

## Natural Resources pH Main

Teacher: ... Of your new systems. Yesterday you guys should have already did your pre-cuts, and it should be going down. All construction should be done down below in the greenhouse. Should we have it running by today?

Students: Yeah. Yes.

Teacher: Yes? All right. Not 1, You guys are excused, go do your job. All right, Not 2, Hydroponics, we've been having some trials and tribulations with this hydroponic greenhouse. Right now you guys got it fantastic, it's looking really, really good. Team 1, your cucumbers and lettuce have been planted. Right? Team 2, your lettuce has been planted. Today you guys are going to do the cucumbers and ...

Students: Soy beans.

Teacher: Soy beans, yeah. Team 1, you guys have to do ...

Students: Soy beans.

Teacher: Soy beans, because you had nothing in your soy bean.

Students: Yeah.

Teacher: Yep, you guys got to plant in your soy bean. You guys understand the concept of the planting, but we're having a hard time with the TDS and the pH because you guys usually get it perfectly to where it's at right now and then it starts to burn, or it starts to die off. We're noticing that you guys' TDS and your pH levels have been off. Today what we're going to do is we're going to practice, reinforce that to make sure you guys all got this down. Then we'll actually go out into the greenhouse. I'll individually call you up. You guys will test each tank, that's going to be your self assessment for today. Then while I'm doing that, other people will be doing their sides jobs.

[00:02:00] As you can see, Team 1, you guys got to plant soy beans and make fertilizer. Your fertilizer tank is low. You guys are also going to have to check your lettuce because a lot of them are doubled. You guys are going to take out one, leave the other one. Team 2, you guys just have to plant cucumbers and plant soy beans. Your cucumber tree should be good. We're going to run it to test to make sure no water is leaking, but it should be set to go. Okay? As long as you have that system running for today, just run it with water to make sure that it's sanitized so next week you guys can put your plants in. Okay? We understand that. Practice makes perfect. What is TDS test? When you're doing your hydroponics? What does it test? What are you testing for?

Students: Fertilizer content.

Teacher: Fertilizer content, very good. If your fertilizer is too high, what does your plants look

like?

Students: Burnt.

Teacher: Your leaves are burning. Very good. If your TDS is too low, what does it look like?

Students: It's very yellow.

Teacher: It's very yellow and it pretty much stunts the growth. It's not going to get any bigger than that. What about pH? What does pH test?

Students: Acid.

Teacher: Acidic and ...

Students: Base.

Teacher: Base. If your acidity is too high, say it's a red color, what happens to your plant?

Students: It dies [crosstalk 00:02:43].

Teacher: What does your plant look like if it has too much acidity?

Students: Yellow.

Teacher: You're starting to see yellow factors in there. What if you have a base and it's turning blue or purple?

Students: Something's wrong.

Teacher: Something's wrong, yeah. What is the plant telling you it needs?

Students: Water. [crosstalk 00:03:05]

Teacher: It's going to need a little bit of boost. If your pH is too high, say it's red, what do you need to do with it? What do you put?

Students: [crosstalk 00:03:14]

Teacher: You put pH up. Okay? Because that will even it out to make it go down. If it's too low and your color is blue, what do you put?

Students: pH down.

Teacher: pH down. That will even it out. The paper that I just gave you is going to be a mini lab. You guys are going to work in little groups. If you look at the first one, your directions. In

your groups, there are 5 tests of different fertilizer solutions. These fertilize solutions I've gathered from around our facility and I made them ourselves. They have being tested. These are what you guys are seeing on a daily basis, nothing new. You're going to write the number of the cup you're testing, and you're going to write the TDS meter. I only have 2 meters because these meters are expensive, so please share. What is the first thing you do with the mete?

[00:04:00]

Students: Turn it on.

Teacher: Turn it on and take off the ...

Students: Cap.

Teacher: Cap, because if you have the blue cap on, it ain't going to read. You take off the cap. When you're done you put the cap back on. You turn it on and you put it in the TDS cup. You read the reading. You're going to write the TDS reading in that box. The next thing, is that TDS good for lettuce? You're going to write yes or no. If it is not good for lettuce, you're going to write what we have to do to make it good for lettuce. Same thing with cucumbers, same thing with the soy beans.

What is the range for lettuce? For TDS?

Students: 900 to 11.

