

Live Tour of Ferdinand's Ice Cream Shoppe

[MUSIC PLAYING]

REBECCA STULL: All right, welcome. Welcome to our tour of Ferdinand's. I'm Rebecca with Global Connections.

I'm really glad that you're here joining us this morning. We joked about promoting this event as coffee and cheese because it's early in the morning. And the reason for that is because 9:30 is when some of the most exciting cheese making happens. So we wanted to make sure to show that to you guys.

This is Nial Yager. He is with Ferdinand's WSU Creamery. He is the professional cheese maker here, certified professional cheese maker.

NIAL YAGER: Certified professional cheese maker, yeah.

REBECCA STULL: That's right. And so we're really lucky to have his expertise to demonstrate and talk to you today. He's going to be giving us a live tour of the floor.

And while he's out on the floor, he won't be able to hear or see what you guys are typing in the chat box. But after he comes back up, we'll be able to take your questions and address any little curiosity that you have and get all of that addressed. So--

NIAL YAGER: Hi, my name's Nial Yager. I've already been introduced. But I'm going to be giving you a tour of the creamery. And of course, I'm going to start with stuff that you can't even see behind me.

So we've actually been here for quite a few hours today. Our day started this morning at about 4:30. When one of the student employees came here, they got in the truck. And they drove out to the farm. And they picked up milk.

So each day we pick up about 13,000 pounds of milk. We load it into the truck. And then we drive back here to the creamery.

So the truck is back behind me right now. Once they get here, the first thing they're going to do is they're going to test the milk for antibiotics. When they do that, they're going to take a sample of milk off the top the truck.

They take the sample. They're going to pour it into a test kit. It's going to wick across the test kit. Once the sample spots turn color, they snap it. And then they wait five minutes.

After five minutes, they're going to look at the dots and see whether or not there's any antibiotics in the milk. If there's antibiotics in the milk, we have to reject the milk. And we can't use it.

OK, so after we test the milk, depending on what day of the week it is, if it's Saturday, we don't make cheese on Saturday. So they'll just take the milk, unload it off the truck, into the two holding tanks that are sitting here on the side of the building.

And if it's not Saturday, every other day of the week-- Sunday we don't do anything. We just plain skip Sunday. On Monday we come in. And on Monday, we make two batches of cheese.

So first thing in the morning on Monday at 5:00 AM, they'll start pasteurizing the milk. So pasteurizing is a way to process the milk to make sure it's safe and wholesome. When we do that, we heat treat it. We cook it to make sure it's safe.

So a couple ways to pasteurize milk. One way is vat pasteurizing. We have the ice cream vats here.

And when you vat pasteurize, you put the whole volume of milk in the vat. You heat it up to 145 degrees. You hold it for 30 minutes.

So we vat pasteurize all of our ice cream mix. And after I'm done talking about the cheese making, we're going to go back and talk about ice cream a little bit. OK, the other way to pasteurize is called high temperature short time.

This machine here on this side is our high temperature short time. High temperature short time is a continuous process. Instead of putting all the milk into it and heating it up for a long time, high temperature short time is a short process. The milk runs into the balance tank.

Then it runs through the timing pump. It pushes it through at a continuous rate. It heats the milk up to at least 161 degrees Fahrenheit. Then it runs through the holding tubes.

It takes at least 15 seconds to run the length of the holding tubes. At the top of the holding tubes, we check the temperature. If it's hot enough, we know the milk has been pasteurized.

For at least 161 degrees Fahrenheit, for at least 15 seconds, it's pasteurized and safe to use. If it's not hot enough, the valves automatically closed, diverts the milk back to the balance tank. And it just keeps recirculating until it gets hot enough. OK, we've been here at this plant for about 25 years now.

Before this plant, we were in Troy Hall in the middle of campus. And Troy Hall was a little bit more simple. Whenever we wash things, everything was put together in pipes. So at the end of the day, we had to take our pipes apart, wash it in the wash tanks, everything was done by

hand. When we moved to this building, one of the things that we were after was a process that matched what was happening in industry.

So we build our plant here to match industry standards. One of the things that we have is a cleaning system. So whenever we want to clean a tank. we have a computer that we hook the pipes up. And we can automatically clean whatever tank or whatever line or whatever system we want it to clean.

So we hook up the panel. By where the sensors are, the computer knows which things we're going to wash. We go to the computer. We tell it which things we want to wash. Then it automatically washes for us.

So when our students graduate from college and go out in the world, they find that the systems they find everywhere else in the industry are the same systems as they're seeing here. The only difference is they're a lot bigger. Here, we have two inch lines.

When they go out in the world, they're going to find things that are big 4 inch lines. And they're always calling us back and saying, oh my goodness, it's not the same. But it's so big.

OK, so after the milk has been pasteurized here in the pasteurizer, it's safe. From there, the milk goes into the cheese vat. It takes us about 50 minutes to pasteurize a full batch of cheese or batch of cheese milk.

So as the milk's coming in, once we pasteurize it, we've killed all the pathogens. And we also knock out a lot of other organisms, too. So the first thing that we do with the cheese milk is we're going to put our own starter bacteria back into it. And then the starter bacteria can grow the entire time the milk is filling in the vat.

Once all the milk is in here, we're going to rennet it, rennet it to the enzyme that's going to make the milk coagulate. Rennet is going to work on the proteins. It cleaves the proteins in a specific point.

