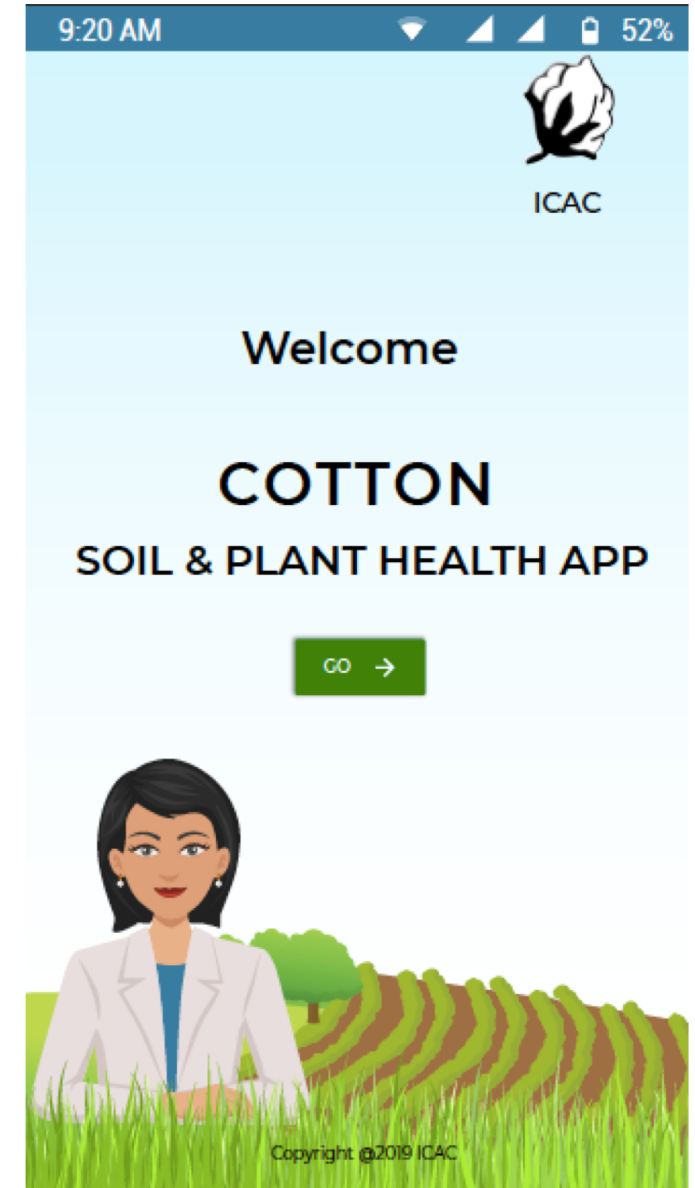


What the App will do?

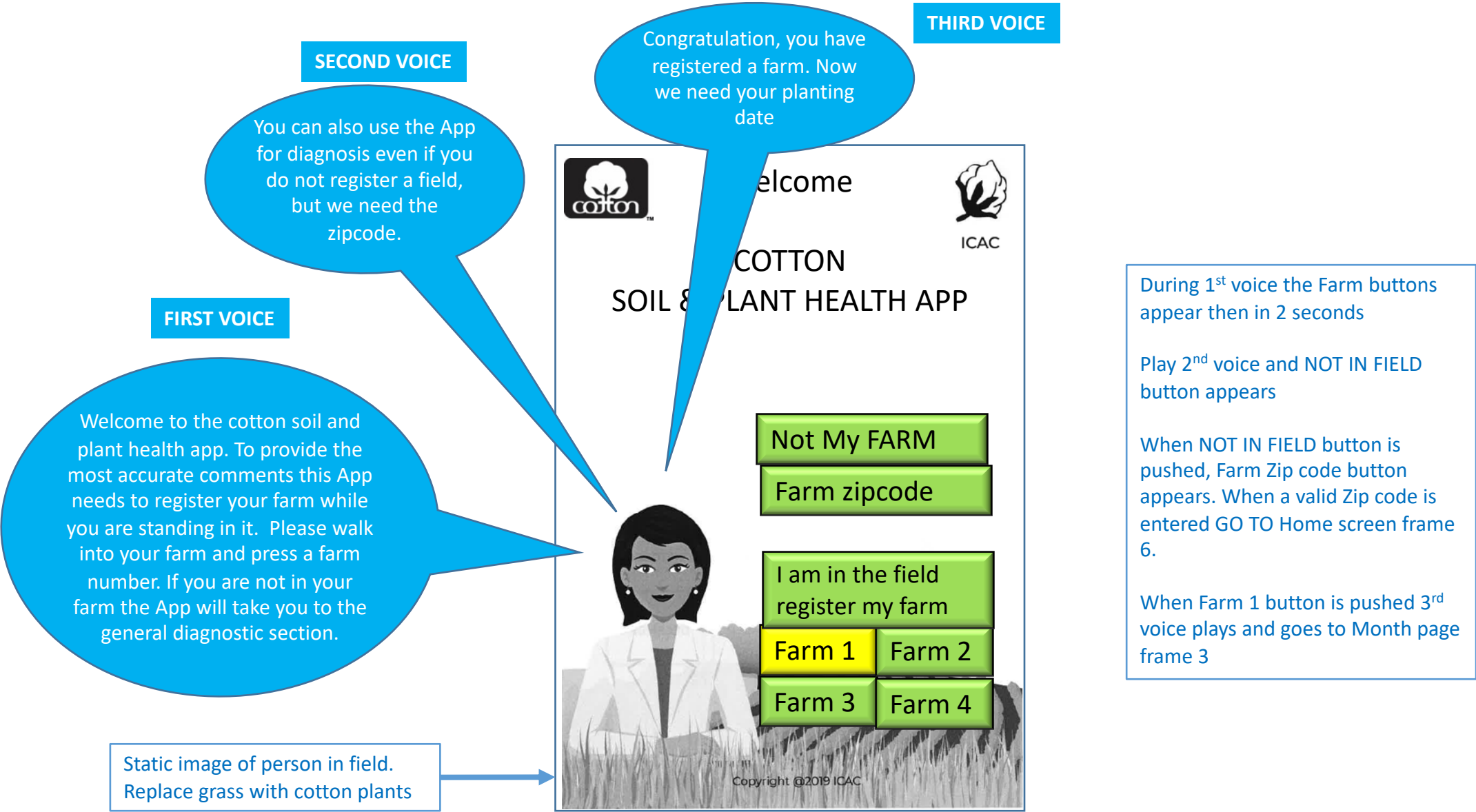
- Unique **voice based- Talking App** for the illiterate farmers
- Four Indian languages (**Hindi, Gujarati, Telugu & Kannada**)
- **Works on GPS location** of the field and connects to weather data and background soil health data
- Runs software to **monitor plant growth with heat units**
- Runs software to **measure air and soil temperature**
- Runs software for water stress to **recommend irrigation**
- **56+ Animations** on insect pests, diseases and diagnostics
- **146+ images** related to diagnostics
- **Printable pdf data sheets** of information and recommendations related to the final diagnosis
- Compiles all diagnostics and **issues voice advisories to communities within a zip-code area**
- Image analysis to be linked to **Artificial intelligence**

