

Non-vibrate Palm Oil Tree Harvesting Cutter Using DC Motor



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Abstract Long exposure use of palm oil tree harvesting cutter powered by fuel engine can give risk of Hand Arm Vibration Syndrome (HAVS) disease, due to the transmitted vibration produced from the motorized cutter. In this paper, a new design of harvesting cutter which was powered by DC motor was proposed. Results shows that the vibration value were significantly low compare to the conventional motorized cutter; ranging between 0.04 and 0.29 m/s².

Keywords Harvesting cutter · Palm oil · Vibration · Hand arm vibration syndrome

1 Introduction

Palm oil is one of production that have very high demand in global as vegetable oils where it is one-quarter in global consumption and in international trade its lead by 60% and for usage in food productions lead by 74% and for industrial usage, it lead 24% [1]. In economic, production of palm oil increases strongly where it reached 128%, which is 58 million tons per year for last decades, Malaysia is one of main country produced palm oil [2]. As understood, the demand of palm oil is very high in world market and the production must be fast especially in harvesting thus, labor workforce very important in this industry. In harvesting oil palm, to take the bunch of fruit of oil palm, there are many ways such as manual harvesting, lifting platform, motorized cutting tool, vacuum operated cutters and advanced robotic.

Common problem for cutting mechanisms devices for palm oil harvesting is it have large vibration. The source of the vibration is coming from the transmitted of potential energy to kinetic energy and vice versa. This vibration can cause health problem to the worker that using this cutting mechanism devices. The health problem

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