T. K. M. COLLEGE OF ARTS AND SCIENCE

Kollam-691005, Kerala

DEPARTMENT OF BIOCHEMISTRY

CERTIFICATE COURSE ON

Microgreen Cultivation and Nutrition

For the academic year 2023-24

Course Coordinator:

Dr. Ansil P. N., PhD.
Assistant Professor
Department of Biochemistry

Department of Biochemistry

Certificate Course

Microgreen Cultivation and Nutrition

CURRICULUM

Total Hours: 35

Learning Outcomes:

At the end of the course, students will:

- Understand the nutritional value and health benefits of microgreens.
- Acquire practical skills in cultivating microgreens using various techniques.
- Learn sustainable practices for urban farming and small-scale agriculture.
- Be capable of incorporating microgreens into diets and recipes.
- Develop knowledge about market trends, packaging, and selling microgreens.

Module I: Introduction to Microgreens (6 hrs)

- Definition and classification of microgreens.
- Nutritional composition: Vitamins, minerals, antioxidants, and phytochemicals.
- Comparison with mature greens and sprouts.
- Health benefits of microgreens.

Module II: Microgreen Cultivation Techniques (6 hrs)

- Tools and materials required: Trays, growing media, seeds, and lighting.
- Methods of cultivation: Soil-based, hydroponic, and alternative methods.
- Best practices: Seed selection, soaking, planting, watering, and harvesting.
- Troubleshooting common issues: Pests, mold, and growth irregularities.

Module III: Nutrition and Culinary Applications (6 hrs)

- Role of microgreens in a balanced diet.
- Incorporating microgreens into everyday meals: Salads, smoothies, soups, and garnishes.
- Cooking and raw consumption: Retaining nutritional value.
- Case studies of dietary benefits.

Module IV: Business and Marketing of Microgreens (6 hrs)

- Understanding the market demand for microgreens.
- Packaging and branding essentials.
- Cost-effective production and pricing strategies.

- Exploring sales channels: Local markets, online platforms, and restaurants.

Module V: Sustainability and Urban Farming (6 hrs)

- Environmental impact of microgreen farming.
- Utilizing small spaces: Indoor, balcony, and rooftop setups.
- Water-efficient and eco-friendly practices.
- Future trends in urban agriculture.

Course Project: Microgreen Farming (5 hrs)

- Hands-on training in growing microgreens.
- Setting up a cultivation unit.
- Monitoring growth stages and harvesting.
- Packaging and presenting microgreens for sale.

References:

Books:

1. Franks, E., & Richardson, J. (2009). *Microgreens: The New Superfood.* Gibbs Smith.
2. Stone, C. (2015). *The Urban Farmer: Growing Food for Profit on Leased and Borrowed Land.* New Society Publishers.
3. Millard, E. (2019). *The Art of Microgreens: Small-Scale Cultivation for Pleasure and Profit.* Cool Springs Press.

Research Articles:

1. Treadwell, D. D., Hochmuth, R., Landrum, L., & Laughlin, W. (2010). *Microgreens: A new specialty crop*. University of Florida IFAS Extension.
2. Xiao, Z., Lester, G. E., Luo, Y., & Wang, Q. (2012). *Assessment of vitamin and carotenoid concentrations of emerging food products: Edible microgreens*. Journal of Agricultural and Food Chemistry, 60(31), 7644–7651.
3. Di Gioia, F., & Santamaria, P. (2015). *Microgreens: Novel fresh and functional food to explore all the value of biodiversity*. Italian Journal of Agronomy, 10(2), 78–85.

Web Resources:

1. University of California Agriculture and Natural Resources – Microgreens - https://ucanr.edu/
2. Urban Agriculture Co. - Microgreens 101 - https://www.urban-agriculture.net/
3. The Spruce Eats - Microgreens Guide - https://www.thespruceeats.com/

PRINCIPAL
T.K.M. COLLEGE OF ARTS & SCIENCE
KOLLAM - 691 005
KERALA

Dr. Latha.B., M.Sc, M.Phil,Ph.D
Assistant Professor & Head
Department of Biochemistry
T.K.M. College of Arts and Science
Kollam-691005, Kerala, India

Course Coordinator

Dr. ANSIL. P.N.
Assistant Professor
Department of Biochemistry
T.K.M. College of Arts & Science
Kollam - 5