And once the proteins are cleaved, the casings will start binding together. As the proteins bind together, they're going to form a matrix around the fat cells. And that is going to give us a coagulated big giant mass of cheese here in the cheese vat.

So after we put the rennet in, we let it sit for about 20 minutes. After 20 minutes of sitting, it's going to be set in there. It's going to be a consistency, somewhere between jello and yogurt. So after it's set up, then we're going to cut it.

Then when we cut it, there's a set of blades inside of there. When they turn one direction, it just stirs the mass. When it turns the other direction, there's a sharp edge on it that if you could get a camera and we can see, but there's no camera down here, so you can't see it. But when it cuts it, it's going to cut it up into curd.

The blades are about that far apart. So we want blade or curd that's about a quarter of an inch. So we're just going to cut for about 10 minutes until we get down to the size that we want, OK.

So we have about two minutes now until we're going to be ready to pump out under the table. So after we cut it, the next thing we want is we want to push as much liquid as we can out of the curd. So to do that, we're going to raise the temperature from the 88 degrees that it starts at to about 102 degrees. And that's going to push liquid out of the curd.

And we do that for about half an hour. After we've cut it and pushed the liquid out for half an hour with cooking, we're just going to stir for about 45 minutes to push more curd out or more liquid out and to give it time for some acidity to develop. That's what we're waiting for right now. We've got 80 seconds. And then it's going to be ready to pump out onto the table.

So when it pumps out on to the table here, there's going to be the curd portion and the liquid portion. The liquid portion, the way we don't use that. So it's going to go through a pump through the pipe system and just get pumped out into the truck. And we're going to be left with just curd on the table here.

So the curd-- we're going to break up into piles. We'll have a pile of curd on either side of the table. After we do that, we'll take some knives and cut it up into loaves. And then every 15 minutes, we're going to turn and stack the loaves.

So the loaves weigh probably 20 to 30 pounds. So individually, they're not really heavy. But the students get a good workout for 2 and 1/2 hours flipping and stacking loaves of cheese.

So why the cheese is here on the table? We're flipping and stacking it. That process is called cheddaring.

So there's three things going on during cheddaring. First, the moisture is running out to get to the right moisture level. Second, the stacking process is stretching the curd. That stretching is going to give us the texture that we want.

And the third thing that's happening, [? starta ?] bacteria keep right on growing. They're going to be taking the milk sugar, the lactose, and as a byproduct, they're producing lactic acid. We're looking for a certain amount of lactic acid.

So every 15 minutes, they're going to be testing the acidity of the whey coming off. They run a simple titration test to test that. So they just started pumping out now.

The curd's coming on to the table. The liquid portion is going to get pumped off. So the first few minutes, we're just going to fill the table up to make sure that we have enough liquid on the table before we turn the pump on.

OK, so after we've taken the loaves of cheese and flipped them and cheddared them, once we get to the right titratable acidity, then we're ready to move on to the next part of the process. So at that point, the cheese is going to be in big loaves. And we're going to add salt to it to slow down the starter bacteria.

And at that point, if we just put the salt on and we take a long time, like half a day for the salt to absorb all the way into the body of the cheese. So we're going to cut it up into 1 inch cubes so the salt will absorb faster.

And to do that, we have a million machines that's pushed up against the wall so you can't see it. But the milling machine they're going to roll out over here. They set on top of the vat here.

One by one, they throw the loaves of cheese into the milling machine. Then they're going to take salt. And they throw salt on.

These forkers will be back in it, stirring the 1 inch cubes of cheese, and stirring the salt all in. So they're going stir the salt in for about 20 minutes to make sure that salt is stirred in properly. After they stir the salt in, the next thing they're going to do is they're going to put it into hoops.

OK, so they'll bring these hoops over here. At that point, there'll be a set of funnels set on the top of it so the cheese can fall down into the hoops. So they'll set them over there. They'll take shovels.

They'll shovel the cheese into the hoops. The cheese will fall in. After all the hoops are filled, they'll bring them over here. And one by one, they'll weight each hoop of cheese to make sure there's enough cheese in each hoop to get exactly nine cans per hoop.

OK, after they've weighed them, they put them back on the cart. They put them under the press. The presses are going to come down and press the cheese in the hoops.

When they press the cheese for about an hour, after an hour of pressing the cheese, instead of being one inch cubes, they're going to be knitted together in a solid loaf that they can handle. At that point, they're going to wrap it in a plastic cheese cloth, put it back into the hoop, put the hoop in the press, put it in the press, turn the pressure on, and then they press it overnight.

By then, we've got a fairly big mess that we'll clean up. So the students will clean up their mess and go home for the day. Then in the morning we come in. We're going to be slicing cheese in the morning.

So about 7:00 AM, the students come in. We have students that come and go all day long, but not very many students have class at 7:00. So we have a fairly big crew the first thing in the morning when it's time to be slicing the cheese and putting it into cans.

OK, so back there in the corner is the ceiling room. You can't really see that room very well either. But at that point, we had some cheese slicers. We're going to be slicing up the cheese one by one into pieces of cheese that will fit in the cans.

Then the cans have a lip on the edge of the can. And then the lid goes on top of it. The sealer goes through and crimps that edge together and spins around and seals it, seals the cheese in the can. After we seal the cheese in the can, it goes into the cooler. It sits for three days.

After three days of [? it ?] sitting in the cooler, we're going to check the seals and make sure each can is sealed properly. After we check the seals, our cheese all gets put into baskets and into pallets and shipped out to a storage warehouse. Depending on what kind of cheese we're making, our Coug Gold and our cheddars age for a year, at least a year.