Teacher: 900 to 1300. That is your range. If you're in between that number, you're good. If you're not, you need to fix it. What about cucumbers and soy beans? What is your range?

1300 to 1500. Very good. Why do you think it's higher than lettuce? Why are cucumber's and soy bean's TDS higher than lettuce?

Students: There's flowers.

Teacher: There's flowers and actual fruit coming out from the plant. Where as lettuce is just a leafy green, so it can be lower. If the lettuce TDS was too high, it would automatically start to burn. You have 4 cups to test for TDS. Then, you have 2 questions to answer on the bottom. I'm sorry, you have 5 cups for TDS, and you have 4 for PH. When it comes to PH, I have 4 testing kits. Each team will have one and it will go around. You fill up the tube full?

Students: No.

Teacher: No, how full do you fill it? Halfway. How many drops do you put in?

Students: 3.

Teacher: 3. Then you put the cover on and you shake it. What color are we looking for?

Students: She she yellow.

Teacher: She she yellow, that's the color we want because the PH for she she yellow is?

Students: 7.

[00:06:00]

Teacher: 7, very good, which is neutral, that's exactly what we want. If it's red, that means it has a lot of? Acid. If it's blue, green, purple, you've got a lot of? Base. Then, same thing like your TDS, you have to write the cup number, you have to write the color for the PH reading. I put TDS, just cross that out and put PH reading. Then you're going to tell me what it does for the lettuce, which you have to put in, which you have to put in for cucumbers, which you have to put in for soy beans. If your PH is too acidic, you're going to put PH?

Students: Up.

Teacher: Base, you put PH?

Students: Down.

Teacher: Down. That kind of messes with everybody, the up and down part. Then you have your two questions on the bottom. Any questions?

Students: How many people do you want in a group?

Teacher: 3 to 4. Get in your groups while I set up everything please.

Students: [crosstalk 00:07:01]

Teacher: We can put that to the side. You're good. On this side of the room, you guys will be testing your TDS.

Students: [crosstalk 00:07:14]

Teacher: On that side of the room, you will be testing your PH factors, okay?

[00:08:00] Make sure you leave with the correct cup that you're testing because you guys may not be doing it in order. All TDS is on that side, all PH will be in the middle, you guys will have to walk around a little bit. Did somebody grab a PH tester? You got one? One. Let me see one?

Students: [crosstalk 00:08:00]

Teacher: Oh, is there two there?

One? I'm missing one more, oh! Right there, I'll take that. These are all TDS. Thank you, darling. No worries. TDS is on that side, PH is on this side. Let me know if you guys have any questions.

Students: [crosstalk 00:08:21]

Teacher: Perfect, whatever cup you're using.

What color do you think that is?

You got a orange. What do you do?

Students: [crosstalk 00:08:45]

Teacher: Halfway. Yes. TDS number 4, then your reading.

Students: [crosstalk 00:09:01]

Teacher: How come what is different?

Because the other ones you guys are using is usually used for aqua-ponics. This is the one for hydro.

Students: [crosstalk 00:09:27]

Teacher: You put the color and if it's good for all 3. Then you guys will move to the next one.

[00:10:00]

When you guys are done, empty it out so the other team doesn't see the color. Make sure you empty out the other one. No cheaters.

Students: [crosstalk 00:10:21]

Teacher: What color was yours? She she yellow. Was that good for lettuce, cucumber, and soy beans?

Students: Yes.

Teacher: Then put yes straight across.

If it's wrong, you have to tell what you're going to put, yeah?

You can just go dump it outside, it's just water, it's okay. You can just melt it with the thing that they used to melt the other one. We can go do that. You guys have the two

room key? No. That's too drill to push it go down.

Students: [crosstalk 00:11:09]

Teacher: Hold on. [inaudible 00:11:24]

[00:12:00]

[inaudible 00:12:09]

Good. Is it good?

Students: [crosstalk 00:12:27]

Teacher: Perfect, because it's orange? Got it. Good.

Students: [crosstalk 00:12:38]

Teacher: Your guys' PH seems to be coming out easy.

Students: [crosstalk 00:13:03]

Teacher: So you just borrowed a meter from somebody?

Students: [crosstalk 00:13:24]

[00:14:00]

Teacher: What is this one? What happens to the vegetable crop if the TDS is too high, very good.

If your PH is too high. Too high the color is higher.

Students: It burns.

Teacher: Very good.

