Getting Started with Food Preservation

KAITLIN HENNESSY: Good evening, everyone. My name is Kaitlin Hennessy. I'm the program coordinator for Global Connections. And we're getting started with food preservation.

And here at Global Connections, we offer engaging co and extracurricular opportunities for online students wherever they have an internet connection. Presenting this evening is Dr. Stephanie Smith and Heidi Holubetz. Dr. Smith is the WSU extension consumer food sciences specialist, and Heidi as an undergraduate student at the School of Food Science here at WSU.

And throughout the evening, please use the chat box, which you will see located underneath the video. And you can use that to discuss tonight's content, ask questions to the presenters, or if you have any technical difficulties, please do let us know. You'll see myself as well as [? Christine ?] in the chat box, and we'll be your event moderators for this evening. OK, I'm going to hand it on over to you, Heidi and Dr. Smith.

STEPHANIE SMITH: Thank you for joining us tonight. Heidi's going to be helping me this evening, and we're going to show you how to can quick dill pickles. And so as we get started with this, let's go over some canning basics.

And so some of the important things that you need to know about canning are that the processing time is highly dependent on the food being processed, and that includes the pH of the food; the water activity, which is the amount of water in the food that's available for micro-organism growth; the processing time that's needed for proper heat penetration to make sure that the coldest spot in the jar gets heated up to enough temperature, a high enough temperature to kill microorganisms; and a lot of other factors.

So it's important to know that improperly processed food can result in botulism, which is often fatal. So we want to make sure that we follow some safe canning basics. So you always want to use well-researched recipes and processes. And you can get these from your local extension office or from the National Center for Home Food Preservation. You never want to use recipes and processes from unreliable sources, such as blogs, Facebook, and Pinterest.

All low acid food, which is food that has a pH greater than 4.6, must be processed in a pressure canner. So this includes vegetables, tomatoes, Asian pears, figs, and much more. You never want to use a pressure cooker, which is shown in the picture on the slide, or an oven or a microwave to can food, nor do you want to fill jars with hot food and let them seal by themselves. A sealed jar is not a sign of a safely canned product. So all these methods are dangerous and can increase your risk of botulism.

If you are doing pressure canning, you want to make sure that your pressure gauges are checked yearly to make sure that they're working correctly. And you can have your gauges

checked at the local extension office. Acidified foods can be processed in a water bath canner according to directions, and this is what we'll be doing this evening.

So acid is added to food to bring the pH below 4.6 to make it safe. And that's what we'll be doing tonight when we can pickles. You also need to be sure to correct for elevation. If you're at a higher elevation, then you need to often add pressure or increase the length of the processing time to make sure that the food is properly canned.

You always want to choose firm, ripe, and unblemished foods, and gather only what can be processed that day. And always make sure that you wash all fruits and vegetables under clean running water before you start the canning process. Most importantly, you never want to alter recipes or processes. Follow the recipes and process times exactly because even the slightest changes can affect the safety of the food.

The canner must stay at temperature pressure during the entire process. And if the canner runs out of water or the pressure drops if you're using a pressure canner, you have to reprocess the food for the entire length of time. You never want to reuse canning lids. And definitely do not eat any canned foods that spurt when open, have a bad smell, is discolored, bubbles, or has mold or slime growing on the top.

You can contact your local extension office for proper disposal instructions. So tonight we'll be working from the publication called "Pickling Vegetables." This is PNW publication 355 and can be found at the website pubs.wsu.edu.

So let's go over a few items that you're going to need to be able to can pickles. You'll need a water bath canner or a stockpot with a rack, a jar lifter, measuring cups, measuring spoons, quart jars with lids and rings, a bubble freer or plastic spatula and ruler, cutting boards, and knives. You also want to have 4 pounds of pickling cucumbers, 3 cups of water, 3 cups of vinegar, some pickling salt, garlic cloves, either fresh dill or dill seed, peppercorns. And you can add hot red pepper flakes as an optional item if you wish.

So let's get started with canning pickles. So the first thing we want to do when we're going to be canning pickles is we want to make sure that we have washed our jars with hot soapy water, and our lids. And right now, we have jars in the canner, but we have the lids and rings over here.

The lids oftentimes now do not need to be boiled prior to canning. They just need to be washed with hot soapy water. And you need to check the box of your lids to determine how they need to be processed, but prior to canning.