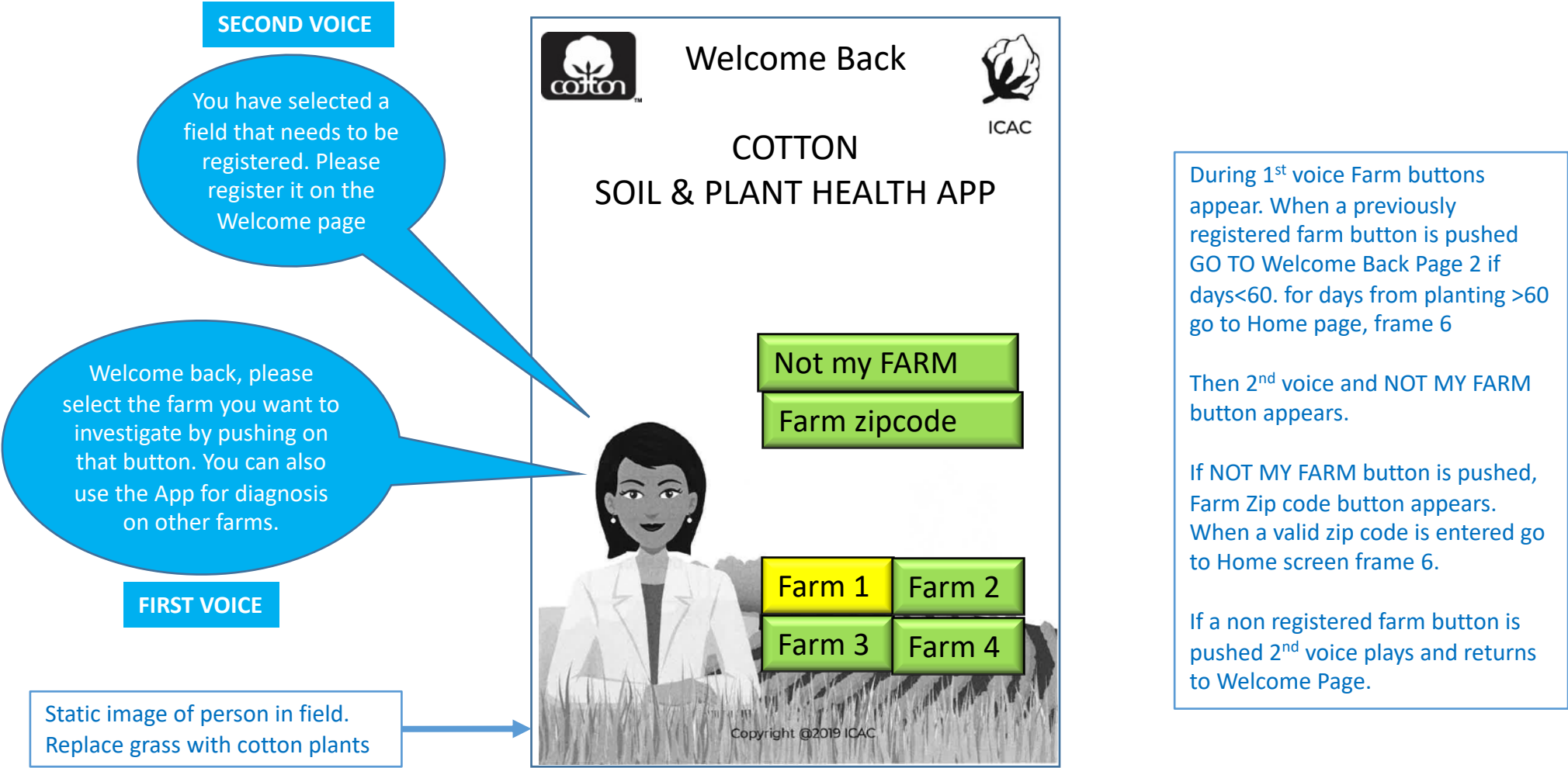


What the App will do?

- **Complete diagnosis for**
 - Soil health and plant health
 - Soil nutrient deficiencies
 - Insect pests and beneficial insects
 - Diseases and nematodes
 - Agrochemical toxicities
 - Extreme weather changes
- **Based on diagnosis**, the App provides eco-friendly recommendations as animation movies and data sheets
- **Connects data to 'core environmental and social sustainability indicators**








SECOND VOICE

When you are ready to start the diagnosis push the ready button


For the farm you just pressed here is a diagram of how your plant should look based on Heat Units since planting.

FIRST VOICE


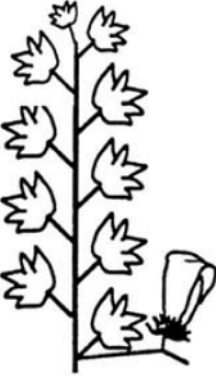
Static image of person in field.
Replace grass with cotton plants



Welcome Back



COTTON
SOIL & PLANT HEALTH APP



Farm 1

Farm 2

Farm 3

Farm 4

READY

Copyright ©2019 ICAC

The Farm button should light up and the predicted plant should appear.