Students: [crosstalk 00:14:18]

Teacher: Yes. Mm-hmm (affirmative). It's that and so it's yellow and it will pretty much stunt. Whatever size your lettuce is the day that the PH is too low and you don't fix it, it's just going to stay that size, yeah? Good.

Students: [crosstalk 00:14:47]

Teacher: TDS meters are on that side, so your going to use those cups for TDS. These cups for PH. There should be 4 PH tests.

Students: What happens to ... If the PH is too high?

Teacher: I don't know, what happens to it?

Students: [crosstalk 00:15:04]

Teacher: What happens? If your PH is too high, what color is that usually?

Students: Blue. Red.

Teacher: Red. So it's higher. When it's red, you have too much acid, too acidic. What do you think the plant will look like if it has too much?

Students: It looks yellow.

Teacher: Yellow burnt. So it's pretty much like you have a lettuce and you squirt a lemon all on top of it. What's going to happen to the ...

How do you put it together?

How did drill the holes last time?

Students: We didn't it was already there.

Teacher: The hole was already there?

Students: Mm-hmm (affirmative).

That one was too big.

Teacher: This one is too big?

Students: Mm-hmm (affirmative).

[00:16:00]

Teacher:

This can't come off ...

I don't know, your best bet would probably be to burn it because I don't know how this one works. This one is easy, you just plug it in. This one is an older version. I don't have a newer version of this in that box? I do have a newer version of this?

Students: I don't know.

Teacher: The box is still by the guinea pig. This won't fit on that.

Yeah? Okay.

Okay.

Students: [crosstalk 00:16:51]

Teacher: Mm-hmm (affirmative). Okay ... That's telling you that the reading is very high. This is the TDS 5. This is 5000 something, the reading is very high on this one. It's just telling you OR, because it's approximate over the 4500. The reading usually goes up to 4500. What are you guys going to need to do?

Students: [crosstalk 00:17:44]

Teacher: Very good.

[00:18:00] One of the TDS is very, very high. Now the caliber is telling you it's way over, OV. The caliber will only read up to 4500. That's telling you it's super high. If you get OV, just tell me what we have to do.

Students: [crosstalk 00:18:09]

Teacher: They go up to 5000, but they max out at 5 right?

That's the highest and I should never see it at that.

Then I know your vegetables will not grow, they will be stunted.

Students: [crosstalk 00:18:29]

Teacher: Oh, it went up to 6 now. Okay. That's just pure fertilizer.

Students: The cucumbers start at 13, yeah?

Teacher: They start at 13?

Students: [crosstalk 00:19:09]

Teacher: What do cucumbers start at?

Students: 13 to 15.

Teacher: It's not 11 to 15?

Students: [crosstalk 00:19:22]



Teacher: Oh, I know it's not 12. It's either 11 or 13. 11 to 15, there you go. It's 11.

Students: For this side ... [crosstalk 00:19:47]

Teacher: Mm-hmm (affirmative). It will burn.

[00:20:00]

Did we find it?

Students: I don't know.

Teacher: The melting one, as soon as you go into the tool room ...

Students: [crosstalk 00:20:22]

Teacher: Mm-hmm (affirmative). Southern line. [inaudible 00:20:34]

[inaudible 00:21:17]

A few more minutes to ... [inaudible 00:21:39]

Students: [crosstalk 00:21:45]

Teacher: No, everything should be inside. There should only be 4 PH, though.

Students: [crosstalk 00:21:57]

[00:22:00]

Teacher: All right, it looks like everybody pretty much is wrapping up. Very good. Your TDS reading, cup 1. What was everybody's roundabout readings for cup 1 TDS?

180? 1080? Oh, 180. 180 for cup 1. For TDS. For cup one.

Students: 970.

Teacher: 970. 950. So 970 950 for cup 1 TDS? Is that about what everybody got? 950 to 970? Okay. For lettuce, is that good or bad?

Students: Good.

Teacher: Good. Cucumbers?

Students: Bad.

Teacher: Bad. What do we need to do?

Students: Add fertilizer.

Teacher: Add fertilizer, very good. Soybeans?

Students: Bad.

Teacher: Bad. Add fertilizer. Any questions for cup 1?

Students: No.

Teacher: Cup 2, what was our readings?  
180, 170, 160, that's about the same range. Now, lettuce?

Students: No.

Teacher: It's bad, right? Because 180, not 1000. So what do you need to do?

Students: Add fertilizer.

