1]Faculty Member of Gorgan University of Agricultural Sciences and Natural Resources
[2]Graduated from Gorgan University of Agricultural Sciences and Natural Resources
[3]Member of faculty of Golestan Agricultural and Natural Resources Research Center

Corresponding Author: Farhang Maghsoudloo

ABSTRACT

This research was carried out at the Research Center for Agricultural Jihad and Natural Resources center of Golestan province and Farm No. 1 of Gorgan University of Agricultural Sciences and Natural Resources in 2011 and 2012. In this research, sorghum cultivars were grown in randomized complete block design with 3 replications and 8 treatments. The pesticides used in this study are 60% Diazinon, 5% Larvin, 20% Goazitone and 40.8% Drosban, extracted fruit of bitter olive, Eucalyptus premature fruit extract, Leaf extract(Sambucus nigra), and treatment as a control. Based on the comparison of the means for different insecticides and their effect, it was observed that the Diazinon and Drsoban pesticides have a good control level and larvin and Goazitone were placed at the next levels in terms of control. Among the pesticides with natural origin, Aghty leaves((Sambucus nigra) showed the greatest effect on the extracted fruit of bitter olives and premature eucalyptus fruit extract.

Keywords: sorghum, disease severity, borer and planting date.

INTRODUCTION

Sorghum is the fifth most important cereal in the world and it is cultivated after wheat, rice, corn and barley. Its production was 159 million tons in 2001, the world's largest, which resulted in an area of 42.6 million hectares. The countries of India, China and Russia are among the best producers of sorghum.

Sorghum is one of the most important cereals in subtropical regions and insect pests are one of the most important factors reducing the product. More than 150 insect species are attacking sorghum, which typically has a loss of $ 1 million a year. Several species of stem borer have been reported as the most important sorghum pests. For example, (the swinhoe species) are *Chilo partllus*, the most important stems in this product in India and South and East Africa.

The amount of damage to stem borers depends on a set of environmental and genetic factors (Sharma *et al*., 2005). Other sorghum pests in India include Sorghum fly Atherigona soccata Rondani. This pest is damaging to sorghum in the early stages and eventually until the fourth week (Balikaiand and Bhaghwat, 2009). One of the important pests of sorghum in Nigeria can be referred to as an Sunn pest, Eurystylus oldi poppius, That pest is the native sorghum in this area (Showemimo *et al*., 2011).

One of the important limiting factors in sorghum and maize is the existence of stem borers. In Kenya, 87% of the corn fields are infected by stem borers, This infection to a 15 percent reduction in the product. When corn is considered as the most important public food product, stem borers damage can affect food security and agricultural economics (Mugo *et al*., 2001).

According to reports, pests cause 40-50 percent reduction in crops in millet and sorghum (Tenda *et al*., 2005). There are four main ways to control the stems: chemical control of biological control, crop control and the use of resistant cultivars (Mugo *et al*., 2001).

The use of resistant cultivars along with chemical pesticides can be a good way to control stem cells and prevent damage to the epidemic (Vandenbery *et al*., 1994). In recent years, habitat management methods and mixed cultivation can lead to increased plant biodiversity, which is one of the preferred methods for controlling stem borers (Belay *et al*., 2009).

Research has shown that early planting of maize can result in increased crop yield, shorter planting periods, earlier pollination, reduced drought, longer days of seeds, better crop response, agronomic aging, reduced drying time. Researchers from the University of Iowa believe that the cultivation of corn is good between April 20 and May 10, and the delay in planting until May 20 and July 1 can reduce 10-20% ability to produce crops (Plicher and Rice, 2001).

In Nigeria, late sowing time increases slaughter and stem infestation. Khan in Pakistan, studying on sowing date, showed that early sown corn is less pollen than late planting corn. Similar results were obtained in the eastern and southern regions of Africa, when corn and sorghum were cultivated in April and early May, were less polluted than those cultivated in late May and July. Jutvanie et al. Found that if resistant varieties and chemical control of early corn are used, they provide a good control for the slaughterers, and this is an economic method for small farmers in Africa (Haile and Hofsvang, 2001).

Several reports from the past three decades have shown that the insect repellency of agricultural pests is some of these reports by jute and aldos, keri, saksana and helpa. Products that are used do not affect the name of the insecticide on non-target insects. Among the suggested control strategies for stem borers, especially early cropping, resistance to insecticide varieties, the use of insecticides is more common among Nigerian farmers. But since the use of these chemical compounds is dangerous, it will also cost a lot of human famine and will also be followed. Therefore, it will be beneficial to use insecticides of plant origin (Okrikata, E. and Anaso aso, 2008).

MATERIAL AND METHODS

This study was conducted over two growing seasons (2012-2013) in Agriculture and Natural Resources Research Center of Golestan University of Agricultural Sciences and Natural Resources and the number one farm located in the road of kordkoy.

