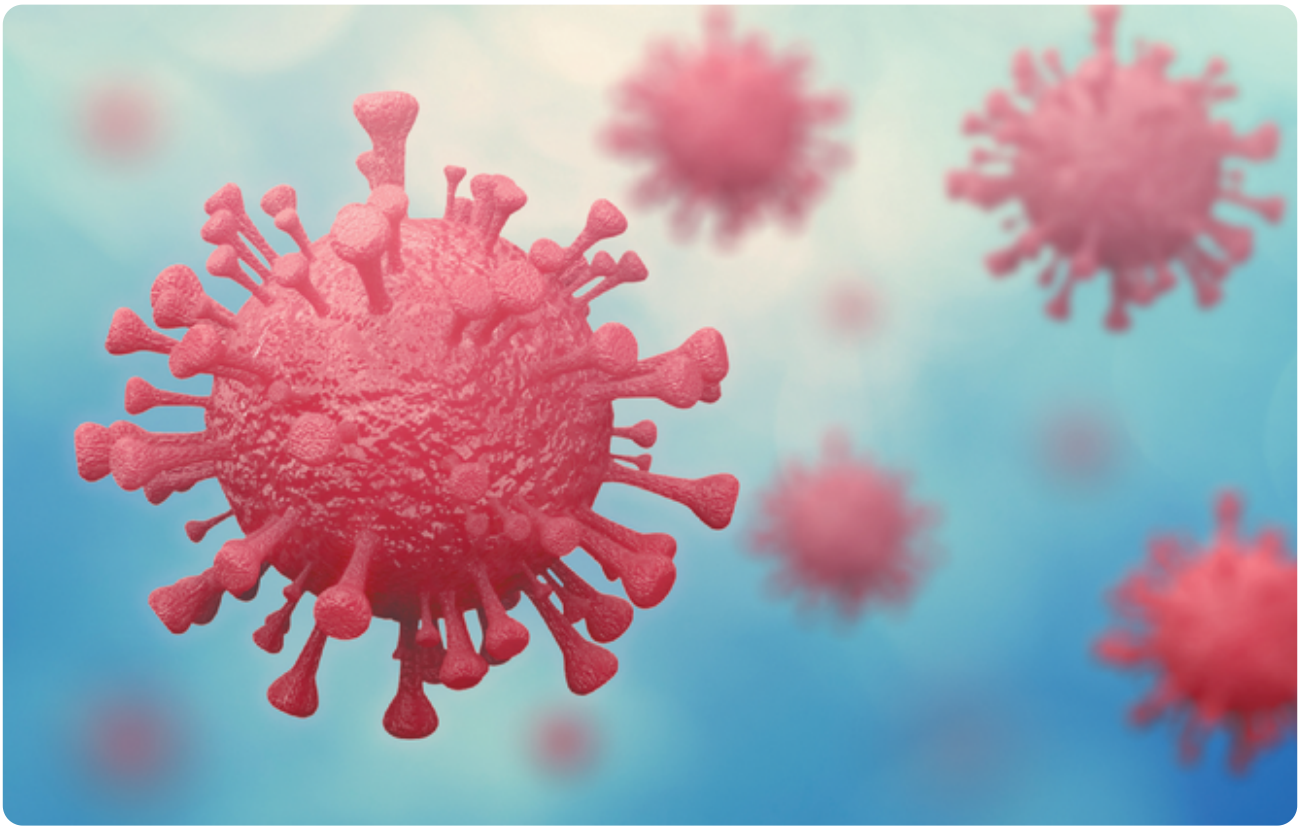
Science Societies

Research and funding in the time of COVID-19

Conversations with Gary Pierzynski of The Ohio State University and Scott Angle of USDA-NIFA

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The novel corona virus (COVID-19) has disrupted the structure of society across the globe. For researchers, faculty, and students, the cancellation of on-site classes and the shutdown of labs and field sites makes for drastic changes in the way this year's spring and summer projects can be completed. For those funded by grants, coming up with means to support students, post-docs, and faculty is a major stressor.

