Agribusiness is a fairly new term that encompasses the many types of activities and subsets of agriculture from breeding to processing. As the population continues to grow and demands more food production, innovations in agriculture are fundamental. Truly, this business system allows for large-scale production but fosters specialties such as hydroponics, aquaponics and specialized organic foods.

Agribusiness is the seventh largest industry in the region because of its steady growth. It is defined as agriculture conducted on commercial principles, especially using advanced technology. Agribusiness benefits from the region’s excellence in ample available land, technological innovation, and low electricity costs providing the necessary infrastructure for agribusiness. One may equate the agribusiness aspect with its equivalent in the grocery store industry. Typically, people are familiar with the frontline staff, grocery store produce workers. However, business would not work if the behind-the-scene workers—farmers and inspectors for example—were not leveraging their expertise.

Entering the agribusiness industry is a viable option for making a positive impact on your community especially with the multitude of opportunities in submarkets. The ancillary items alone create their own market. For example, local farmers markets are a great way to eat local fresh produce and honey. Local farmers such as Ben Wells Produce leverage farmer’s markets to sell items such as radishes, sweet potatoes, lettuce, collards, eggplant, spinach, turnips, beans, carrots, cauliflower and seasonal herbs. Ben Wells Produce offers specialized services such as delivery of produce via a ‘Bushel Basket Box.’

The Palatka Georgia-Pacific Mill in Putnam County is an excellent example of a sustainable company that benefits their region while they produce nationally renowned products, according to FloriAgriculture Magazine. This mill and its surrounding industries has an economic impact of $330 million. Without agribusiness providing trees to the mill, the mill would cease to exist. The tree farms bring 30-40 truckloads of trees to the mills each day allowing the mills to provide America with 22,000 tons of bathroom tissue and paper towels per day. This scenario highlights the background role that agribusiness plays in everyday transactions of our lives. It also demonstrates how agribusiness connects so closely to targeted industries in Northeast Florida, such as Advanced Manufacturing and Transportation & Logistics.
5 regional colleges & universities offering degree or certificate programs that aid in preparing students for careers in Agribusiness.

- Florida State College at Jacksonville
- Jacksonville University
- Keiser University
- St. Johns River State College
- University of North Florida

**TALENT PIPELINE**

**COLLEGE AGRIBUSINESS CURRICULUM**

**FSCJ**

Florida State College at Jacksonville

Urban Agriculture at FSCJ explores exciting new techniques in Hydroponics and Aquaponics, basic biology, water chemistry and food safety analysis, how to build and operate your own systems, opportunities in education and employment, collaboration (local, commercial and educational), Hydroponic and Aquaponics facilities. This field can be pursued from a degree in anything from Biomedical Engineering Technology to Human and Culinary Management. According to FSCJ.com, Professor Emily O’Neill states “Hydroponics and aquaponics is designed to grow food, plants and fish in controlled environments with the potential to alleviate food deserts and pollution.”

**Jacksonville University** has several majors, minors, and graduate level programs that further promote the agribusiness world. Whether a student’s passion is on the open water working with commercial fisheries or caring for wildlife or on rigid land creating biological machinery or operating ecotourism, a marine science degree from Jacksonville University grants future professionals the expertise needed to infer and draw accurate conclusions from an ecological standpoint, for the betterment of society. Due to Jacksonville’s location, most of this falls under a Marine Science degree.

**Keiser University** offers an Applied Engineering Associate of Science degree which prepares students for entering the workforce as entry level technicians and problem solvers with an understanding of basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, installing, calibrating, modifying and maintaining electrical, mechanical, aerospace, agricultural, transportation, and biomedical systems.

**St. Johns River State College** provides the business and engineering technology programs. These two programs directly correlate with agribusiness contributing to the continual growth of our Northeast region. SJR State offers articulation opportunities for universities having strong agricultural departments.

The Florida Small Business Development Center at the University of North Florida (FSBDC at UNF) has assisted hundreds of thousands of potential and existing business owners by providing the management advice, training and information they need to start, grow, and profit. This now includes small farmers. The FSBDC at UNF has a full-time agribusiness consultant to help small farmers grow their bottom lines. Farmers across the State of Florida were surveyed in order to ensure that the services offered by the FSBDC at UNF are what farmers want and need. 86% of those farmers surveyed felt they could benefit from the information and training to further develop business skills.
**Related Career and Technical Education (CTE) Programs**

**Duval County** high schools partake in a “Farm to School” program. This program allows schools to partner with local farmers. This allows them to introduce kids to fresh, new foods and flavors, while also benefitting the farmers and the entire community. An AgriScience CTE program at Frank H. Peterson allows students to engage in veterinary assisting and biotechnology coursework to result in certifications.

