IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

COMPARATIVE STUDY AND ITS EFFECT ON TOBACCO LEAVES, PUDINA LEAVES & TULSI LEAVES ON T.GRANADIUM

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ABSTRACT-

Regardless of political ideology environmental issue are becoming paramount in all economic system from the very poor to the very rich India one of the world's largest agricultural economies poses no exception

The most common animals' pests are insects but rodents, birds, nematodes, mites and ticks also attack crop plants pests damage the crop plants during different stages of development from sowing till harvesting. This posses a major problem for the entire nation.

The various physiological activities of insect and insect population are controlled by medicinal plant like tobacco, pudina and tulsi. It was mixed in wheat grain @ 1 to 4 gm seed separately 100 gm of such treated seed kept in plastic containers & some T.granadium were released. There were four replication in data were recorded of each medicinal plant leaf.

The given survey showed that the tobacco shows 62% and pudia shows 47% but tulsi leaves shows only 38% . Tobacco & pudina is better controller than tulsi leaf

KEYWORD-

Pudina, Tulsi, Tobacco, Wheat grain, T. granadium

INTRODUCTION-

India is an agrarian country with more than 60% of its population directly dependent on agriculture which contributes nearly 18% to country's GDP. Ensuring food security for a population of more than 1.27billion with diminishing cultivable land resources herculean task. The green revolution technologies helped the country to increase food grain production from 82 million tons in 1960-61 to 176 million tons in 1991-92 and further to 264 million tons in 2013-14 .This steady increase in production of food grains has been brought about through the introduction of high yielding varieties of wheat and rice with appropriate agronomic and plant protection technologies. According to an estimate, India would require more than 450 million tones of food grains to feed 1.65 billion people by 2050 which will be a very difficult task. The substantial increase in food grain production over the years has helped to meet the food security needs of the country but on the other hand, it has created a stress on the natural resource in some regions.

Plant protection strategies have assumed significance in the overall crop production programmers for sustainable agriculture and aim at minimizing crop losses due to ravages of insect pests disease, weeds, nematodes, rodents etc Although no exact estimates of total crop loss in India due to insects, diseases and weeds could be found, it is generally believed that on farm yield losses could range between10-30%.In terms of monitory value the losses due to these biotic factors account to near 12 billion. In many regions of India, where adequate postharvest storage facilities are not available these losses, especially in fruits and vegetable can be much more

According to Pfadt (1978), 130 million people could have survive for one yr o the grain destroyed by the stored grain pests. In Egypt a heavy loss in weight of the stored grains has been reported by infestation caused by insects. (Koura &HalfNa1962)The pos harvest losses and quality deterioration caused by storage pests are major problem throughout the world. (Hill1990)

The ancient scholars Aristotle, Pliny and Vergil offered observations and recommendations of grain storage techniques, including the use of seed dressings of olive oil to the kill infesting insects (Panagiotakopulu and Buckland1991)

According to Saha (2003) reported the all insects pests of storage grain have a remarkably high rate of multiplication within one season, they may destroy 10.15% of the grains and contaminate the rest with undesirable odours and flavor.

There are different sources of infestation. Even well maintained storage structures can be attacked by pests which get an access to the stored food grains. The important causes of infestation are the-

Active migration of pests

Residue of old storage commodities

MATERIALS &METHOD-

Procedure of tobacco leaves powder on T.granarium

In the lab the sample were taken and collected in the laboratory.100 gm of wheat were taken in different glass-tubes of 6”x2” sizes. Five pairs of freshly emerged adult insects were released in each tube. Different doses of powder of tobacco leaves were mixed with the grain separately. Four replications were used for each treatment. Starting from 1gms to 4 Gms, 4 doses were treated at an interval of every 1gm.The containers were thoroughly shaken for 15 minutes for optimum coverage of the grain surface. Five pairs of freshly emerged insects were taken from laboratory culture and released in every replicate having same parameters except for the percentage treatment of the grain by tobacco power. Simultaneously three replicates with untreated grain were established as control. The room temperature was at 30ºC ±2ºC.Therelative humidity varied between 60% to 70% on provided equal degree of ventilation.

Procedure of Pudina leaves powder on T.granarium

For this experiment the grains, wheat, were taken in the different glass containers of the same shape and size. The weight of the grain was fixed at 100 gms. Different concentrations of the standard pudina leaves powder from the laboratory were weighed out separately and mixed with grains. Experiments with each concentration were taken in four replications. Starting from 1 gm to4 gms, 4 doses were tested at intervals of every 1 gm.The plant product was thoroughly mixed with the grains for optimum coverage of the grain surface. Containers were provided with equal degree of ventilation. They were placed inside the laboratory at constant range room temperature at 30º

2ºC, The relative humidity varied between 60% to 70%. Three replicates were taken as control. These contained untreated grains.

Five pairs of insects were released in each container, and left observations were taken successively at every 24 hours for seven days.

