talking pests, with clemson entomologist j.c. chong

IN AN ISSUE of his "PestTalks" e-newsletter not long ago, entomologist Dr. Juang-Horng Chong wrote something that I really loved.

"I often consider ignorance the most serious pest of plants," said J.C, as he is known, who has worked at Clemson University since 2007 and is an associate professor, running its Turf and Ornamentals Entomology research and extension program.

J.C. also writes the "PestTalks" newsletter that's part of the suite of magazines and e-newsletters from Ball Publishing, geared to horticulture industry professionals. That's where I first got to know his voice.

I called J.C. to ask how he advises us to become smarter observers ahead of

when trouble is brewing in our gardens, and we got to talking about volcano mulching (don't!); about asking your county or state cooperative extension for help with a diagnosis (do! and send samples, too), and how obvious clues like what time of year we see an insect and on what plant can really help in ID. Other subjects that came up include spotted lanternfly (photo, top of page); biological control and the bigger topic of integrated pest management; whether winter chill really does reduce pest populations, and more.

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pest talks: my q&a with clemson entomologist j.c. chong

Margaret Roach: So first, I thought maybe just a little background. You know, as a longtime garden writer, I've read trade publications for a long time, and as I said in the intro, that's how I got to learn about you. But a little bit about what you do at Clemson, and including the role you play in doing the "PestTalks" newsletter.

J.C. Chong: Sure. I'm a professor at Clemson University with a research and extension appointment in Turf and Ornamental Entomology. Basically, what I do is dealing with developing pest-management programs for growers of turfgrass and ornamental plants. It could be in the garden, it could be in the sod farm, greenhouse, nursery, golf courses—just about anything.

Margaret: How long have you been doing the e-newsletter for Ball then?

J.C.: Well, we are going into our second year. That's pretty exciting.

Margaret: It's very funny. Now, you wouldn't think that something that's about the latest horrible creature [**laughter],** or disease to be known, or some new protocol–spray protocol–or something like that could be funny. But you manage to have fun with it, too, and keep it entertaining. So congratulations on that.

J.C.: Why, thank you. It's always my philosophy in some way to try... if people have to listen to me, might as well make it funny, so that people can pay attention in some way, I suppose.

Margaret: Yes. So as I said in the introduction, I love the advice—and it was a couple months ago, maybe, in one edition of the newsletter—you said, "I often

consider ignorance the most serious pest of plants." And I think it was maybe in reaction to something someone else **[Joe Boggs of Ohio State University; his photo above]** had written about volcano mulching**,** and maybe we should tell people what that is. But yes, so tell me a little about that.

J.C.: So that particular quote actually come from an issue I wrote about volcano mulching. I don't know, I'm sure you're familiar with volcano mulching. That's basically the practice of folks piling up that mulch right up to the trunk of the tree making it really thick, almost look like a volcano. That's why we call it volcano mulching.

The reason why I say that ignorance is the biggest pest in some way is that even though volcano mulching looks very nice, but it will actually lead to a lot of issues down the road. And one of the biggest issues is actually it kind of increases the humidity level right at the trunk and causes a lot of trunk decay and that kind of issues. And basically we're doing things that seem to make sense at one point, but it's not exactly beneficial to the plant at all.

Margaret: And sometimes it's really driven strictly by—and I'll use this, it's probably a derogatory term, but the sort of "mow and blow" mentality of yard maintenance, which is just make it look tidy so the homeowner feels they've gotten some service that Tuesday at 10 in the morning or whatever. Do you know what I mean? It's just "put on the mulch, clean up the edge."

J.C.: A lot of it is that, but also, you know, I think it kind of goes both ways. I think a lot of our homeowners also could use a lot of education as far as what a lawn is supposed to look like.

Margaret: Yes, totally agree. So we don't want to pile mulch up the base of the trunk of a tree so that we're creating these moist conditions and so forth. And so that was one example that you then said brought up the ignorance quote.

And another sort of wisdom I have gleaned from your newsletter: I loved that you acknowledge that even *you* sometimes need help with insect ID—that it isn't... not every potential pest or insect we see appear is known to all of us, even an expert like yourself. Right?

So how can we become less ignorant and how can we avail ourselves more, especially us as home gardeners that are the audience that we're speaking to today? You know, like what would you advise people do to sort of open up their minds to more learning?