So what we're going to do next is Heidi is going to make the brine for our pickles. So if you want to go ahead and add the 3 cups of water--

HEIDI HOLUBETZ: Sure. So I'm adding 3 cups of water to a stock pot, and we're going to heat that with 3 cups vinegar and a quarter cup of pickling salt. So there's the water. There's the vinegar.

And we pre-measured a quarter cup of pickling salt made specifically for pickling. You want to make sure you use pickling salt, not just any salt. And heat that to boiling so we're prepared to hot fill our jars.

STEPHANIE SMITH: OK, so while we're waiting for that to heat up, I'm just going to go over here and finish preparing our cucumbers. I've already sliced a lot of them, but I have a few more that still need to be sliced. So what you need to do is cut off about 1/16 of an inch of the bottom of the cucumber of the blossom end of the cucumber, so the part opposite of the stem. And this is because the blossom end has enzymes which could cause the cucumber to become soft and deteriorate.

So the next thing we're going to do is we want to cut each of our cucumbers in half. And a couple of these are a little large. This one's kind of large. So it's at the end of the growing season. So I'm going to go ahead and quarter this one. And then we'll just cut the rest of these down, and they'll be ready to go.

So you want to make sure that when you get cucumbers that you use pickling cucumbers. You definitely don't want to use cucumbers that have wax on them because that can affect the penetration of the brine into the cucumber. And so you want to make sure that you use waxless cucumbers.

And then Heidi had already mentioned as far as the canning salt goes for pickling, you want to make sure that you use canning salt. Other salts can cause impurities in the product that can lead to weird taste in the pickles and also cloudiness, which can make it hard to tell if your dark pickles are having issues with spoilage or any other problems. So always make sure you're using the canning salt.

And then the one other thing that I wanted to cover, Heidi was using vinegar. It needs to be 5% acidity. And that's for safety because we know that if you add vinegar that is at least 5% acidity that it's going to acidify the cucumbers enough to make them safe.

So cucumbers have a pH greater than 4.6. And so we need that 5% acidity to bring the pH down below 4.6 to make a safe canned product. And if you're wondering how to find that, it often just says here on the bottom of the bottle in small letters that it's 5% acidity. So you can just check the label on that.

OK, so right now, we have our jars that are-- we've washed them and put them in this canner. We've heated them up. And so we want to make sure the jars are hot before we start filling them up. So we're going to go ahead and take one out at a time and just empty out the water that's in them, as Heidi's doing.

OK, and we'll just set them either on a cloth or on the cutting board. And we can start adding pickles to the jars. So we washed our hands thoroughly with soap and water for at least 20 seconds before we handled any food for safety. So we're just going to start adding these cucumbers in to the jar.

So when you're packing these in, you want to pack them in firmly because you don't want them to float up during processing. But you do want to-- you don't want to pack them in too tight so that the heat can't penetrate into the center of the jar. So you can play around with some sizes here and see what's going to work best for getting those packed in well.

And you also want to leave enough head space. So we need at least a half an inch at the top of the jar. So you don't want to fill the pickles up past that at all. So we'll just shove these in.

So what we'll do next is we're going to add 2 teaspoons of dill seed. So you can use either dill heads or dill seed. One dill head is equivalent to 1 teaspoon of dill seed. So we've chosen to use the seed tonight instead. So I'll just add 2 teaspoons of the dill seed.

And over here, we have some sliced-up garlic. So the cloves have been sliced in half. So we want to add four halves of garlic. And then we're going to add four peppercorns.

So we'll come over here and we're still waiting for this to come up to a boil. So sometimes it takes a minute or two. So we want to try to keep the jars as hot as possible. So I'll go ahead and start filling this second jar, though, in the meantime.

So if you put the jar on the side, oftentimes it's a lot easier to try to get these stacked in here. OK, so this one's getting pretty full. Maybe one smaller slice in here-- OK, so again, 2 teaspoons of dill, four garlic cloves halves, and four peppercorns.

OK, so I can see that's starting to steam up some. So as you can see here, we have a couple different canners. So I'll go over that for just a minute while we're waiting for the brine to heat up.

