

Research Article

Green Guide Tools

Nur Aieyn Nadirah Binti Anuar¹, Nur Nabila Binti Mohammad Nizam², Amir Haikal Bin Zairimi³, Nur Zulaikha Binti Mohd Zaidi⁴, Muhammad Azim Bin Azizi⁵, Selvakkumar K N Vaiappuri⁶, Wan Zuraida Wan Mohd Zain⁷, Muhammad Nuruddin Mohd Nor⁸

- ¹ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; 2022930701@student.uitm.edu.my
- ² Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; 2022931153@student.uitm.edu.my
- ³ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; 2022987823@student.uitm.edu.my
- ⁴ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; 2022905589@student.uitm.edu.my
- ⁵ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; 2022771699@student.uitm.edu.my
- ⁶ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; selvakkumar@uitm.edu.my;  0000-0002-8476-4424
- ⁷ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; wanzuraida@uitm.edu.my;  0000-0001-8133-9230
- ⁸ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Malaysia; mnuruddin@uitm.edu.my;  0000-0001-7221-6271
- * Correspondence: selvakkumar@uitm.edu.my; 06-2645298

Abstract: The proper growth and stability of plants are crucial for maximising yield and ensuring healthy development. This study presents the design and implementation of an innovative plant support system aimed at facilitating upright growth and preventing plants from collapsing. The system comprises a specialised pole or sticks strategically placed near the base of the plant, providing support as it grows. Through field experiments and measurements, we evaluated the system's effectiveness in enhancing plant growth and stability across various plant species and environmental conditions. Our findings demonstrate that the plant support system significantly reduces instances of plants bending, breaking, or falling over, thereby promoting straight vertical growth. Additionally, we observed improved nutrient uptake and overall plant health in the supported plants compared to the control groups. These results highlight the potential of this plant support system as a practical and cost-effective solution for optimising plant growth and mitigating structural damage in agricultural and horticultural settings. Further research is recommended to assess its long-term impact on crop productivity and explore potential modifications for different plant types and growth stages.

Keywords: growth; preventing; improved.



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1. INTRODUCTION

The innovative effort aims to make agriculture more accessible to modern farmers who live in cities and have limited space. The invention concept derives from wooden plant support, which is typically used to straighten the trunk of a tree. Furthermore, the teams enhanced individuality and creativity with other sets, including the green guide set, sprout space, and climbing graze.

2. METHOD & MATERIAL

The multifunctional poles that had been created to make gardening for urban farmers simpler have a pretty simple usage process. To make things simpler for consumers, we made this pole. Our major tool for focusing the poles that will support the saplings is the green guide. As a result, when urban farmers purchase saplings, all they need to do is poke this pole next to the tree; the sapling will then be held in place by the post's hole. Because it is adjustable, this tool is extremely simple to use. Therefore, users can alter this pole in accordance with the sapling's height. To use it, pull the pole to the desired point. We also offer extra components, like the head and base. There is a climbing graze first. This head is gate-shaped when the customer purchases it, making it ideal for use with creeping flowers. The goal is to make the yard look nice. Installing it involves switching out the original head, a green guide, for a climbing grace. Our second head is referred to as the "sprout space". Due to its quadrate design, the second head resembles a creeping plant more. Simply change the head, and the procedure remains the same. The base, which comes in two varieties—sharp and spiral—is the following extra tool: replace the original base and insert the new one to use it.

Ethylene Propylene Diene Monome (EPDM) rubber and stainless steel are the materials we utilise to make this pole. Following that, iron and carbon are primarily used in a two-step procedure to make stainless steel. The addition of chromium (Cr) and other alloying elements like nickel (Ni) to stainless steel results in a product that is resistant to corrosion. Therefore, the pole, base, and head are made of stainless steel. This is due to its many benefits, which include corrosion resistance, high and low-temperature resistance, ease of fabrication, strength and durability, ease of cleaning and maintenance, low lifecycle cost, aesthetically pleasing nature, environmental friendliness, and recyclable nature. Due to the great quality of the material utilised, this pole is particularly ideal for its users. Rubber EPDM comes next. To prevent any harm to the saplings, we hold them with high-quality rubber. EPDM rubber has the benefit of being lightweight, ecologically sound, 100% waterproof and recyclable, resistant to temperature, life expectancy of 50 years. It is ideal for use as a tree because of this benefit. It is ideal for use as a sapling holder because of this benefit.

3. FINDINGS

The findings of this study highlight the development of an innovative plant support stake (Green Guide) that offers significant advantages in terms of adaptability, protection, ease of use, durability, versatility, and aesthetic appeal. The adjustable stainless steel plant support stake features a button mechanism for effortless height adjustment and an EPDM rubber clip for securing the tree stem without causing damage. One of the key findings is the enhanced adaptability of the adjustable stake. The incorporation of a button mechanism allows users to easily adjust the stake's height, accommodating plants of varying heights and growth stages. This adaptability is particularly beneficial in gardens or nurseries with different plant species or varying growth rates.