Our higher moisture viking types, they age for at least two months. So the other vikings that we make, so our high moisture viking. And we make it just a straight plain viking that's a Monterey Jack.

We also make a hot pepper cheese. In the case is of the hot pepper cheese, we put the hot peppers into the cheese vat. So it's all mixed in when it pumps out.

We make dill garlic. In the case of dill garlic, when it's in salting and it's in one inch cubes, we sprinkle the dill and the garlic and mix it in with the salt. And the same with some of our other flavors. We mix it in with the salt.

When we make smoky cheddar, we mix the liquid smoke. And the color goes into the cheese vat when it's still milk. OK, so that's a summation of the cheese making process. I'm going to talk about ice cream now for a little bit.

And then I'll come back up. And we'll be having a question and answer tour. So if you have any questions on cheese making, I'll be able to answer them then.

OK, so, ice cream. We make cheese every day of the week. Ice cream we only make once a week.

So when we make ice cream, it's a two-day process. The first day of making ice cream, we make the ice cream mix. So we've got the vats back there.

We put all the ingredients together-- the milk, the cream, the sugar, the powdered milk. We heat them up in the vat. We raise the temperature, in the case of ice cream, to 155 degrees Fahrenheit. And we hold it for 30 minutes.

After 30 minutes, it gets run through a homogenizer to break up the butter fat and get the powders in the solution. Then we cool it through a plate cooler. Then the ice cream mix comes over into these tanks.

The tanks are going to hold the mix overnight. So the mix just sits here. We add any liquid flavors-- the vanilla, coffee flavor, mint flavor, any of that kind of thing. It gets put into the ice cream vats, in the mix tanks and held overnight. That was yesterday.

So today they came in. And you can see they're freezing ice cream right now. So right now on one side, they're freezing Huckleberry. So we've got Huckleberry flavor in the tank.

There's a Huckleberry ripple that's being pumped into it. And that's injected directly into the boxes. The one next to it, they're freezing peppermint. The peppermint-- there's some flavor in the tank. And then there's some peppermint candy in the candy feeder that they're mixing into the ice cream after it's been fed into the barrel.

From there, it goes into a three gallon boxes. After the three gallon boxes, they put it into the 20 below. In there, it's going to harden. And then they'll be stored in there until it's ready to serve. So that's all I have about ice cream now. So I understand they're going to show you a video and give me a chance to come upstairs.

REILLY: If you're like me, you love ice cream anytime of the year. Hey, there I'm Reilly. Ferdinand's been producing and selling tasty ice cream since 1948.

Have you ever wondered how ice cream is made? Well, let's go visit Ferdinand's production shop and learn their recipe for greatness.

SPEAKER 1: Not only does Ferdinand's produce some of the best ice cream in the world, we also offer students a great learning experience. It's the students of WSU who produce our ice cream with lots of help from happy cows that work and play a WSU's own dairy farm.

Early in the morning, a student employee drives the milk truck to WSU's Knotts Dairy Center where dairy workers milk a herd of Holstein cows each day. They cool the milk quickly and pump it into the truck for the trip back to the WSU creamery.

Since cream is the key ingredient to our starter mix, we take a portion of the fresh milk and separate out the cream. Then we blend in some whole milk to give the mix a 12% butter fat ratio. The right ratio of butter fat to air gives the ice cream a smooth, creamy texture.

Next we add dry milk powder and sugar to the mix in a stainless steel vat. This thickens and sweetens the mix. Sugar actually makes ice crystals smaller, too. Speaking of ice crystals, adding a stabilizer to the mix will bind the water. So that you don't get those annoying crunchy ice crystals in the final product.

Now we add emulsifier. Emulsifier's keep all the ingredients blended well and suspended in the mixture. Without an emulsifier, we would be more likely to make butter instead of delicious ice cream.

REILLY: At this point, to make chocolate ice cream mix, they would add cocoa powder and chocolate wafers. The chocolate mix is used in flavors like chocolate, peanut butter, and fudge brownie. Oh, yeah.

SPEAKER 1: We heat the mix to at least 155 degrees and hold it there for 30 minutes or more. This is called pasteurization. And it kills any bad bacteria that might be there.

After pasteurization, we send the hot mix to the homogenizer. This piece of equipment forces the mix through a small opening at 2,500 pounds of pressure per square inch, breaking the milk fat into smaller pieces, making the ice cream nice and smooth. Now we have to cool the hot mix using the plate cooler.

This cooler has a series of plates running side by side, hot ice cream mixed on one side and ice cold water on the other. This will cool the mix to below 40 degrees Fahrenheit. Once the ice cream is cooled, the mix is allowed to sit for at least four hours.

This aging time makes the freezing process more efficient, allowing dry ingredients to fully hydrate and helping the emulsifier's work to make sure that every particle of the mixture is evenly blended. After aging, we add the coloring and the flavoring ingredients to the ice cream mix. Because many of these ingredients are sensitive to heat, we can only add them after the mix has cooled. Now we pump the flavored mix into the ice cream freezer.

REILLY: If you've ever made ice cream at home, then you know that that mix needs air whipped into it. Without air, the ice cream will be a solid frozen brick that would bend a spoon. Ferdinand's uses special equipment to force compressed air into the mix.

SPEAKER 1: Now the mix is fluffy, creamy, and incredibly delicious. But it's not ice cream yet. It needs to be sent through the freezing barrel where blades called dashers thoroughly stir the mix so that it freezes evenly.