So this canner here is an electric canner, and it's nice because you can plug it in. It doesn't take up your stove top. And then it has a spout on here, which makes it easy to be able to drain it when you're done using it.

And then we have a standard water bath type canner here. And I can show you more of this canner in just a moment. One of the things that's nice about it is it has-- both of these have glass lids. So you can tell when the water's boiling and make sure that the water stays boiling during the entire process.

But you can use just a standard stock pot. You just need to have some sort of tray underneath. Actually, I can show you on this one. So it has a rack in here that holds the jars, and this is going to allow water to circulate around and heat the jars evenly and just circulate under the bottom

side of the jars. And so even if you use a stockpot, that's fine. You can often buy just these racks at a local hardware store.

The other important thing about the canners is you want to make sure that they're tall enough that they'll hold your jars in there and then have enough water to cover one to two inches over the lid. So that's important to know. So you need to make sure that it is big enough to hold enough water to cover the lids of the canning jars.

OK, so let's take a look at our brine here. So it's almost coming up to a boil. So while we're waiting for this to come up-- it's almost there-- I'll talk a little bit about canning in general.

A lot of people want to know why people can't can whatever they find in the store or their favorite salsas or any other thing that they like to make at home. And the reason why is is I mentioned the canning process is really dependent on the pH of the product and what the product's made out of and how long it's going to take for the heat to penetrate into the center of that jar during the processing time.

And so the only way for us to know that for sure, to know for sure how long it's going to take to process it, is to do an evaluation of the product. So basically when we have businesses that are trying to bring a product to market, they'll send it to the process authority. We have one here at WSU. My colleague's a process authority. So he does the testing on the product and determines how long that product needs to be processed to make sure that it results in a safe product.

So there's a lot of steps that you have to go through, and a lot of research needs to be done to be able to bring a product to market that we just can't always do for those people that want to make their favorite product at home. So that's why you always want to follow recipes that have been well-researched because we know that those are safe and will result in a safely canned product. OK--

HEIDI HOLUBETZ: I think we're ready.

STEPHANIE SMITH: So yeah, so our product's coming up to a boil here. So what we're going to do is Heidi's put a funnel on here.

And we're going to go ahead and add the brine now to the product. And a funnel just makes it a lot easier to try to get that hot brine in there without spilling it everywhere. So maybe just a little more, and that will be good for now. And then we can top it off.

HEIDI HOLUBETZ: Sure.

STEPHANIE SMITH: OK. So I had mentioned that we have a bubble freer, that you need a bubble freer. Or you can use a plastic spatula and a ruler. So this is a bubble freer.

And you can use the one end of it to release bubbles that might be trapped inside after you've added the brine. So we're just going to use this end to push in here and just kind of push around and let some of these bubbles that might be trapped in the bottom of the jar escape.

So we don't want trapped air in there because it can affect the sealing of the lid and also cause the brine to boil over, which would then leave the pickle exposed. And we need the cucumber to be well into that brine. So sometimes they pop up as you're trying to free the bubbles. So you just want to push them back into place.

OK, so you want to make sure that if you do use a plastic spatula that it's plastic and not metal because it can scratch the jars, which can then lead to breakage when you stick them in the water bath canner. So we're just going to push these down.

On the other end of this is a measuring device. And so when you're doing pickles, you need to have enough head space so that the air can escape. You want the air to be able to escape from the jar, but you don't want too much because you need to have the cucumbers down into that brine.

So the nice thing about the bubble freer is that this one does have graduations on it. So you can just stick it in. The second graduation here is for 1/2 inch. And we see we're a little bit short on the brine. So if you want to add just a little more brine--

HEIDI HOLUBETZ: Sure.

STEPHANIE SMITH: Let me get the pickle freer out of your way.

HEIDI HOLUBETZ: Good?

STEPHANIE SMITH: That looks pretty good. It's right about half inch, OK. So now what we're going to do is we're going to stick a lid on. So this is one of our clean lids. We've already inspected the lids to make sure that they're not damaged in any way, that the orange sealing compound is fine.

So we're going to stick this on. And actually before I do that, I need to wipe with a damping cloth. So we just want to wipe that edge. So we want to make sure that we can get a good seal. So you always want to wipe that. And then we're going to stick this on.

And then here's your ring. So you just want to put the ring on finger-tight. So we're using two-part lids here. And those are the preferred lids, and I can talk more about those in a minute. But right now, we want to get this back into the water baths.

