

**Filling A Growing Need for Ag Grads**  
**An Interview with John Dole**  
EP 24: Farms, Food and You Podcast

**[Music]**

**Dee Shore (00:06):**

In the United States, there are more than 59,000 job openings for college graduates in agriculture each year. And the need for them is climbing. What is North Carolina State University's College of Agriculture and Life Sciences doing to fill that need?

I'm Dee Shore, of the college we call CALS, and in this episode of Farms, Food and You, John Dole, our associate dean for academic programs, talks about agricultural careers and shares more about what our programs offer for students.

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In 2019, the U.S. Department of Agriculture and Purdue University found that the need for college graduates in agriculture would rise by about 2.6% between 2020 and 2025. But as Dr. Dole explains, there are caveats when it comes to that figure and CALS' role in addressing the gap.

**John Dole (01:08):**

One, it is a very broad category and includes jobs that are in some of our fellow colleges, such as the College of Natural Resources and even some in Engineering, for example. So it's not just the College of Ag that represents this. But nevertheless, it's been robust. Back to the time when I was an advisor in horticulture, I never was without a list of companies that were hiring. And that continued even during the recessionary years. There was never a lack of jobs that needed to be filled by agriculture and life sciences.

Having said that, I also had students who had occasionally a hard time finding a job, and it had to do with a lot of the specifics – because of their family, they may have to go back to a certain area. They might be interested in propagation, and there may not be a job for propagation in their county, so to speak. So we do see that as much as there are jobs that are going unfilled in ag and life science, there are students who have difficulties finding jobs, because of getting that match. Especially in some of our majors, the numbers of jobs are not huge, and they're thinly spread over the state.

**Dee Shore (02:27):**

Still, overall when it comes to agricultural jobs, students have a range of opportunities on farms and in companies and nonprofits in North Carolina and beyond. About 15% of these jobs are in production agriculture, and the rest are in related occupations. Dole says that if he was an ag student today, he'd be hard-pressed to choose a major from so many rewarding programs.

**John Dole (02:55):**

There's just so many cool fields. We focus a lot on farming for very good reason, because that's the mainstay of the agricultural industry. They grow the food animals. They grow the crops. Golly, that's just the beginning. There are so many other professions that are tied to farming. It's everything from technical support -- it's the plant breeding, it's the engineering, the agricultural engineering. It's the business side, the ag and resource economics side of it. It's the people side, the ag education -- training the farmers in our high schools and in community colleges. And there's just so many other professions that are tied to farming.

And then, of course, if we add the life science part -- and North Carolina's well known for its life science industry -- it's the science, the development of products that support food and agriculture, itself huge. We grow a lot of the raw product. We have a goal within the college to keep more of that product here in North Carolina and process it, all the jobs focused on that processing, the value-added part of that.

I'm leaving out tons of jobs here, but we have many careers in each of our majors and, yes, farmers are the key. But for any student thinking about food and agriculture, it's just literally hundreds of other jobs in addition to that.

**Dee Shore (04:29):**

To prepare students for these jobs, CALS offer six majors through the Agricultural Institute, a two-year program often referred to as AGI. There are also 17 undergraduate degrees and 23 graduate programs, plus minors and certificate programs. As with undergraduate programs, graduate degree programs include those related to the life sciences.

**John Dole (04:58):**

Life science is in some way, the science behind agriculture. It's biology, on the graduate side; microbiology, both on the graduate and the undergraduate side; physiology. One program in particular, microbial biotechnology, and I'll focus on that one just a little bit. It's a professional master's program. What it does is it combines the life science, the microbiology, with the business end of things. So, the students get experience in the science as well as some of the MBA-type courses. So, it brings together the science and the professional part of it.

Other broad fields -- environmental science, ecology. We have nutrition in the food science department, which is one of our life science fields. Human nutrition -- so many aspects of that. And that just really brings together the agriculture in the human side of things -- growing crops that are high in the nutrients that people need, and then going on the other side, what are the nutrients that people need? What do people need to be healthy? So, life science overlays a lot of our commodities and brings them all together in terms of the impacts. And then, of course, there's all the jobs that are associated with those majors and fields.