Teacher: Add fertilizer. Cucumbers and soy beans?

Students: Add fertilizer.

Teacher: You need to add fertilizer. 180, that's just pure water. When it's in that range, that's just pure water. Cup 3. What did we get for TDS? 11, 1100, 1280, 1240. All around the same. What do we do for lettuce?

Students: Nothing.

Teacher: Lettuce is good. Cucumbers, soy beans? Good. Cup 4.

Students: We have a problem. [crosstalk 00:23:55]

Teacher: 860.

Students: Too high.

[00:24:00]

Teacher: 860?

Students: That's low.  
For 4?

Teacher: Yeah. So some got 860, some got ... Did anybody get a different number for number 4?  
You guys got 1280? 1280? 1260. Those of you who got 860, is it good?

Students: No.

Teacher: So you guys are going to have to put?

Students: Fertilizer.

Teacher: Fertilizer between. Those of you who got 1280?

Students: It's good.

Teacher: Why do you think it's different from one to the other?

You see how sometimes they got 880, and they got 1280? Why do you think that changed? You guys used the same cup.

Students: [crosstalk 00:24:41]

Teacher: Could have dissolved more, or?

Students: [crosstalk 00:24:47]

Teacher: Exactly, the meters have not been washed. You guys are just popping them in and popping them in, so whatever was in the last one, it could affect the other one. But when we do it outside, what do you guys have to do? You have to watch the meter every time you change the reservoir, because it could be still reading from the last reservoir. You have to wash it. Good thing you guys caught that. Very good. What about cup 5?

Students: 5000.

Teacher: Over 5000, that's way too high. What do we need to do for all 3?

Students: Add water.

Teacher: Add water to dilute it. Let's say your reservoir is all the way full, but it's still reading 5000, what do you do?

Students: Dump out the water.

Teacher: Very good, you bail out water. You get a bucket, you just bail out water. Then you put water, then you test it again. Very good. Any question on TDS. Okay, if your TDS ... What

happens to the vegetable crop if your TDS is too high?

Students: It burns.

Teacher: It burns.

Too low?

Students: Turns yellow.

Teacher: Growth stunts, and your vegetable starts to turn yellow. Very good. PH readings cup 1.

Students: Red.

Teacher: We got red.

Students: Orange.

[00:26:00]

Teacher: Some got orange. What does that mean? You add PH up because you've got too much ...

Students: Acids.

Teacher: Acid, very good. Cup 2?

Students: Good.

Teacher: Good, we got she she yellow. Cup 3? Good, she she yellow, and cup 4?

Students: Yellow.

Teacher: Yellow. Good. It was very difficult to make ... I could not make blue. I got all these readings from your tanks and the other ones, that means you guys have been doing really, really good that I could not change it no matter how many different things I put in, I could not change it. You guys are doing a good job on that. I literally put 4 different fertilizers in 1 of the cups and it still did not change. You guys are doing an awesome job. What happens to the vegetable crop if the PH is too high? Burn. PH too low? Growth stunt, very good.

PH and TDS both can do kind of the same thing, but it does affect the plant and you will be able to see it. Any questions on this? We should be good from here out. I shouldn't have any questions about TDS, no questions about PH, right? We should be awesome possums.

Team 1, you guys are planting soy beans, making fertilizer, and checking your lettuce doubles. You guys need to get all your supplies, I have no supplies out there for you.

Students: [crosstalk 00:27:12]

Teacher: The fertilizer content? No. I will get that for you though. Your seeds are all right here, make sure you do not get the seeds wet.

Students: [inaudible 00:27:21]

Teacher: Very good. Make sure you guys are mixing correctly. Team 2, your fertilizer is still high, so you guys are good.

Students: Water.

Teacher: Team 2 you guys are planting cucumbers and planting soy beans today. Make sure you count your holes. How many extras do you guys usually plant just in case it does not germinate?

Students: 5. 10. 5.

Teacher: 5 extra. Say your lettuce, your cucumber, you need 80. You should be planting 85. Your soybeans now, you guys are only doing half. Team 2 does half, team 1 does half. You guys each do 5 extras. I'm going to go check on our aqua while you guys are doing that. When I get in there, be ready. I'm going to individually call you to test the tanks and that's going to be your assessment for today. Any questions? Can you guys put all the PH and TDS ...

[00:28:00]

Mm-hmm (affirmative).