So I'll go ahead and-- let me see. We'll stick this in here. And we can actually maybe get another jar of pickles. Well, here, I'll finish this one. We'll leave these jars so they'll stay hot.

And let's finish up. This one's ready to go. So we'll just check the head space on this one.

HEIDI HOLUBETZ: And before we started, we got another recipe ready to go and started the processing time. So it's been 20 minutes, and they're ready to come out. So I'll show you what they look like now that they've been processed for 20 minutes.

So the water was shut off, and they sat for 5 after the 20-minute process time. And now they're coming out. And you want to leave them undisturbed and not touch the lids so that they properly seal.

STEPHANIE SMITH: Great, OK. I got those done.

HEIDI HOLUBETZ: Are we ready to go?

STEPHANIE SMITH: If you want to put that in--

HEIDI HOLUBETZ: Sure.

STEPHANIE SMITH: And then we'll pull out another jar. And we can get those packed. I'll move these over to the cloth. So I'll just move them very gently over and let those sit.

OK, great. So we'll go ahead and just pack one more. That way, our pickles don't go to waste. It's best if you have cucumbers that are evenly sized, but that's not always possible. So sometimes you've got to cut them up maybe a little more, cut some up more than others. But I'll just shove these in here.

Let me see. And the jar's pretty hot, so you don't want to burn yourself. So our 2 teaspoons-- OK, so we'll bring this over and fill that one up. And let me tip that for you. That's good for now.

We'll get those bubbles out. Make sure those cucumbers are down in the brine. And again, wipe the lid so that we get a good seal on it. Recheck the headspace. And we're going to need just a little more brine.

OK. Whoops, and I'll just wipe it again. OK, we got two lids stuck. OK, so we'll go ahead and put this one in. And then we can pull that last jar out, and we'll just let it sit. We can just let it sit somewhere.

Sometimes-- the handles are nice to have, but sometimes the jars fall over inside and it's hard to get them out. Put this on. So we want to put the lid on. And it needs to come up to a boil and process for 20 minutes.

So we're going to go ahead and start our timer, but we're not going to hit Start yet until this canner comes up to boil. So you want to make sure it's at a good rolling boil, not too hard of a

boil, but you want to make sure that there's large bubbles coming up and circulating around the canner.

And so as we wait for this one to come up-- let's turn it up a little bit. And so once it does start getting boiling, then we can go ahead and start our timer. And we'll process for 20 minutes.

So we're here in Pullman. The elevation's about 2,400 feet. So we need to add 5 minutes to the processing time. If you're, for instance, in Seattle, then you might only need to process for 15 minutes. So make sure you follow the directions in the publication for canning pickles to make sure that you correct for your elevation.

OK, so as Heidi showed you already, these pickles we put in the canner a little earlier and they're ready to go. And I know they're supposed to sit undisturbed. But let's see if we can very carefully move-- we'll just carefully move them over.

So when you bring these-- so you definitely don't want to tip them or anything. Just keep them upright and move them very carefully. The lids haven't quite sealed on these yet. And we'll talk more about that in just a minute. Let me get some of these out of the way.

OK, so these pickles were canned yesterday. They sat undisturbed. And so we're ready to deal with them. And so one of the first things you want to do is check the lid and make sure when you push on it that it doesn't make any sounds, that it doesn't pop back on you at all.

This one has a little bit of tag or something on it, but-- actually, Heidi, do you want to grab a jar real quick over, one of the canning jars?

HEIDI HOLUBETZ: Yeah.

STEPHANIE SMITH: And then-- so you just want to make sure you check those seals. Make sure that there's nothing that's leaking out of the jar and that they look good. If you push on the seal, this one doesn't make any noise. But I don't know if you guys can pick this one up. But when you push, it kind of makes that click-click noise. That means that the lid hasn't sealed.

And so if something happens-- you have a jar that doesn't have a sealed lid on it-- you have a choice. You can either put it in your refrigerator and use the product-- with pickles, you can probably leave it in there for several weeks. It should be fine.

Or you need to reprocess it. So when we talk about reprocessing, that means you have to restart over with clean jars. You have to heat them up again. You're going to have to heat up the brine again and repack everything into clean jars. And then you're going to have to put new lids on there. So probably the best thing to do would be to just put them in the refrigerator if they don't seal.