J.C.: Right. Well there's not really whole lot of trick to it. It's really a willingness of you to learn more about what your garden is about. You know: Read up, go to the extension website, buy several gardening books, just to see what may be out there. And most of the time in the garden, the pest species that we deal with are relatively few. But once in a while there may be something surprising coming up, you know? And when it comes to those kinds of surprising cases, your local extension agent is definitely one of the good resource to help you identify any kind of pest problem that you have.

Margaret: So for instance, at Clemson is there a lab that people submit samples to or call in, or that type of services? Because in the old days it used to be more widespread that people knew about their county extension, even, you know, having a hotline and things like that. And some of those have been eliminated with budget cuts and so forth.

J.C.: Right. That's the unfortunate thing is that what was available years ago it may not be available now. But most of the states still have a plant diagnostic clinic run by the university or the extension service. **[For a state-by-state list of U.S. clinics, compiled by Purdue, click here or here.]**

Margaret: Yes.

J.C.: And those are the clinics that you can send in samples and they will be able to tell you what might be wrong with it, whether it's a disease or insects or abiotic factors or anything like that. Usually those clinics would diagnose the problem for you for a fee. Those fees are usually pretty minimal.

For example, at Clemson University we have a clinic called the Plant Problem Clinic, or Plant and Pest Diagnostic Lab. To run a sample that's usually about $10 or $20, depending on what it is. So it's pretty minimal. And the best thing about it is that not only do you get a diagnosis, you're also getting pest-management advice to deal with that particular problem yourself. And those advice, because they come from the extension service, they are research-based. They are coming from specialists that know something about those pests to give you the best advice available.

Margaret: Plus I would imagine there is a benefit in the other direction. If we, as citizens, use our extension, the extension knows when things are percolating out there in the area. Do you know what I mean? I mean if there's an uptick in reports of some past or disease occurrence, I would imagine also the extension. It's almost like citizen science.

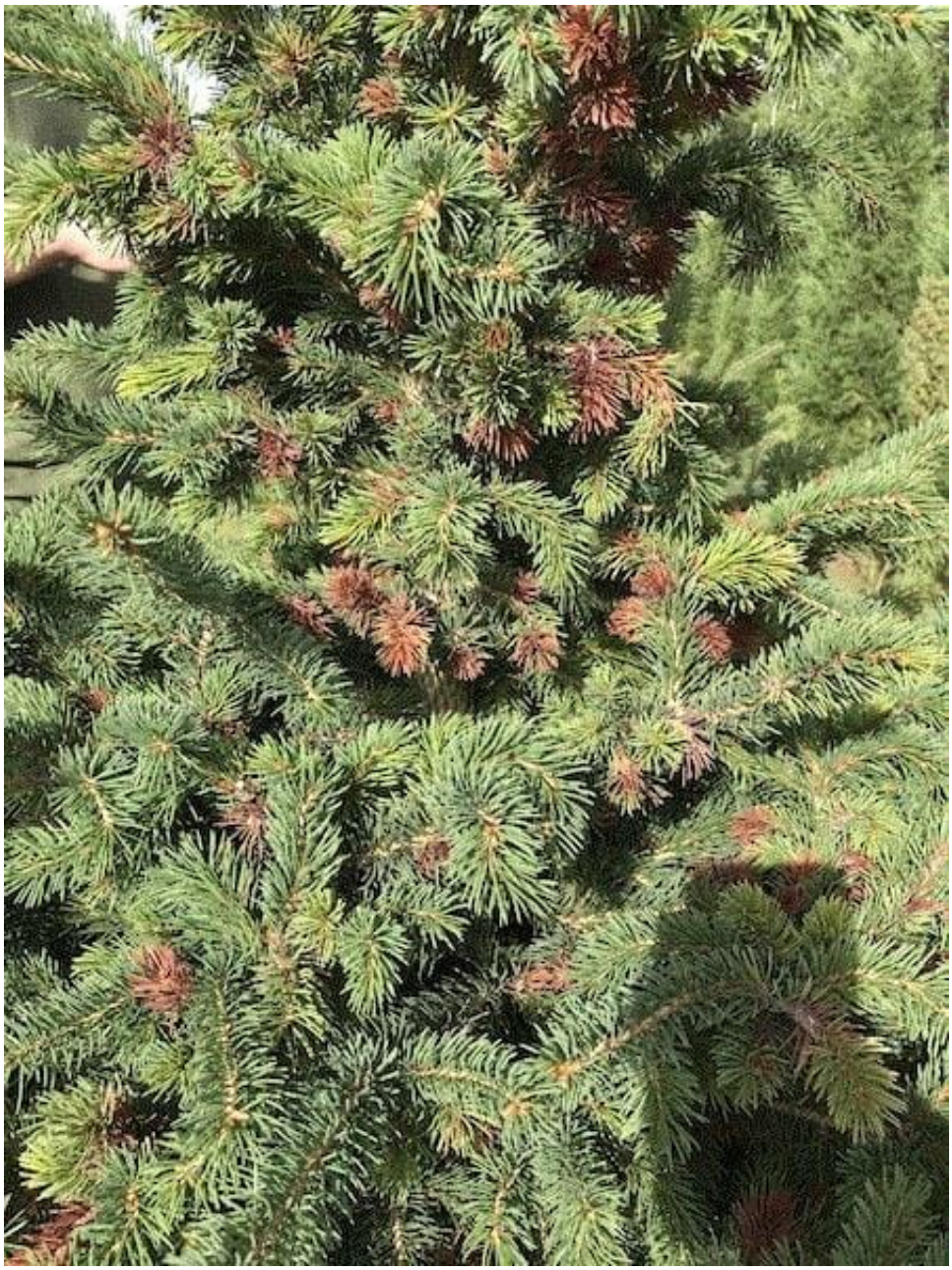
J.C.: Yes. You brought up a very good example. Actually we have a recent case of that because we have... I'm not familiar if everybody is familiar with crape myrtle bark scale. It's a scale insect that attacks crape myrtle. And you know we recently found it in South Carolina, and that particular infestation was actually alerted by a homeowner to one of our extension agents.