You guys can get all your supplies ready for planting. Put all the PH meters and indicators in the baggy. You guys can take one meter, I'll ... Yes, please turn in your papers. Please take out two meters and two test kits for today, please. Use the ones that we're using now.

Yes.

Students: [crosstalk 00:28:41]

Teacher: If we can get all the cups together and put them on the outside table please. That way nothing will spill inside. All the testing cups please take outside. We can just dump them, they're just water and fertilizer. Thank you. All your supplies should be in that back room, don't forget your cart. You can just dump it right there, it's just water and fertilizer.

Students: [crosstalk 00:29:18]

Teacher: How are we doing in here?

Students: [inaudible 00:29:35]

Teacher: How was your levels? Did you guys test? Your PH, your ammonia, your nitrates? Did we ...

Gavin has my key, yeah?

Students: I'm done, forever.

[00:30:00]

Teacher: Hole went through?

You just have to stir it around a little bit.

Students: [inaudible 00:30:05]

Teacher: Okay, because your pump is coming inside from here. You will need an extension cord. Torch? I don't even know where Cody got that from.

Students: We're trying to get the flint, but he said it's ...

Teacher: It's probably for the welding stuff. While some of you are doing that ... All this is set up already?

Students: Yeah.

Teacher: Good. Your pump and your bell ... Are you guys ... You do have it ready, huh. I'd get your extension cord ready and make sure you check your PH and your ammonia nitrate and see what we have all in those levels. Very nice. You have enough PVC pipe?

Students: Yes. [crosstalk 00:31:05]

Teacher: Good job guys, it's going to be running today, right? Get all those tested.

Where you got that from?

Students: The tool room.

Teacher: That was in the tool room?

Do you guys have your baskets and everything? You have the blue tub? The blue tub is upstairs.

[00:32:00] Does it work?

Cucumber? It still leaks?

Students: The bottom.

Teacher: Major?

Students: Yeah.

Teacher: Ah. It's not as bad as how it was? I gotta probably put more ... Are you still running water? The white stuff ... Where is it coming out? It's not as bad, but I have to add more dap then. Like a little dap piece. Not as bad? Before it was shooting out, right?

Students: Yeah.

Teacher: We're just getting a little bit of a drop? That's not too bad, though. We're going to still get your plants ready for the system. After we get the dap, we'll go and fix it up. Turn off the water, get your stuff set up for that.

The blue one?

Students: [inaudible 00:33:08]

Teacher: I just saw it. It's as soon as you go into the shop, right there. Unless they got it. See, we got this. Let's see. Ryan, you're up. Grab a TDS meter. Kiani, you're up. Grab a TDS meter.

Students: [inaudible 00:33:32]

Teacher: Leave them all alone, we're going to test them all. I'm having everyone individually test, so don't change anything. You got a TDS meter? You got that one.

Students: [crosstalk 00:33:47]

Teacher: You can do that one. Mm-hmm (affirmative). Was that one low water content? Okay. [00:34:00] Those of you uys should be getting your fertilizer ready. There should be one more upstairs. 1400, good or bad?

Students: Bad.

Teacher: What do you need to do? Check your PH. You're good, go ahead and test.

Students: Turn off.

Teacher: Left Lucy, righty tighty.

What is it?

Very good, add fertilizer.

Daniel, TDS. We can use that. Give that one to Kiahi so he can check PH. Daniel, you can check that one. Check that one. You can check Kiahi's.

Students: Oh bro, I'm last.

Teacher: Perfect. Half half of each.

Students: What?

[crosstalk 00:35:20]

Teacher: You're good you can leave that right there. Ranky?

What do you think? What's your call? It has a little bit of green tinge on it, but you're good. What you got?

Students: 1100.

Teacher: 1100. What do you?

Students: We ... good.

Teacher: Good, now check PH for the same tank. You got 990? What do you do?

Students: Add fertilizer.

Teacher: For cucumbers?

Students: Add fertilizer.

[00:36:00]

Teacher: Good. Check your PH. Same thing. Daniel, is the spoon hanging over there or did it fall? No more spoon hanging over here. What you got?

Students: 1100.

Teacher: 1100 for your?

Is it good or bad? Good, check your PH.

Student?

Students: Student. Come on, buddy.