Procedure of Tulsi leaves powder on T.granarium

100 gms of wheat were taken as test- grain, separately in the same-sized glass containers from the laboratory stock. Different doses of standard tulsi leaves powder were weighed out (1gm, 2gm, 3gm and 4gm) and mixed with test grains. Although 4 doses were taken. Five pairs of freshly emerged adult insects were released in each glass-tube. Three replications were taken for each Treatment before the release of insects; the containers were thoroughly shaken for 15 minutes for optimum, coverage of test grain. All experiments were done in equal degree of ventilation and equal percentage of humidity.The room temperature varied from 28ºC to 32ºC while RH60% to 70%.Four replications of the experiment were done without the use of tulsi leaves powder. These served as control.

OBSERVATION-

TABLE 1:

Effect of Tobacco leaves powder on T.granarium infesting wheat

Doses	Durations						
	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day
1gm	10%	15%	20%	25%	30%	40%	50%
2gm	15%	18%	26%	35%	40%	43%	55%
3gm	25%	30%	35%	40%	45%	48%	57%
4gm	40%	44%	49%	50%	52%	54%	70%

In table 1 the effect of tobacco was observed. In 1 gm its shows highest morality rate at 8th day, it was 50%.In 2 gm its shows highest morality rate at 8th day, it was 55%.In 3 gm its shows highest morality rate at 8th day, it was 57%.In 4 gm its shows highest morality rate at 8th day, it was 70%. It was observed that maximum morality rate was 70%

TABLE 2:

Effect of Pudina leaves powder on T.granarium infesting wheat

Doses	Durations						
	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day
1gm	10%	12%	18%	22%	25%	28%	30%
2gm	15%	18%	20%	24%	27%	30%	32%
3gm	18%	20%	22%	25%	28%	31%	35%
4gm	25%	29%	32%	36%	38%	40%	47%

In table 2 the effect of pudina was observed. In 1 gm its shows highest morality rate at 8th day, it was 30%.In 2 gm its shows highest morality rate at 8th day, it was 32%.In 3 gm its shows highest morality rate at 8th day, it was 35%.In 4 gm its shows highest morality rate at 8th day, it was 47%. It was observed that maximum morality rate was 47%

TABLE 3:

Effect of Tulsi leaves powder on T.granarium infesting wheat.

Doses	Durations						
	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day
1gm		3%	5%	8%	10%	15%	18%
2gm		5%	12%	14%	16%	20%	24%
3gm	3%	8%	15%	20%	21%	25%	27%
4gm	5%	10%	18%	25%	28%	30%	38%

In table 3 the effect of tulsi was observed. In 1 gm its shows highest morality rate at 8th day, it was 18%.In 2 gm its shows highest morality rate at 8th day, it was 24%.In 3 gm its shows highest morality rate at 8th day, it was 27%.In 4 gm its shows highest morality rate at 8th day, it was 38%. It was observed that maximum morality rate was 38%

RESULT & DISCUSSION-

It was beyond doubt that tobacco irrespective of the grains treated with exerted its effect on the infesting beetles and weevils. Different doses brought different percentages of morality under various durations. Compared with the control even the lowest dose had also toxic effect with the increase in the quantity of tobacco the rate of mortality also increased.

All the dose of tobacco leaves powder were also found more effective on causing morality of T. granadium took place on 8th day of observation. In higher dose i.e. 4 gm 70% mortality occurred on 8th day Result showed that the lower doses took more time but in higher dose instant death occurred. In the middle dose i.e. 2gm and 3 gms some dead larvae and pupae were found inside the grains.

The given survey show compared to tobacco pudina and tulsi powder, the maximum effect is up to 70% of the powder of tobacco leaves on T.granadium and pudina has up to 47% effect while tulsi leaves have only up to 38% effect

Guthrie et al. (1957) identified containing as the principal nicotine metabolite in the American Cockroach and most likely in the German cockroach as well. Self et al. (1964) examined the fate and disposition of nicotine in the tobacco feeding insects which manage to survive large quantities of nicotine they ingest. It was shown that the tobacco wire worm, Cigarette beetle and grasshopper metabolize nicotine to one, two and four another alkaloids respectively. In the same study the housefly metabolized nicotine to three other alkaloids. In

all the above cases at least 70% of the recovered alkaloids were metabolized, (other than nicotine), the principal one corresponding chromatographically to continine (Self et al.1964)

The first is the efficient nicotine excretory system and the second is a metabolic path way from nicotine to cotinine.Guthrie et ai. (1957) Jacob (1992) and Selt et al. (1964) observed cotinine to be nontoxic to insects.

According to schmaltz (1972), nicotine penetrates the insects, body directly through the cuticle as well as through the spiracles and the trachea. Sharma (2000).

According to schmaltz (1972), insects response to nicotine is observed and Kudachi and Balikai(2010) also reported.

Makkar(1998)observed Temin's effects on viruses, bacteria, fungi and insects .Excessive Temin's cause indigestion of protein.

Kumari and Kumar (1997) studied the efficacy of tulsi leaves on C.chinensis infesting pulse grain. Singh and Kumari(2005) also observed the tulsi leaves powder as grain proctectant against T.granarium.

Srivastava et al (2010) reported effect of different grain protectants on sitophilus oryzae linn.

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