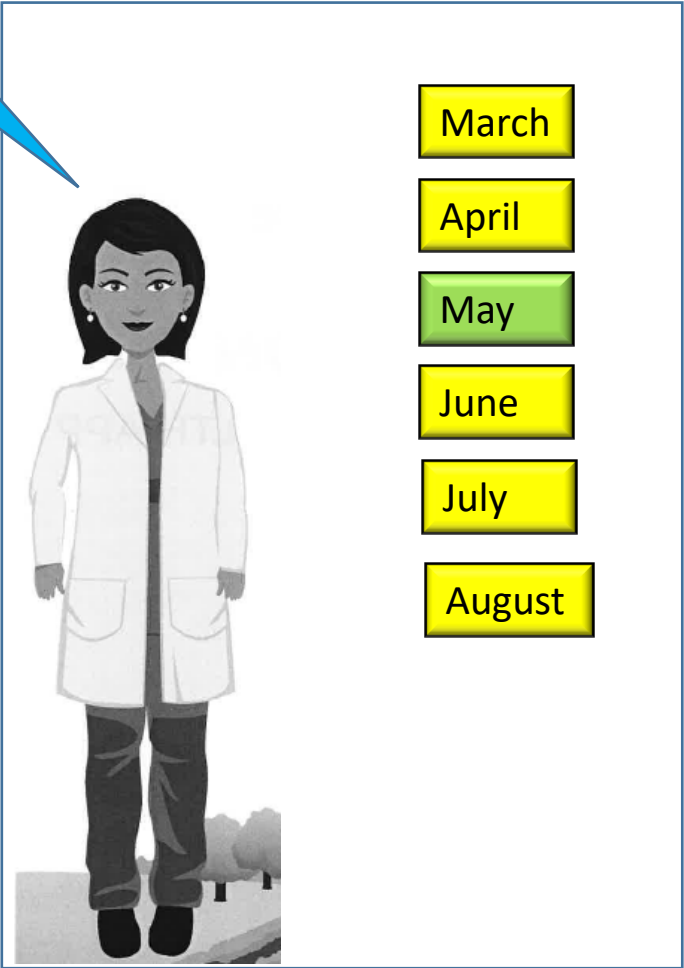
This is the same graphic as in frame 5 but will only be used for days after planting <60.

Delay 2 seconds then play the 2nd voice and READY button appears.

When READY button is pushed, GO TO Home screen frame 6

Press on the month
you planted. March
is at the top and July
at the bottom

Replace with static
image of person
dropping seeds onto
bare soil



Only include months of
planting based on look up
table from GPS. In this
example May and June are the
key months in this region so
showing 2 additional months
before and after.
Button lights up green when
finger touches. She says the
month when button touched
and turns dark green when
pressed while other buttons
disappear.
GO TO Day page, frame 4

Use same static image as in frame 3

Press on the day you planted

M	T	W	Th	F	Sa	Su
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	21			



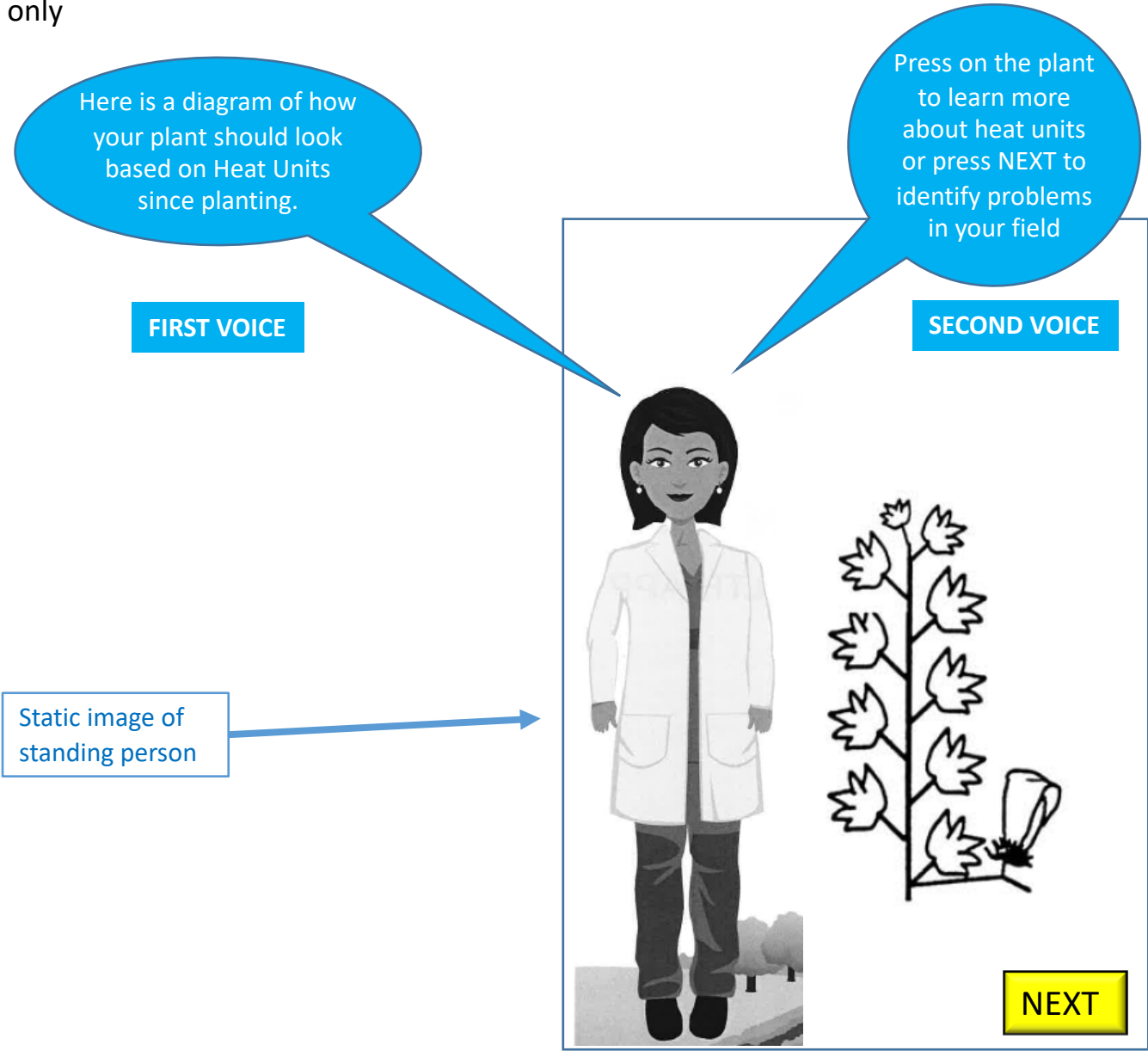
Use the same format as the Months in frame 3

After the planting day is selected the APP determines if it has been 5 days or more since planting and calculates DD60's for 5 days after planting.

