

Advanced Agriculture -  
Practice & Theory.

*Lecture 15:*

‘Cotton - Roots  
development’  
*(in Coco-peat)*  
Controlled by  
‘AutoAgronom’

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Gerbera Breeding Ltd. Israel  
August 2019

Photos by the author

*Lecture 15 -*

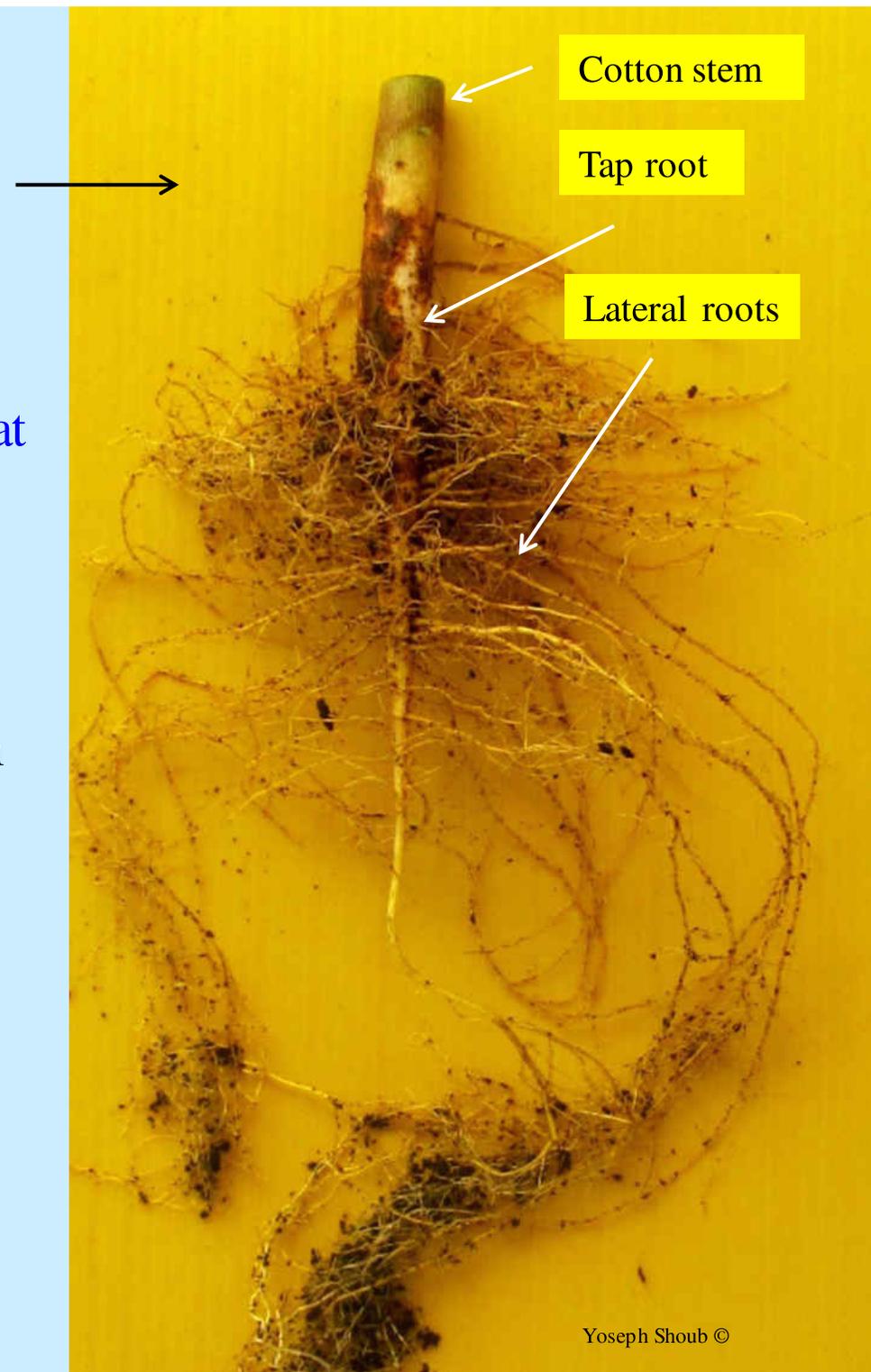
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This is the ordinary picture used by experts to show the Cotton roots' system. It shows the Tap root and the Lateral roots.

