



# FOLIAR APPLICATIONS INFLUENCE OF NEEM TREE (*Azadirachta indica*) INFUSION ON PECHAY

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## ABSTRACT

The effectiveness of the organic foliar application is higher with a lower cost than soil application. The research was conducted to assess the influence of neem tree when applied as a foliar insecticidal spray to a group of pechay. Results figured out that commercial spray was 1.19 times effective against neem tree. The analysis of foliar applications influence of neem tree was considered significant as it proved prospective evidence in exterminating leaf insects. Therefore, neem tree extract showed a good effect against troubling leaf insects.

Keywords: foliar, neem tree, soil application, commercial spray, leaf insects

## INTRODUCTION

With the mounting global demand for environmentally sound pest management strategies (Devlin and Zettel, 1999), natural pesticides, the practically sustainable alternative, should be developed (Grange and Ahmed, 1988). The undiscerning practice of chemical pesticides has given rise to many well-known and severe complications, comprising genetic resistance of pest species, toxic remainders in stored products, increasing costs of the use, threats from handling, environmental effluence and so on (Rembold, 1994; FAO, 1992). The usage of plant extracts to control destructive insect pests, or disease vectors is not new (Hillock, D and P. Bolin, 2004, as expounded E. U. Asogwa1 et al., 2010). At present, considerable effort has been put into developing and promoting plant-based methods and products to control pests (Stoll, 2000). Plant products and their analogs are an essential source of agrochemicals used to control insect pests (Cardellina, 1988).

Then again, it has been found that microelements foliar application is at the same level and even more influential than soil application. It was recommended that micronutrients be applied successfully to compensate for the shortage of those elements (Arif et al., 2006). These authors found that foliar spraying could be effective 6 to 20 times compared to soil application based on soil properties. Resistance to diverse stresses will be increased by foliar application of micronutrients (Ghasemian et al., 2010). Since soil features and environmental factors affecting nutrient absorption are highly changeable in field situations, a foliar application could benefit crop growth (SeifiNadergholi et al., 2011). Also, the effectiveness of foliar spraying is higher and the cost of foliar application is lower than soil application (Heidarian, A. R. et al., 2011; Yassen et al., 2010).

Neem tree (*Azadirachta indica*) is being used to manufacture natural or biopesticides, which are environmentally pleasant and do not have any lethal effects on plants and soil. Neem pesticides protect both foods and cash crops (GEP, 2008a). The pesticide influence of neem has been ascertained on several insect groups containing Lepidoptera, Diptera, Coleoptera, Homoptera and Hemiptera species (Sadre et al., 1983). Several pieces of research conducted on cocoa mirids with neem extracts in Ghana and Cote d'Ivoire presented promising outcomes (Padi et al., 1999; 2000; 2003; N'Guessan et al., 2006). The full potential effect of neem and neem-based products for controlling the brown cocoa mirids has not been thoroughly carried out in the different parts of the world. Moreover, an environmentally sound farming system is the vision for the society to cope with the problems of a chemical-based farming system (Karp LD, Koo BC, Sacheti S 1995). That denotes free worries from acquired illnesses and diseases brought by a chemical-based farming method.

Hence, the study is conceptualized to determine the foliar influence of neem tree infusion in the growth of pechay.

## MATERIALS AND METHODS

Pechay seeds were sowed on a shallow seedbed and covered lightly with fine topsoil for 50 samples each treatment for four replication sets. Seedbeds were taken care of, which insects might eat until the seedlings were ready for transplanting. Seedbeds were moistened a day thoroughly before pricking out the seedlings for transplanting to facilitate easy pricking out of seedlings for transplanting from the seedbed to minimize root injury with a distance of 15 cm between hills and 20 cm in the middle of rows. Transplanting was conducted in the late afternoon to reduce the stress of transplanting. The age of the seedling before transplanting was 9-12 days old.

Fresh leaves of neem tree were collected from the same origin of plant sample between 8 am-10 am, exactly 1 kg using tap water as the solvent. The aqueous neem solution was achieved by maceration. (Jackai et al., 1992; Lale, 1995; Jackai, 1993; N'Guessan et al., 2006). Soaking or immersion the plant extracts in water for a more extended period improves the neem aqueous extracts' toxicity against cocoa mirids (N'Guessan et al., 2006). A sufficient quantity of water was added equal to the volume mixture of the commercial spray amounting to 3 tsp per 10 liters as directed on the product's formulation. The macerated extract was filtered twice to avoid possible mix-in leaf residue. Each group of the sample was exposed to a series of treatments. Spraying was scheduled once a week and harvested 45 days after transplanting.

The first group was treated with macerated extract of a neem tree. The second group was treated with commercial pesticide spray. Foliar application efficiency was recorded every 3 days interval; once eaten by leaf insects the plant was already considered infected; ANOVA (manual computation) was utilized to shed light on the foliar influence of neem tree against the commercial product.

## RESULTS AND DISCUSSION

Table 1. Analysis of sample taken after transplanting of seedlings

Sample	Value
Neem tree extract (%)	32
Commercial spray (%)	38

The commercial spray was 1.19 times effective against the neem tree; likewise, it was 2.38 times effective against the controlled group due to its more significant harvest percentage. Botanical pesticides from neem tree have a good perspective for the prevalent use and can be applied either as a farmers' recipe (crude extract) or as a standardized industrial formulation (Bruan, 2000). The study proved that neem trees could partially substitute commercial spray, showing potential pesticide action. Furthermore, recent studies have shown that neem seeds in Ghana are of high quality, having an Azadirachtin content of 6.2 - 6.9%, second only to those in Kenya where the Azadirachtin content ranged from 6.81 - 8.80% (Foerster, 2000).

Table 2. Analysis on the harvest and yield performance of pechay treated with neem tree infusion and commercial spray.

Comparison	Mean1 - Mean2	95% CI of difference	Significant (P <0.05)
Neem Tree	+ 1.875	+ 0.962 to + 2.788	Yes
Commercial Spray	+ 1.824	+ 0.911 to + 2.737	Yes

The results denote that the yield performance in pechay of both neem tree and commercial spray was considered significant. The biological activities of these plant extracts may be due to various phytochemical classes existing in the plant; these compounds may jointly or independently contribute to producing activity (Azhari H. Nour et al. 2012). It implies that using neem tree infusion in growing pechay can be of notable quality influence to have a good harvest. Organic food denotes a better effect on human health and the environment than conventional production.

## CONCLUSION

This study revealed that neem tree extract showed potential pesticide activity against leaf striking insects, though not as potent as the commercially sold insecticidal sprays available in the market. Thus, neem tree infusion can be an excellent organic spray in producing a quality harvest of pechay.

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