Simplified soilless system for low tech greenhouses

BACKGROUND:

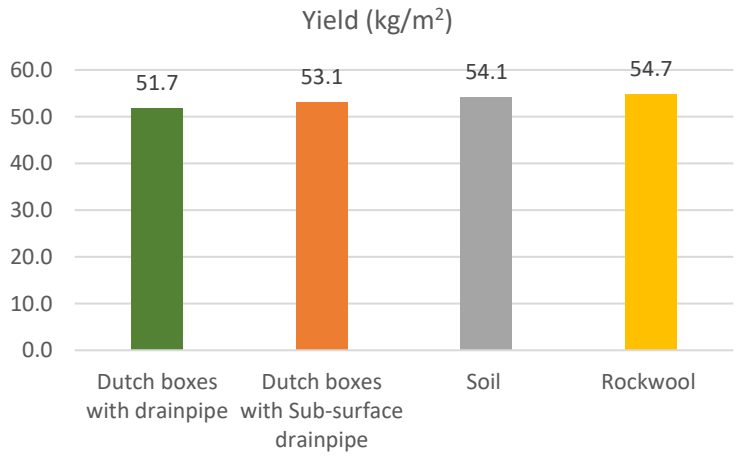
Soilless culture is an important technique to limit the production losses from soil-borne diseases. When completed with a drain collection system, serious savings on irrigation water and fertilizers can be achieved. In medium and high-tech greenhouses, rigid gutters are used for support of the substrates in which the crops are grown. Such rigid gutters allow for a well-defined slope and almost leakage-free capture of drain water. However, gutter-systems are expensive and require the greenhouse to be high and are therefore not compatible with low-tech greenhouses.

OBJECTIVES:

1. Showing options for using simple low-cost soilless culture systems that can be made on-site by local growers.
2. Testing the efficiency of the system (clogging, leakage).
3. Summarizing the costs of the system.

TREATMENTS:

1. Dutch boxes filled with layers of volcanic rock and perlite with above ground drainpipe.
2. Dutch boxes filled with layers of volcanic rock and perlite with sub-surface drainpipes.
3. Soilless culture with rockwool slabs and soil cultivation for comparison.



RESULTS:

- Water consupmtion for irrigation was reduced by 35% (drain) when using simple soilless system (1064 l/m²) as compared with soil cultivation (1518 l/m²).
- The variation in yield ranged between 1 to 2.4 kg/m².
- The cost of simple soilless culture was 4.5 SAR/m2 as compared with 10.0 SAR/m2 rockwool.





CONCLUSION

- Soilless cultivation has large benefits for growers. The system could be practical and economically feasible for them.
- All materials used in simple soilless system could be re-cycled with no nigative impact on environment as compared wit rockwool.