Insecticidal property of parthenium hysterosphours and vitex nirgundi leaf extract (acetone) against *Sitophilus oryzae*(rice weevil) (coleptera , cruculionidae) in stored grain pest

ABSTRACT:

The insecticidal property of Parthenium hysterosphorous and vitex nigundi leaf extract in acetone' against the rice weevil were very effective to control the pest Different concentration , dose were checked and the result showed that high doses or the extract of Parthenium and vitex were significantly more toxic to Sitophilus oryzae compared to lower dose.

The probit analysis of data demonstrated mortality rate for acetone extract was mortality % of Parthenium leaf extract in acetone 5 %,10%, 15% = 25 % , 40%, 60 % mortality % of vitex left extract in acetone 5% , 10% ,15 %= 15 %, 35 % 65 %, Mortality % of mixture of Parthmium and vitex leaf extract in acetone =5 % 10 %, 15 %, 30 %, 40 %, 80 %, respectively from10 days. Hence we concluded that leaf extract of Parthenium hysterosphorous and vitex nigundi served as a potential insecticide used against (Rice weevil).

Keywords:-

Parthenium hysterosphorous, vitex nigundi, rice weevil, stored grain mortality insecticide

INTRODUCTION

Stored product are attacked by insect in different ways. Panicularly in developing countries 5 to 10 % cereal grains in temperate and 20 — 30 % loss in tropical countries is a serious problem due to the insect infestation during storage. Different type of stored product pest are seen in India. Like rice weevil, Indian meal moth, sow toothed. Green beetle, red flower beetle, cowpeas weevil. (Sitophilus oryzae). (Coleoptera, Curculionidae) is one of the most wide spread destructive major insect pest of stored grains. (Park L. el al 2003)

Control of infestation of stored grains by insect pest is primarily archived by the use of synthetic chemicals. Insecticides like methyl bromide & phosphine. In most of countries due to environment concerns and human health, hazardous several chemicals have been either banned or restricted. (Taponjou L A 2003) Chemical pesticides are toxic to use as they have high toxicity and residual value and hence are not suitable to treat the pest in stored grains. There is no doubt that Botanical pesticides are an more than 250000 plant species growing an our planet have been property evaluated for these purpose many weeds, medicinal plants and spices have been used to pest control agents (Lale NES 1992 Isman MB ,1995)Formers and Researches often claim the successful use of plant material in insect pest control included ash (Ofuya IT, 1986), vegetable oil [Schoohovern Av, 1978], plant extract and botanical powders (Bindu VR et at (Nilesh Jaywalker et al, 2016) It has been reported that certain plants

ChemicalConstituents:-

Negundoside,favanoides.pentene,limonene,linalodsand comphy,
Vitricin (Alkaloids') (Rasthogi & Metrotra 1993 & 1995)

Mode of Action: -

Antifeedent, insecticidal and repellent (Listinger et al 1978) Keeping this in view the present study Was carried out by to test the efficacy of the leafextract oftwo plants i.e. Parthenium hysterosphorous ,Vitex negundo.

INSECTICIDALPROPERTY

Parthenium:-

Higher plants are rich source Of novel substance that can be used to develop safe method for insectcontrol. Plant Parthenium hysterosporous is labeled as a serious weed of pasture wasteland and agricultural field in world. The weed is noxious on two counts. Firstly it is a highly adaptable weed and can grow any ware but it content several important chemical components like lactone, Parthenon, histamine, saponine. The presence of several important like chemical components in Parthenium hysterosporous and there prominent biological activity in animal and human and human models indicate that a weed can be used as ovicidal, antifeedent, insect growth regulator, insecticidal, weedicidal, antiviral, antibacterial active compound there analog due to the cytotoxic and pharmacological in future may find and important place as medicine. The nutrition value of plant indicate its utility o food and fooder also and it also is used as insecticide. (Veena et a', 2012).

Vitex:-

The plant is indigenous to the Mediterranean Countries and central Asia, It is found in India, Burma, Shrilanka, Afghanistan, India, in all districts. The insecticidal property of Vitex as well as its essential oil is well known. And it is effective against puls beetle C. chinnensis (Jadhav & Jadhav, 1984). Leaf extract of V.nigondo. Under different extraction method Vis. Cold water, hot water, cold alcoholic soxhelt extraction with methanol and petroleum ether were tested for their toxicity against S.litura on tobacco. The application Of extract exhibited considerably mortality after 48 and 72 hrs. Of exposure period and found significantly superior over control. Higher mortality was observed higher mortality at higher concentration. Similarly more mortality also reported with higher exposure period (Nemade et a], 200

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Material:-

parthenium hysterosphorous Family; Asteraceae ,Vitex nigundi Family; Verbanaceae ,Solvent; Acetone , Insectpest; Rice weevil, stored grain's (jawar)

Methods:-

Preparation of leaf extract in Acetone parthenium and vitex leaf Extracts. Collect the healthy and fresh leaves of parthenium and vitex Wash With tan Water ,Wash With DIW ,Dry under shade for 10 days Grind the dried leaves (separately) Take 50 gm. Of powder Of Parthenium leaves & vitex leaves Separatelv dissolve in 300 ml of Acetone ,Filter the extract through watman filter paper No-I Keep for 10 days in dark brown bottle ,Evaporate the excesses solvent with use of rotarv evaporator Make final volume (SO ml) Keep in cold temperature

MORTALITY STUDIES:-

The mortality of Sitophilus oryzae adult was recorded after 10 days and parentage data collected was analyzed and determination of mortality rate for 10 days was done by using following formula.