So a homeowner, a lot of times if you know what you're typically dealing with, that's what I'm saying, if you know what you're typically dealing with, sometimes have something surprising coming up. When that come up you know you can always call and get an extension agent to help you. And then

you know in some ways you're actually helping them detecting some of the new pests that's popping up. **[Read J.C.'s recent newsletter about the crape myrtle scale. Photo above by M. Foster.]**

Margaret: Yes. I grew up on Long Island, and early in my career I was the garden editor at "Newsday" newspaper on Long Island, and we worked closely with our county extension agents in Suffolk and Nassau counties, the plant pathologist, and I knew all these people early in my career, and I think that's why my inclination is always to send a sample or always to inquire, not to guess.

You know, if I have a conifer that has some other than normal-looking needle browning. Like O.K., if I see interior needles browning in late summer, early fall in my area on most conifers, I know they're shedding, they're doing their shedding, and different species, genera and species, have different rates of shed and so forth; those inner needles will go away. But if I see something else and I don't know, I'm not just going to go, "Oh well, maybe it's nothing." Do you know what I mean? Or make up a diagnosis. I want to know.



J.C.: Absolutely. For example, one of the pest species that we see on young conifers, sometimes is a spruce gall midge, and that created something very similar to a lot of other diseases, basically is flagging of the terminal [bud] and there's several diseases that could cause the same thing. So if you just go in thinking that, "Oh, well, it's one of those diseases, I can just spray a fungicide," then you're not solving your problem at all know, because fungicide doesn't kill insects, and vice versa. **[Above, spruce gall midge from J.C.'s newsletter; photo by Grace Owen.]**

Margaret: Right, right. Exactly. So like I said, I wanted you to encourage us, as a person who works with a university extension, to encourage us, because I think people can't believe it's O.K. to pester the university and send the sample. But I think it's a good idea.

J.C.: Oh, no. We love it when folks call up. [Laughter.] It takes a special kind of people to be one in our position, and a lot of the time we are the kind of folks that just want to help.

