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A STUDY OF SELECTED MICROGREENS IN SOIL-LESS MEDIA

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ABSTRACT

Growing microgreens in soilless media is a very easy task. Here, coco peat and Rice husk are used as growing media. Microgreens are considered as a very good diet source and consumed for good health. They are rich in vitamins and carotenoids. Microgreens are miniature form of leafy vegetables and can be grown anywhere. Carrot, Radish, and Spinach microgreens are taken for the present study in mixture of soilless media. Comparatively a good result was achieved in soilless mixture as media than soil.

Keywords: *Micro greens, Coco peat, Rice husk, Carrot, Radish, Spinach, Soilless.*

INTRODUCTION

Coco peat is a growing medium and is normally used for soil amendments. It is made from the coir of coconuts. It provides good moisture content for the seed germination and is beneficial for the growth of microgreens. It increases water retention, aeration and provides antifungal properties when used alone. Coco peat is denser in volume, meaning fewer naturally occurring air pockets will be present around plant roots.

Rice husk are the hard covering on the seed of rice. They are generally light weighed, yellowish in color and convex in shape. It gives high resistance to the penetration of moisture and fungal decomposition. Rice husks decompose slowly due to its rich silica content. It increases aeration and works like a conditioner.

Verlinden in 2020 stated that the microgreens are small salad greens grown for their fully developed and non-senescent cotyledons and often include one to two true leaves in development. They are typically harvested without roots. There are many definitions of microgreens but, based on a review of the literature, it is suggested that the above stated and simple definition is one that is broad enough to encompass all microgreen production. Microgreens became popular in the last two or three decades as culinary additions to enhance texture, color, taste, aroma, and visual appeal of a number of food dishes and more recently have been promoted as healthy additions to the diet. Microgreens are harvested without roots and seed coats and, therefore, are less likely to be exposed to two routes of contamination in sprout production, the growing media and the seed itself. Promotion of the consumption of significant quantities of microgreens and expanding the palette of species used for microgreen production has the potential not only to positively impact diet but also secure the economic future of microgreens.

Micro greens are seedlings grown to fully expanded cotyledons or one true leaf. Only the stem and leaves of micro greens are eaten. Generally, all edible leaves are categorized as Micro greens.

Lester *et al.*, in 2010 reported that the younger leaves of baby spinach (*Spinacia oleracea* L.) generally had higher levels of phytonutrients: vitamins C, B9and K1, and the carotenoids (lutein, violaxanthin, zeaxanthin and β-carotene) than the more mature leaves.

Microgreens are ideally suited for indoor production and are part of the global movement towards controlled environmental agriculture (CEA) (Riggio, Jones, & Gibson, 2019a).

Di Gioia *et al.*, in 2017 stated that "Microgreens" is instead a marketing term used to describe a category of products that has no legal definition. They differ from sprouts because they require light and a growing medium and have a longer growth cycle (7–28 days); the edible portion is constituted by stem and cotyledons and often by the emerging first true leaves. By

contrast, "baby leaf" vegetables are grown in the presence of light, either in soil or soilless systems, have a longer growth cycle (20–40), usually require the use of fertilizers and agrochemicals and are harvested after the development of the true leaves.

METHOD:

In a container a mixture was made in 1:1 ratio of coco peat and rice husk (soilless media and here used growing media). The containers were made up of wastes produced from sugarcane straw. Seeds were sown evenly in container filled with growing media. Watering was done from the edges of the container. Harvesting was done with scissors when the microgreens were 2-3 inches tall. The experiment was designed in the replicates of three and one as the controlled. The day of sprouting was recorded regularly.

RESULTS AND DISCUSSIONS:

❖ **Carrot (*Daucus carota*)**

Family: Apiaceae

Carrot micro greens are short, light and feathery. Although they grow a little slower, everything turned out great at the end of the day. They have similar flavor that they have in form mature vegetables. They take a long time to grow.

❖ **Radish (*Raphanus sativus*)**

Family: Brassicaceae

Radish is one of the most popular and easy micro greens to grow. They are harvested as early as possible for more crunchiness and taste.

❖ **Spinach (*Spinacia oleracea*)**

Family: Amaranthaceae

These micro greens grow quickly after germination and have a good resistant to cold temperature. It makes a great salad base and often used for making of juice and smoothies.

The Results of microgreens in soilless media here the mixture was used for the study and was quite interesting and was more than expected. The first true leaves sprouted in Carrot were on the 7th day after sowing, Radish on 12th day, and Spinach on 7th day. All the three microgreens' samples selected showed higher growth rate in soilless media. Fig.1 shows Coco peat is a fibrous and soft in texture and is proved as a good growing medium for microgreens in this present study. Fig.2 shows Rice husk which is rough in texture and is also a natural medium. Fig.3 shows the germination of Carrot leaves after 14 days and these grown leaves can be used in making salads. Fig.4 shows Radish leaves which and can be used for the consumption, and Fig.5 shows Spinach leaves which can be used for utilization.

Fig.1 Coco peat

Fig.2 Rice husk

Fig. 3 Carrot after 14 days

Fig. 4 Radish after 14 days

Fig. 5 Spinach after 14 days

CONCLUSION:

Growing microgreens in bagasse dishes filled with mixture of coco peat and rice husk is having an excellent experience. Result is more than expected in soilless media. Bagasse dishes are biodegradable container and mixture of coco peat and rice husk is reusable. Microgreens are rich in nutrients and often contain higher nutrient level than their mature counter parts. Harvesting of microgreens is done by Scissors.

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