Normally, one gallon of ice cream mix makes two gallons of ice cream. That means most ice cream is half air. Finally, we add the nuts, fruits, or candy pieces, which are called inclusions. These are added to the ice cream just before filling up the three gallon tubs.

We have to be careful to make sure that every scoop of ice cream contains the same amount of goodies. Students work fast to put the ice cream inside our frigid warehouse so that it doesn't melt. The warehouse is kept at minus 20 degrees Fahrenheit.

When it's ready to scoop and serve to the public, we transfer the ice cream to a slightly less cold freezer about the same temperature as a home freezer. Each year, WSU students make over 14,000 gallons of ice cream. Much of that is sold at Ferdinand's ice cream shop where you can sample 20 different flavors of delicious cones, sundaes, banana splits, shakes, and sodas.

You might even be tempted to take home a 3 gallon tub filled with your favorite flavor. So stop by Ferdinand's and try all the great dairy treats that we're making or take home a can of world famous Cougar Gold Cheese. We'd love for you to stay a while and watch the ice cream and cheese making action from our own [? Mark P. Bates ?] observatory room.

REILLY: Mmm, ice cream. Trust me, it tastes as good as it looks. So what's your favorite flavor?

[MUSIC - "WASHINGTON STATE UNIVERSITY FIGHT SONG"]

(SINGING) Fight to the end. Honor and glory you must win. So fight, fight, fight for Washington State and victory,

REBECCA STULL: Welcome back. We just had a great tour down on the floor. And now we're back up here in the observation room. And I think Nial's got a couple of things to say that--

NIAL YAGER: Yeah--

REBECCA STULL: Zoom in up close that we didn't get out there.

NIAL YAGER: Yeah, there are a lot of things that go on in the cheese making process. One thing that you couldn't see from down there on the floor as I was talking about it was this is the kit that they use for testing antibiotics every morning. So what they do is they take their milk sample.

It's a dye-binding test. So they put the dye into the sample. They pour it into the well.

It's going to wick up through here and change the-- get darker as it goes past the spots. As it hits the spots, they're going to snap it. And that's going to put the other reagent into it. And then it wicks back across the spots. So it's a dye-binding test.

So if they're antibiotics, the dye binds to the antibiotics. And then when it goes back across the spot, it's already bound to the antibiotics. So it won't stick on the spot.

So if there are antibiotics on it, the sample spot won't light up. And if there aren't antibiotics, the sample spot will light up. And so that's a little confusing.

But the truth is our students don't have to remember that at 5:00 AM. They just take these kits and stick them into the reader. And it automatically reads them for them. So every batch of cheese. We check and make sure there's no antibiotics in it.

REBECCA STULL: Yeah, that's awesome. Yeah, I am-- when I first came here, I was really impressed with how detailed yet how simple the process is. It really is. You really are making a natural cheese, which I thought was really cool because I never thought that through.

And of course, I went right out and bought a can and made it into Mac and cheese. I hear there's some Mac and cheese fans out there. So feel free to send in your questions.

Corey is going to be reading to me. And I will repeat the question in case you're not in the chat box. And we'll go ahead and kick off Q&A. So get those questions coming in. Do you have anything to start with?

SPEAKER 3: I know students work at the creamery. What program of study is best if they want to make cheese for a career?

REBECCA STULL: What program of study is best if they want to make cheese as a career? We were actually talking about this before we went live, yeah.

NIAL YAGER: Our students here, we have a lot of students that work here. I think right now there's about 30 students that work in the production area. And about a third of them are food science students.

So they come and they learn the science and everything behind the cheese making process. And when we get food science students in here, I wouldn't say we give them preferential treatment. But we make sure that the food science students learn what they can as they go through the process. But then about 2/3 of our students are just students. At first they come here, they're-- it's that paycheck thing.

REBECCA STULL: Just looking for a job, yeah.

NIAL YAGER: They're just looking for a job. And then after the time working here, they have incredible experience that they can use and they go out in the world. And a lot of food industry people will be watching the students that graduate from here even when they're not food science.

And they hire them all over. So food science is a really good major to be coming through the creamery with. But a lot of other majors get really good experience. And then there's life skills that they get.

A lot of times we get college students here. And this is their first or second job. And they haven't ever really had jobs before.

So sometimes our freshmen coming in or our new students coming in, we're training them how to work. And they're getting that work experience of learning how to wash their hands, how to follow directions, how to work together as a team, how to be on time. But then by the time that they've been here for two or three or four years, we try to-- since they're students, they come and go to class all day long.

REBECCA STULL: Pesky classes.

NIAL YAGER: And if we train somebody-- yeah, those classes. If we train somebody at one job, we know that next semester their schedule is going to be entirely different. And they're going to probably not be working at the same times. So we try to cross train all of the student employees to do as many different jobs as possible.

So when next semester comes, they will know as many jobs as we can. It makes it easier to schedule people and work with people. But with that in mind, as people are here, we train them on how to do the entire cheese making process.

So ideally, by the end of the semester, everybody's trained. The staff members get to just stand back and watch to make sure everything goes OK. But the students are doing it all. The students are pasteurizing the milk.

The students are making the cheese. They're raking it, cheddaring it, weighing it. Students make the ice cream mix. The students freeze the ice cream mix.

They assemble the freezers, all of the work at the end of the day. The cleanup. The students are doing the clean-in-place system and cleaning all of the equipment. So it's an incredible work experience that they're getting working here.

