



tree plants are less suitable for media because of more rapidly decomposition than coniferous sawdusts. In soil less media nutrients are supplied to the plants by incorporation of slow release fertilizers or by nutrient solution feeding on a day to day basis. Care must be taken to ensure that the water content of a soil less medium is frequently replenished to prevent dissolved fertilizers from becoming too concentrated and damaging the plants.

## PROPERTIES OF SOIL LESS MEDIA

### A. Physical Properties

- \* High absorption of water than soil.
- \* High air content.
- \* Particle size diversity.
- \* Bulk density determines the balance between height weight and good water/air ratio.
- \* High porosity resulted good air/water ratio.
- \* High hydraulic conductivity.
- \* Constant volume.

### B. Chemical Properties

- \* High CEC content.
- \* Sufficient nutrient contents.
- \* Efficient buffer capacity
- \* Low electric conductivity.

### C. Additional Properties:

- \* Weed free
- \* Free of disease and pests.
- \* Stable formula.
- \* Easy to prepare.
- \* High resistance to changes.

### DISADVANTAGES OF SOIL

- \* High bulk density.
- \* Low hydraulic conductivity.
- \* High weight.
- \* Inconsistency of properties.
- \* Compaction
- \* Chance of weed and diseases infestation.

# SOILLESS MEDIA CULTURES

A Propitious Auxiliary for Crop Production in Horticulture

<sup>1</sup>Dr. V.K. Tripathi and Ankur Sharma\*

<sup>1</sup>Department of Horticulture  
C. S. Azad University of Agriculture & Technology,  
Kanpur-208002

\*Assistant Professor, Horticulture Department,  
ITM University, Gwalior

Nurserymen found that productive field soils confined to contain often gave inferior results because of compaction and inadequate drainage but that improvements could be made by incorporating materials such as peat, sand leaf mould and rotted manures. Soil less media are being tailored to meet the needs of plant and with suitable nutrients mixture, we can provide all the required nutrient for the growing plants dissolved fertilizer from becoming too concentrated and damaging the plants,

Now at these days sawdust, ground bark, and peat sawdust mixture are the mainstay of the nursery and green house industries because of their low cost, light weight and ease of drainage and uniformity of plant ratio produced.

Besides sawdust, ground bark and peat-sawdust mixture, some other materials such as sand gravel pumice perlite, vermiculite and dolomite have also been successfully used as a soil less media for crop yield. Peat and peat sawdust mixture has been widely adopted because of its uniformity and high moisture holding capacity but sawdust from deciduous





## General standard of soil less media used for horticultural purposes

Bulk density	-	0.3-0.78 g/cm <sup>3</sup>
Water content	-	20-60%
Air content	-	30-50%
pH	-	5.5-6.5
CEC	-	10-100 meg/100g

## TRANSPLANTING MEDIA

### Media for bedding plants:

The cornell peat-lite mixtures are commercially available and are suitable for seedlings, bedding plants and pot plants. These mixtures are prepared by mixing 1:1 peat-vermiculite, 1:1 peat- perlite, 2:1:1 peat-vermiculite-perlite by volume measurement.

For bedding and pot plants when slow release fertilizers are used in these medium, an occasional overwatering is required to remove any accumulation of excess soluble salts.

### Media for vegetable seedling blocks:

For the production of vegetable seedling peat, peat vermiculite or peat-perlite mixtures are suitable. A cheaper mixture using half sphagnum peat and half black peat (peat humus from marshes) is widely used for seedling blocks. In case of non-availability of black peat, the sawdust can be mixed with sphagnum peat in place of black peat.

### Media for flower cuttings:

Soil less media are well suited to the rooting and growing of flower cuttings because of rapid rooting and reduction in black stem rot incidence due to their good soil aeration.

A 1:3 peat-sawdust mixture is suitable for rooting of geranium cuttings and a 1:2 peat-sawdust mixture for poinsettias and chrysanthemums. A mixture containing equal parts of peat, sand perlite and sawdust is also a good rooting medium for the flowering plants.

## GROWING MEDIA

For growing soil less media sphagnum peat, pumice ground bark hemlock-sawdust and sand are used widely. In these supplied as a dilute nutrient solution throughout the growing season to meet the remaining needs of the crop.



### Media for green house vegetables:

Peat based mixture, sand-sawdust mixture and hemlock-sawdust are used as growing media for greenhouse vegetables. These media have placed in plastic beds, plastic tubes, pots or wooden sided beds isolated from the soil by plastic sheeting.

Slow release fertilizers may be used as a mixture for growing greenhouse vegetable in peat-lite mixtures but due to high cost this method has not been adopted commercially. In European countries and Manitoba, fertilizers and ground limestone are thoroughly mixed with coarse peat and placed in beds for green house vegetable production

### Media for potted nursery plants:

Container green plants are based on fine sand and sphagnum peat ranging from 100% sand to 100% peat with 3:1, 1:1, and 1:3 mixture being the most useful. Sand Dust, wood shaving or rice hull may also be used for potted plants, Fertilizers are incorporated into the growing mixtures, depending upon crop and growing method.

Peat-sawdust mixture and ground bark alone are well suited to container growing of nursery stock because they are inexpensive well drained and light in weight and have a fairly good moisture holding capacity. Moisture holding capacity can also be increased by addition of more in the mixture.