OK, so the next thing you want to do is to remove the lids-- or the rings, not the lids. So we're using these two-part lids, and these are the preferred lids to use. There's a lot of other kinds on the market, but the two-piece are better because you can get a view into the pickles and see if for some reason something started growing in there because it wasn't processed properly. You might have mold or slime if it wasn't processed properly.

Also, these will give. If you do start getting some bacterial growth that produces a gas in it, it'll pop that lid up. So you always want to check these lids too before you open up a canned food product and just make sure that that lid is still down.

So you just take these out. Make sure it's clean. And then what you should do is on the lid, you want to write down what the product is and when it was canned. It is best to use the product within one year after you've canned it. That's not for safety, but that is a quality issue. So your product will have best quality if it's used within a year.

Also, for pickles, it's good to let them sit about four to five weeks on the shelf before you eat them for the best flavor. So we'll want to label these and then store them in a cool, dark place so that they don't have changes due to light or too much heat. OK, so these ones are ready to go once we label them.

And some other things I wanted to cover again, just as a reminder, is that you want to make sure that the lid is down when you go to use them. You also want to make sure that the lid doesn't-- liquid doesn't spurt out when you do open up the jar because that's a sign that there might be spoilage.

You want to make sure that there's nothing growing on top of the food, that you don't see any fungi or slime, and that there isn't any odd odors. And also remember that just because the lid is sealed, that doesn't mean it was canned properly. So again, you want to make sure that you only eat food that was canned properly using researched methods. Excuse me.

OK, so we've covered spoilage. And I don't know. You guys probably couldn't hear it. But one of the lids just sealed. You hear a little "pink" when the lid seals down on the jar. So basically, the air's evacuated, and it just pulls a vacuum down on that lid and seals.

So we're going to let these just sit overnight. And so that's how you can pickles. And does anybody have any questions or--

KAITLIN HENNESSY: So our first question asks, "could you use the same bunch of spices to pickle other vegetables, like green beans?"

STEPHANIE SMITH: So there is a lot of overlap with pickling green beans and also pickling the cucumber. So again, you want to make sure that you follow researched and approved recipes, which you can get either from the National Center for Home Food Preservation or from the

WSU extension publications. And they'll tell you exactly how much spice to use and other products to use for pickling green beans. But there are recipes for that available.

KAITLIN HENNESSY: Our next question asks, "why do people store homemade canned goods upside-down, and does that actually make them preserve longer?"

STEPHANIE SMITH: No. And actually, I haven't seen that. And they should not be stored upside-down. That might come from an old process. So we don't recommend that you store them upside-down. They should be stored upright on the shelf.

KAITLIN HENNESSY: Our next question asks, "what causes exploding homemade canned goods? A neighbor gave us some canned beets and exploded all over the pantry one night."

STEPHANIE SMITH: OK, so that's a great question. So what often happens is that you have either spoilage microorganisms or other microorganisms that are inside the jar. So your foods out in nature-- and even though you wash it, you don't get all the microorganisms out. They're in the air. They're on surfaces no matter how clean you're trying to be.

The one organism we're concerned with most is Clostridium botulinum because it produces the botulinum toxin and gives you botulism. So any of these organisms-- or not any of them, but a lot of them will produce a gas. So what happens is they start basically eating the food, and they end up producing carbon dioxide as a byproduct. And so that can cause the product to-- a lot of gas just builds up inside the jar. And then that can cause the lid to pop and cause the food and liquids to come out.

So that's definitely signs of improperly canned food. And at that point, it would be good to contact the extension office. Or we have publication on our website too that tells you how to safely dispose of that food because there is a concern if there is botulism toxin that's been produced by an organism in the jar that it can make you sick. Even a slight little bit can cause paralysis and severe lifelong symptoms or death.

OK, so I guess that's the end of our questions. So we do have one more slide for you. And we just want to give you some resources where you can go for more information.

We have our website. And then also, your local county extension office is available. You can call them and ask them for information on canning safely. And if they don't have somebody at that office that can help you, they can give you references and information on where you can go to get more information.

We have our website and also our Twitter and Facebook pages that you can visit where we update with all sorts of food safety information.