Teacher: Team 1 make sure you empty out whatever is in the fertilizer tanks. Wash it up before we stop mixing. Good job, Student. Student, you can check TDS on this one. Good, and you can check TDS on the one Daniel just did, so start emptying out those tanks. Wash them up. Let's go. Everybody got their baskets accounted for? All these baskets are getting counted? Count your baskets.

Students: [inaudible 00:37:20]

Teacher: You can do TDS for that one, he's doing PH.

Students: Where are the meters?  
What is it, lettuce or cucumber?

Teacher: I don't know, what is it?

Students: Oh, lettuce.

Teacher: You got this. What do we have?

Students: 1190 for lettuce.

Teacher: 1190, is that good or bad?

Students: Kinda bad because it's kind of low, it's good.

Teacher: It's good.

Students: Close to 13 ...

Teacher: [00:38:00] So you're good on that one. Now you're going to check your PH. What are you? 1100, good or bad? Good? Check your PH. Good. Very good, you guys are done? You got all the lemons and the cabbage was counted already? Where the cabbage was, okay? Yeah, cause I'm down here.  
Student, you're up. Student, you're up. You tested this one, what is this?

Students: It was 1010.

Teacher: 1010, so you need to add?

Students: Fertilizer.

Teacher: A little bit, good. You can do that one.

Students: Add like a little bit.

Teacher: But don't do it yet, we'll have everybody change and then we'll change them all. You gonna put the 3 drops?

Students: Yes, I did.

Teacher: You're good, now you guys can start planting.

Students: 1100.

Teacher: 1100 for your? Lettuce? Okay. Student! You're up. You can do a PH tank.

Students: Student!

Teacher: Mm-hmm (affirmative). What do you got Student? Good or bad? That's good. Good. Pick a tank any ... You know what? Oh, no more in this one. Now you can start clean out your fertilizer bins and we're going to start mixing. 1290 is that good or bad? Very good. Check PH. Pick a tub. You got all baskets? Make sure you guys get your seeds, did you grab all your seeds? They should have been right inside the classroom, I brought them out. Just dump it.

[00:40:00]

Students: She she yellow.

Teacher: Very good. 1170 for that tank?

Students: Yeah.

Teacher: Very good, check PH. Reina, you're going to grab a PH, yeah? [inaudible 00:40:17] He's coming, he went to get the seeds. Empty those out and start washing. Careful. Did you guys move a tub?

Students: Yeah, both hands.

Teacher: Shoot it down with the hose. You'll be all right. It's not too much, just ... Just shoot them down. Very good. Language! Pick a tank, check your TDS, is that good or bad? Yeah it's good? Perfect. Ralph?

You can do that tank right there. What you got?

Students: 101?

Teacher: 101? One zero one? 3 numbers? Put it in.

It's 1010. Is that good or bad for cucumbers?

Students: It's almost there.

Teacher: What do we need to do?

Students: PH. Fertilizer.

[00:42:00]

Teacher: Very good, you'd put half a bucket of each fertilizer in that one. Now check your PH.

What did you get? 1200 for lettuce? Good or bad? Very good, check PH. Student, can you check the TDS for that bucket back there?

Students: You have a hose?

Teacher: No. Shane, can you just do it after they're done? Just do a quick shoot over here. Chandler, sorry. After they're done just do a quick shoot over there so you can check your ceilings. Make sure you separate who's is who's. Good or bad?

Students: Good.

Teacher: Good. Good or bad? Good. J and Chandler? What you got, Student? Good or bad? Good, check your PH. Pick a tub. Then do PH too Student. Good. What is it?

Students: 1100.

Teacher: 1100 even?

Students: Good, check your PH.

Which one is that?

Teacher: 1080 for lettuce, good or bad?

Students: Good.

Teacher: Good, now check PH. This one?

Students: We should write it on the bins.

Teacher: Write it on the bins? The formula? Okay.

[00:44:00]

Very good.

5 pounds calcium nitrate ... Is that going in ... So that's only 5 pounds going in, and you add it with?

Students: Water.

Teacher: Water. All the way to the top, good. Once you have your baskets done with your perlite, where do you put it? Very good, put it in there, yeah. Cucumbers and soy beans. You have to separate. Make sure you know who's is who's. Very good. I want you to calibrate these, make sure these are good to go because everyone is done testing. Make sure these are good to go. Are we close to 5? You think we'll have enough? No? What are we at?

What is this, calcium nitrate? Empty out this bag, then. This has calcium in it. No, yeah, that's calcium. Nope.