REBECCA STULL: And you mentioned there, you also have some hospitality majors as well. So some business folks, too.

NIAL YAGER: Yeah, we have a lot of business folks that come through. And there's some business skills that they can pick up, too, in addition to cheese making skills. We have hospitality people that come through. And the hospitality people, we also tend to cross-train them up front with Ferdinand. So that they can learn the customer service aspect of working here.

And we had some computer programming students that come in here. And we let them work with and look at our computer system, just a little, not a lot. One of the computer programs that we had here, he had such good supervising experience. By the time he went through here, he got hired by a large cheese corporation. And they didn't want him doing any programming work. They wanted him for his supervising skills that he learned here, even though he graduated as a computer programmer.

REBECCA STULL: Cool.

NIAL YAGER: So there's a lot of different experience here.

SPEAKER 3: Rebecca, this one's probably more for you. But is there a new online Master's in Food Science and Nutrients?

REBECCA STULL: I'm not sure about that. We'll check into that and post it in Coug Synch for you. There is? Yes.

I'm [? getting the work ?]. Yes, there is. That's pretty exciting. So check it out.

I know they're bringing programs online as fast as they can, which is pretty cool. But I know Rebecca and Dave were constantly out there in the University talking to people and trying to bring new programs online. So that's a pretty cool one. Any other questions?

SPEAKER 3: What do you do with the leftover whey?

NIAL YAGER: It used to be that we would just dump it down the drain. So we had a pipe. And it just ran down the drain.

And that was that. We didn't have to worry about it. We just opened the valve and away it went.

Then the city's sewage treatment plant realized that oh, you're putting a lot of whey down the drain. And it was against the rules of what we're doing, supposed to be doing. So we had to stop doing that.

And the whey is actually really valuable. It's about 5% lactose. So there's quite a bit of food value in it.

It's about 1% protein in the whey. So there's a lot of value. We would be awesome if we-- if somebody wants to buy us a big dryer for about a half million dollars, we could process the whey and dry it.

The problem is we only produce about \$200 worth of value in our whey every day. So it's hard to justify a half million dollar piece of equipment for \$200 of whey every day. So what's happening now is our whey gets pumped out, put into a truck, hauled two miles out of town to the farm. And it goes into a lagoon out of the farm. And then--

REBECCA STULL: [INAUDIBLE].

NIAL YAGER: Bacteria and anaerobic stuff in the lagoon at the farm that processes it for us. And then that gets pumped out onto the fields out of the farm. So it just gets used as fertilizer for watering the field.

REBECCA STULL: Now if you dried it, would that be similar to what you could buy at a health food store when you buy whey powder? Or is that a little different, or--

NIAL YAGER: There's a lot of different forms of whey powder. The just generic dried whey is the commodity way. You can just take it and just dry it. And then that generic dried whey is used as a food ingredient.

A lot of foods, when you read the ingredient label, it's going to say whey in it. And it's a high value nutrient. So it's used in a lot of foods. And then the health food stores, if you want to go with that, normally that kind of whey is fractionated.

So they run it through other equipment that like ultra filtration and reverse osmosis. And they break the whey into different components. So the health food will normally be just the protein or specific parts of the protein.

REBECCA STULL: OK, and that's why--

NIAL YAGER: And then that separates the lactose out.

REBECCA STULL: --bodybuilders use it to get the protein, the extra protein supplement. Hm, interesting. I'm hearing that you guys can't hear me. Is this a little better? OK, just let us know in the chat if you're still having problems hearing me. It might be too quiet.

SPEAKER 3: So what do you do with the milk that you have [? to deny due to antibiotics ?] ?

NIAL YAGER: If, for some reason, we have antibiotics in the milk, then it has to be disposed of. We've had that happen only once or twice in the 20 years that I've been here. But when that happens, it just goes back out to the lagoon and gets dumped into the lagoon.

REBECCA STULL: OK, so it goes out with the whey.

NIAL YAGER: Yes.

SPEAKER 3: What is your favorite type of cheese?

REBECCA STULL: I was going to ask that. I was going to ask what's your favorite type of cheese.

NIAL YAGER: I like them all. It's like asking me what's my favorite child. I get that question with ice cream a lot, too. What's my favorite ice cream?

But the truth is I really like the smoky cheddar. And the Cougar Gold is a really incredible strong cheese. Most of the time when you get an aged cheddar, you get incredible cheddar flavor. But the aging process releases a lot of flavor.

And so a lot of cheddars, in addition to the strong cheese flavor, you get other, sometimes, objectionable flavors. Some people like it. But sometimes cheddars will have a sulphery note to them or a really strong bitter note to them. And our Cougar Gold, we have all that aged cheese

flavor. But the special cultures we have in there, we'll take out the bitter notes and take out some of the sulfide. So we get more of a clean aged cheese flavor in our Cougar Gold.

REBECCA STULL: Now, do you have test-- do you do any testing after it's aged to make sure that it's--

NIAL YAGER: We do a lot of testing when we put it into the cans. We test the acidity.

REBECCA STULL: So you test the process at that point?

NIAL YAGER: We test the amount of salt that we're putting in. We test the moisture. We test the butter fat.

So we test everything at the point that it gets put into the can. And then once it's in the can, a lot of magic happens in the can. So there's a lot of difference between the cheese when it's fresh. If you go out to the front of the store and buy fresh curd, it tastes like salty dairy. And that's just-- that's all there is. It's just salt and dairy flavor.