Another significant finding is the stake's user-friendly design. The button mechanism simplifies the height adjustment process, eliminating the need for additional tools and making it convenient for gardeners of all skill levels to set up and modify the plant support system. This ease of use enhances the overall gardening experience. Durability and longevity were identified as important factors in the design of plant support stakes. The stainless-steel construction of the stake ensures strength, resistance to rust and corrosion, and the ability to withstand harsh weather conditions. They boast remarkable resistance to rotting and damage caused by insects, making them particularly well-suited for deployment in regions prone to high termite activity (Unicomposite, 2023). This longevity is

further enhanced by the combination of stainless steel and the flexible EPDM rubber clip, providing a reliable and long-lasting support system.

Furthermore, the study highlighted the versatility of the adjustable stake. Its adaptability allows for ongoing use as plants grow and change throughout the seasons. The stake can be easily repositioned and reused for different plants or transplanted specimens, reducing waste and maximising utility. The conventional approach to staking plants typically involves using a single stake. Various types of stakes, including wooden, bamboo, plastic, and metal options, are readily available at garden centres. These stakes serve as the support structure to which plants can be secured using plastic plant ties. This method allows for easy attachment and adjustment, providing stability and support to the plants as they grow (MasterClass, 2020). The innovative plant support stake is adjustable, and customers might intend to incorporate add-on items such as an arch trellis; it offers further versatility and functionality to the plant support system. By attaching these additional elements to the plant support stake, customers can create a more comprehensive and adaptable structure for their plants. The arch trellis (Climbing Graze), when installed alongside the Green Guide, provides a framework for climbing plants to grow vertically, creating an aesthetically pleasing archway. This feature adds a decorative element to the garden or landscape while allowing plants to utilise vertical space effectively. The trellis (Sprout Space) acting as a roof further enhances the functionality of the plant support system. By extending horizontally from the adjustable stake, it creates a canopy-like structure that offers shade and protection for plants underneath.

4. DISCUSSION

In a rapidly evolving marketplace, consumers are often faced with the decision of sticking with familiar, tried-and-true products or embracing innovations that promise to revolutionise their lives. This report aims to conduct a comprehensive analysis comparing old products and new innovations across various industries, highlighting the benefits and considerations associated with each option. By examining both sides of the spectrum, we aim to assist consumers in making informed decisions that align with their preferences and needs.

New innovations usually offer advanced functions and features that may not be available in older products. For example, traditional plant support will take a long time to complete each seedling, but with the green guide, farmers only need to stick it into the ground and can use it immediately. Old products may lack compatibility with emerging technologies or evolving consumer needs. New innovations are designed to address current trends by incorporating compatibility with smart home systems, connectivity with mobile devices, or energy-efficient features. Older products tend to be more affordable due to mature manufacturing processes and economies of scale. In contrast, new innovations often come at a premium due to research and development costs, limited availability, and initial demand.

As technology continues to advance at an unprecedented pace, new innovations emerge in various industries, captivating consumers with their potential to revolutionise daily life. This report aims to conduct a price comparison analysis of our innovative products, evaluating the affordability and value proposition of these cutting-edge technologies. By examining a range of new innovations, we aim to shed light on their cost and accessibility to consumers. To carry out this analysis, we employed a combination of our research and market analysis. We gathered data from official manufacturer sources, tech blogs, and reputable online retailers, focusing on five groundbreaking innovations that have garnered significant attention in recent months. From the price comparison data,

several important observations can be made. We value durability and longevity. Our products cost slightly more, have additional features, and have superior voice recognition technology.

Table 1: Cost of Product

Material	Price per kg/m	Total price
Stainless Steel Round Bar 10mm	RM23.35 (1.5 m)	RM23.50
Stainless Steel Round Bar 7.9 mm	Rm 5.90 (1 m)	RM5.90
EPDM Rubber	RM 1.00 (1 m)	RM1.00
TOTAL		RM30.40

Table 2: Costs For Green Guide

Material	Price per kg/m	Number of materials used	Total price
Stainless Steel Round Bar 10mm	RM23.35 (1.5 m)	1	RM23.50
Stainless Steel Round Bar 7.9 mm	Rm 5.90 (1 m)	1	5.90
EPDM Rubber	RM 1.00 (1 m)	1	RM1.00
TOTAL			RM30.40

Table 3: Costs For Climbing Graze

Material	Price per kg/m	Number of materials used	Total price
Stainless Steel Round Bar 10mm	RM23.35 (1.5 m)	1	RM23.50
TOTAL			RM23.50

Table 4: Costs For Green Guide

Material	Price per kg/m	Number of materials used	Total price
Stainless Steel Round Bar 7.9 mm	Rm 5.90 (1 m)	9	RM 53.10
TOTAL			RM 53.10

5. CONCLUSION

In conclusion, new innovations across various industries have transformed the way we live, work, and interact with the world. These innovations have brought about significant advancements and improvements in technology, healthcare, and many other sectors.

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