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Effect of teak leaf litter addition on Ambrette content of *Abelmoschus moschatus*

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Abstract

The field investigation in relation to “Effect of Teak leaf litter addition on Ambrette Content of *Abelmoschus moschatus*” was conducted in the year 2016-17 at Agroforestry Research Farm, College of Agriculture, Nagpur. The experiment was framed in Randomized Block Design (RBD) with ten treatments consisting of various levels of Teak leaf litter combined with cow dung slurry and bio-decomposer which were replicated thrice. The highest Ambrette content was recorded in T₇ with application of Teak leaf litter @ 5 t ha⁻¹+ cow dung slurry @ 50% of Teak leaf litter + bio-decomposer (0.50%). T₈ supplied with Teak leaf litter @ 5 t ha⁻¹+ cow dung slurry @ 50% of Teak leaf litter recorded second highest place recording 0.48% Ambrette content. Application of @ 5 t ha⁻¹ Teak leaf litter + cow dung slurry @ 50% of Teak leaf litter+ bio-decomposer recorded 10% increased Ambrette content over control.

Keywords: Ambrette, *Abelmoschus moschatus*, teak leaf litter, cow dung slurry and bio-decomposer

Introduction

Leaf litter is an important component of cropping system. This is because it builds up the forest floor and creates a layer of nutrient and litter on the soil. It is a major source of soil organic matter as it returns nutrients back to the soil through nutrient recycling. Teak leaf litter supply the nutrient of *Abelmoschus moschatus* it helps to increase Ambrette content in the seed. *Abelmoschus moschatus* seed has Oil glands located in the hypodermis and are connected to other outer surface by stomium cells (Bagchi *et al.*, 1984)^[3]. The different grades of essential oil consisting mainly of macrocyclic lactone, ambrettolide and sesquiterpene alcohol, farnesol are isolated from the aromatic substances obtained from its seed (Hegde *et al.*, 1994)^[4].

The seed coat yields an aromatic “absolute” which can serve as a highly useful base for preparing high quality perfumes, scents and cosmetics (Anonymous, 1998)^[1]. Ambrette oil in the form of extract can be used in creams, lipsticks, cosmetic powders, soaps, non-alcoholic beverages, ice-creams, candy and baked foods. In medicines, seeds are used as a tonic, aphrodisiac, antispasmodic and carminative. They allay thirst, check vomiting and cure diseases like Kapha and vata and are useful in healing intestinal disorders, stomatitis, dyspepsia, urinary discharge, nervous debility, hysteria, and skin diseases like itch and leucoderma and also valued as cardio tonic.

Material and Method

The field investigation in relation to “Effect of Teak leaf Litter addition on Ambrette Content of *Abelmoschus moschatus*” was conducted in the year 2016- 17 at Agroforestry Research Farm, College of Agriculture, Nagpur. The experiment was laid out in Randomized Block Design (RBD) and the treatments were replicated thrice. The ten treatments consist of various levels of teak leaf litter combined with cow dung slurry and bio-decomposer. The experimental site where experiment was conducted is a Teak plantation of year 1991. The Teak was planted at 2 m distance (tree to tree) and 12 m row to row spacing. Teak leaf litter required for the experiment was obtained from Teak plantation of Agroforestry research farm. During late winter i.e., in the month of February litter fall of Teak starts. The Teak leaf litter was collected from surface and was dumped in pit where it was crushed.

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The teak leaf litter samples were then analyzed for nutrient content. From the result it was observed that C: N ratio of teak leaf litter is 30.40 which is narrower. Anonymous (2011) [2] concluded that, understanding C: N ratios of crop residues and other material applied to the soil is important to manage soil cover and crop nutrient recycling, providing quality habitat for soil micro-organisms.

The soil under experimental area is light textured soil with good drainage. Standard procedures were applied for analysis of Ambrette content. Ambrette content in seed was determined by Soxhlet apparatus using diethyl ether as described by Sankaran (1975) [6].

Results and Discussion

The data pertaining to Ambrette content is presented in table no.1 and depicted in figure 1.