But that same curd, if you let it age for a year, you have a lot of flavor that's developed inside of there. So you have to make sure it's perfect before we put it into the can so that after it ages for a year in the can, it's going to produce the right flavor. And then as far as the other end, we do some quality testing at the other end mostly involving cutting a sample off of each batch and tasting it to make sure it's good.

REBECCA STULL: Yeah, then you get to eat it.

NIAL YAGER: It's such a hard job. But somebody has to do it.

REBECCA STULL: Yeah, exactly. Yeah, well, I was thinking the process of winemaking. You send the bottles out in the world. And you've got to trust that--

NIAL YAGER: Yeah, there's a lot of that, too.

REBECCA STULL: --it's got what you expect it to have. Hence why you get your little taster glass.

NIAL YAGER: So I was talking to you earlier. That's actually one of the things that I've got to do as a life experience. I was invited to the American cheese-- Oh, no. Anyway, so I was invited to be a cheese taster in Wisconsin. And they're going to smite me that I can't remember the name of their organization.

But so a lot of the people that I was working with, these cheese tasters, that's what they do for a living. They work in large cheddar plants. And they taste cheese all day.

So they taste the young cheddars. And if it's perfect, they say, oh, this is going to be a good aged cheddar. And they put that back to the side to age for years or however long. And if it's not quite perfect, they say, oh, this is going to be mild. And they immediately sell it--

REBECCA STULL: As mild.

NIAL YAGER: --so that it doesn't age anymore. So that's a job that people actually do for a living is tasting cheese to determine how much to age it.

REBECCA STULL: Yeah, can you imagine tasting cheese for living? That would be pretty cool. Any more questions?

SPEAKER 3: How many students work making ice cream and cheese during the week? And is that through work study?

REBECCA STULL: So we've got a question about how many students that work here and if it's work study.

NIAL YAGER: So first thing in the morning, we have about nine students on the floor. Throughout the whole day, on our set of employees, we have about 30 students. And some of the students come in and they have work study. And we work them until their work study hours are done.

And then we keep right on working them. So we do have a lot of work study students. But also we have students that don't have any work study at all, which is actually an advantage to us because a lot of departments can only hire work study. And we're allowed and able to bring in those people that don't have work study, too.

REBECCA STULL: Yeah, yeah, that's pretty cool.

SPEAKER 3: Do you have a college degree? And what does it mean?

NIAL YAGER: No, I do not have a college degree. I have come here to WSU to be an engineer. So I took engineering. And then I didn't like all of the paperwork that seemed to be involved in engineering.

So I moved to physics. I spent a couple of year studying physics. And about when I moved here, I came to the creamery. And I needed money.

So I was one of those people that came in and said, do you do that paycheck thing? And so they hired me as a tanker driver. I came in, and at 4:00 AM I was going out to the farm, picking up milk, and bringing it back to the plant. And then during that time, I was a college student. And after four or five or six years of being here, I decided that I'd had enough. And I went in and went to just general studies, which I actually haven't quite finished. But someday--

REBECCA STULL: I think they're trying to get your job.

NIAL YAGER: So yeah, once I was here, I just kept right on as a staff member. When they moved from Troy Hall to this building, they needed one more person to be a staff member. So they promoted me to a staff member. And I've just been here since then.

I've been-- at one point, I was a cheesemaker. Another point I was the ice cream maker for while I was in charge of the process on the floor. And now they've moved me to planning what products we're going to make, making sure we have all the ingredients, and then watching quality control to make sure that everything's done right out on the floor.

REBECCA STULL: Yeah, so right now you're doing buying?

NIAL YAGER: So I do a lot of buying, too, so--

REBECCA STULL: So what does that look like? You are constantly evaluating what you have available and then ordering what you need and balancing that in-out process of your other ingredients?

NIAL YAGER: Trying to make sure that we have everything we need on hand, trying not to get too much. Like right now--

REBECCA STULL: So you have room.

NIAL YAGER: --there are way too many cans out of the annex. So they're grumpy that I ordered too many cans. And they can't store them all out there. And then trying to make sure they don't run out of any ingredients or anything that they have.

And one of the advantages we have here is the milk industry is really volatile. Prices go up and down. And you have to watch really carefully what the prices are doing.

But here at the creamery we get all of our milk from the WSU herd. It all comes out from the dairy. So for years we would sit and watch the prices. And we would sit and we would argue with the dairy-- argues the wrong word. We would discuss with the dairy what the price should be and how much we should pay them.

And then one year, we decided this is really silly. What do you guys need to cover your cost? And then we set a price. So now we're paying a straight fee for our milk every year. And then once a year we go through and determine what we need to do for us, and what we need to do for them to make sure that everybody can survive and thrive. So--

REBECCA STULL: Right, using our own milk is hugely advantageous to--

NIAL YAGER: Well, that's the other thing is--

REBECCA STULL: --everybody, right?

NIAL YAGER: There are standards if you sell milk to the co-op for what your milk has to be as far as butter fat and protein and bacteria counts and somatic cells and all those things. But since we are purchasing it from one source, we can go to that source and say, hey, there are those standards. But these are the standards that we want.

So we have them on a stricter. We want the butter fat to be in this range and the protein to be in this range. And we also want the cell counts to be in the smaller range. So we can be a lot tighter on the quality of the milk that we're getting.

And we can go out to the farm and say this isn't exactly as clean or as pretty as we'd like, can you-- so we can watch what they're doing out there.

REBECCA STULL: Yeah, what are you feeding these guys?

