

Gerbera growing in substrate

Soil-based agriculture is facing some major challenges with the enormous growth of civilization all over the world. Soil-less culture is becoming more important in the present scenario. Hydroponics or Soilless cultivation is a technology for growing plants in artificial substrate wherein all nutrient elements needed for optimum plant growth are applied as per crop requirement. It results in efficient and effective use of water and fertilizers and minimizes the use of chemicals for pest and disease control since management of substrate grown plants is highly efficient.

Current issues in soil cultivation:

1. Non availability of good quality soil-
 - a) Soil salinity increasing day by day
 - b) High pH or low pH problem
 - c) Improper fumigation increases chances of soil born diseases
 - d) Improper soil physical properties such as soil structure, drainage and composition of the soil affect the crops growth
2. Increasing soil cost-
 - a) Now government charging royalty on soil so cost increasing
 - b) Due to increase in transportation charges soil cost increasing
3. Soil reclamation-
 - a) Soil reclamation processes are time consuming and costly

Threats if grower continues soil as a growing media:

1. Soil quality issues directly affect on flower quality and quantity if not reclaimed correct
2. Less profit as compare to substrate cultivation in soil
3. Cost on plant protection is more in soil cultivation due to soil born diseases

Why cocopeat??

1. Precise fertigation: Fertigation schedule can be given as per plant requirement. The precise control on fertigation and watering has a positive effect on the quality as well as quantity of the flowers.
2. Slowly decomposing-High lignin percentage (31%) makes cocopeat very stable .Also it promotes the development of favorable micro-organisms.

3. Reduces transmission of diseases -The plants are situated individually in different pots; the chance of transmission of diseases like *Phytophthora*, *fusarium* is reduced or eliminated.
4. Working posture of workers –Speed of harvesting in pot systems is normally slightly higher if the height of the pot stand or trough stand is adjusted to the height of the workers. Crop-maintenance practices like leaf picking/de leafing can be done easier and therefore often quicker.
5. Irrigation -Irrigation can be monitored easily by measuring the quantity of drainage water, as per weather changes (more or less water) and needs of the plant.
6. Botrytis- Cocopeat has a highly porous with good drainage so less chances of diseases such as Botrytis
7. Crop protection -The leaves of the plants can hang more when growing in pots. Due to this the plant is more open/ exposed. The crop protection measures (chemical spray) can be executed more efficiently.
8. Clean working environment and no weeds - Grower do not have any direct contact with soil so hygiene is properly maintained and weed problem is eliminated.

Comparison between soil cultivation and substrate cultivation:

Sr.No.	SOIL	COCOPEAT
1.	Primary choice for cultivation	Alternate media for soil- Promising media for future
2.	Soil reclamation is a tedious and time consuming process	Reclamation is easier; enrichment is possible in a very short period of time
3.	Proper mixing of adequate quantity of organic materials with soil is essential for good results	Mixing of organic materials is not required
4.	Availability of good quality soil is a problem.	Substrate is available and enrichment takes care of any deficiency in the media.
5.	No or Improper fumigation can lead to high risk of soil borne diseases.	Very less probability of soil born diseases due to porosity of media
6.	Separate treatment for infected/diseased/slow growing plants not possible	Separate treatment can be given to infected / diseased / slow growing plants
7.	Per plant flower yield and quality is lesser as compare to cocopeat	More flower yield and quality obtained than normal by 10-20%
8.	Gerbera plants/sq. m. area = 6 (Total = 6000 plants in 1000 sq.m. area) As number of plants are less, quantity of production for given area is less compared to cocopeat.	Gerbera plants/sq. m. area = 8 (Total = 8000 plants in 1000 sq.m. area) As numbers of plants are more, quantity of production for given area is more as compared to soil.

Sr. No.	Economics of Gerbera Soil Vs Cocopeat cultivation (for 1000 sq.m.)				
	Input cost	Rate/unit in cocopeat (Rs)	Rate/unit in soil (Rs.)	Cost in Cocopeat (Rs)	Cost in soil (Rs)
1	Benches	210		210000	0
2	Pots	160		160000	0
3	Cocopeat	100		100000	0
4	Soil		200		200000
5	FYM		300		300000
6	Rice husk		2.5		2500
7	Sterilization cost	40	50	40000	50000
8	Irrigation system	220	180	220000	180000
9	Fertigation unit	150	10	150000	10000
10	Planting material cost (Total plant population)	8000	6000	280000	210000
	Total cost			1160000	952500
	Annual flower production (No. of flowers/sq.m.)	320	240	320000	240000
	Total flower production (3 years)			960000	720000
	Total turnover in 3 years(Rs.) (Rate-Rs.2.5/flower)	2.5	2.5	2400000	1800000
	Re-plantation cost	Addition of items (1+2+3+7+10)	Addition of items (4+5+6+7+10)	420000	762500

1. In coco peat cultivation initial cost increases by 20%; but total turnover increases by 33% as compared to soil cultivation because of higher planting density per unit area.
2. Re-plantation cost in substrate cultivation is 80% lower than soil cultivation.