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Effect of Chinese neem (*Melia azedarach* L.) on the storage of pea seeds

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Abstract

The Chinese neem, *Melia azedarach* L. in Meliaceae family is a native tree of Asia and Southern Australia which possess important insecticidal properties. It is also found abundantly in the state of Manipur too and known as "Seijrak" in Manipuri. So an experiment was conducted in the experimental laboratory of Agronomy Department, College of Agriculture, Iroisemba, Central Agricultural University, Imphal in 2017-2019, to study the "Effect of *Melia azedarach* L. on controlling insect pests on storage of pea seeds (*Pisum sativum* var Makhyatmubi) in Manipur condition". It was found that when we mixed the *Melia azedarach* L. with pea seeds in the ratio 1Kg pea seeds:150g *Melia azedarach* L. and above, there were no damage of the pea seeds by insect pests but in control where there was no *Melia azedarach* L., all the seeds were damaged by insect pests.

Keywords: The Chinese neem, pea seeds, storage

Introduction

Now-a-days, people are aware of environment and started leaving synthetic insecticides slowly and slowly for the save of the new generations. Botanical insecticides have been used in agriculture for at least two thousand years in Asia and the Middle East (Thacker, 2002) [3]. The Chinese neem, *Melia azedarach* L. in Meliaceae family is a native tree of Asia and Southern Australia with important insecticidal properties (Villalobos, 1996) [5]. It is also found abundantly in the state of Manipur too and known as "Seijrak" in Manipuri. The insecticide activity of *Melia azedarach* L. is due to biologically active triterpenoids with an antialimentary effect i.e., they inhibit the feeding of phytophage insects producing death and malformations of subsequent generations (Vergara *et al.*, 1997; Carpinella *et al.*, 2003) [4, 1].

In Manipur majority of the farmers are small and marginal. So, most of them try to store pea seeds for the next year at their own way. But many of them get loss due to insect pests. Synthetic insecticides are also very costly, farmers could not afford it. Not only that they like to come on the way of organic farming.

Considering the above problem of storage an experiment was conducted at Department of Agronomy, College of Agriculture, Iroisemba, Central Agricultural University, Imphal from the year 2017 to 2019 to bring about a suitable storage method to minimize the storage losses in pea with the help of *Melia azedarach* L. which is available everywhere in Manipur.

Methodology

Pea seeds were collected from the farmer's field and cleaned properly. The seeds were spread thinly on a concrete floor under the sun for 5 days. It was then cooled and stored in polythene bags. *Melia azedarach* L. leaves were collected from the forest and dried in the shade. After drying, they were chopped into small pieces. The pea seeds were then mixed well with the *Melia azedarach* L. at different proportions as: T₁(1Kg pea seeds, control without *Melia azedarach* L.), T₂(1Kg pea seeds+150g *Melia azedarach* L.), T₃(1Kg pea seeds+200g *Melia azedarach* L.), T₄(1Kg pea seeds+250g *Melia azedarach* L.), T₅(1Kg pea seeds+300g *Melia azedarach* L.), T₆(1Kg pea seeds + 350g *Melia azedarach* L.) and T₇(1Kg pea seeds + 400g *Melia azedarach* L.) and then stored in polythene bags. The upper most layer of each treatments was covered with a layer of *Melia azedarach* L., and tied the ends of bags then s placed on a desk in the laboratory for a year. Each treatment consists of four replications.

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The stored seeds were monitored and damage percentage were recorded for each consecutive year i.e., from 2017 to 2019.

Results and Discussion

It was observed that there was no damage of pea seeds by insect pests in all the treatments except the control (Table no. 1). It may be due to the leaves of *Melia azedarach* L. which possess important insecticidal properties (Villalobos, 1996) [5]. The insecticide activity of *Melia azedarach* L. inhibit the feeding of phytophage insects producing death and malformations of subsequent generations is due to biologically active triterpenoids with an antialimentary effect

(Vergara *et al.*, 1997; Carpinella *et al.*, 2003) [4, 1]. Similar result was also obtained by (Sah *et al.*, 2004) [2] that while storing field pea in gunny bags, onions were mixed randomly @ one kilogram per quintal of field pea for preventing damage by storage pest. Farmers perceived that the smell of onions repel the storage pest, thus minimizes the storage losses. In the same way prior to storage of chickpea seeds, *Asafoetida* was found mixed with water and sprinkled and mixed thoroughly on the grains by farmers. The practice was followed with a rationale that the smell of *Asafoetida* repels the storage pest and the damage by storage pest is minimized. In the control treatment, where there was no *Melia azedarach* L., the seeds were all damaged.

Table 1: Effect of *Melia azedarach* L. on 1 year storage of pea (2017-2019)

Treatments	Damaged percentage (%)		
	2017	2018	2019
T ₁ :1Kg pea seeds (without <i>Melia azedarach</i> L.)	100	100	100
T ₂ :1Kg pea seeds+150g <i>Melia azedarach</i> L.	0	0	0
T ₃ :1Kg pea seeds+200g <i>Melia azedarach</i> L.	0	0	0
T ₄ :1Kg pea seeds+250g <i>Melia azedarach</i> L.	0	0	0
T ₅ :1Kg pea seeds+300g <i>Melia azedarach</i> L.	0	0	0
T ₆ :1Kg pea seeds+350g <i>Melia azedarach</i> L.	0	0	0
T ₇ :1Kg pea seeds+400g <i>Melia azedarach</i> L.	0	0	0

Conclusion

Pea seeds could be stored with *Melia azedarach* L. in order to safe from the insect pests damage. It would support the economy of small and marginal farmers and would be good for environment and human health too.

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