

Soilless Cultivation of Turmeric and Ginger

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Introduction

The tropical and subtropical plant family *Zingiberaceae* includes the spices ginger and turmeric. In a warm, humid environment with plenty of nutrients and moisture-retentive substrate beds, they do well under protected cultivation. The culinary benefits of fresh ginger and turmeric rhizomes have long been known. Due to the volatile components that are produced when the rhizomes are chopped or grated, they offer a somewhat distinct, more fragrant flavour profile than their dried counterparts.

Ginger and turmeric are both used medicinally in addition to in food. Fresh ginger is used to treat nausea, while turmeric has long been used for its digestive, antioxidant, and anti-inflammatory properties. Various curcuminoids and volatile oils including zingiberone, turmerone, and atlantone are among the potent substances found in turmeric. Ginger includes gingerol, a naturally occurring bioactive molecule with antioxidant and anti-inflammatory qualities as well as digestive assistance and antibacterial characteristics. A well-grown ginger or turmeric plant also adds a lush, tropical air to any indoor garden with its gorgeous, big, lime-green leaves in addition to these medicinal and culinary benefits. If the environment is favorable for quick growth and development, turmeric plants also have the benefit of producing stunning exotic blossoms.

The rhizomes of ginger and turmeric can be picked at any stage when they are grown hydroponically. Fresh, fresh ginger rhizomes lack the fibres of older rhizomes and have a crisp, juicy texture. It has a mild flavor and is great for thinly slicing to eat raw or to prepare pickled ginger for Japanese food. Fresh turmeric is frequently used as a natural dye because of its bright, finger-staining yellow hue and mild, earthy flavour. Young turmeric rhizomes can be used right away, grated into curries and other recipes, or combined with fruit and vegetable juices to make a smoothie that's packed with nutrients. When air dried, the harvested rhizomes can be stored for many months before being replanted for the following harvest or eaten

Soilless cultivation

The soilless culture system is the most intense production technique currently used in agriculture, and it can produce higher yields even under challenging and constrained growing circumstances. Generally speaking, "soil-less cultivation" refers to the "Hydroponics" and "Aeroponics" methods. Numerous growing media or substrates, including cocopeat, rockwool, perlite, vermiculite, and peat, have been used in soilless production systems to grow a variety of crops.

An excellent growing medium with acceptable pH, electrical conductivity, and other chemical characteristics was thought to be cocopeat. The chemical formula of perlite, a grey-white mineral of volcanic origin extracted from lava flows, is sodium potassium aluminium silicate. Maintaining a very constant water profile in the rooting media is its key advantage for success in hydroponics. With increased pore volume (more oxygen movement), a stable structure, less water retention, and a big volume of accessible water for the plants, sand serves as a natural inert growing medium.

For soilless culture systems, fertilizer programmes must provide all the nutrients the plants need. Nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, and micronutrients need to be given, while carbon, hydrogen, and oxygen are already present in water and carbon dioxide in the atmosphere.

The benefits of soilless turmeric farming include

- Enhanced quality of crop, including potency, flavour, and aroma; cleaner crops
- Lowering risk of spoilage and requirement for post-harvest labour
- Dramatically reduced overall chemical use;
- Increased ability to harvest in response to market need;
- Production of clean rhizomes "seed" or "mother" pieces.

What to consider before starting to growing turmeric hydroponically

Coir substrate

The proper substrate is the first step in growing a good soilless turmeric crop. To enable turmeric rhizome expansion while preserving constant water-holding capacity (WHC) and air-filled porosity (AFP) over the course of the crop, a well-balanced blend of coir substrate is advised. Galuku has spent over seven years perfecting a blend and customising a



product solution for the effective growing of soilless turmeric and ginger crops in partnership with top Australian farmers.

Irrigation infrastructure

To ensure good turmeric growing, appropriate irrigation infrastructure is needed. We advise using an A and B stock tank system with computerised controller support, automated dosing, and pH correction. This will make it possible to manage the root-zone environment precisely.

.Specialized expertise and support

Growing turmeric hydroponically in coir is not only successful when the correct ingredients are used. Any new crop or growing technique requires specialised support from professionals who can ensure your success. In order to ensure that your turmeric crop is as successful as it can be, Galuku collaborates with its growers and is available to support and advise you on project design, layout, infrastructure, nutrition, and irrigation strategy. We are the ideal partner for you and your hydroponic turmeric production because to our proprietary technologies and years of research and development.

Conclusion

Rhizome rot disease and other soil-born illnesses may harm traditional crops, reducing yield, curcumin content, and other quality indicators. The key to its effectiveness in soilless cultivation is keeping the water profile in the rooting medium nearly constant. With increased pore volume (more oxygen movement), a stable structure, less water retention, and a big volume of accessible water for the plants, sand serves as a natural inert growing medium. Consequently, soilless cultivation can automatically increase the yield and quality.