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Development of Agriculture Weeder Machine Operated by Two Stroke Petrol Engine

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Abstract: The world's population is growing at an accelerated rate, which has raised the demand for food production and made agricultural processes more efficient. Since weed infestations can drastically lower agricultural yields, weed management is an essential component of agriculture. Large-scale farming enterprises find traditional manual weeding methods to be unproductive due to their labor-intensive and time-consuming nature. To overcome this difficulty, we have developed an agricultural tiller powered by a two-stroke petrol engine. The goal of this project is to build an Agriculture Weeder, which will increase the effectiveness of weed management in agriculture. In comparison to conventional manual weeding methods, the weeder's 2-stroke petrol engine has several benefits, including more power, decreased operator fatigue, and ease of use. Mechanization is becoming more and more important in modern agriculture to increase output. This study provides the route map towards the development of an eco-friendly grass cutter machine and it also reduces the effort of skilled labor.

KEYWORDS: Walk-and-go Brush Cutters, Weed Cutter, Two-stroke-Petrol Engine, Blade Attachments**.**

I. INTRODUCTION

Weed control is one of the most difficult tasks in agriculture that accounts for a considerable share of the cost involved in agriculture production. Farmers generally expressed their concern for the effective weed control measures to arrest the growth and propagation of weeds. In Indian agriculture, it's a very difficult task to weed out unwanted plants manually as well as using bullock operated equipment's which may further lead to damage of main crops. More than 33 percent of the cost incurred in cultivation is diverted to weeding operations there by reducing the profit share of farmers. A weed is essentially any plant which grows where it is unwanted. A weed can be thought of as any plant growing in the wrong place at the wrong time and doing

more harm than good (Parish, 1990). It is a plant that competes with crops for water, nutrients, and light. This can reduce crop production. Some weeds have beneficial uses but not usually when they are growing among crops. Weeds decrease the value of land, particularly perennial weeds which tend to accumulate on long fallows; increase cost of cleaning and drying crops. Weeds waste excessive proportions of farmer's time, thereby acting as a brake on development. Weeding is an important but equally labour-intensive agricultural unit operation. Today the agricultural sector requires non- chemical weed control that ensures food safety. Consumers demand high quality food products and pay special attention to food safety. Through the technical development of mechanisms for physical weed control, it might be possible to control weeds in a way that meets consumer and environmental demands.

Agriculture weeders have long been used to remove unwanted weeds from crops, allowing them to grow healthily and produce high yields. Conventional weed control methods, such as hand weeding and chemical-based herbicides, can be time-consuming, labor-intensive, and can have negative impacts on the environment and human health. In recent years, there has been a growing demand for sustainable and efficient weed control methods in agriculture. Agriculture weeder machines have emerged as a promising solution to these challenges, offering a more efficient, environmentally friendly, and cost-effective alternative to traditional weed control methods.

The objective of this project report is to provide a comprehensive overview of agriculture weeder machines, including their types, de principles, and effectiveness in different agricultural contexts. The report will examine the different types of weeder machines available in the market, their design and development process, their environmental impact, and the economic benefits of using them. It will also provide recommendations for implementing weeder machines in different agricultural contexts, based on factors such as soil type, crop type, and climate.

Overall, this project report aims to contribute to the promotion of sustainable and efficient weed control strategies in agriculture, by providing valuable insights and recommendations on the usage of weeder machines. By exploring the latest technology and design principles used in the development of these machines, this report seeks to facilitate the adoption of more efficient and environmentally friendly weed control methods in agriculture.

II. MATERIALS & METHODOLOGY:

1. Construction of Cutter machine:

S. No	Components	Images	Description
1.	**2-Stroke Petrol Engine**		One kind of internal combustion engine that completes the combustion cycle in two piston strokes during a single crankshaft revolution is the two-stroke petrol engine. In contrast to four-stroke engines, which feature distinct strokes for intake, compression, power, and exhaust, two-stroke engines integrate intake and compression into a single stroke and power and exhaust into another. Due to their great power-to-weight ratio, ease of use, and low

