



Scientific Study of Horticulture: A Lucrative Earth in Future

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Editor's Note

Nature has offered the flowers with the most varied combinations of colour and structure, which is evolutionary conserved feature for pollination via other animals. Not only insects or lower vertebrates, flower also attracts human being too. Such realization is the founding stone for the study stream 'Horticulture'. In horticulture, people can relate the study with the mesmerized options like art, science, technology, and commercial aspects. Horticulture basically follows the principle of botanical science and in a wide spectrum it covers the care and commercial promotion of fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds, grass and ornamental trees etc. The said all the parts are essentially the subject matter of horticulture. Several protective measures are associated with the scientific study of horticulture, which includes plant conservation, landscape restoration, landscape and garden design, construction, and maintenance, and arboriculture. Growing with urbanization, horticulture practice through space managed approaches are the only options for future production of flowers and other plant based products. Several studies have shown that alteration in climate is going to change the vegetation distribution throughout the globe. Hence research and studies on horticulture and allied subjects are the only hope for a lucrative earth in future. The Journal of Horticulture publishes the latest findings in horticulture and associated fields. The current issue of the Journal of Horticulture presents a few findings which can be incorporated in culture strategies to yield better crops. Conant et al. [1] observed that, the microbial bio stimulant, Mammoth PTM could be seamlessly incorporated into the Cannabis sativa culture, resulting in a 16.5% increase in bud yields. Akram et al. [2] found that, application of 100 kg ha⁻¹ Phosphorus and 120 kg ha⁻¹ Potassium to the chili plants resulted in optimal plant height; increased number of branches, leaves, flowers, and fruits per plant; enhanced fruit length, girth, and weight; enhanced seed weight and Phosphorus percentage. Lungo [3] conducted a study on the origin of grapevines, where grapevine varieties are annotated in history with their names and not by a generic reference notation. Ali and Mehmood [4], performed micro-propagation of Banana in Pakistan. Thanaa et al. [5] investigated the outcomes of foliar application of *Moringa oleifera* leaf extract in Hollywood plum, and identified it to have positive effects on the plant parameters such as yield and fruit weight.

Cannabidiol or CBD is the second-most abundant molecule in cannabis, though CBD is more abundantly present in a strain of cannabis, called hemp. Unlike the more well-known Tetrahydrocannabinol (THC), CBD is non-psychoactive due to its significantly different cannabinoid 1 receptor binding kinetics. Clinical trials involving CBD did not reveal any negative adverse effects. Therefore, the medicinal uses of CBD are expanding to include pain relief, management of epileptic seizures and anxiety. This has stimulated a burst of large indoor cannabis growing operations; one

key issue with indoor cannabis production is increasing the yield of cannabis without too much increase in operating costs. Conant et al. [1] investigated the effect of a microbial bio-stimulant, Mammoth PTM on the growth rate and other parameters of *Cannabis sativa*. The authors observed that inoculation with Mammoth Pled to a remarkable increase in bud yields (16.5%). This increase in bud yield was accompanied by increased plant height, and increased basal stem area. Additionally, Mammoth P integration into the operation was seamless, as it did not require any revision of standard protocols.

Heavy use of phosphorus (P) and potassium (K) by chilies has a considerable impact on their quality, growth, yield, and seed production. Akram et al. [2] investigated the dosage of P and K for better quality, growth, yield, and seed production parameters of an exotic variety of chili brought from Spain. Further, the authors aimed to improve this variety to thrive under the environmental conditions of Rawalakot, Pakistan. Optimal parameters pertaining to features such as: plant height; number of branches, leaves, flowers, and fruits per plant; fruit length, girth, and weight; seed weight; acidity; and Phosphorus percentage were observed upon application of 100 kg ha⁻¹ P and 120 kg ha⁻¹ K to the plants. The authors therefore recommend this dosage of K and P for optimal growth and yield of this chili variety under the climatic conditions of Rawalakot, Pakistan.

Grape is one of the earliest domesticated fruits; the earliest domestication of grapes dates back to 6000 BC in Gadachrili Gora, Georgia. The grape cultivars were later spread from Georgia, to the Middle-East, the Near-East, and Central Europe, which constituted the secondary domestication centers. According to Lungo [3], genetic research identifies central-southern Italy as the 'Third Center of Grape Domestication', which represents the third stage of the journey of the vine varieties (*Vitis vinifera* L.) and vine related culture (ability to domesticate, cultivate, select, and spread) either together ('demic diffusion') or separately ('cultural diffusion') from the Caucasus to the Western world. However, molecular archaeology studies do not give any credence to it. The authors present a novel analytical system, where the spatiotemporal factor is incorporated into the genetic research. The authors identify Siritis in southern Italy (also known as Siris, Enotria, and Amineae at different times in history) as the 'Third Center' of vine domestication. The varieties selected in this region such as Pinot Noir, Syrah, and Aglianico have colonized the western Mediterranean. This is the first study where grapevine varieties are annotated in history with their names and not by a generic reference notation.

In the early nineties, 60% of the banana plantations in Sindh, Pakistan were under attack from the Banana Bunchy Top Virus (BBTV) which resulted in 90% slash in the banana production. As a consequence, farmers shifted to the cultivation of sugarcane and/or cotton, but these were not as profitable as banana. Therefore, efforts were made to engineer BBTV resistant banana varieties. The first approach included importing healthy germ plasm from overseas, but

the imported germ plasm could not survive in the local alkaline soil. The second approach involved cleaning and multiplying the existing germ plasm. Ali and Mehmood [4] took the approach of micro-propagation of Banana. The authors observed that, explant cultures behave differently, with some cultures producing more shoots than others. After five rounds of sub-culturing, 112 plants on an average were produced from each shoot tip.

Plums belong to the Rosaceae family; Hollywood plum (*Prunus salicina* L.) is a Japanese variety of plum that thrives in the Egyptian environmental conditions. Moringa oleifera is consumed as a vegetable in a lot of countries; Moringa leaf extract is enriched with growth factors like auxins, cytokinins, and Abscisic Acid (ABA). Many investigations have revealed that *M. oleifera* leaf extract stimulates vigorous plant growth, better root development, and improved seed germination. Further, plants treated with *M. oleifera* leaf extract were observed to be more pest and disease resistant. Thanaa et al. [5], investigated the outcome of foliar application of *M. oleifera* leaf extract in Hollywood plum. Towards this, Hollywood plum trees were sprayed with varying concentrations of moringa leaf aqueous extract (0%, 4%, 5%, 6%) at three stages: (1) Full bloom stage, (2) Fruit setting stage, and (3) 2-weeks after fruit setting stage. It was observed that, plums

treated with 6% Moringa leaf extract exhibited higher yield, fruit weight, firmness, and color; other parameters such as: Antioxidant activity, anthocyanin content, ascorbic acid content, Titrable Acidity (TA) ratio, and Soluble Solid Content (SSC) were also optimal at this concentration.

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