For DD60<30 in first 5 days after planting say comment C6a in notes below and then GO TO frame 5

For 31<DD60<120 in first 5 days after planting say comment C6b and then GO TO frame 5

For DD60>120 in first 5 days after planting say comment C6c and then GO TO frame 5



Use this page for days after planting <60.

Show a stylized plant based on the following DD60s equation and look up table based on the following formula.

Convert daily max and min temperature to oF, average these two, then subtract 60 and accumulate starting 1 day after planting. For DD60 of 0-50 show nothing. DD60 of 51-100 show just cotyledons. 101 to 150 show cotyledons and 1 true leaf. 151 to 200 show 2 true leaves and cotyledons. Starting at 201 show only true leaves and increase leaf number by 1 for every 50 heat units.

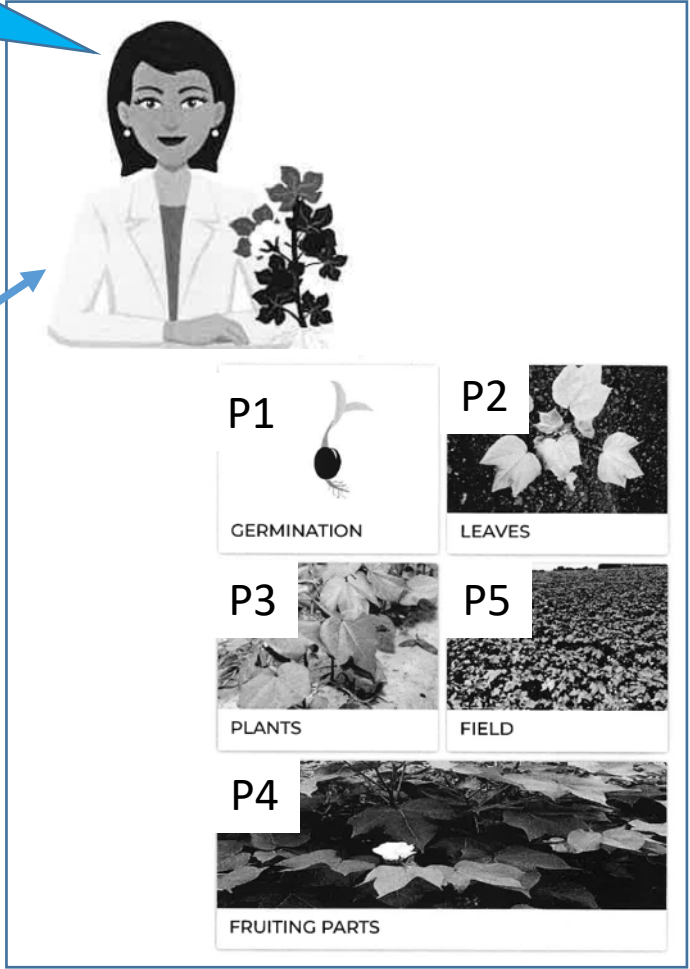
After the stylized plant appears she says “press on the plant to learn more about heat units or press NEXT to identify problems in your field”. After she speaks the NEXT button appears.

If the plant is pressed play C1a then GO TO Home page, frame 6. NEXT button pushed GO TO Home page, frame 6.

For days after planting >60 skip this frame and GO TO Home page, frame 6.

Select the plant part
that you are
concerned is not
progressing or is
unhealthy:
Germination, Leaves
Plants, Fruit and Field

Static image of a
person with a cotton
plant from ICAC is good
example.



Use the same format as the
Months Page in frame 3. When
voice mentions “germination”,
“leaves, “plants” “fruit” or “field”
or the image is touched it lights
up and the name is repeated.

When a button is pressed the APP
GOES TO frame 7 for
Germination, or frame 12 for
Leaves.