It does not show the vital roots: 'The roots that do the work', those who absorb the 'Soil-solution' that hold and supply the oxygen and the minerals to the above soil organs.

In our work with the 'AutoAgronom Irrigation Control System' we are able to show the 'Secondary roots' carrying the 'Hairy roots' that do the work - as they are presented there and act 24 hours a day.

And now the picture can be seen completely.





Cotton Seeds by the courtesy of Hazera Seeds Ltd., Israel.

Sowing date - 16, July 2019

# Cotton Sprouts in Coco-peat media.

Left - Sprouting, 4 days after sowing. 20, July 2019

Right - Secondary roots, 5 days after sowing. 21, July 2019





Left - A Seedlings, 12 days after sowing,  
28, July 2019.

Below - The secondary roots already  
touch the lower part of the  
containers wall.





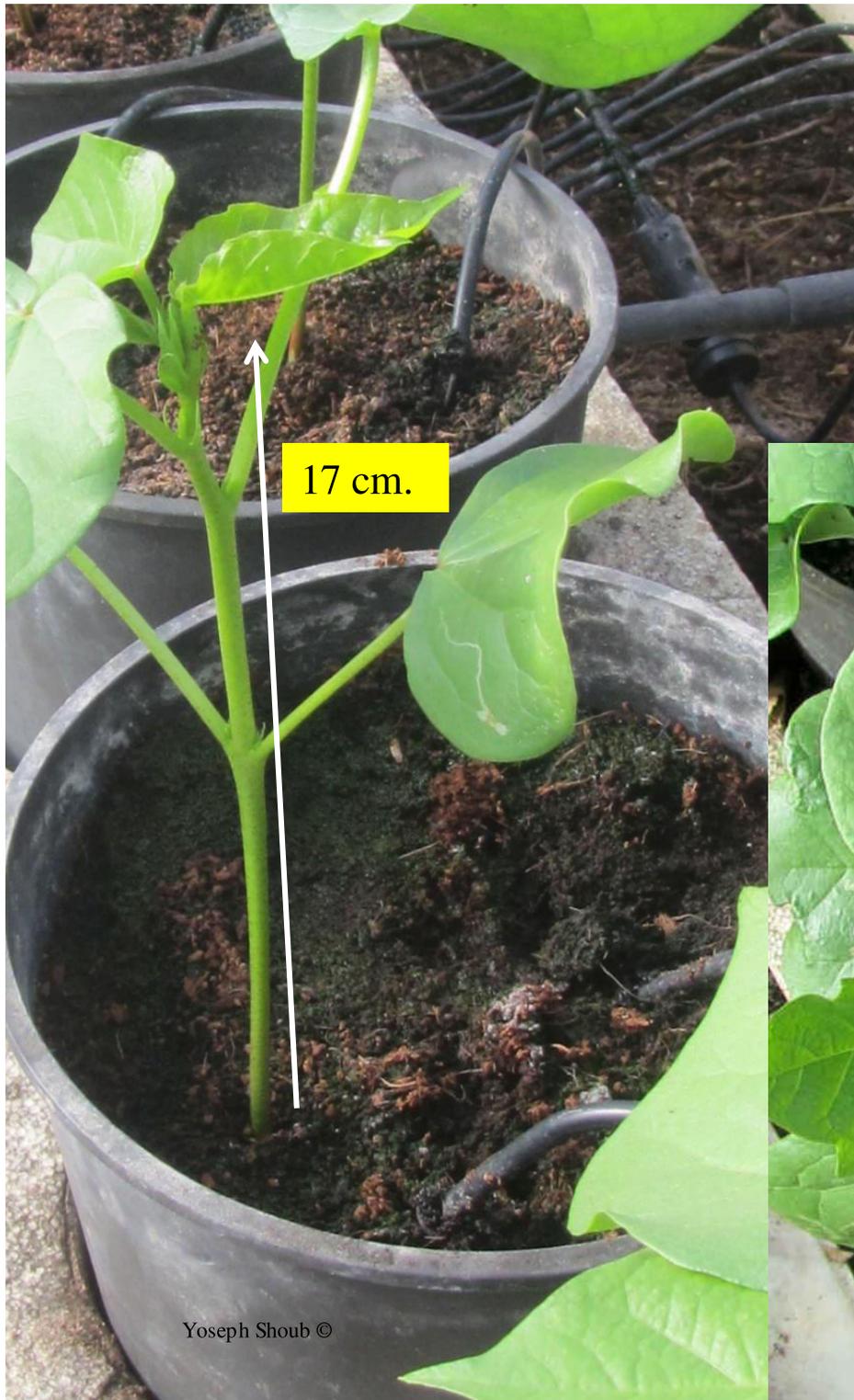
Washed roots system 12 days after sowing.