To address questions about research practices and funding affected by the COVID-19 pandemic, *CSA News* magazine reached out to two scientists: Dr. Gary Pierzynski and Dr. J. Scott Angle.

Pierzynski is the Associate Dean for Research and Graduate Education at The Ohio State University College of Food, Agriculture, and Environmental Sciences. He is also the ASA past president and a former SSSA president. Pierzynski provides valuable insight into the effects of the pandemic on students, faculty, and researchers at a major land grant university.

Angle is the current director of the USDA National Institute of Food and Agriculture (NIFA). A fellow of ASA and SSSA, Angle was also a long-time professor of soil science and former president and CEO of the International Fertilizer Development Center. According to the 2018 Annual Report, NIFA awarded $1.585 billion in farm bill, discretionary, and endowment funding (**https://bit.ly/2wGo3P2**). Angle describes steps researchers can take to manage disruption to their research practices and provides valuable resources regarding funding.

The following conversations have been edited for length and clarity.

Gary Pierzynski, The Ohio State University



Photo from 2010: Then graduate student Elizabeth Herndon (geosciences) collects a soil pore fluid sample from the Shale Hills Critical Zone Observatory while Danielle Andrews (crop and soils science) prepares to measure the pH of the water. Source: Flickr/Penn State.

CSA News: What is The Ohio State University doing regarding 2020 field work?

Pierzynski: When we received the stay-at-home order, we were limiting our research to critical activities, of which field work would not have qualified. What we did at that point, while staying sensitive to health issues, was to ask to conduct some research and extension activities under the agricultural exemption in the stay-at-home order. With appropriate approvals all the way from the governor's office, we were given permission to allow a very limited amount of field research to either continue or to be initiated.

In the case of field research, we're at the critical time in the year where if things are delayed too long, they won't work at all and then you'll have to go an entire year before you can do it. We have a committee of five that's looking at requests for exemptions and making recommendations to either allow them to work and start or not. I'm one of those committee members. Most of the decisions we've made so far have been to delay a decision because it's so early in the growing season. We're trying to keep the number of people out there to the bare minimum, making sure that all the safety precautions are in place, and the [personal protective equipment] is available to try and prevent the spread of the virus.

CSA News: Do you know how other land grant universities are handling this situation?

Pierzynski: In our case, we are a part of the North Central Region. We're aware of what everybody is doing. I would say that Ohio has been in the lead, in the sense that our restrictions came down sooner and were a little more stringent initially. My sense from my counterparts in the other 11 states is that most of them are almost at the point we're at: they're defining essential research.

Their definition of essential would include research that must be done for a student to graduate or if there's field work that would result in a loss of a year's data—they're going ahead and approving those projects. We're not being quite as liberal in what we're allowing to proceed. Unfortunately, we don't consider a delay of a graduate program or even the loss of a year's data as sufficient criterion for allowing things to continue.



Dr. Clemencia Rojas, left, and graduate student Catalina Rodriguez inspect Arabidopsis plants in growth media that have been genetically modified to possess a specific gene that plays a role in plant defenses. Photo by Fred Miller/University of Arkansas System Division of Agriculture.

CSA News: That's a hard decision to make—for a graduate student, a year could seem like a long time.

Pierzynski: It is, and there's a whole other side to this: how are we going to manage the graduate students? For example, when we first started being placed under restrictions, we moved so that students who were planning on graduating this semester could have their defenses virtually.

Now we have to deal with how we're going to manage delays in research. For students who

are funded on grants, they're still getting paid, which is good; but it's possible that the grant is going to end before the work is done. How are we going to handle that? We don't have all the answers yet. I'd be surprised if there were very many students who literally had to take a full year delay in graduation because of this. We'll find some other way to get their research done and their degrees completed, or substitute other research where they don't have to rely on a growing season to get data.