AT THIS TIME WE ARE ONLY
CREATING GERMINATION AND
LEAVES SECTIONS

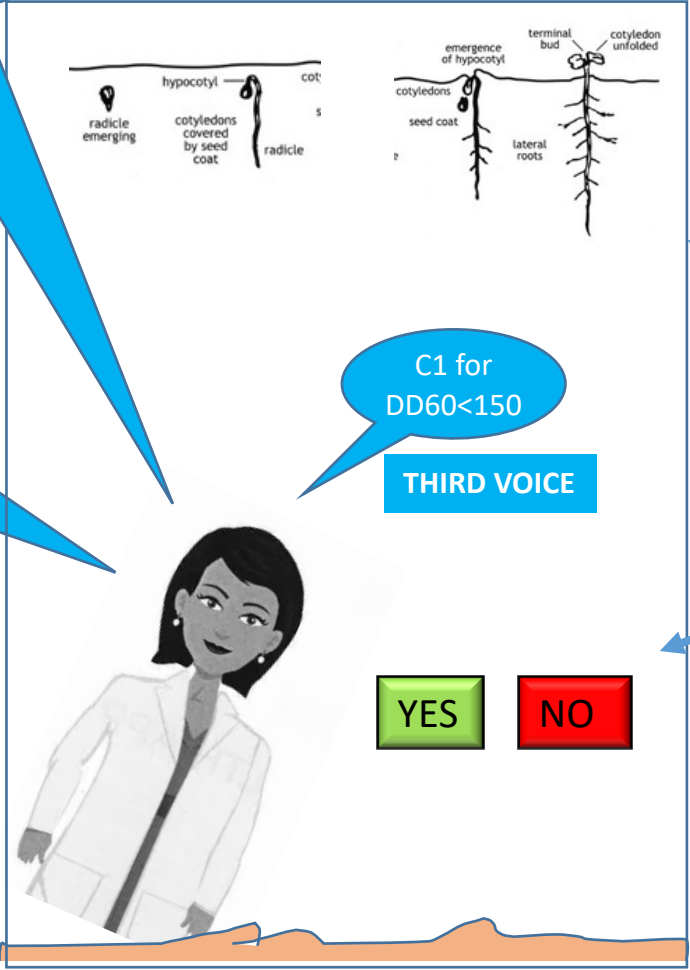
SECOND VOICE

These pictures show healthy roots during germination. Click on the picture to learn how to examine roots. Do your roots look like these?

Problems with germination need to be investigated by carefully digging up at least 5 slow-emerging seedlings and inspecting the roots

FIRST VOICE

Static image of a person kneeling over in a bare field



C1 for
DD60<150

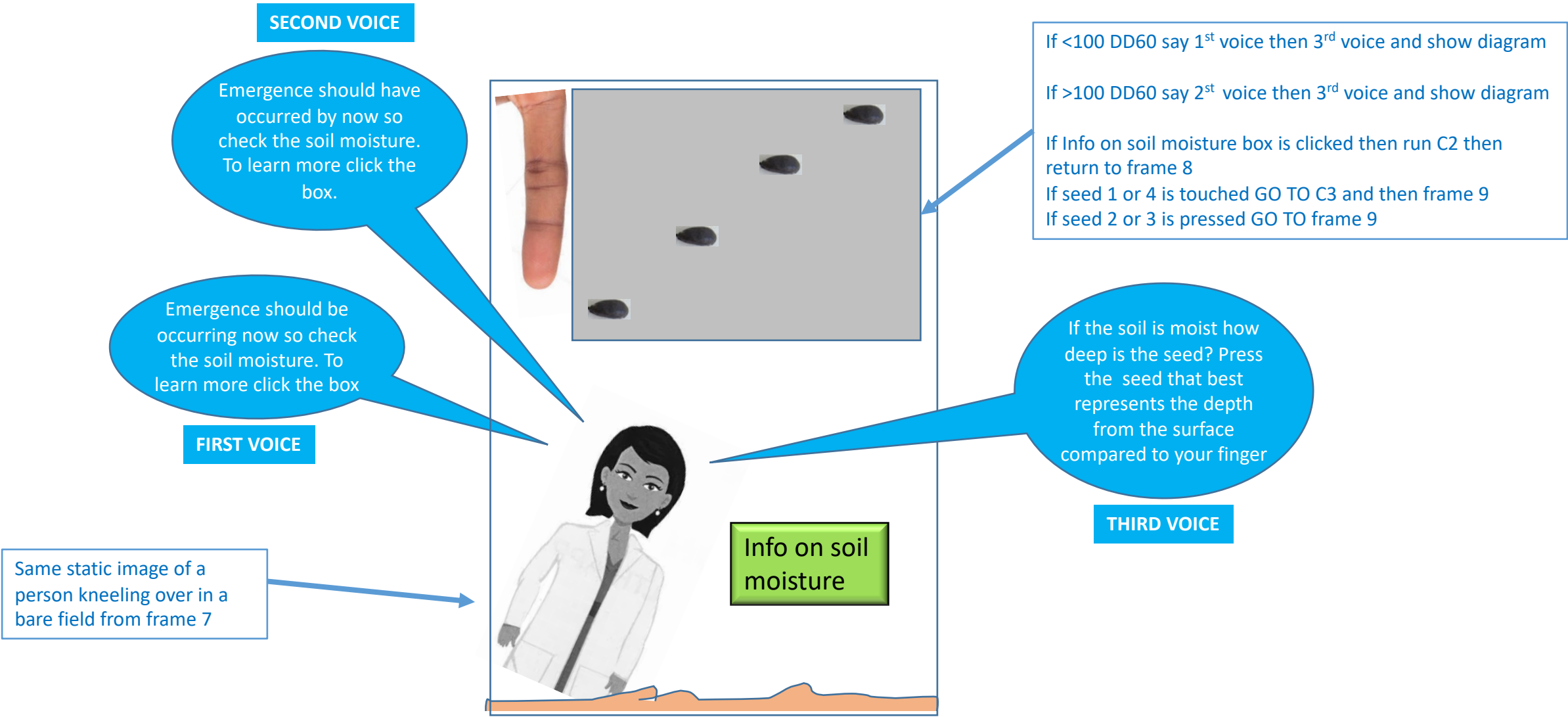
THIRD VOICE

After 1st voice then pictures of healthy roots appear based on heat units
For DD60<50 show picture of smaller plants. For DD60>51 show larger plant pictures.