30, July 2019  
14 Days after sowing



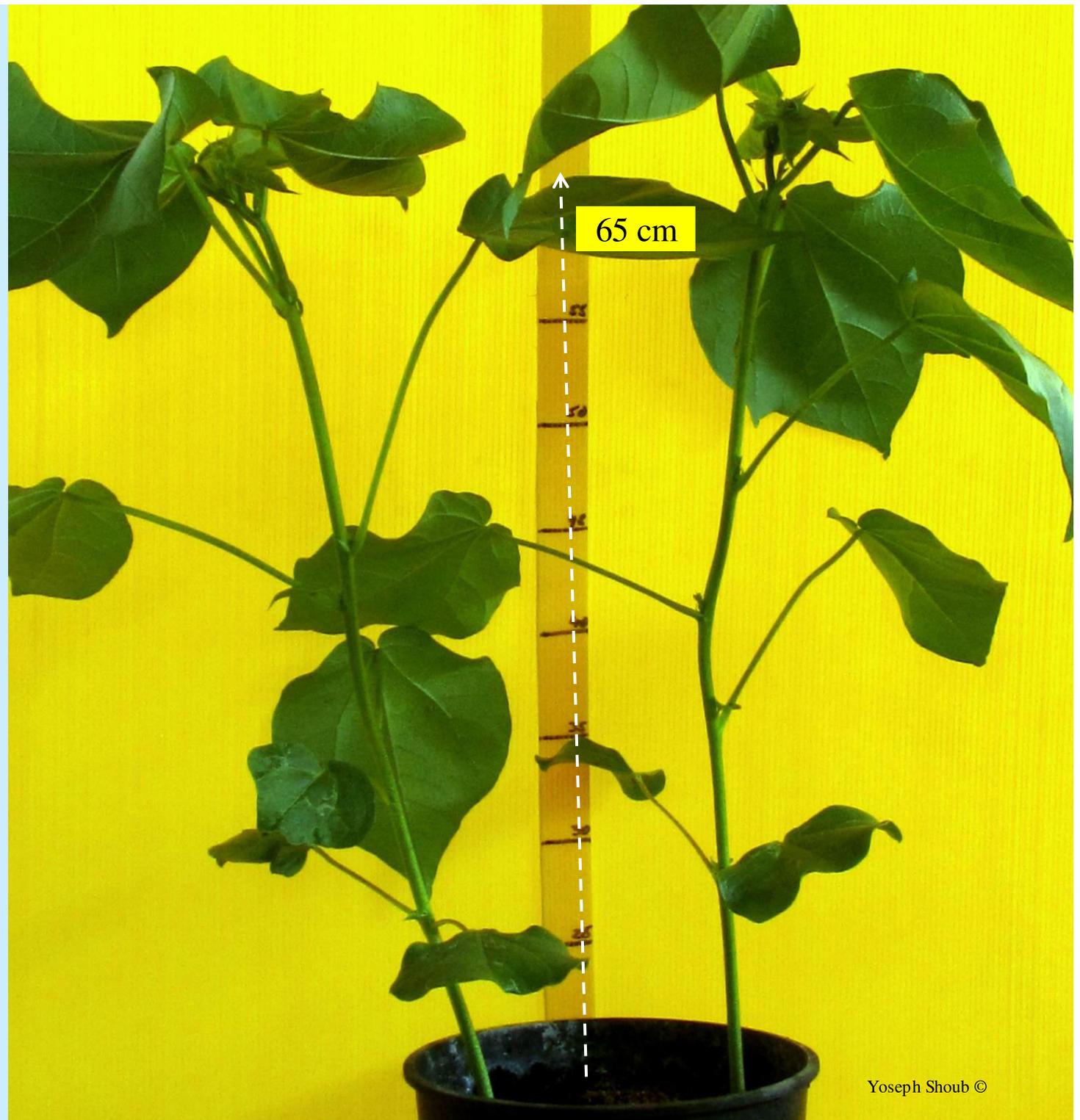
14 Days after sowing

Left - 1 plant / cont.    Right - 2 plants / cont.