**St. Johns County** high schools features an Academy of Hospitality and Tourism, which allows students to run a micro-farm. It teaches students about sustainability and allows students a unique, hands on experience with certain animals, fruits, and vegetables. CTE programs also include Horticulture Science and Services, Environmental Waters and Reclamation Technology, and Natural Resources.

**Clay County** has Agriculture, Food & Natural Resource programs offering classes such as agriscience at both the Middle School and High School levels, encouraging related career pathways. To learn more about one of Clay County’s Agriculture Instructors, Carley Dyal from Keystone Heights High School, go to [https://earnup.org/support-industries](https://earnup.org/support-industries) and check out the Education Services Report.

All of **Baker, Nassau, and Putnam County** high schools offer Career and Technical Education Courses on Agriculture, Business, and Mechanics. **Baker County schools** offer programs specifically in Agricultural Sales and Services, Technical Agriculture Operations, and Agritechnology. These three courses will encourage growth for agribusiness in the region.

**Flagler County** high schools offer a wide range of Program of Studies such as Information Technology, Finance, Management, Administration, Agriculture, Food, and Natural Resources which incorporate and advance the future members of the agribusiness world.
AN AG PATHWAY: FROM EXTRACURRICULAR TO CAREER

“I want to show a steer in the County Fair,” Kelly Oehler told her parents one evening. Kelly’s interest was a result of a seventh-grade agriculture class at Wilkinson Junior High in Clay County. Her teacher, Mr. Johnson, mention steer and pig weigh-ins for some of the other students. Kelly was intrigued. Her parents were open to the possibility. The family had moved from Fleming Island to Middleburg and homesteaded on 34 acres to accommodate Kelly and her sister’s love of horses. The steer could accompany the family’s horses, chickens, and miniature donkeys.

This moment helped set Kelly on a career pathway that she once just considered a hobby. With the help of experts in the community, Kelly learned how to groom and show a steer. While she was sad when the steer was sold at auction, her interest didn’t diminish. In fact, she showed steer for six years.

At Middleburg High School, Kelly was involved in Future Farmers of America (FFA), which was her all-consuming extracurricular activity. Kelly served as the secretary and president of her school’s chapter. Kelly was involved in placing in and judging various state contests from poultry to ornamental horticulture, learning skills like propagation of begonias via leaf cuttings. Participation in FFA also allowed Kelly to teach kindergarteners through Food for America. Once a month, she would teach students different agriculture lessons, from making butter, to planting flowers, to understanding egg embryology.

Kelly grew up loving all aspects of agriculture, but she didn’t anticipate that this would be her career pathway. After high school, Kelly pursued an Associate degree from Santa Fe College while working full time. She interned at the Jacksonville Zoo, intending to enroll in the University of Florida’s (UF) Zoology program. She pivoted from this program of study, encouraged to change her major to Animal Science. In the interim, she continued full time work for several years at the University Air Center adjacent to the Gainesville Regional Airport. Ultimately, she realized her current role did not offer growth potential and the love of ag hadn’t diminished. “I learned that we don’t all take the same pathway and it’s okay.” She enrolled at UF to study Animal Science. The degree has three concentrations: Animal Biology, Food Animal, and Equine. Kelly selected the Food Animal area of focus.

Once Kelly returned to school full time, she continued to keep a full-time work schedule saying, “If you really try, you can do it.” The commitment and enthusiasm needed to maintain such an intensive regimen resulted in Kelly’s graduation following the Spring 2020 semester with a bachelor’s in Animal Science and a minor in Agribusiness Management and Sales. She now joins her grandmother, mother, and sister as UF alumni.

As part of her program, Kelly was required to take an introduction to meats class. After doing so, she selected other classes such as meat processing, selection and grading, processing, evaluation, and food safety. Kelly’s education has provided many industry lessons. She said, “There are so many untrue facts about how the industry is represented as well as how products are marketed.” An avid proponent of the Farm to Table movement, Kelly indicated that sometimes consumers are provided half the narrative. For example, packaging indicating that chickens aren’t treated with any growth hormones isn’t newsworthy. In fact, it isn’t legal to give any chicken in the United States any kind of growth hormone. “Cage free” still involves chickens being raised in massive barns.

Kelly intended to intern with Tyson Foods in Illinois this summer prior to its cancellation due to the COVID-19 pandemic. Instead, she secured a part-time internship at the UF’s Meat Lab. While initially disappointing, the smaller operation offered Kelly the opportunity to engage in all aspects of production from humane kill to slaughter wrapping and customer service via the UF Meat Store. Kelly notes that a USDA Inspector is on site to ensuring that the Humane Slaughter Act protocols are in place. One experience involved making bacon from over 80 animals, seeing the process from smokehouse to slicing.