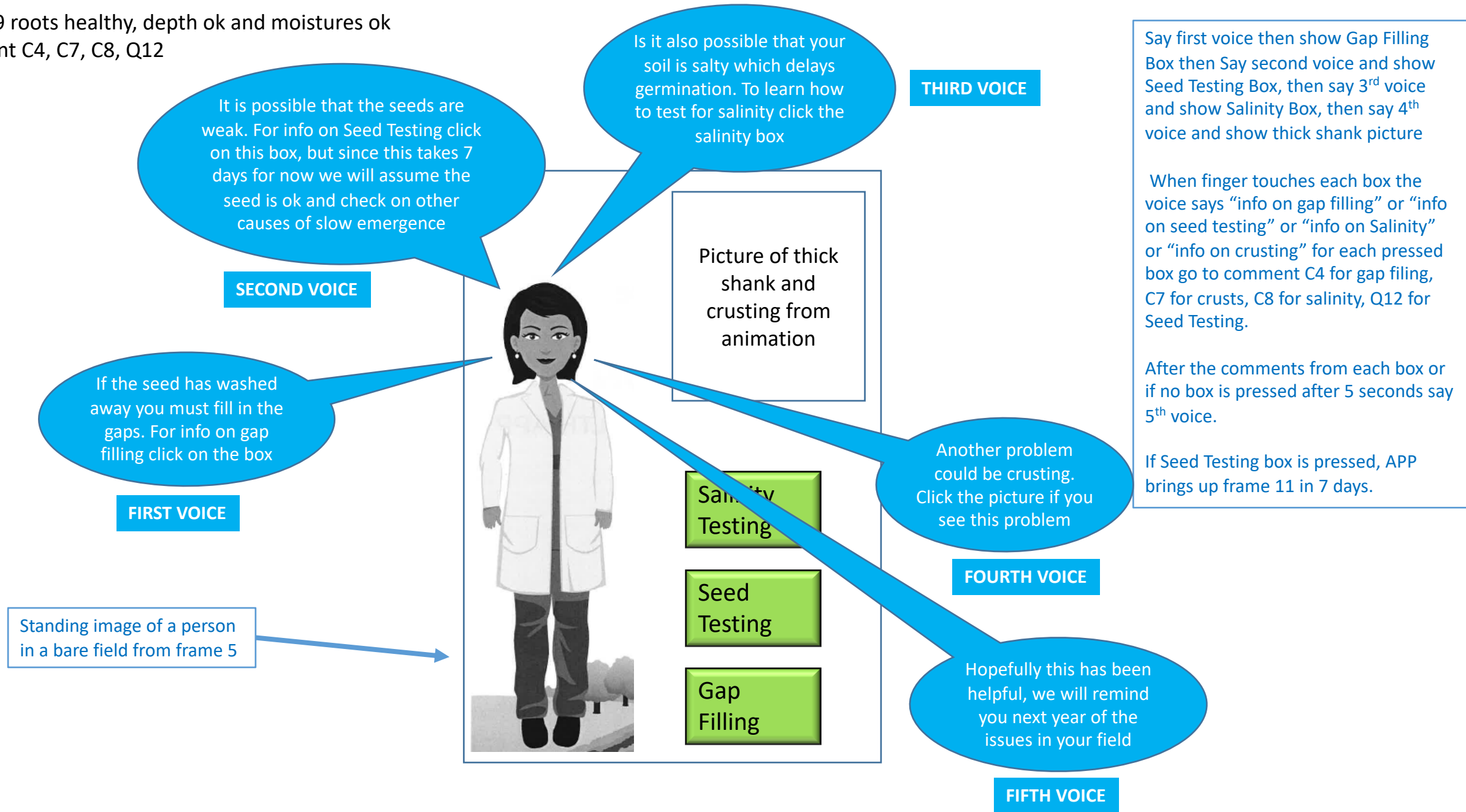
After pictures appear then 2nd voice speaks and YES and NO boxes appear.

If the root image is clicked the 3rd voice says C1 for DD60<150 then returns to 2nd voice

If YES box is pressed go to frame 8
If NO box is pressed go to frame 10

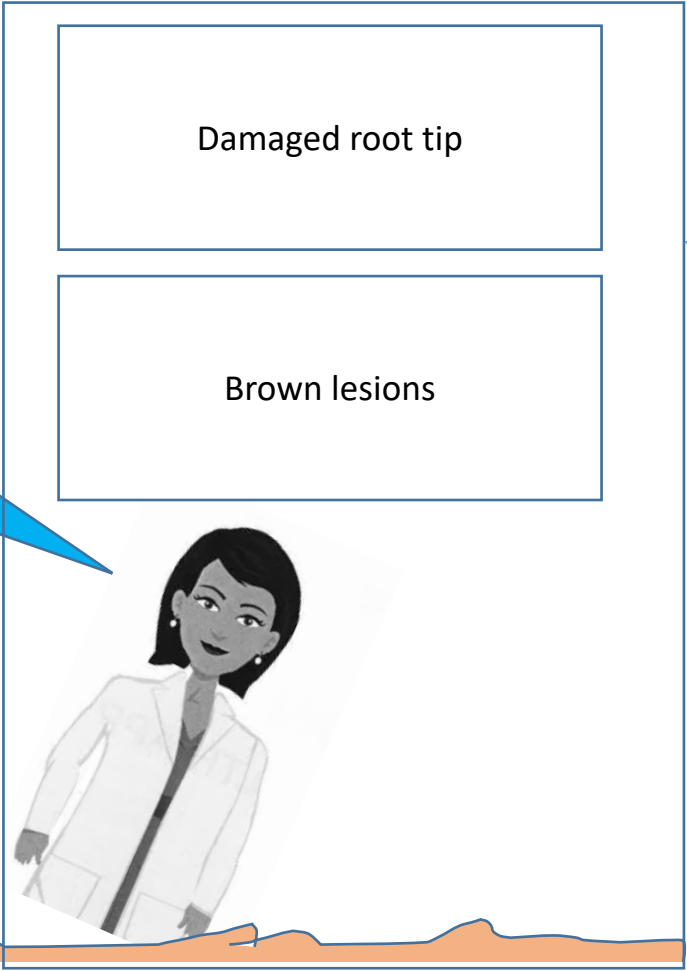


Frame 9 roots healthy, depth ok and moistures ok
Comment C4, C7, C8, Q12



Help me focus on understanding your roots that do not appear healthy. Click on the picture that reflects the root injury you observe

Same image from frame 7 of a person kneeling over in a bare field



At same time as voice, show all pictures
When Black Root Tips is pushed play C10
When Brown Lesions is pushed play C11



It is time to unroll the moist towel used to check the seed germination. If less than 7 of the seeds have a root less than 4 cm this is likely a low quality seed lot.

For help interpreting your seed testing results press the Seed Quality button or press the back button to return to where you left off.

FIRST VOICE

Seed Quality

Back




Open with 1st voice and show pictures of healthy roots.

Person should be pointing to roots.

After 3 seconds play second voice and show Seed Quality and back buttons which returns the user to where he/she left off

Seed Quality button GO TO C5 and a back button which returns the use to where he/she left off

To help us better guide you to a diagnosis and corrective action please select the types of leaf damage you are concerned with

	Curling or Cupping
Discoloration	Defoliation
Torn	Leaf spots

Open with voice and show 5 pictures

When any button is touched, say the words on the button.