09, August 2019

24 Days after sowing.



24 Days after sowing -  
External roots system of  
2 plants per container.

The secondary roots system in the  
coco-peat media, grow first toward  
the container walls. Only than it  
start to fill up the internal volume  
of the containers.



16, August 2019

31 days after sowing

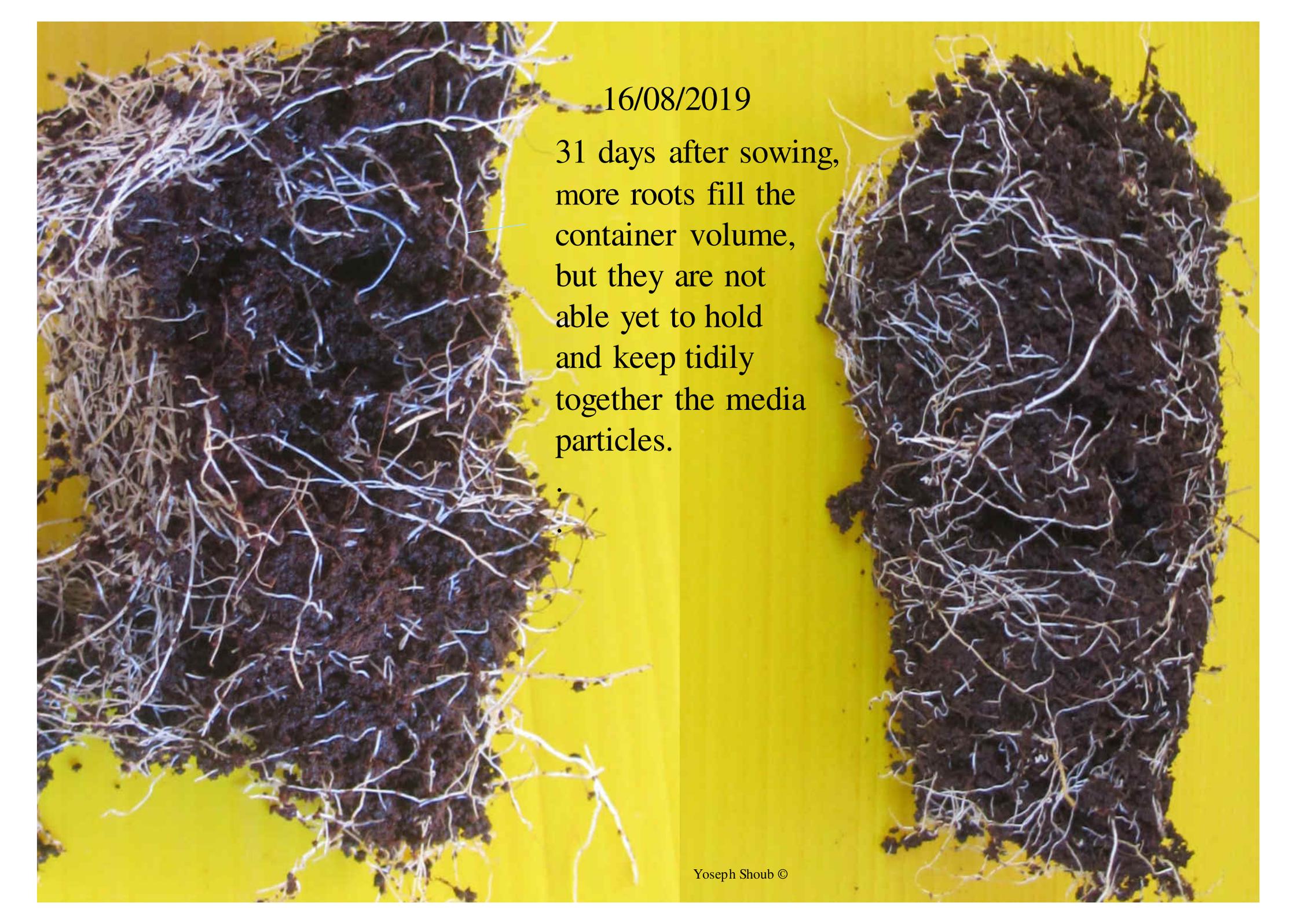




16/08/2019



Yoseph Shoub ©



16/08/2019

31 days after sowing,  
more roots fill the  
container volume,  
but they are not  
able yet to hold  
and keep tidily  
together the media  
particles.



16, August 2019, A look of the containers soft media of the cotton roots' trial.