[00:46:00] Yeah. This one is going for who? Team 1 or team 2? That's 1, is that soy beans or cucumbers? Team 2 has baskets? Team 1 is using the cups. Not today. I got them. Team 1 make sure you also clip your cucumbers, make sure it's not going towards the pole. Good.

Students: [inaudible 00:46:40]

Teacher: Student, that's all singles? Awesome. Okay. Soy beans ... Here's another basket if you need it. Which team is this? You guys?

Students: Our ... Team 1.

Teacher: You guys are going to put them over there. This is not going to be running yet. Everybody water their oasis too, make sure those are watered for the weekend. It's Friday.

Students: That's the only thing that goes in the tank?

[00:48:00]

Teacher: The only thing that goes in the tank. You got your stir? Are you guys done? Okay.

Before the end of the period, you guys use the watering cannon, do a quick water on the top of your ceilings. While he's doing that, you can change and then start getting ready.

Students: Turn on the water?

Teacher: No, you just go at with the watering cannon. If you turn on the water no more roots yet.

Just leave it on the side, then. You have 20 minutes to finish all your tasks, remember, you always have to clean up after so make sure you get your brooms and clean up

everything after. 20 minutes to finish. Until the bell rings.

[00:50:00] Make sure all those clips get picked up. Get the broom, sweep everything up. Make sure you double check your buckets. Make sure your water levels are still good on your hydroponic bucket systems.

I'm going to check aqua. Keep on task, good job.

Students: [crosstalk 00:50:20]

Teacher: You're okay? Good.

All right, so what were the testings?

What was this one? 7.84 PH, which is good. Do we have nitrate? We have nitrate in here, good job. Have you been rinsing out the bowls? You did rinse them out? You had a purple, is that regular PH or high PH?

Students: High range.

Teacher: High range? Have all range been purple and then we added the bowls?

Students: Yeah, because that one was purple.

Teacher: High range or regular?

Students: [crosstalk 00:51:39]

Teacher: High range is good.

Students: We had nitrate too.

Teacher: You had nitrate in there?

Students: We had.

Teacher: [00:52:00] No more today. Right now we're running 4 of the bowls in there. 5? 5 in here are running 5 fish, yeah? When we get our fish on Monday, where are we adding them? Are we adding in here? Oh, your guppies are going in there, and 20 telapia in that tank?

I think I spent 2020, yeah? I think it's 20 telapias. I don't think 20 telapias is going to be too good in that one. You guys will be good for Monday, though. Are you guys going to need 1 more day for construction? You guys did it, that looks very nice. [inaudible 00:52:49]

Students: [crosstalk 00:52:51]

Teacher: Did you guys heat it, is this a rubber?

Students: Yeah.

Teacher: Because usually when you put something of a rubber substance in a boiling pot of water ...

Students: It will stretch.

Teacher: It will stretch, yeah. If you heat it a little bit it might be able to wiggle through. You have 20 minutes left, you're almost there. You cut through the table or no? Okay, very good. Good job, guys.

Students: [crosstalk 00:53:27]

Teacher: You got it. Or the mallet? Good job with that, you guys have 20 minutes so finish up with that and make sure all your supplies are back, yeah?

Students: I put in ... [inaudible 00:53:47]

Teacher: [00:54:00] You have nitrate, what is that today? Florence, you checked this yeah? Student, what do we got? We have no nitrate, we have no nitrate today. How many bowls do we have in there, just 2? Did you just add?

Students: I put the water in yesterday and I just [inaudible 00:54:11]

Teacher: I'll rinse them out today ... Sure, yeah. Ready for the next one? You have 5 pounds of calcium nitrate, your next one is 51126, how much do you think? 3.2 or 5?

Students: 3.2 ... 5.

Teacher: 5 pounds of 51126, magnesium sulfate is 3.2. So 51126 is how much?

Students: 5.

Teacher: 5 pounds. Magnesium sulfate is? 3.2, good. Now you can go up top. Very good, guys. You have to remember, I don't see you guys until Thursday of next week. ACT testing is Tuesday. Be ready. Make sure everything is put away. Good job guys, very good.

[00:56:00] All your stuff is put away? Make sure everything is put away. I still see cups outside ... That's the ones we used today, we can toss those.

That's probably all the leftovers, you can leave it there. Perlite put away? Make sure all our caps are good.

Students: Sticky.

