

Plants were constantly pruned to eliminate side shootings and were tied to trellises from week 3.

During the first 60 days and mainly day 45, as first and second flower clusters started setting fruit; definitive patterns characteristic to the various growing medium started showing differences:

-Plants grown in Palm pith showed a very pronounced and strong vegetative growth especially leaves, plants became bushy whilst fruit developed quickly into full fruit clusters (6-7 fruits) with significant fruit size.

-Plants in Perlite developed thinner less pronounced leaf density but larger fruit clusters whilst in both mediums plants did not developed significant height. (Trellises cable at average 2m).

-Plants in Sawdust developed to various heights with impressive first clusters fruit size, but significantly the medium became compacted and drain analysis suggested a low nutrients uptake in comparison with other mediums.

Drain flow was higher than other mediums (ie; the medium do not hold the water effectively during irrigation and majority of input water and nutrients drained out). The result; plants probably experienced longer stress periods which affected the upper fruit clusters which produced less fruit per cluster and were smaller in size. The plants in Vermiculite performed the best in terms of vegetative growth, they reached the trellis cable before the 60 days with strong vegetative growth. Interestingly the flowering and fruit set stage was dramatic slow, less flowers on clusters and less fruit on mature clusters (average 3-5), fruit size was impressive.

Contrary to the Sawdust medium, vermiculite's water retention capacity is high and therefore the over draining of water due to irrigation was due more to saturated medium than just because of a lower water retention capacity (Which may affect the overall uptake of nutrients due to low capillary dynamics, which affected fruit formation).

From the mixed mediums, the combination

of Palm pith 50%/ Perlite 50% and same combination of 70% - 30% produced the best balanced vegetative development as well as perfect flower clusters and fruit number and size.

The mixed Palm Pith 40%-Vermiculite-30%- Perlite 30% performed well, but due to Vermiculite's water retention in conjunction with the Palm Pith created a more "soggy" texture. The vegetative plant development was impressive but fruit setting and size differed slightly from the previous medium but not significantly.

The Pot-soil 50% combination with 50% Perlite did not perform well. The Pot-soil being a soil structure with minimal water holding capacity and structured from large particles of organic matter that ferment (similar to sawdust) in very moist environment.

The Perlite present in the mixed medium improved on one hand the holding water capabilities of the mixed medium but probably contributed to the increased moistness of the texture and expedited fermentation process. The medium became more acidic over time and more compact which is the reason for the development of tall, spindly plants with significant drop in fruit setting low numbers of fruit per cluster (2-3) and smallest in size.

Being a soil derivative the pot-soil (and few of the sawdust containers) is susceptible to soil borne diseases such as fungus (Early blight, Late Blight) and about 40% of that specific block of plants grown in Pot-Soil developed

fungus infestation which was rectified rapidly mainly with Copper Hydroxide to prevent it spreading.

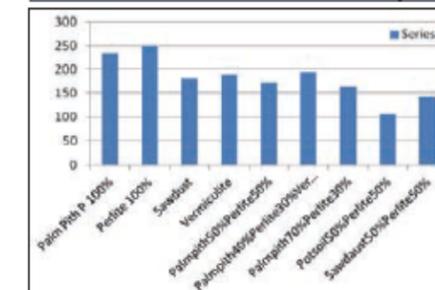
Sawdust 50% - Perlite 50% performed slightly better than Sawdust on its own. The Perlite added better water holding capacity to the medium and therefore slowed the drain release of water and nutrients causing the plant growth and fruit formation to be better than the Sawdust only but still poorer than Perlite on its own, specifically when comparing fruit size and number of fruits per cluster. From a purely economic point of view, it is a less expensive combination which creates a more reliable medium and more effective than the Sawdust alone, with much better results.

It is important to note; that the experiment is far from final conclusion and data is collected on daily basis. Harvesting will be decisive element of this experiment to analyze overall yield and quality per medium started on December 15th (90 days from sowing).

The total harvested to date: 1631.00kg ripe tomatoes is not a final indication of medium performance but a trend. Nevertheless, one can conclude certain statistics and predict the overall results due to various trends in plant performance.

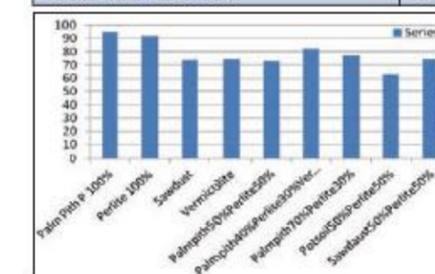
C. Average fruit weight in grams per medium:

Palm pith 40% Perlite 30% Vermiculite 30%	183
Palm Pith P 100%	175
Palm pith 50% Perlite 50%	172
Palm pith 70% Perlite 30%	168
Perlite 100%	165
Sawdust 50% Perlite 50%	158
Sawdust	155
Vermiculite	135
Potsoil 50% Perlite 50%	127



D. Average fruit size in mm:

Palm Pith P 100%	95
Perlite 100%	92
Palm pith 40% Perlite 30% Vermiculite 30%	82
Palm pith 70% Perlite 30%	77
Vermiculite	75
Sawdust 50% Perlite 50%	75
Palm pith 70% Perlite 30%	77
Sawdust	74
Potsoil 50% Perlite 50%	63



Conclusion:

From all tested mediums, Palm Pith and Perlite performed best in terms of production per plant, fruit size and weight. The medium combinations performed slightly behind with exception of Palm Pith/Vermiculite/Perlite mix which was not far behind. The Sawdust as a one-off medium performed averagely but with considerably lower fruit size and weight. Potsoil/Perlite mix performed worst in all categories.

The consideration of which of the mediums to use is economical one. Taking into account the re-usable option of some of them, may directly affect such a consideration. The experiment will test later on the long term effect on crops grown in re-used mediums.

To categorize each medium performance the following statistics (Annexes A,B,C,D and the graphs) will grade fruit production per medium in various segments:(analysis of 5 clusters, Dec15th-January 5th).

It is important to note; Results might vary due to different hydroponics method used.



Side overview on perlite block.

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After all, when the products you make were formed millions of years ago, then 50 years is only the beginning