26, August 2019

*(East side)*

41 days after sowing



Yoseph Shoub ©

26, August 2019  
(West side)



The average stems length is now 115 cm long, and out of 13 - 14 stem-nodes: 10 are woody, branched and show already flower buds. The secondary roots fill up the total container volume.

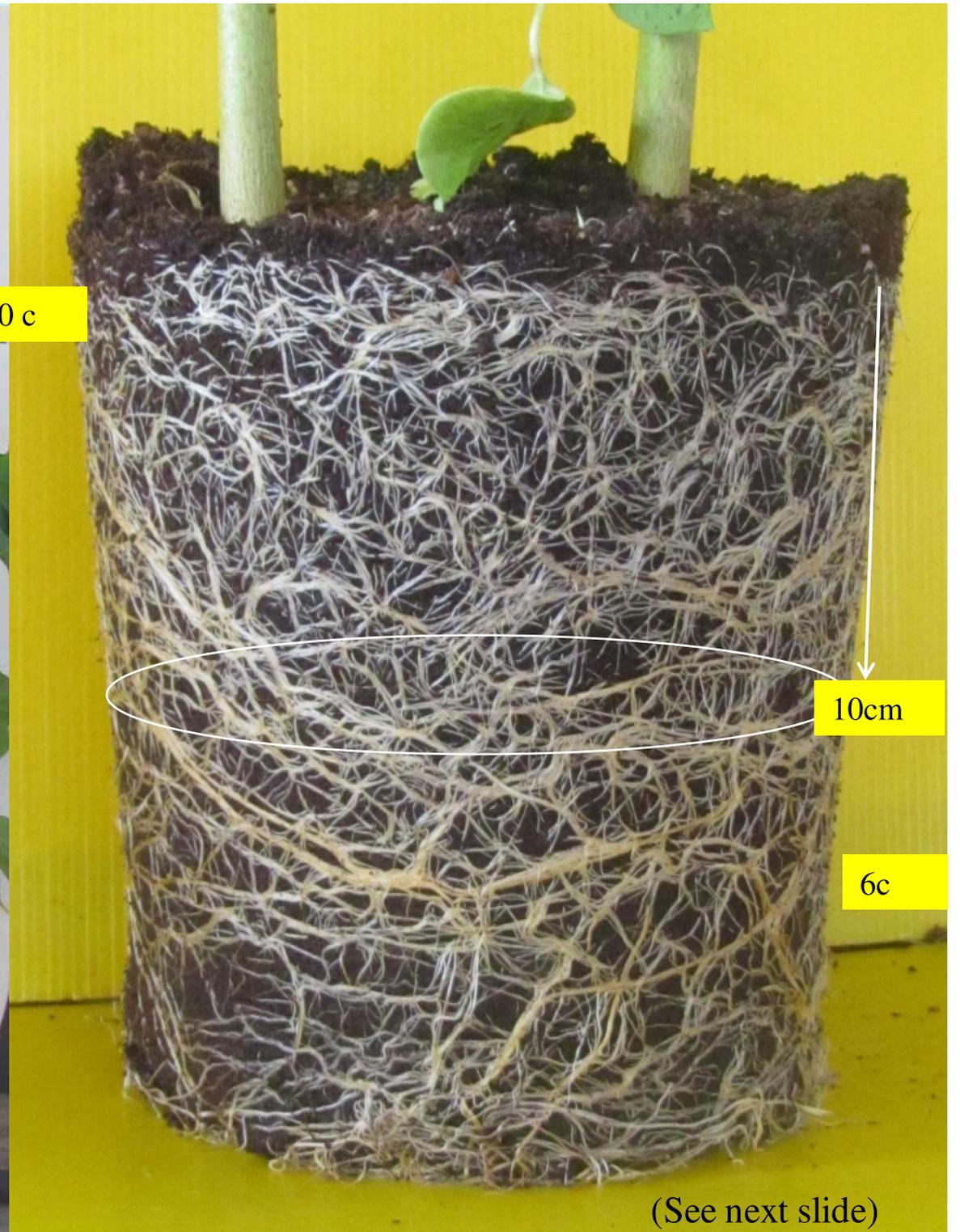
Yoseph Shoub ©

26, August 2019

115 cm

20 c

Yoseph Shoub ©



10cm

6c

(See next slide)

19 September 2019

65 days after sowing.

Well established secondary roots  
of one plant.

Cross sections 10 cm below the  
surface.

The average plants high 165 cm.





Cotton - first flower 48 days after sowing 02, Sept. 2019