NIAL YAGER: So, of course, they're always clean and sanitary. But we have the opportunity to make sure of that, too.

REBECCA STULL: Cool, that was a great question.

SPEAKER 3: Where is the farthest location you have shipped in can cheese?

REBECCA STULL: Where's the farthest you've shipped?

NIAL YAGER: What would be the opposite geographical place from here? Right now we're mostly just shipping within the United States. We do ship to military addresses. So a lot of our cheese goes to Iraq and Afghanistan.

In the past, we have been shipping throughout the entire world. So our cheese is pretty much gone everywhere in the world. And then we have a short course.

Once a year, people come in for a week and learn about cheese making. And a lot of times people will come in from all over the world to learn about cheese making from us. And those people will buy cheese and carry it with them. So the Spokane Airport is used to seeing cheese go through their process. So our cheese, while we don't ship it everywhere in the world, gets carried everywhere in the world.

REBECCA STULL: Yeah, and that's a great thing to bring up the course because if you're interested in, maybe, going on to the master's degree program or just learning more, come out here for a week, take the short course and learn more.

NIAL YAGER: Yeah, and the people that come to the short course, it's three days of hands-on-- or not hands-on. But three days of learning about cheese in a classroom setting. And then one

day-- actually, we changed the course. It's two days of sitting and learning about it in a classroom setting. And then one day of hands on.

We come in here. And we make cheese in the plant. So they'll be working on the cheddaring table. We go into the pilot plant.

We make mozzarella. We make Gouda and Havarti. Some years we make cottage cheese.

And we actually make the best cottage cheese in all the world here. But we don't sell it. So no one will ever get to eat it. But--

REBECCA STULL: Unfair.

NIAL YAGER: Sorry.

REBECCA STULL: Anything else? Any other questions from our folks from the chat? And if you're watching the stream and haven't logged in the chat, feel free to do that and send in your question I'd love to see in there.

SPEAKER 3: How many cans of cheese get shipped for the Christmas season?

NIAL YAGER: A lot.

REBECCA STULL: Do you know? How many-- the question was how many cans of cheese get shipped for the Christmas season? And a lot.

NIAL YAGER: A lot. So each day, we make about 800 cans of cheese per batch. So on Monday, we make two batches. On Monday, we make 1,600.

So we continually make cheese every week. 52 weeks out of the year. With the University, 51 weeks out of the year, we make cheese. And during July, it's too hot to ship.

So some people will come to the store and buy it. Some people will ship it on ice. But for the most part, it just sits in the inventory and it builds up. So by the time it gets to be Christmas season, we have a fairly big stack of cheese out there waiting to be shipped. And about 80% of our cheese is shipped during Christmas season.

REBECCA STULL: Oh, 80%.

NIAL YAGER: Somewhere between 3/4 and 80%.

REBECCA STULL: And if they wanted to buy cheese for Christmas, it's a good idea to buy early, right, to make sure that it gets where you're going?

NIAL YAGER: Well, you want-- yeah, with mailing, you want it to be a week or so ahead of time just to make sure it's not going to get stuck in the mailing system. But the other thing is this year we're placing bets on what day it's going to run out. And I'm betting on the 12th of December.

There are some people that are betting on the 30th of November. Some people think we might squeak by all the way to Christmas before we run out. But we're pretty sure that we're going to run out of Cougar Gold this year.

REBECCA STULL: OK--

NIAL YAGER: So if you really--

REBECCA STULL: So you hear that here first.

NIAL YAGER: --really have to have it, then you're going to probably want to order it around Thanksgiving time or before.

REBECCA STULL: OK, OK, so get that cheese ordered if you want it for Christmas. Any other question?

SPEAKER 3: [INAUDIBLE].

REBECCA STULL: Sound good. OK, yeah, and I imagine that if you are ordering gifts for Christmas, Cougar Gold is a really good one to order because it's probably the most well known, I would say. I mean, when you mention Cougar Gold, people at least around in this area definitely know what you're talking about. And we have frequented the South Fork restaurant for their Cougar Gold Mac and cheese.

NIAL YAGER: Yum.

REBECCA STULL: Have you had that?

NIAL YAGER: No, I haven't. But I think they make burgers with Cougar Gold on it.

REBECCA STULL: Oh, yeah, mhm.

NIAL YAGER: Yeah.

REBECCA STULL: It's really good. And they have their kids meals with the boxed Mac and cheese. And the adult one is with the Cougar Gold. So I have to order the adult one for-- we all split it. But my daughter doesn't eat it all.

SPEAKER 3: Have you decided which flavors of ice cream you'll make [INAUDIBLE]?

REBECCA STULL: OK, so how do you decide which flavors of ice cream are you going to make?

NIAL YAGER: We have some flavors that we just always have on hand. We're going to always have chocolate. We're going to always have vanilla. We're going to always have cookie dough.

And so those flavors, deciding when we're going to make them just is going to be I go in the 20 below. Or I send somebody else in the 20 below. And we count how many boxes are and decide well, we're running low on this. So it's time to make this flavor.

So those are fairly straightforward. Some of our flavors are seasonal. The lemon we make for-- we like to have the lemon out and ready for Mother's weekend. So in the spring, we'll make lemon--

REBECCA STULL: The lemon's [? big with moms ?].

NIAL YAGER: --because we're making lemon, lemon chiffon. And then during the summer, oftentimes we'll make a lemon chiffon with a raspberry ripple. But then there are other seasonal flavors, like pumpkin. We make pumpkin to line up with Halloween and Thanksgiving.