We haven't had those conversations yet since we're still scrambling to make up the rules for operations under the current situation. When we get that in place, we'll have to start looking back and going student by student to ensure that each student gets out with minimal delay.

CSA News: There's also post-docs and early career researchers; what kinds of things are institutions like yours doing to help them?

Pierzynski: In the case of post-docs, it is really going to be a funding issue. The grants might end before the work is done. In the case of early career faculty, at the university level, we've already granted an automatic one-year extension of the tenure clock to take that pressure off that group of individuals. Clearly that could impact their eligibility for tenure if they didn't get that extra time. By and large, between what the university has tried to do and even how the granting agencies are handling things, everybody is sympathetic to the people affected by this and doing their best to minimize the damage.



CSA News: Is there anything besides No-Cost Extensions that NIFA can do to help out with these efforts?

Photo from 2008: Crop physiologist Larry Purcell and then graduate student Xiaoyan Hu use an in-line array of sprinkler heads to provide variable irrigation to test plots in a study of drought tolerance in soybeans. Photo by Fred Miller/University of Arkansas System Division of Agriculture.

Pierzynski: Any favorable consideration for supplemental funding would help. There's a lot of ways you could do that, but the easiest way would be making additional funds available to carry people until all the work is complete. If they really wanted to be generous—and I would extend this beyond the USDA to NSF and NIH and Department of Energy, all of the funding agencies—if they could make a pool of dollars available to help with students and postdocs who are not necessarily funded by active grants at this time, that would be just wonderful.

In some of our departments, depending on the discipline, it might be only 25% of the graduate students that are funded by grants. The rest of them are on teaching assistantships or sources of funding that can't be extended or supplemented. You could argue that the benefit of that is that we want to make sure the pipeline of qualified scientists in the workforce is maintained.

CSA News: One other group that's being affected negatively by this is international graduate students and researchers. How do you think the interruption in visas is going to affect agronomy, crop science, and soil science departments?

Pierzynski: I think it's going to have a fairly significant impact. The numbers will vary from place to place, but for us, considering both graduate students and post-docs, 25 to 50% of those people are international. There are several reasons for that. One is that we can't find enough qualified people who are U.S. citizens to fill all the slots we need

to fill. If international students have more trouble getting here, we're going to struggle to get the work done, there's no doubt about that. Faculty have grants for students and post-docs, and they won't be able to find them.

Longer term, many international students and post-docs go back to their countries, and it's a capacity-building exercise. They go back, they're highly trained, and it's a benefit to the students and the research going on in those countries. There's going to be a loss there—it will take longer to be felt, but eventually, there's going to be a dip in qualified people in the countries that our international students go back to.

CSA News: Could this be an opportunity to encourage more U.S. students to get involved with agronomy, crops, and soils?

Pierzynski: Absolutely. Domestically, we're going to have high unemployment for a while. Those conditions are a bit of a boon to university enrollment at both the undergraduate and graduate level. So that could offer an incentive to have more domestic students interested in graduate school because they can't find a job elsewhere. I don't know what the net effect will be—we'll have to see.

CSA News: How do you imagine this is going to affect our country moving forward, both from a research perspective and a funding perspective?

Pierzynski: It's really going to force us to look at what we're doing and what really is focused on maintaining the food supply. We're going to increase our efforts in some places because we'll see our vulnerabilities, and we might realize that other efforts aren't needed as much. Certainly, in the short run, we need a better plan as to what activities will continue, and which will not, when we get into a crisis situation like this. We're making things up as we go along because we never even dreamed of something like this happening.

CSA News: Are there any specific ways that people in the agricultural science community can assist with the current situation?