Leaf spots GO TO frame 13
Curling or cupping GO TO frame 15
Discoloration GO TO frame 16
Defoliation GO TO frame 22
Torn GO TO frame 24

Do any of these
leaf spots look like
the problem in
your field

Alternaria	Bacterial Blight
Fusarium Wilt	Leaf Rust
Verticillium wilt	None of the these

Open with voice and show 5 pictures

After 2 seconds show “None of these” button.

When any button touched, say the words on the button.

When pushed go to C13 for Alternaia, C14 for Bacterial Blight, C15 for Fusarium Wilt, C16 for Leaf Rust, C17 for Verticillium Wilt.

When None of These button is pushed GO TO frame 14

Here are 5 more causes of leaf spots. Do any of these match your field?

Manganese Toxicity	Boron Toxicity
Potassium Deficiency	Sunburn
Mites	None of the these

Open with voice and show 5 pictures

After 2 seconds show “None of these” button.

When any button touched, say the words on the button.

When Mn is pushed GO TO C18, C19 for Bo, C20 for K, C21 for Sunburn, C22 for Mites.

When None of These button is pushed GO TO C88

Do any of these symptoms of leaf curling or cupping appear in your field

Jassids	CLCuV
Whitefly	Aphids
Boron Toxicity	Auxin herbicides

Open with voice and show 5 pictures

After 2 seconds show “None of these” button.

When any button touched, say the words on the button.

When pushed go to C25 for Jassids, C26 for CLCuD, C23 for Whitefly, C24 for Aphids, C19 for Boron. C51 for Auxin

Healthy leaves are green. Nutrient deficiencies cause specific leaf symptoms

Nitrogen	Potassium
Sulfur	Zinc
Iron	None of the these

Open with voice and show 5 pictures of classic nutrient deficiency

After 2 seconds show “None of these” button.

When any button touched, say the words on the button.

N go to C40
K go to C20
S go to C39
Zn go to C31
Fe go to C30

For “None of these” GO TO frame 17

Many stresses discolor leaves. What color are your leaves.

Red	Bronze
Yellow	White
Healthy green leaves	None of the these

Open with voice and show 5 pictures

After 2 seconds show “None of these” button.

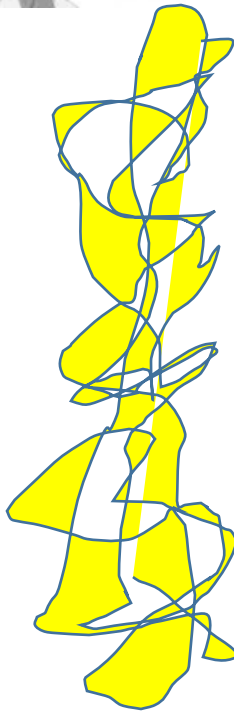
When any button touched, say the words on the button.

GO TO frame 6 and omit “leaves” when Healthy green leaves is pushed
GO TO frame 15 for Yellow
GO TO frame 19 for White,
GO TO frame 20 for Bronze if DD60>1000 or if <1,000 go to frame 21
GO TO frame 20 for Red.

For “None of these” GO TO frame 19 and do not show “discoloration” picture.

Where are most of the yellow leaves?

Just the top leaves
Just the lower leaves or, entire plant



Just the top leaves

Entire plant

Just the lower leaves


Open with voice and show buttons as voice says each of the 3 options, Top, Lower and Entire.

If pushed top, then GO TO C39
If pushed Lower, GO TO C40
If pushed Entire, GO TO C30

ani

Some herbicides cause leaf whitening. Do you have symptoms like these?

YES




Pictures of herbicide injury

Open with voice and show YES and NO buttons and pictures after the voice.

If pushed YES, then go to C88

Look at the pictures
of Potassium
deficiency. Is this
occurring in your
field



Pictures of K
deficiency


Pictures of Zn
deficiency

Open with voice and show YES and NO
buttons and pictures during the voice.