Kelly said most people assume her degree is specific to pre-veterinary studies. However, her degree allows her to work in extension education, agribusiness management, and agricultural operations management. She can pursue a government job, such as a USDA Inspector. Kelly is particularly interested in jobs such as Food Safety Inspection Agent, specializing in import and export products. She says, “Agriculture is everywhere. It’s the backbone of this country. Thousands of animals help feed everyone every day. This is a way of life that has sustained generations of people.”

University of North Florida Awarded NSF Grant for Use of Autonomous Robotics in Agriculture

The University of North Florida College of Computing, Engineering and Construction, in collaboration with the University of Central Florida (UCF), has been awarded a grant from the National Science Foundation for collaborative research in the use of autonomous robotics for agriculture in Northeast Florida.

The $499K research grant, led by UNF School of Computing and School of Engineering faculty and supported by a UCF computer science faculty collaborator, will focus on efficient and secure agricultural information collection using a multi-robot system.

“As world population continues to grow and agricultural lands diminish, it is essential to maximize crop yield,” said Dr. Ayan Dutta, UNF computing assistant professor and lead researcher. “This project will aid farmers by helping them to utilize safe, efficient robotic technology to securely collect the information needed to improve production, protect crop health and mitigate pests and disease.”

Dutta is working in collaboration with two UNF faculty members, Dr. Swapnoneel Roy, computing associate professor, and Dr. Patrick Kreidl, electrical engineering associate professor, as well as numerous UNF undergraduate and graduate students. The team will conduct basic and applied data-driven research in controlled simulation labs and then test their findings with local Northeast Florida farmland partners using multiple aerial robots for real agricultural information collection.

The project will utilize multiple autonomous robots that communicate wirelessly to perform agricultural tasks, such as harvesting and pesticide/fertilizer applications. For example, as devices fly over the farm, they would be able to determine areas in need of watering or take pictures of crops to check weed levels, and deliver that data to the farmer, while reducing labor costs. The research team will determine how the robots can best collect and share real-time data to adapt to field and crop conditions, as well as use secure communication and autonomous decision-making. The security of the inter-robot communications and mitigating adversarial influence that targets the integrity of collected data are important components of the project.

This research anticipates the growing adoption of precision agriculture solutions in farmland operations. It seeks to deliver a prototype multi-robot agricultural information collection system that is simultaneously autonomous, efficient and secure, while also contributing to fundamental knowledge about cyber-physical system development in general. Project plans include regional workshops to promote technical interchange between faculty and student academic computing/engineering researchers and the farmers and technologists who make up the agricultural industry stakeholders.
"We just sort of fell into it," says Lindsay Meyer, owner and Creative Director of Congaree and Penn. An agriculture and culinary operation since 2014, Congaree and Penn offers the Jacksonville community with a diverse number of activities that engage different age groups and keep this family-run enterprise thriving.

Lindsay and her husband Scott met in college at Texas Christian University in Fort Worth, Texas. Lindsay studied Marketing and Design. Scott, a Jacksonville native, pursued Environmental Science. They later lived in south Florida while Scott pursued a master’s degree in Aquaculture. Initially, he considered starting up a fish farm on his father’s property. He and Lindsay began building rice paddies and milling in their shed, literally “testing the waters” for the components needed in fish farming.

Scott’s father owned the farm, now Congaree and Penn, a 330-acre property which served as a tree farm. Rather than using the land for fish farming, they pivoted, choosing to grow rice to supply various restaurants as well as their own. The farm now houses a unique mix of muscadine, mayhaw, and olive orchards, tree nurseries, a southern farm-to-table inspired restaurant, and their goats, chickens, ducks, guinea fowl and horses. Tours, blackberry and muscadine picking, community events, a retail operation and landscaping service round out their business model and brand.

While growth has been steady in the last six years, future plans include building the brand to offer a variety of personal agri-tourism experiences to interact with the property, the animals, and the food. Plans for pressing the Arbequina Olives that are produced on the farm would also require expanded capacity. Lindsay indicates that the community has supported Congaree and Penn as they’ve grown and evolved, which mirrors the evolution of her own career.

Lindsay shares that farming was not her intended career pathway. Although she grew up on a farm in New Mexico that produced green chilis, pecans, and cotton, she originally pictured herself working in a large design firm. However, farm life suits her. She enjoys feeding her menagerie of pets, riding horses, and spending time on their beautiful property. She and her husband also live on the property, a lovely way to work from home.

However, it’s not all beautiful sunsets and rows of impeccable crops. Farm life is hard work and requires its owners to wear a variety of hats. Diversity of skills needed on the farm truly represent modern agriculture. For example, designing a brand, logo, and website, responding to all communications, event planning, and managing a restaurant staff all fall within Lindsay’s self-created job description. She gets her hands dirty during the day-to-day operation along with their 30 employees. “You have to be weather-tolerant and be comfortable being outside. Weather isn’t always easy,” Lindsay says.