In this study, sorghum varieties were planted in a randomized complete block design with 3 replications and 8 treatments. The treatments were: diazinon 60% EC, Larvin 5% DF, Gvaziton have 20% and Doursban 8/40%, fruit extract the reach of olive bitter fruit extract immature Eucalyptus extract of the leaves, elderberry, and a treatment as evidence that the statistical analysis was performed using the software SPSS.

Table 1. Scoring based on the condition of plant contamination in corn and sorghum using the method of Chetreji *et al*. (1972)

Rating	Condition
1	Totally healthy bush
2	Plants that have one to two tiny holes on one or two leaves.
3	Plants that have a number of small or coarse holes on three to four leaves.
4	Plants that have tiny holes on almost 30% of the leaves and also, one to two sheets of tunnel on the main stream.
5	Plants that have been damaged are roughly 50% of their leaves.
6	Plants that have various lesions on 75% of the leaves.
7	Plants that are damaged in almost all leaves.
8	Plants that have the maximum leaf damage and will occur as the central bud rotates.
9	Plants that are damaged are completely dead.

Sorghum cultivars were planted by hand in the project. Between rows of corn were 70 cm and 20 cm between plants on each row. Sorghum was taken at 70 cm between rows and between plants 20 cm. Corn plant situation in terms of injuries ranked were based on Cheterjy *et al* (1972) are as follows (Table 1).

RESULTS AND DISCUSSION

Table 2 shows results of analysis of variance in a randomized complete block design based on two factorial experiments in 90 and 91 years showed that there is a significant difference between the different post-spray application times at 1% level. Also, there was a significant difference between the applied pesticides and their effect at 1% level, and the interaction effect between the time of the survey * pesticide type * in the year was also significant at 1% level. It is also significant that the effect of year * pesticide is also at 5% level.

Table (2) Table of variance analysis data on the number of infected plants

SOURCE	DF	MS	F
Year	1	22.005	24.44**
Error a	4	0.208	0.235^{ns}
Planting date	3	25.130	28.372**
Year * Planting date	3	0.158	0.78^{ns}
variety	7	222.398	251.084**
Year * Variety	7	2.339	2.640*
Year * Planting date* Variety	42	14.894	16/815**
Error b	124	0.886	
Total	192		

In Table 3, the comparison of the mean of different times of inventory by Duncan test at 5% indicates that after 3 days in the first and 7 days after the second application of the pesticides used, they had a good control over the stem borers, and in The third inventory, that is, ten days after spraying, has the same level of contamination with the time before spraying.

Table 3: Comparison of the average rate of contamination at different times of inventory using Duncan test at 5% level

Planting date	number of polluted plants
3 days after spraying	5.979 a
7 days after spraying	6.308 a
10 days after spraying	7.270 b
Before spraying	7.395 b

Table 4 shows the comparison of averages for different insecticides and their effect in 2011.The pesticides of diazinon and vasobans produced good control levels and the larvae and deodorant poisons in the later stages of the control. Among the pesticides of the natural origin of rubbish, the greatest effect was on the extracted fruit of bitter olive and extracted fruit of Eucalyptus.

Table 4: Comparison of the average exposure to plant and chemical toxins using Duncan test at 5% level

toxins	The average amount of toxins
Diazinon	3.458 a
Drsoban	3.833 a
Goazitone	5.041 b
larvin	5.083 b
Aghty leaves	6.416 c
eucalyptus	8.541 d
bitter olives	8.985 d

In the studies on the chemical and vegetable pesticides in sorghum according to the comparison table, the average in 2011 of the first post-spray (after 3 days) data showed that the used toxins produced good control and control until seven days after Spray has also been good.

There was a slight increase in infection after 10 days.

In the comparison of averages in 2011, the pesticides of Diazinon and Drsoban showed good control power. Larvain and Goazitone toxins were also placed in the later stages in terms of control power. Among the toxins produced the bitter olive fruit extract, they had the least effect and placed on a surface with an extracted Eucalyptus fruit extract and the leaves produced the most effect on plant pesticides.

In the study by Gunewardena and Madugalla (2010), the Diazinon was used as a granule, which made it a good control against Chilo partlellus stems in corn. These results are consistent with the results of our research in sorghum. In this study, Diagonium provided the best control that was used in our experiment from Ec60% formulation.

In a study by Khan (1986) Diazinon was used in the form of a 10% granule, which produced weaker controls than other

pesticides, such as diesulfuton, carbofuran and phthanone. But in general, if Diagonium is used in the form of a granule 10 days after germination, it will produce the best control against the stem borer. The results of Khan's study are in agreement with the results of this study.

According to studies by Mekhlif (2006) Extract of bitter olive in different concentrations was used in an artificial diet against Cuerine Spodoptera cilium, which caused a high mortality rate among larvae and prolonged pupal period.

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How to cite this article: Sarailoo MH, Maghsoudloo F, Noirinia A. Effect of chemical pesticides and herbal extracts on Sesamia critica and pyrausta nubilalis in sorghum populations. International Journal of Research and Review. 2020; 7(9): 187-190.

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