Margaret: Yes. So then there are also, in a more casual manner, there are online diagnostic tools, for example, not about... well, there are ones for diseases, too. But for instance, if you see an insect, you know, I love. BugGuide.net for instance. You know, I can upload a photo—and I don't want to pester them; they're all volunteers. I didn't want to pester and barrage them. I want to try to key it out myself if I can. I do my homework, but if I can't figure it, well I'll ask. You know what I mean? Or iNaturalist.org. People can at least try to avail themselves, and then do a little homework once they have a rough ID, maybe. I'm surprised at how few people do that. They're too busy piling on volcano mulch. **[Laughter.]**

J.C.: Yes. Those are actually two very good resources. In fact, as a professional entomologist even I would go to BugGuide just to see what in the world I'm looking at sometimes, just to confirm that what I'm looking at, what I think it is, is indeed what it is.

Margaret: Yes. So one example that just passed by late summer, early fall up North where I am: people will they see, I don't know how you would describe them, but like cocoons, not cocoons like webs. Well it's fall webworm **[below],** but they think it's Eastern tent caterpillar, which we don't have in the fall. We have it in the spring. It's the wrong... do you know what I mean? It's like the near-miss—people have in their mind it's all one thing and it's the wrong

approach. Do you get both of those there?

J.C.: Sure. We've got both species in South Carolina for sure in my neck of the woods. Like you say fall webworm, Eastern tent caterpillars, they just show up at different time of the year. So just by looking at time, you can usually figure it out what it might be. That's pretty true for a lot of insects species as well, which is if you match the time, and also look at what kind of host plant they're feeding on, a lot of times you can make a pretty educated guess as far as what the problem might be.

Margaret: Yes. So those are two—the timing and the host plant—are two other pieces of information to have when you go ask for that BugGuide help or whatever. Yes.

J.C.: That's right.

Margaret: Oh good point; good point. In recent years, it seems like every 5 minutes there's sort of a much feared new sort of invasive species making the headlines. And I say "new" maybe in quotes because a lot of times it turns out they've been around a long time. Like they've been in the country since the 1940s, but they haven't become a serious issue, like emerald ash borer or spotted lanternfly, whatever. So many of these. How is an entomologist... is this what people ask you about all the time now, these headline ones?

J.C.: Oh yes, they asked me about the headline ones, and sometimes it's just a common everyday one, too. But usually the headline-grabbing ones are what people are most interested in, of course.

Margaret: Are there ones that have your particular attention; ones that you're the most concerned about or kind of on your radar?

J.C.: Well a lot of times that kind of depends on what I'm working on. For at least a garden and ornamental plants in my area, we are really keeping an eye out for spotted lanternfly. While we could see up in your way, in Pennsylvania area, they could cause serious, serious issues in both production and also on just being a nuisance pest a lot of times. So that's one thing that we're looking at, and we are pretty concerned about it simply because it could easily hitchhike on a lot of vehicles coming up and down the interstate. So when they get down here it, the environment's probably favorable for them to have huge populations as well. **[Photo of spotted lanternfly adult, top of page, from Pennsylvania Department of Agriculture website alert page.]**

Margaret: Tell us a little bit background about the spotted lanternfly. It's not something I've talked about on the show before, and again it seems to be ... It's an eerily beautiful insect, so that's especially creepy when you see pictures of it. Do you know what I mean? **[Laughter.]**

J.C.: Oh yes. It's probably one of the most beautiful insects that I have known.

Spotted lanternfly is actually a kind of planthopper or treehopper. But you know, we have a lot of different species of treehoppers, but none of them are as beautiful as the spotted lanternfly. They just have that gray background with a bright red and black dots and white spot. And that's just beautiful. And it was recently discovered in Pennsylvania and slowly spreading out to the surrounding states. And the biggest problem with them, of course, is them feeding on some of the horticulture crops that we might have, particularly grapevines. So folks are quite concerned about that for sure.

Margaret: So fruit growers in particular are very alarmed by this.

J.C.: Oh, absolutely. In fact folks out in California are also keeping an eye out for this spotted lanternfly as well because once they get to California, who knows? They might become a huge pest on the wine grapes.

Margaret: Yes. Did it come from another country? I don't remember with that one.