An easy hospitality is part of the brand. Congaree and Penn has a boutique feel and offers an intimate experience, but its reach continues to expand due to hard work. For example, their small batch Pecan Oil won both a Good Food Award and a Garden & Gun Made in the South Runner-Up Award. Sustainable farming allows Lindsay and Scott to innovate, grow and change as the consumer market and community interests change. Having a diverse number of products, goods, and services also allows them to weather any economic changes.

With a name inspired by family history, it’s only natural that the farm’s philosophy is encapsulated in Lindsay’s statement, “We want everyone to feel special.”
A Career Pathway of Conservation

White Oak Conservation is dedicated to conservation programs directly impacting over thirty species, as well as providing training and education programs to cultivate future conservation leaders. This beautiful property is host to 485 threatened animals and many opportunities to experience and appreciate them. In 1938, the Gilman Family of Yulee Florida purchased acreage on the St. Mary’s River. Located 30 miles north of Jacksonville, this property was established as a conservation facility in 1982 when Howard Gilman returned home inspired by a trip to Africa. As Howard appreciated the arts and public policy in addition to the natural beauty of exotic and domestic animals, he made his property available for those activities. White Oak was for sale in the 2000s; the new owners have expanded Howard Gilman’s reach by doubling the footprint to 17,000 acres under conservation, engaging in more public outreach, and serving as the catalyst for new educational programs. As a result, White Oak is a host site for innovative science, training, and collaboration having global reach.

White Oak Conservation Center boasts impressive statistics, with each number representing success in conservation efforts. For example, 19 injured and orphaned Florida panthers have been rewilded after their rehabilitation at White Oak, and 188 cheetah and 70 giraffe births have occurred since 1985 and 1987, respectively. Rhinos, okapi, gazelle, and native bats round out this extraordinary conservation property. While it truly takes a village to operate White Oak, three women shared their career pathways leading them there. Brandy Carvalho, Development & Sustainability Manager initially earned a BS in Public Relations from the University of Florida. She then earned master’s degrees in both Public Administration and Natural Resources. She changed course throughout her career and pursued additional education relative to her interests. She now engages in fundraising, community relations, non-profit leadership, and managing sustainability. Of this work, she says, “There are so many ways to plug in from marketing to finance to construction.”

Laura Gruber, Conservation Program Manager, grew up in Southern California, where her mother was a researcher at the San Diego Zoo. She received a BS in Biology and worked in animal husbandry at Disney’s Animal Kingdom and San Diego Zoo Global before joining White Oak. Laura’s passion for her work is evident. Of individuals interning or seeking conservation as a career pathway, she says, “It’s not just about playing with animals.” Shannon Basile, Stables Specialist, grew up with animals in her household and demonstrated an interest in horses at an early age. She took lessons and showed horses. Shannon majored in business with a minor in equine science. To gain experience, she completed farm work on ranches and managed a small animal vet clinic, before joining White Oak. Her time there has led her to develop passion for conserving exotic animals.

Laura also provides ways to plug into similar career pathways. In 2019, 1,298 K-12 students visited for field experiences and work-based learning. A Summer Camp offers exposure to wildlife, veterinary science, natural resources, and sustainability. White Oak staff also engage local students and partner schools for an entire semester to instill in them a conservation ethic and interest. There are internship opportunities available at White Oak designed to foster those who are already serious in making conservation, animal science, or biology part of their career pathways. Nearly forty interns receive valuable professional training each year. For example, Wildlife Conservation Internships, and Equine Internships are offered. For safety, interns must have a basic understanding of animal behavior and demonstrate it through previous hands-on experience. To gain this critical experience, Laura suggests volunteering at a local veterinary office, in wildlife rehabilitation, or at the local zoo.

One of White Oak’s activities to engage the public allows individuals to ride horses adjacent to wildlife. Equine Interns must be able to manage the horses as well as provide a meaningful, safe experience for guests. To do so successfully, previous equine experience is needed. Interns must be engaged, serious, and willing to work hands-on with the horses. As Laura states, “It’s hard work and very experiential. You are directly alongside staff in every aspect of their job.”

For those interested in conservation efforts and have an appreciation and respect for animals, pursuing this pathway could be ideal. For more information, visit: whiteoakwildlife.org.
“You have to be weather- tolerant and be comfortable being outside. Weather isn’t always easy.”

- Lindsay Meyer, Creative Director and Owner, Congaree and Penn

“As world population continues to grow and agricultural lands diminish, it is essential to maximize crop yield.”

- Dr. Ayan Dutta, computing assistant professor and lead researcher, University of North Florida

“Agriculture is everywhere. It’s the backbone of this country. Thousands of animals help feed everyone each day. This is a way of life that has sustained generations of people.”

- Kelly Oehler, Alumnus, University of Florida