**Dee Shore (06:22):**

There are so many CALS programs because North Carolina agriculture is the state's number one industry, producing an array of crops and livestock. Meanwhile, the life sciences industry is expanding. Every year departments adapt their degree programs to make sure that students are well-prepared and

ready for jobs in these ever-changing industries. For example, an emerging area that's getting more attention in the college is collecting, analyzing and putting data to use in agriculture.

**John Dole (06:57):**

We collect so much data in plant breeding, trying to find the varieties that will do well in North Carolina, to data that's being used on the farm. A pass of a drone over a field generates a huge amount of data, and we have to know how to handle that and get information out of it. It's one thing to collect it. It's another thing to be able to use it to make decisions. So, we have a certificate coming out for data science to help folks analyze and, most importantly, use that data.

**Dee Shore (07:31):**

Two new certificate programs relate to regulatory science in agriculture. They're designed to help professionals in regulatory programs make decisions appropriate for both consumers and industry.

In all programs, coursework is the primary focus, but students have the opportunity to participate in other activities, from study abroad to internships.

**John Dole (07:59):**

We have to layer on top of that the professional development. And so that is where we get into some of the other aspects of an education – the leadership, teamwork, being aware of your role within a company. If you're the tech support, being aware of finance, being aware of marketing, being aware of legal and all that they do and how that impacts your job and how your job impacts them from a big company.

Now, of course, a small company, all four of those jobs could be the same person. I might be the grower, but I also might be the marketing person. So, we have to be aware of how all of those interact.

And then of course there's the more personal aspects of professional development: interviewing skills, how do you present yourself during an interview, how you interact with people on a day-to-day basis. We have leadership programs but also clubs and organizations, internships, research experiences, teaching experiences, extension experiences. There's just so many ways and opportunities for students to develop the professional skills in addition to all the knowledge they're going to gain in their coursework.

**Dee Shore (09:16):**

To make sure such opportunities are available to more students, CALS has beefed up recruitment for the two-year Agricultural Institute and launched a program to bring more students into its four-year programs. It's called Nominate a Student.

**John Dole (09:33):**

It's our process by which we reach out and hear from folks who know of young people who would make great students in our college. They let us know about these students. We contact them, we help guide

them in terms of the application process, and then we advocate for them with the university admissions office. That has been very successful in helping us identify students and helping us to bring more students in.

**Dee Shore (10:00):**

As part of its recruitment efforts, CALS welcomes rural as well as non-traditional urban and suburban students.

**John Dole (10:08):**

Without a doubt, the urban and suburban students have a place in agriculture in our college. Many of them are interested in traditional farming, and we're just thrilled to have them and have them interested in traditional farming because there are jobs in farming. And many of them are interested in that whole wide range of other jobs associated with agriculture and life sciences and food.

**Dee Shore (10:33):**

Dole says that these and other prospective students have four pathways to an agricultural and life sciences education at NC State.

**John Dole (10:44):**

The first pathway is the traditional fall freshmen that starts in the fall. The second pathway is Spring Connect, where they start in the spring, following the fall. During that fall semester, they will go to a community college traditionally, or they might go to another university and we coach them. And we work with them to make sure that all the classes they take during that time period then transfer to NC State.

A handful of students will also go on to work during that fall semester, or they will go on to do some professional development, study abroad, mission abroad, or something like that. And then they come back and start school in the spring. The third pathway is through community college. And then there's the Agricultural Institute, which is a pathway and a destination in and of itself. Most of the students that come to the Ag Institute go on to successful careers, but some continue on into the four-year undergraduate program.

**Dee Shore (11:44):**

As Dole puts it, North Carolina has robust and successful agricultural and life sciences industries, and NC State has an undeniably successful College of Agriculture and Life Sciences. The college gets strong support from partners in the state's Department of Agriculture, the Farm Bureau, and other agencies, companies and organizations. And with nearly 4,000 students, we're one of the largest and most diverse colleges of the agriculture in the country.

Opportunities in CALS are nearly boundless, as are the opportunities for our graduates.

**[MUSIC]**

**Dee Shore (12:31):**

Thanks for listening today, and we hope you'll join us again for the next episode of Farms, Food and You. To learn more about the College of Agriculture and Life Sciences and our podcast, visit [go.ncsu.edu/farms](https://go.ncsu.edu/farms). While you're there, share your thoughts. We'd love to get your ideas and to hear what topics you'd like for us to explore in the future.