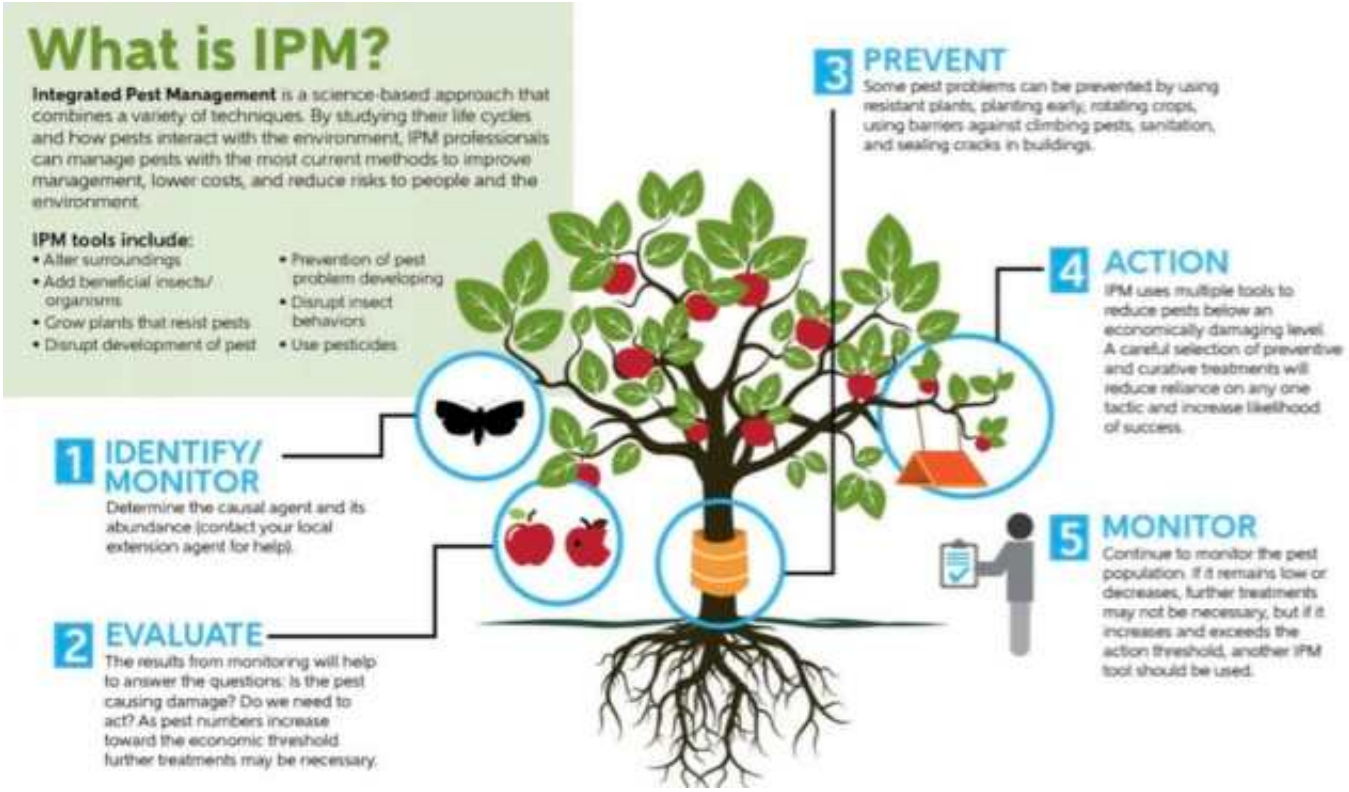
J.C.: Sure. It actually comes from East Asia, most likely China.

Margaret: Another thing we read about in the headlines is the phrase "biological controls" being researched, often against pests like the ones we've been talking about or older pests. And your research focuses on, I think, integrative management of insects and mites that are damaging to turfgrass and ornamental plants. Can you explain sort of what biological control and integrative—what these terms mean practically speaking?

J.C.: O.K., sure. In fact biological control is probably one of my specialties as well. That's what I went to graduate school to study. So biological control, in its simplest sense, is basically using one insect or one organism to control another organism. So in this case it could be one insect that's feeding on another insect. I'll give you an example: tomato hornworm. Sometimes you're

going to have those white rice-grain-looking cocoons on their body, right? That's actually biological control in action. It's basically one organism controlling another one.

Integrated pest management or integrative approach is an approach that takes not just biological control but a lot of other different control methods into one comprehensive program. For example, if I wanted to control a pest, not only am I using insecticide, I'm also thinking about using cultural control, or using biological control, and combine it all together in a comprehensive program. **[“What Is IPM?” infographic from Entomological Society of America, below.]**



Margaret: And so by doing, by using cultural control, sanitation and other cultural tactics, as well as biological control potentially, and maybe some intervention with an appropriate substance, a chemical or whatever, you would theoretically be mapping the least-toxic remedy because you're not just going and hitting it with the big spray only. You're looking to map a plan that's a smart

plan. Is that correct? Is that the goal?

