

[MUSIC PLAYING]

**INTERVIEWER:** We are in Calhoun Fields, the home of Clemson University Student Organic Farms, and I'm talking with Shawn Jadrnicek, who's the manager here. Shawn, so many people after a cold winter tell me that their greenhouse heating bills just were so bad that they just kind of gave up. Sometimes they even just cut things off and let the plants go. And you've got a lot of passive, pretty cool strategies for avoiding these high bills, um, and I'd like to talk to you about those. And I think it starts with what I thought was just a lovely little pond for wildlife. So let's go through the process, beginning right here at our feet.

**SHAWN**  
**JADRNICKEK:** Yeah. Yeah we-- we're working on some new techniques. We slope greenhouses towards the south and then that enables us to capture a little more solar energy, but it also allows us to capture the water that comes off the greenhouses. And then we channel that water into ponds, which are on the south side. And the ponds are reflecting ponds, so in the wintertime when the sun is low, you get light reflecting off the pond and into your greenhouse. And then in the summertime, when the sun is higher, you don't get the reflected light. So it's a just cheap easy way to get more light and heat into your greenhouse.

**INTERVIEWER:** And since you are interested in having beneficial insects, does this give you some, um, advantage in that aspect?

**SHAWN**  
**JADRNICKEK:** Oh yeah. Yeah, it becomes a giant mosquito trap, because you put mosquito fish in there. And then it also attracts frogs and toads--

**INTERVIEWER:** Oh!

**SHAWN**  
**JADRNICKEK:** --and then dragonflies. You get this whole plethora of beneficial insects that are attracted to the pond and beneficial organisms, like the toads and the frogs. And they disperse into our farm and help give us pest control.

**INTERVIEWER:** And then when we go inside, um, I see that on the front of the greenhouse, we've got all these big black barrels.

**SHAWN** Yeah. Yeah.

**JADRNICKEK:**

**INTERVIEWER:** Not very beautiful for a greenhouse.

**SHAWN**  
**JADRNICKEK:** But they act as thermal mass, so they absorb the heat during the daytime. And then they release the heat at night when we need it. So they make the greenhouse cooler during the daytime when we don't need the heat in there, and then warmer at night when we do need the heat.

**INTERVIEWER:** And in some of the greenhouses instead of the barrels, you have another pond on the inside.

**SHAWN**  
**JADRNICKEK:** Yep, so we have internal ponds, they're actually called shallow solar ponds, and they absorb the heat just like the barrels do and they act as thermal mass. And then they transfer that heat into the greenhouse. And then all of our greenhouses are connected to what's called the hydronic heating system, where we heat water and then we can transfer that water through tubing and through pipes to wherever we need the heat. So it's really efficient. Instead of heating the entire greenhouse, you can heat a bench or you can heat one greenhouse using one central heating system. And then the other benefit of hydronic heating systems is that you can use anything to heat the water. So we connect our hydronic heating system to compost piles that get really hot and then we extract the heat from the compost piles and then we use that to heat our water for our greenhouses.

**INTERVIEWER:** So when we hear about, um, heating mats and those kind of things to help plants get off to a good start, you've got tubes on the benches and you'll put the flats on top of those tubes. And then that water that you've-- that your hot water heater has heated up through these various strategies flows through those tubes.

**SHAWN**  
**JADRNICKEK:** Yep, it flows through the tubes. It's a closed-loop system. So it just stays within the tubes and doesn't go anywhere else, but then the heat transfers from the tubes into the soil on where the plants are growing.

**INTERVIEWER:** Sean, this is called the Student Organic Farm at Clemson University. And what are some of the ways that students are involved here?

**SHAWN**  
**JADRNICKEK:** We have-- we hire student employees, um, so they work at the farm, but we also have classes here. Creative inquiries and other classes use the farm. And then we have grad students that use it for research as well. So there's all kinds of opportunities for students to get involved.

**INTERVIEWER:** And what are some of the research projects that are going on?

**SHAWN** Uh, we have a grad student right now who's doing really important research in organic, no-till practices. Normally no-till is, uh, done with herbicides to terminate the cover crops and then he's using a roller/crimper that was developed at Rodale to terminate the cover crops. And then it's used in organic practices with no-till.

**JADRNIČEK:**

**INTERVIEWER:** Sean, I think people would probably like to be able to enjoy some of the produce that comes off the sustainable farm. Is there a way that the public can do that?

**SHAWN** Yeah, we have a CSA program which is a subscription program. And they can find out more information about that through our website, Clemson Sustainable Ag.

**JADRNIČEK:**

**INTERVIEWER:** And if people want to know more about all these activities, who can they talk to?

**SHAWN** Uh, either myself, Shawn Jadrnicek, or the head of the program, Dr. Jeff Zehnder. Uh, and they can find out his information as well through our website.

**JADRNIČEK:**

**INTERVIEWER:** All right well I've had a wonderful time visiting with you today. You have a very large, and creative mind and every time I come to see you I learn a lot. Thank you for being a part of Clemson University and Clemson Extension.

**SHAWN** Yeah, thanks for coming. [MUSIC PLAYING]

**JADRNIČEK:**