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Kalpavriksha – A natural weed controller

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Abstract:- Farmers commonly face challenges with widespread weed growth, requiring effective management strategies. The use of chemical weedicides, though prevalent, raises concerns due to their harmful impact on human and animal health. Consequently, there is a pressing need for safer alternatives to address this issue. This study focuses on assessing the weedicide properties of blackish brown wood vinegar, also known as shell vinegar, derived from the inner hard shell of coconuts (Kalpavriksha). Scientific analysis confirms the safety of shell vinegar, containing organic acids and phenolic compounds. Field studies, including pot experiments and plot tests, very clearly demonstrate its efficacy as a weed control agent. The findings underscore its affordability, safety, and eco-friendly nature, presenting a viable alternative to commercially available chemical weedicides.

Key Words: Endocarp, Shell Vinegar, Weed Control.

I. Introduction

The weed problem in agriculture poses a significant challenge for farmers worldwide, adversely affecting crop yields and farm productivity. Weeds compete with crops for essential resources such as sunlight, water, and nutrients, leading to reduced growth and yield of cultivated plants. Moreover, weeds can harbor pests and diseases, further jeopardizing the health of crops. The manual labor required for weed control is not only time-consuming but also adds to the operational costs for farmers. The use of chemical-based weedicides in agriculture carries a range of adverse effects. Runoff from treated fields can contaminate water sources, endangering aquatic ecosystems and compromising water quality. Persistent herbicides or weedicides contribute to soil degradation, disrupting microbial communities and diminishing overall soil health and fertility. Residual chemicals in crops can enter the food chain, raising concerns about human exposure and potential health risks. Hence there is need of safe and effective organic material which can effectively control weeds. The present study aims at utilization of a liquid extracted from coconut endocarp for weed control without affecting environment.

II. Literature Study

Coconut, Cocos nucifera L., is a tree that is cultivated for its multiple utilities, mainly for its nutritional and medicinal values [1]. The various products of coconut include tender coconut water, copra, coconut oil, raw kernel, coconut cake, coconut toddy, coconut shell and wood based products, coconut leaves, coir pith etc as shown in Fig.1. All parts are used in some way or another in the daily life of the people in the traditional coconut growing areas, hence called Kalpavriksha. It is the unique source of various natural products for the development of medicines against various diseases and also for the development of industrial products. A study was made on use of coconut shell as a partial replacement for coarse aggregates in a concrete mix showed better strength results [2]. A study on extraction of shell oil from endocarp by pyrolysis process revealed the presence of aromatic, phenolic, acid, ketone and ether compounds and water [3]. A study on chemical based weedicide, demonstrated the presence of Glyphosate, a harmful chemical and its potential threats on environment and health [4]. Following objectives have been set for the present study -

i. To explore the characteristics of coconut shell vinegar through different scientific procedures.
ii. To identify the shell vinegar ingredients those are responsible for weed control.
iii. To test the efficacy of the shell vinegar through filed studies such as Pot experiments and Plot tests.

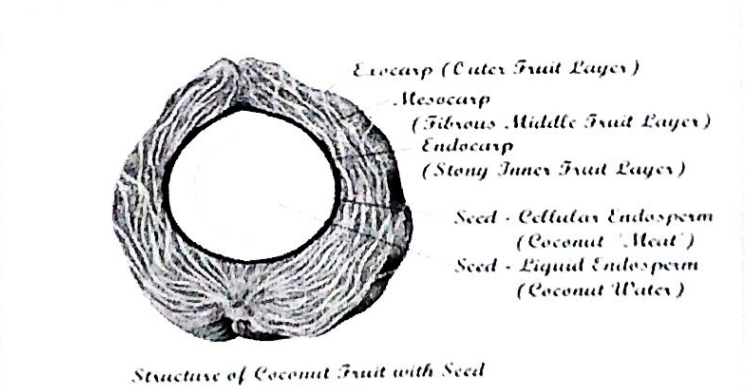

Fig. 1: Different Parts of a Coconut
(Ref.: http://raizadanidhi.blogspot.com/2009/07/coconut.html*)*

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