Pierzynski: That's one of the ways we're trying to look at the activities we would continue and those we would not. The first question we ask is: is there anything we're doing that is going to directly affect the food supply this year? So, short term, most of the problems with the food supply are going to relate to the labor force, to get food processed and to the grocery store and even sold at the grocery store—it's not the food supply itself. Of course, that's very short sighted. Long term, we need to continue to develop better crop varieties, and we need to protect our natural resources.

I think about situations like this, and in various ways it really highlights the importance of what we do. It's not very often in this country we have to sit back and consider: do we really have our food supply properly secured? There is the whole chain, from farm to table, and we're a part of that bigger picture. What we do is important.

Scott Angle, USDA-NIFA

CSA News: Many of our members are no longer able to conduct research due to COVID-19. What are their options if they are unable to complete projects?

Angle: The project directors can contact the NIFA National Program Leader assigned to the project either now or during the last year of the project to discuss various options. This includes adjusting the project scope, giving a No-Cost Extension, and providing supplemental funding for completing the project. We're working through some decisions about that last option, and we're not guaranteeing that supplemental funding will be available. That's why we're encouraging project directors, particularly on multi-year projects, to keep good records and to contact us in the final year of the project's life when we'll know the most about all the options that are available. The

exception to that is our Small Business Innovation Research program recipients. If you have any members in that category, and they are unable to complete their research project, they should contact their National Program Leader today.

CSA News: Beyond extending the time grantees must finish projects (No-Cost Extension), many of our members are worried about funding as they continue to pay graduate students, research assistants, and post-docs even though they are unable to conduct research. Is NIFA able to provide supplemental research grant funding?

Angle: Honestly, from the beginning of this situation, one of our fears was that supported graduates, post-docs, and others would be left in the lurch without a source of income, leave the university, and never come back. We got some good news on that front from the White House on 17 March. The Office of Management and Budget put out a memo that allows institutions to continue charging salaries, stipends, and benefits to our active awards. That means that there is a lot of scientific talent that will retain its association with the university.

You raise the obvious question about the shortfall—will NIFA be able to supplement those awards, so they can be completed? I don't have an answer to that question today since it's a problem faced by many USDA and other extramural programs…we're going to need a unified approach.

CSA News: For researchers who cannot do field work, is there a possibility to adapt already awarded grants to current conditions, for example, by modifying a project's scope?

Angle: The question that I would immediately ask is have the research objectives changed by doing other kinds of work? If the answer is yes, modifying the scope that is

consistent with the purposes of the program you applied for could be an option. Seeking a time extension and hoping for better conditions later might be a better option.

CSA News: How should Principle Investigators approach requests for changes or extensions to their projects?

Angle: If a researcher wants to discuss the allowability of salaries, time extensions, or a change in scope, he or she should contact our Awards Management Division. We have that contact information in our Frequently Asked Questions document (see Resources section below). If he or she anticipates programmatic shortfalls, contact the National Program Leader that runs their program. The best place to find that information is on the current request for applications for that program.

CSA News: What are some of the broader changes you think that this chapter in our country's history will have on agricultural research programs moving forward, whether from a funding or research perspective, and are there any specific ways that people in the agricultural science community can assist with the current situation?

Angle: More than research, addressing the broader scientific community, it's our Cooperative Extension colleagues that always step up and shine during a crisis. This situation is no exception. As an example, the Extension Disaster Education Network recently put on a webinar, with over a thousand people registered, regarding how trusted local extension educators could work to put out messages in cooperation with the Centers of Disease control. Further, during this time, Cooperative Extension is finding new and innovative ways to deliver content to its target audiences. After this season of social distancing subsides, these new methods are going to be integrated

with more conventional tactics to yield new hybrid approaches that encourage the adoption of innovations.

Resources

- NIFA Coronavirus Resources: **https://nifa.usda.gov/coronavirus**
- NIFA Frequently Asked Questions: **https://nifa.usda.gov/resource/nifa-20-005-nifa-coronavirus-faqs**
- Extension Disaster Education Network: **https://www.extensiondisaster.net**

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