Mortality % =

NO OF DEATH OF INSECT ×100
TOTAL NO.OF INSECT USED FOR EXPERIMENT

RESULT:-.In the insecticidal property of Parthenium leaf extract (Acetone) shows the mortality % of 10%, 150/0=250/0,
In the insecticidal property of Vitex leaf extract show the mortality % of5%, 10%, 15%=15%, 35%, 65%.
In the insecticidal property of mixture of Parthenium and Vitex leaf extract (Acetone) shows the mortality % of 5%, 10%, 40%, 80%.. In the insecticidal property Of Parthenium leaf extract and Vitex leaf extract show the low rate of mortality percentage. The Mixture of Parthenium and Vitex leaf extract (Acetone) shows the mortality percentage in 15% conc. Extract shows 80% of mortality rate.

Observation Table:-

Table No 1.

Effect of Parthenium leaf (Acetone) extract on mortality of ***Stiophilus oryzae***

Name of Plant Extract	Time of exposure in days	Dose	Total no of insert used for expt.	No of death of insert	Mortality
	10	5%	20	5	25%
Parthenium	10	10%	20	8	40%
	10	15%	20	12	60%

Table No 2.

Effect of Vitex nirgundi leaf extract (Acetone) extract on mortality of ***Sitophilus oryzae***

Name of Plant Extract	Time of exposure in days	Dose	Total no of insert used for expt.	No of death of insert	Mortality
	10	5%	20	3	15

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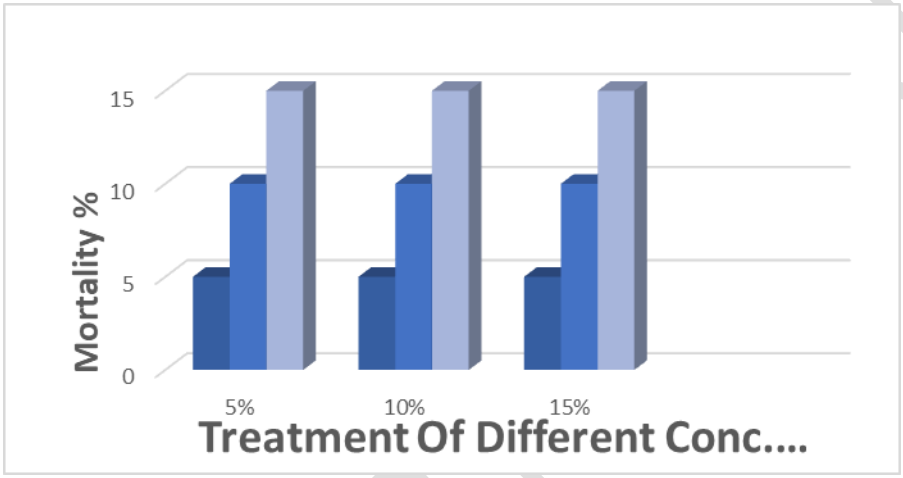
Vitex	10	10%	20	7	35
Nigundi	10	15%	20	13	65

Table No 3.

Effect of mixture of Parthenium & Vitex leaf extract (Acetone) extract on mortality of ***stiophilus oryze***

Name of Plant Extrant	**Time of exposure in days**	**Dose**	**Total no of insert used for expt.**	**No of death of insert**	**Mortality**
Parthenium	10	5%	20	6	30%
&	10	10%	20	8	40%
Vitex	10	15%	20	16	80%

Graph:-



Graph 1:- the graph shows mortality % of *S.oryae* for treatment of different conch extract

Mortality % Parthenium leaf extract

Mortality % Vitexleaf extract

Mortality % Parthenium Vitexleaf leaf extract

Toxicity of plant extract to adult Insect:-

The stock culture Of Weevils. sitophilus oryzae reared in laboratory condition were used for experiment.

On the bottom Of petriplate simple filter paper disc were placed singly at the bottom of petriplate [3 sets of 3 petriplates one set for parthenium one set for vitex & another for mix ofParthenium & Vitex i.e. 5%, 10%, 15%,] The extract were applied at different doses on petriplate & dried the 20 gm. By jawar grains were placed on the paper. 20 insect released in each petriplate. And fix with the help of

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rubber band of muslin cloth observation were recorded on the 1 0th days ay the treatment.

CONCLUSION:-

.Weed shows rich source of novel nature substance that can be used to devlop safe method for insect, This result show the acetone leaf extract parthenium and vitex lethal toxic to S.oryzea but the mixture Of partheniurn and vitex acetone leaf extract more toixic to rice weevil or tested against stored grain pest i.e. S.oryzea. Research reveals that extract prepared from plants have a variety of properties including insecticidal activity, repellent to pest, antifeedent, insect growth regulator etc. (Prakash AGRao, 1997). The plant like Vitex and Parthenium contains various components which are known to be insect repellent and toxic to the insect (Tilak, 1977). The various chemical compounds present in vitex like Negondoside, flavonoids,pinene, limonose, comphy vitricin, and in parthenium chemical compounds like lacton and parhenine.(Shen et al, 1976 and Ramesh et a], 2003, The various chemical compounds present in that plants that's why it's vary toxic to stored grain insect, i.e. S.oryzea.

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