If pushed K, then go to C20

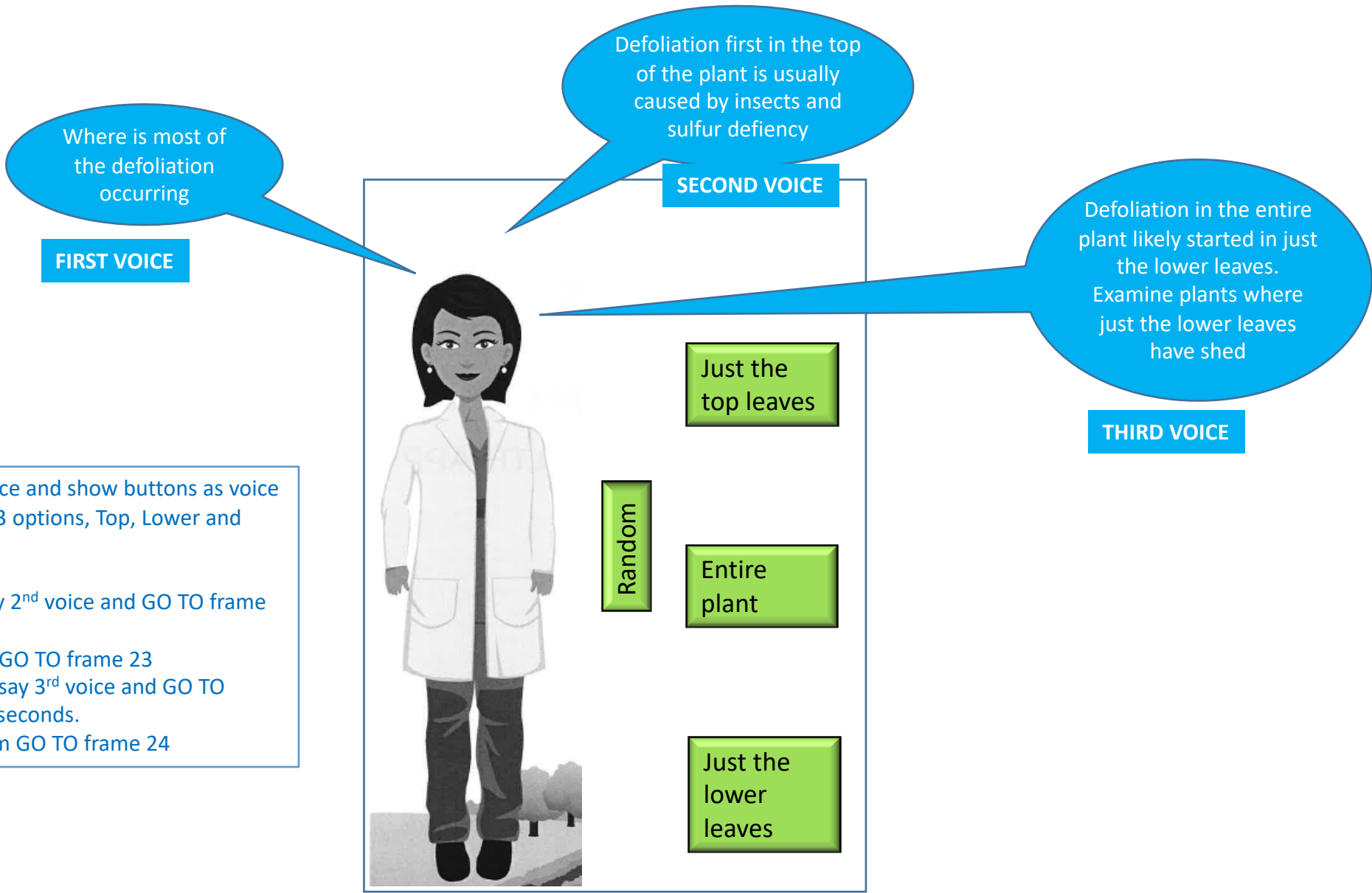
If pushed Zn, then C31

Red protects leaves from many stresses.
Start by selecting the picture that best fits your plants.
You will receive help to verify a cause or return to this screen to consider other causes of red leaf stress

	Verticillium
	Mites
Nitrogen deficiency	Jassids
Chilling Injury	Sunburn
Magnesium deficiency	Water logging

Open with voice and all pictures.

If Verticillium go to C17
If Mites go to C22
If Jassids go to C25
If Sunburn go to C21
If water logging go to C38
If N deficiency go to C40
If Chilling Injury go to C85
If Magnesium go to C???????????????



Open with 1st voice and show buttons as voice says each of the 3 options, Top, Lower and Entire.


If pushed top, say 2nd voice and GO TO frame 24

If pushed Lower, GO TO frame 23

If pushed Entire, say 3rd voice and GO TO frame 23 after 3 seconds.

If pushed Random GO TO frame 24

Defoliation first in the bottom of the plant has many causes
Start by selecting the picture that best fits your plants. You will receive help to verify a cause or can return to this screen to consider other causes of defoliation.

	Verticillium
	Mites
Nitrogen deficiency	Shading
Alternaria	Bacterial Blight
Fusarium Wilt	Leaf Aging

Open with voice and all pictures.

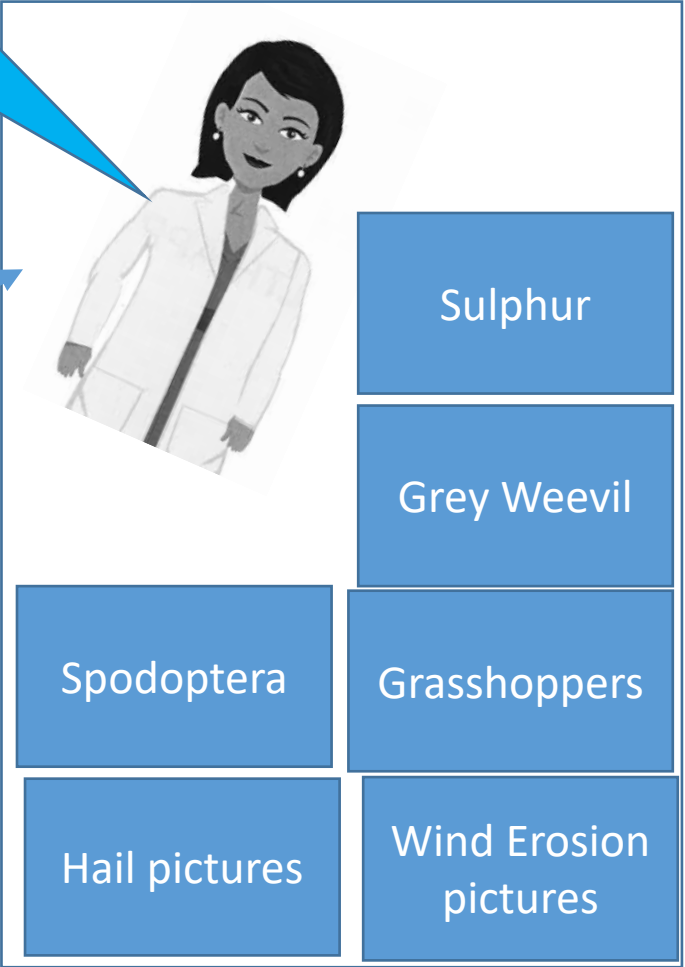
If Alternaria GO TO C13
If Bacterial Blight GO TO C14
If Fusarium Wilt GO TO C15
If Verticillium GO TO C17
If Mites GO TO C22
If N deficiency GO TO C40
If Leaf Aging GO TO C86
If Shading GO TO C87

Have back button on each C page

Several insects feed on leaves do you see these insects . Also consider sulfur, hail and erosion

FIRST VOICE

Show picture of someone holding a leaf close to their face and inspecting for insects.



Sulphur

Grey Weevil

Spodoptera

Grasshoppers

Hail pictures

Wind Erosion pictures

Open with 1ST voice and all pictures.

If Spodoptera GO TO C32
If Grasshoppers GO TO C33
If Gray Weevil GO TO C33
If hail GO TO C84
If erosion GO TO C35
If Sulphur GO TO C39