

The infrastructure used to accommodate various methods is costly; Gutter (troughs) systems in various combinations in a way sort out the logistical aspects, while providing ample space between the rows and using heights as a space to increase density. This method is very practical logistically since most crop production is

easily accessible. The main downfall is the need to replace the plants and handling the structure between crops.

Gutter system in various experiments proved that light distribution and temperature variation between plants on

both sides of the gutter is a challenge and if

gutters are not placed facing sun at high noon time across the tunnel length will affect productivity by up to 40%.

Bag culture is another used option which increases the need for intense labour since most plant handling is done on the ground floor. That system reduces plant density dramatically and can be commercially hardly considered viable.

Another option which starts making impact is stake towers (Vertical); the method was experimented in various techniques and applications aiming to



overcome the other methods' deficiencies. The biggest challenge was to create an optimum density that justifies its commercial viability, to ensure fair light distribution amongst the plants, and to provide easy accessibility to plants and easy fruit picking.

Since it is well recorded that strawberry's plant root system in hydroponics culture can do well in volume of about 9-10 Liter space, the stakes system allow sufficient root space in a pot designed with 6 lob. Each lob volume is approximately 9 liters, but access roots if required can develop vertically inwards to the pot centre. The stakes are laid one on the top of the other to 8 pots high, allowing 48 plants on one stake tower.

Having a structure like that will not overcome the light distribution problem if kept stationary.

Easygrow system equipped to rotate around its centre allow plants to enjoy equal light exposure during the growing season. It also enjoys more efficient irrigation dripping from the top using gravitation to distribute water and nutrients across the growing space. The plants are easily accessible and fruit picking become less complicated. The systems using vertical growing method in various designs failed mainly on the basis of light distribution and sustainability of the structure. The system developed by Easygrow (<http://www.easygrow.co.za/>) effectively overcome those issues. (Easygrow also provide low tunnel solutions)

### STRAWBERRIES and GROWING MEDIA

Another major issue in growing Strawberries in Hydroponics is the effect of the growing media on plant development and production. Since the Strawberry plant root system is highly sensitive to over-logged media but easily collapses when it dries out too quickly, the media combination should allow



constant sufficient moisture by letting access water run out of the system easily.

The combination of coir and perlite provides the exact balance required to sustain healthy root zone.

The mixture percentage between the two media is a result of certain considerations the variety of strawberries used, the irrigation system used and obviously the growing structure itself. In general; any mixture up to 50% Coir, 50% perlite will serve as effective solution. If climatic conditions dictate very high temperatures in mid growing season more coir and less perlite in the mixture will be good enough to obtain root zone constant moisture ( 70%-30% ).

Coir as a growing media varies in quality and texture, it is therefore important to use fine coir which has less fiber content. The perlite of medium grade works well with coir but coarse perlite will act the same especially when coir particles are fine. Strawberries can be grown effectively in perlite on its own (Fine, medium or Coarse) but will require a strict irrigation program to allow its full potential as a sole media (Strawberry's shallow roots must be moist at all times).

The aim of the s Strawberry grower is to produce quality marketable fruit, to keep production going longer as possible while reducing cost associated with maintenance, labour and logistics.

The article above does not deal with the importance of the strawberry varieties which affect the marketing timing. The principles described here intend to give a broad overlook on what and how to improve growing techniques and to better production while considering the basic strawberry plant's requirement.

Recommended references:

<http://hos.ufl.edu/protectedag/Strawberry.htm>

Scientific information is available upon request.



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