And for the Christmas season, we make peppermint. So that's actually what they're freezing right now. Whoops, they're done. They're not freezing peppermint.

But they were freezing peppermint today. And then some of our other seasonal flavors, we just make them when it looks like it's time to make them. But as far as when--

REBECCA STULL: So what do you make around commencement? Sorry. What do you make around-- early spring like, if we've got some folks out there that are going to come out for commencement, what could they maybe [INAUDIBLE]?

NIAL YAGER: It's normally going to be a lemon chiffon by commencement. And it's still going to be [INAUDIBLE] here. And some of our other flavors, it just depends on what experiments we've done and what flavors we've came up with. And there's no-- we sit down every once in a while and have discussions about what we're going to be making. This summer we had Root Beer float as our summer seasonal flavor.

REBECCA STULL: Sounds good.

NIAL YAGER: We've had some other flavors that we've done recently. We had lavender, which I didn't--

REBECCA STULL: How did that do?

NIAL YAGER: --especially like. But some people really like it. It tasted like lavender. So and we make an assortment of different ice cream flavors. So--

REBECCA STULL: Is the mint chip a standard?

NIAL YAGER: Mint chip will always be there, unless I mess up and we run it.

REBECCA STULL: OK, all right, well, if there's no other questions, we'll give you a couple more minutes if there's anything else. And then we'll start to sign off. But we're really glad to have you with us, joining us on the stream today.

And thank you so much for giving us a tour and opening the facility for us and giving us the observation deck this morning, which is a great room. And we encourage you to order your cheese now for Christmas the next couple weeks at least because there is a bet going on, and to come swing by Ferdinand's if you're out for commencement or any of the Leadership Conference or anything like that. Come on up and get yourself some ice cream.

It is extremely creamy I have to say. I tried it, and I was shocked. And I've been eating like fat free frozen yogurt--

NIAL YAGER: Ew.

REBECCA STULL: --for the past 10 years, which is horrible. And I actually had forgotten what real ice cream tasted like. And it was outrageously creamy and kind of fluffy. It just-- it was airy. So it's really good. All right, any other questions?

SPEAKER 3: More comments about flavors. Have you ever thought about making cranberry ice cream for the holiday season?

REBECCA STULL: Oh, cranberry ice cream.

NIAL YAGER: No, but I'll--

REBECCA STULL: That sounds interesting.

NIAL YAGER: --write it in my list. I do have a list of flavors that we're thinking of. The one thing with cranberry for seasonal is the truth is in the winter, we don't make a lot of new flavors because it's a craziest thing. But when it gets really cold out, our ice cream sales plummet. So if we made a seasonal flavor--

REBECCA STULL: Well, it's true, yeah.

NIAL YAGER: --it's likely we'd make a small amount of it.

REBECCA STULL: Yeah, hm, cranberry that would be interesting.

NIAL YAGER: It'd be kind of fun.

SPEAKER 3: [INAUDIBLE].

REBECCA STULL: Yeah,

SPEAKER 3: Also they were talking about apple pie with apples from the orchard [INAUDIBLE].

REBECCA STULL: Oh, that sounds good. You can have your vanilla ice cream with apple pie. I'm picturing it.

NIAL YAGER: About 15 years ago when the new creamery manager came in, that was one of the first things he came and said, we should have a signature WSU creamery ice cream flavor. So we thought about it. And the signature flavor we came up along that lines was Apple Cup Crisp because we've got the Apple cup game.

So we've spent quite a bit of time trying to come up with a good flavor balance that came up good. And we did try real apples in that for a while. And it was really hard to come up with a texture that went well in ice cream. Once it freezes, it changes the texture.

REBECCA STULL: Right, the apples get weird probably.

NIAL YAGER: Be really careful about the inclusions we put in. Some candy that seems like oh, that would be great candy to have an ice cream. Once you get it cold, it doesn't work good. You can't make gummy bear ice cream.

REBECCA STULL: Yeah, they'd be little rocks.

NIAL YAGER: It's really hard, little rocks in there. We tried applesauce in the Apple cup for a while, which was just mostly weird. So we stopped doing that after a while, too.

REBECCA STULL: Mostly weird. All right, well, thank you so much for joining us, and have a great morning. Please come to some of our more events.

We've got a whole bunch that we're planning for spring. And that'll be posted shortly. If you have any questions, feel free to email us, Global.Connections@WSU.edu. And stay tuned to YouTube for a posting of this recorded event.

SPEAKER 3: We have on more question.

REBECCA STULL: More question, OK.

SPEAKER 3: Do you guys-- have you ever tried to make lentil ice cream for the lentil festival?

NIAL YAGER: Yes.

REBECCA STULL: I knew he was going to say yes. They've tried everything.

NIAL YAGER: Yeah, we've worked with lentils. It's really hard to come up with the balance that you would want for a lentil ice cream. Because the truth is, making ice cream, I could make sand ice cream that would taste great. And you would think, oh, this is great. If I cover sand in chocolate, you would think it was the best.

REBECCA STULL: Like if you fry it, it's better, too.

NIAL YAGER: But do you want lentil Ice cream that just has lentils in it and we're hiding the flavor, or do you want lentil ice cream that bursts and screams of lentil? So we're still working on lentil ice cream. We haven't--

REBECCA STULL: Yeah, stay tuned for the lentil ice cream. All right, all right, thanks again. And we'll see you guys soon.

[MUSIC PLAYING]