			weight, two-stroke engines are widely used in small boats, motorbikes, and chainsaws, among other applications where size and weight are crucial considerations.
2.	**Cutter**		The purpose of cutter is to cut the grass and weeders. The cutters of various shapes and profiles are chosen in the present work. Teeth blade designs differ according to the material being cut and the intended use. For example, metal cutting blades usually have smaller, closely spaced teeth for greater durability and precision, whereas wood cutting blades have larger, widely spaced teeth to provide smooth cuts and minimize clogging. The cutting performance of a blade is significantly influenced by the shape and placement of its teeth.
3.	**safety guard**		When using a brush cutter, safety is of the utmost importance. Several measures are vital to guarantee the safety of the operator and people in the immediate vicinity. First and foremost, safety equipment including goggles, gloves, hard shoes, and long. Wearing pants is usually a good idea to protect yourself from potential risks and debris. To avoid unintentional contact with the cutting

			blade while in use, the brush cutter should also have a safety guard covering it. By serving as a barrier, this guard lowers the possibility of damage by redirecting any debris that the cutter may throw. In addition, the operator's arms and back will be less strained if the brush cutter's weight is distributed equally via a harness or shoulder strap. Frequent maintenance inspections are also essential to guarantee
4.	**Petrol Tank**		The fuel tank is a vital part of a two-stroke gasoline engine because it is charge of obtaining and storing the fuel needed for burning. When it comes to gasoline and oil, two-stroke engines usually use a premixed system, in contrast to four-stroke engines that have their own separator. An engine running on two strokes needs its fuel tank to meet multiple key roles. To ensure continuous and smooth combustion, it must, first and foremost, supply the engine with a steady and dependable supply of fuel. To prevent pressure buildup and enable fuel flow to the engine, it must be constructed with adequate ventilation. To further assure safety during operation and avoid leaks, the gasoline tank needs to be firmly installed within

			the engine assembly. The fuel tank requires routine maintenance and inspection.
5.	**Wheels**		An essential component of agriculture's effectiveness and efficiency are wheels. weed eaters. With the help of these devices, weeds in agricultural fields can be eliminated, increasing crop output and lowering the demand for herbicides. The kind of wheels on these vehicles can affect how well they function in different types of terrain and dirt.The size and kind of tire is an essential factor to take into account when choosing wheels for a weed eater machine. The machine's weight, power, and the dimensions and form of the fields it is working in should all be taken into consideration when choosing the tire size.

III. Working Principle:

Fig1: Development of agriculture weeder operated by 2- stroke petrol engine

A machine called an agriculture weeder is used to get rid of weeds from fields of agriculture. Although there are several varieties of weeder machines on the market, they all operate on the same fundamental concept.The engine, gearbox, and weeding mechanism are all supported by the frame that makes up the weeder machine. Usually, the weeding mechanism

consists of a rotating set of blades or teeth that chop or pull weeds out of the ground. The engine powers the transmission system, which in turn powers the weeding mechanism, when the weeder machine is started. The weeding mechanism's teeth or blades rotate quickly, uprooting or chopping weeds as they pass through the soil. Usually, the weeder machine is connected.

IV. Benefits Of Present System:

❖ **Reduced Labour Costs:** Agriculture weeders are designed to make weeding easier and faster. By using an agriculture weeder, farmers can reduce the need for manual labor, which can result in lower labour costs.

❖ **Increased Efficiency:** Agriculture weeders are designed to be efficient, which means that farmers can cover more ground in less time. This can result in increased productivity and faster weed removal.

❖ **Reduced Soil Erosion:** Weeds can cause soil erosion by destabilizing the soil and exposing it to wind and water erosion. By removing weeds with an agriculture weeder, farmers can reduce soil erosion and protect the soil from further damage.

❖ **Improved Crop Quality:** Weeds can negatively impact crop quality by competing for resources and by serving as hosts for pests and diseases. By removing weeds with an agriculture weeder, farmers can ensure that their crops are healthy and of high quality.

V. CONCLUSION

Weed cutter machine which is used to perform different activities in agriculture field. In the general view, each of those activities requires different kind of machinery or an extra set of expert hands which ultimately cost the farmer a fortune and brings down their monthly income even less. It has been concluded that the weed cutter machine will save a lot of money and time for the farmers which will directly affect the economy of India as the income of the farmers grow. As a result of the work, it can conclude that the work will meet the needs of small-scale ranchers who cannot afford to purchase expensive agrarian equipment. It took less labour and time than traditional methods, so if a farmer uses it on a large scale, his costs will be cut in half.

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