Reaching out to Small Holders through the soil & plant health app

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The Soil and Plant Health App

Original objective of the ICAC SEEP Expert Panel was to help illiterate farmers address climate risks with access to soil health principles and diagnostics.
Intense rainfall & severe droughts threaten all agriculture! Small Holders are least empowered to adapt & respond.

Soil Health Helps Growers and the Environment

- Rainfall infiltration
- Soil moisture storage
- Surface evaporation loss
- Root extraction of water
- Nutrient availability
- Soil/plant erosion
- Blowing dust
- Sequestering carbon
Soil Health Helps Growers and the Environment

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Stunted plants

Q1, Q2

Roots ok

Q13

Leaves dark green?

NO

YES

Go to Q20

Leaves curled or cupped?

Q36A

NO

YES

Q36

Leaves pale green or yellow?

NO

YES

Inter-venal yellowing or bronzing

Q36C

New leaves pale yellow?

Q36B

NO

YES

Q36Ba

Suspect Sulphur deficiency

Info Sheet on Sulphur deficiency

Old leaves pale yellow?

Suspect Nitrogen deficiency

Info Sheet on Nitrogen deficiency

Leaves abnormal?

Suspect Verticillium

Cross section of stem – Browning of vascular tissues

Info Sheet on Verticillium

Suspect Zinc deficiency

Info Sheet on Zn deficiency

Suspect Salinity

Info Sheet on salinity

Lower leaves affected first?

Q36Ca

NO

YES

Go to Q35

Go to Q21

Suspect Sulphur deficiency

Info Sheet on Sulphur deficiency

Suspect Nitrogen deficiency

Info Sheet on Nitrogen deficiency

C123

C125

C22

C133

C94

C123

C125

C22

C133

C94
Frame 9 roots healthy, depth ok and moisture ok
Comment C4, C7, C8, Q12

It is possible that the seeds are weak. For info on Seed Testing click on this box, but since this takes 7 days for now we will assume the seed is ok and check on other causes of slow emergence.

If the seed has washed away you must fill in the gaps. For info on gap filling click on the box.

Standing image of a person in a bare field from frame 5

Say first voice then show Gap Filling Box then say second voice and show Seed Testing Box, then say 3rd voice and show Salinity Box, then say 4th voice and show thick shank picture.

When finger touches each box the voice says “info on gap filling” or “info on seed testing” or “info on Salinity” or “info on crusting” for each pressed box go to comment C4 for gap filling, C7 for crusts, C8 for salinity, Q12 for Seed Testing.

After the comments from each box or if no box is pressed after 5 seconds say 5th voice.

If Seed Testing box is pressed, APP brings up frame 11 in 7 days.

Hopefully this has been helpful, we will remind you next year of the issues in your field.
ICAC Staff expanded the objectives

• Help illiterate farmers address climate risks with access to soil health diagnostics
• Included above ground diagnosis of plants, insects & diseases
• Included crop growth model, daily weather & cotton prices
• Included a community communication option
• Insisted on a simple to use app
ICAC Staff expanded the vision to include Artificial Intelligence (AI)

<table>
<thead>
<tr>
<th>Disease Names and Labels</th>
<th>Bacterial Blight (Class 0)</th>
<th>Septoria Brown Spot (Class 1)</th>
<th>Frogeye Leaf Spot (Class 2)</th>
<th>Healthy (Class 3)</th>
<th>Herbicide Injury (Class 4)</th>
<th>Iron Deficiency Chlorosis (Class 5)</th>
<th>Potassium Deficiency (Class 6)</th>
<th>Bacterial Pustule (Class 7)</th>
<th>Sudden Death Syndrome (Class 8)</th>
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</thead>
</table>

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ICAC SEEP Soil & Plant Health App

• A tool for illiterate farmers to rapidly access useful information in their own spoken languages and dialects
• To educate farmers on principles of plant and soil health without imposing prescriptive production practices
• A conduit to share future cutting-edge innovations with cotton growers who are most at risk
COTTON SOIL AND PLANT HEALTH APP