J.C.: Well the goal of integrated pest management, the central goal really is, to reduce our use of insecticides. Pesticide by its nature is basically chemical warfare in some way. So some of them can be toxic to humans, to pets, or the environment. So the whole idea of using different kinds of approach is so that we are not so reliant on pesticide alone. So instead of every time we see a mosquito we spray and spray and spray, we think about another approach to try to kill them. Maybe you know, hitting them with your hand would be a cultural control I guess.

Margaret: [Laughter.] Yes.

J.C.: And perhaps letting a spider eating the mosquito would be a biological control. So if you just try to think of different ways to actually control that one pest, now you're doing integrated pest management.

Margaret: Up here, at least, winter is planning to arrive at some point. And everyone I know always says, depending on what the pest that's been prevalent in a given year, they say, "I hope we have a cold winter to freeze (fill in the blank)," the name of the worst pest of the season or at least ticks in my area, "to death." As if a certain degree of winter chill is going to have a cleansing. I think you've alluded to that, to being asked that a lot, is it going to be cold enough this winter to kill off (blank)? Is that something that you're asked about and what is the relationship between chill and pest management?

J.C.: Right. Well, I was asked that question every single year.

Margaret: Yes, me too. [**Laughter.]**

J.C.: Of course in the South we have played me plenty of mosquitoes, we have plenty of gnats. And in the spring everybody will be like, well hey the winter is

pretty cold, do you think we're going to have just as many mosquitoes? My answer has always been, "I don't know my friend. I just don't know."

Because a lot of time, insect population or disease population kind of depends on the temperature that they are facing at the time when they are developing. For the winter, a lot of times, for example, insects, a lot of insects actually have a life stage that would help them over the winter. So you know, unless the temperature drops really, really, really low, otherwise we're probably not going to see a whole lot of differences in pest population the next spring.

Margaret: So one of the pests that I'm the most afraid of at the moment is these Asian jumping worms, a couple of species of invasive worms. And they have a strategy like that. At least in our Northern climates, they annuals—the adults hatch from sort of like a little egg cases or whatever that are left from the adults of the last summer or fall. And they grow up and they're just around for the summer and then they die. So all that has to survive the cold is the little egg case, and that is very durable to cold.

So like you're saying, these animals, these different animals have strategies where like the mosquitoes and whatever, where they have a winter phase that keeps them safe. That may not be the adult that's out there flying in the freezing cold.

J.C.: Right. It could be a lot of different life stages, and a lot of times those overwintering stages are usually eggs or pupae. And in those life stages they are usually much more tolerant to environmental extremes.

Margaret: Yes, yes. And strategically so. It was all these genius moments of evolution in developing those strategies. Right? Otherwise they wouldn't have a big population the next year. **[Laughter.]**

J.C.: That's right. Well insects had millions of years to try to figure out what's

the best way to make sure they propagate. They've got plenty of practice.

Margaret: Yes. In the last minute, I just wanted to ask you, is there something right now that's really a focus? I mean I know you say it changes depending on what project, but is there anything you've been really reading up on, delving into, worried about the way I'm worried about the jumping worms? That's my main obsession. **[Laughter.]**

J.C.: Right. Well, my main obsession has always been scale insects. That's what I've been studying and that's really the Number 1 pest that we have in most of our landscapes and gardens for the most past.

Margaret: Scale?

J.C.: Right. Scale insects.

Margaret: O.K. Yes. Well I'm glad to speak to you finally, and I enjoy the newsletter, and as I said I love that you manage to give all this information to the trade as well as some laughter to make it go down easier. And thank you for making the time.

J.C.: [Laughter.] Thank you for having me.

Margaret: Yes. And thanks for telling us to send our samples to the extensions, because I think that's something... hearing it from you makes it sound a little more important, so thank you.

J.C.: Oh yes, that's definitely a good investment.

for more info about diagnostic help in your state

- University Related Plant and Pest Diagnostic Facilities and Soil Testing Services, by state (compiled by Purdue)