Teacher: How much you made with this?

Students: 5.

Teacher: Oh, this one you need the whole 5. This one is your 51126?

Students: [inaudible 00:56:38]

Teacher: You guys are going to have to go to 511.

Chandler, grab my key, go in the fertilizer room. 51126. The key should be on my desk. One of the little brown ones. Did you put the other one in already? You were doing 51126. Okay.

You finished painting?

Students: No. [inaudible 00:57:45]

Teacher: [00:58:00] Oh yeah? I want my key. I would ask Gavin. Those of you who are done, I have all your papers. Get out a sheet of paper, you guys are going to write what was accomplished today, what you did today as your exit pass. Just how we do Not 2, because everybody had their own jobs today right? Right? Get your piece of paper out, write your exit pass, exactly what you got done today. From lab to finish, then turn that in, that will be part of your points. Yes. Oh. Same for you guys, exit passes. Exit passes for everybody. I have paper under there if you need it. Exit passes everybody, everybody had their own jobs today, what you guys accomplished. 10 minutes, the bell rings in 10 minutes.

Remember, recap from next week, I don't see you guys until Thursday, hopefully everything was accomplished. Did we accomplish all of our cucumbers?

Students: Yeah.

Teacher: For team 1? Team 2? Cucumbers are all planted? Soy beans? Soy beans were planted, cucumbers were planted for team 2. Team 1? Soy beans, and then they're finishing up the fertilizers, then we cleaned out, right Student? That's cleaned out? Perfect. You are the only ones, you guys are okay. Write your exit passes, make sure they're on my desk. [01:00:00] Make sure your areas are clean, No rubbish left on the tables.

Make sure your names are on these exit passes, too. It doesn't help me if there's no name. I hear someone calling me, is that [inaudible 01:00:27] ?

Students: They finally got it in the whole?

Teacher: Did they? Good. Exit passes. Exit passes, everybody is doing that, everybody had a job

today. I have one meter here, where is my other meter? Make sure by the end of the period I have 2 meters in this drawer, gotta have 2 meters in there. Exit pass. Exactly what you accomplished today, because everybody had their own jobs to do, I want to hold everyone accountable. Everybody did something today.

Students: Just what we did individually.

Teacher: That's what you did individually. 10 minutes before bell rings, make sure your supplies  
[01:02:00] are put away, I need exit passes. [inaudible 01:01:48] We gotta find 51126.

Right here, darling. [inaudible 01:02:19]

51126, you're good. Go ahead, I'll lock up. You guys even putting the lekka in today?  
Right on.

Students: [crosstalk 01:03:09]

Teacher: Oh wow, look how nice it look. That's cool, I like that.

Students: The cameras [inaudible 01:03:25]

Teacher: So the water is going to go higher? I like that though, the whole thing is siphoning up.  
What crops did we decide? Strawberry? How many strawberry crop plants do you want?  
I'll make sure it's ready for Monday, because we're not ...

Students: 1, 2, 3. 1, 2, 3, because we're not ...

Teacher: This one is going to be a bush, not a vine.

Students: [crosstalk 01:03:52][inaudible 01:03:53]

[01:04:00]

Teacher: So I'm going to bring a total of 4. This is going to be in soil, because you can not get  
seeds. You're just going to plant the whole thing inside. Good amount of water, too.

Students: [inaudible 01:04:10]

Teacher: It looks good. We'll run it over the weekend so we can rinse them out, and Thursday  
you'll get your fish. We're good. Good job, it looks good, I like this. You guys got this  
way, we got the pipe way, we got the regular bell-siphon way, and we got the string way  
over there. Very good, guys, you guys are doing good. Clean up, good job.

Students: [inaudible 01:04:46][crosstalk 01:04:47]

Teacher: I see what you did today, good job. That's hot, that's what they use to burn the pipe.  
Make sure your PVC if you're done, put it away. Very good job guys. Put everything



away.

I got all my exit passes? Make sure two chairs per. Then you guys have period 7, then you got to advisory for brown bags today. There is an assembly today. There is an assembly today, make sure you guys ready for the assembly. No hats, no gum chewing, no drinks in the assembly. You're singing? I know Student is singing today.

[01:06:00]

Students: [inaudible 01:06:00] I seen her this morning.

Teacher: With his guitar? Yep.

Students: Mrs. [inaudible 01:06:17]

Teacher: You have 7 minutes, good ...