The effect of Teak leaf litter addition on Ambrette content was found non-significant and values for Ambrette content ranged from 0.45% to 0.50%. The lowest Ambrette content was recorded in T₁ without any input while the highest Ambrette content was recorded in T₇ with application of Teak leaf litter @ 5 t ha⁻¹ + cow dung slurry @ 50% of Teak leaf litter + bio- decomposer (0.50%). T₈ supplied with Teak leaf litter @ 5 t ha⁻¹ + cow dung slurry @ 50% of Teak leaf litter recorded second highest place recording 0.48% Ambrette content. Application of @ 5 t ha⁻¹ Teak leaf litter + cow dung slurry @ 50% of Teak leaf litter+ bio- decomposer recorded 10% increased Ambrette content over control.

Treatment T₈ recorded 10% more Ambrette content than in control. The findings one in conformity with Oudhia (2001) [5] who stated that, application of dried Neem leaves (500 Kg ha⁻¹) at last ploughing increased oil content and quality of *Abelmoschus Moschatus*.

Table 1: Effect of teak leaf litter addition on Ambrette content

Treatment		(%)
T ₁	Absolute control	0.45
T ₂	Teak leaf litter @ 2.5 t ha ⁻¹	0.46
T ₃	Teak leaf litter @ 5 t ha ⁻¹	0.46
T ₄	Teak leaf litter @ 7.5 t ha ⁻¹	0.46
T ₅	Teak leaf litter @ 2.5 t ha ⁻¹ + cow dung slurry @ 50% of Teak leaf litter + bio-decomposer	0.47
T ₆	Teak leaf litter @ 2.5 t ha ⁻¹ + cow dung slurry @ 50% of Teak leaf litter	0.47
T ₇	Teak leaf litter @ 5 t ha ⁻¹ + cow dung slurry @ 50% of Teak leaf litter + bio- decomposer	0.50
T ₈	Teak leaf litter @ 5 t ha ⁻¹ + cow dung slurry @ 50% of Teak leaf litter	0.48
T ₉	Teak leaf litter @ 7.5 t ha ⁻¹ + cow dung slurry @ 50% of Teak leaf litter + bio- decomposer	0.47
T ₁₀	Teak leaf litter @ 7.5 t ha ⁻¹ + cow dung slurry @ 50% of Teak leaf litter	0.47
SE(m) +		0.03
CD at 5%		-

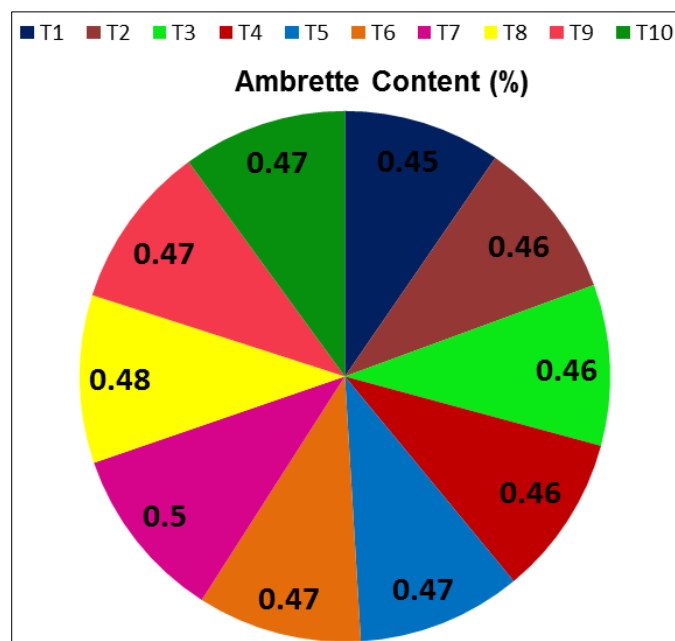


Fig 1: Effect of teak leaf litter on Ambrette content of *Abelmoschus moschatus*

It is concluded that the application of Teak leaf litter @ 5 t ha⁻¹ + cow dung slurry @ 50% of Teak leaf litter + bio – decomposer in increasing Ambrette content and also helped in improving the soil health by improving the soil chemical properties after harvest of *Abelmoschus Moschatus*.

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