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Efficacy of *Nicotiana tabacum* as pesticide against *Callosobruchus maculatus* (F.) in stored gram

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Abstract: *Callosobruchus maculatus* is a serious pest of stored pulses belonging to the order of beetles, Coleoptera hence also called pulse or bean beetle. In the present article, indigenous method of pest control by adopting the products of a pesticidal plant leaf, tobacco (*Nicotiana tabacum*) has been discussed on the basis of the findings over the natality, mortality & larval growth of pest on stored grams hampered by the tobacco plant extract. A significant result has been obtained by the decreasing trend of population growth of the pest (P> 1.05) thereby encouraging the farmers & stored grain & other product managers to adopt this safe & indigenous method pest control in a low & control dose. As tobacco product is itself very toxic & harmful to the human consumers, higher doses of application should be avoided.

Key words: ***Callosobruchus maculatus,*** **stored gram,** ***Nicotiana tabacum,*** **efficacy & pest control.**

INTRODUCTION

Many insects and mites attack foodgrain (gram) during pre and post-harvest stages. In pre harvest attack, mainly the yield is affected but attack during post-harvest period lead to both quantitative and qualitative damage.

The qualitative and quantitative losses caused to stored gram in India have been discussed by number of researchers.

Callosobruchus maculatus (F) commonly known as 'pulse beetle is & important pest of grain. It belongs to Class-insecta, Order-Coleoptera, Family-Bruchidae. Larvae of the pest eat up the grain kernel and make a cavity. Adults are short lived, harmless and do not feed on stored produce at all. Even though one grub damages only one grain, yet the pest may damage 100% of the grains (gram) in the stores. The attack of the insect not only reduces the market value of the infested grains but also adversely affects their germination.

In view of present work was undertaken to examine the efficacy of product of tobacco (*Nicotiana tabacum* against *Callosobruchus maculatus* infesting stored gram.

Tobacco is one of the important cash crops of Bihar. It is most commonly used "Khaini", 'Bidi' and cigarettes.

Nicotiana tabacum is one of the common species of tobacco in India. It is main source of nicotine. Nicotine is an alkaloid fond in leaves of tobacco. Nicotine is an intoxicating chemical.

Tobacco leaves were collected from a farmer of Vaishali District. They were first of all dried in scorching sun for 3 days. Then it was put into the incubator at 60°C temperature for 6 hours in order to make it free from any

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moisture. The dried leaves were fed into a mechanical grinder with brought out fine brown powder of tobacco. The power was further put into oven as 50°C for 8 hours to make it free from moisture.

MATERIAL & METHODS

In order to ascertain the efficacy of tobacco powder sample of 100 gm of gram were taken in containers of equal size. Eight doses of tobacco powder i.e. 0.5gm, 1gm, 1.5gm, 2.5gm, 3gm, 3.5gm and 4gm, were taken separately with 100 gm of gram in each container. Tobacco powder was mixed with grain vigorous shaking of container. Each treatment was arranged in three replications. At the same time a set of three containers with under treated gram was established as control. 5 pairs of insect i.e. *C. maculatus* taken from laboratory culture were released in each container.

RESULT & DISCUSSION

Tobacco leaves powder (TCP) showed the significant effect.3gm, 3.5gm, and 4gm, doses brought about 100% mortality on 6 DAI where 1.5gm, 2gm and 2.5gm does caused in on 10 DAI.

The egg laying was not affected too much in lower doses. In higher doses like 3.5gm, it was reduced to 75% and in 4gm, there was no oviposition at all.

The population growth was badly affected by the treatment with tobacco *Nicotiana tabacum* leaves. In 0.5gm treatment the population growth was reduced to 75% in comparison to the control. In treatment with 1gm to 4gm TP there was no population growth at all.

Effect of Tobacco Powder (TP) Treatment

Tobacco Powder/ 100 gm. of gram	Adult Mortality Percentage							
	2 DAI	4 DAI	6 DAI	8 DAI	10 DAI	12 DAI	14 DAI	16 DAI
Control					30	63	80	100
0.5 gm.	30	50	50	56	66	80	96	100
1 gm.	33	50	70	73	80	80	93	100
1.5 gm.	50	50	60	80	100			
2 gm.	50	60	60	80	100			
2.5 gm.	50	56	60	86	100			
3 gm.	70	93	100					
3.5 gm.	80	96	100					
4 gm.	80	96	100					

DAI = Days After Infestation

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