N.C. Food Processing Innovation Center Committee

N.C. Food Innovation Lab Progress Report

submitted to the Joint Legislative Oversight Committee on Agriculture and Natural and Economic Resources and the Fiscal Research Division

Biannual Report: August 2020 – December 2020
Prepared by Dr. Bill Aimutis, Executive Director, NCFIL

Progress between partners and with facilities

Progress at the N.C. Food Innovation Lab (NCFIL) during the last 6 months continued to be slowed by the ongoing COVID-19 pandemic.

Equipment installation resumed in early September, but as of this writing we are still finishing the last detail work (pipe insulation, going live with control software, and correcting some electrical connections). Several unfortunate discoveries regarding steam and electrical lines not being run as they should have been. Steam quality coming from Castle & Cooke's power plant is of poor quality, and really caused us major headaches during start-up. Installing and correcting many of these items has incurred NCFIL about $250,000 in additional costs. After the current installation campaign is completed in the next couple of weeks, we will have one more campaign to connect the twin screw extruder that has been delayed by COVID also. That piece of equipment is scheduled for delivery in late January or early February 2021.

Equipment commissioning for the lab has been challenging. Joe Hildebrand (NCFIL Pilot Plant Manager) has been tenacious in teaching himself on several pieces of equipment. There are still a few pieces we need the company representatives to come finish installation and assist us with start-up (for example, the spray dryer and the fluid bed dryer). International COVID travel restrictions has left us to figure it out ourselves, and that has not gone as smoothly as we hoped.

The good news in this report is that we have been working with paying customers since mid-October. The Product Development Lab and its personnel have been busy with several customers, and they have developed products that have been in test markets, and with two of our clients are now commercially offered for purchase. We had Cabarrus County inspect and approve our Lab for commercial production. There are still a couple of minor items we need to correct, but that has helped us to move products into commerce. Likewise, the Pilot Plant has been very busy with production of products for clinical studies or product approval studies.

Several companies have approached NCFIL to run unique analytical testing on plant-based proteins and "precision fermentation products". Most of this testing is to characterize the physical functional properties (gelling, emulsification, foaming, pH solubility, etc.) of proteins. The work is similar to a grant we had recently funded by a NC start-up company. Additionally, several companies have inquired, and been quoted, on conducting shelf-life studies of new products. Both these could prove quite lucrative for NCFIL in the future.

We have begun invoicing and receiving income. The following table presents income and commitments as of December 4, 2020:

Source:	Income	Accounts Receivable	Total Committed
Companies	$8,013	$32,997	$63,945
Grants	$4,169	$17,283	$81,639
University Researchers			$9,100
Total	$12,182	$50,280	$155,764

Several projects are in negotiation phase. Two companies are interested in NCFIL producing products for them every week, and we are exploring the possibility to have a sustaining cash flow. Our challenge right now is not enough personnel to run simultaneous projects.

Our Marketing and Communications Team is functioning very well. Our blogs and Executive Director monthly reports are written and posted to our website and social media (Twitter and LinkedIn) with excellent regularity and they are bringing attention to NCFIL. The table below update our previous report with links to external coverage of our marketing efforts:

Year	Date	Publication	Article
2020	August 26	Specialty Food Association	Haw River Mushrooms Wins Two SOFI AWARDS: New Product Award and Silver in Jerky & Meat Snacks Category
2020	September 2	Engineering News-Record	ENR 2020 Top 400 Sourcebook: Meatless Product Mission
2020	September 14	Ingredientsnetwork.com	NC Food Innovation Lab Virtual Tour
2020	September 22	Cabarrus Center	Interview with NC Food Innovation Lab representative Bill Aimutis
2020	September 23	CLT Regional Business Alliance	CLT Alliance Focus on Manufacturing in the Food and Beverage Industry
2020	September 28	CSRwire.com	ENR Highlights CRB's Work in Plant-Based Foods
2020	October 1	Plantbased Business Hour	Bio-Hacker Ryan Bethencourt on What is the Future of Food and His Investment Strategy
2020	November 17	NC Field & Family	How NC State Advances Food Manufacturing
2020	November 19	Salisbury Post	Peppermint partnership: N.C. State's Food Science Club manufactures ice cream toppings at Research Campus

Personnel

NCFIL is operating with 3.5 FTE as of December 7, 2020. One other person (Roberta Hoskin) that was working with us two days a week has returned to a full-time position at the Plants for Human Health Institute. We lack the critical mass to respond quickly to customer inquiries, invoice customers, schedule production runs, and other daily activities essential for a facility operating under good manufacturing practices.

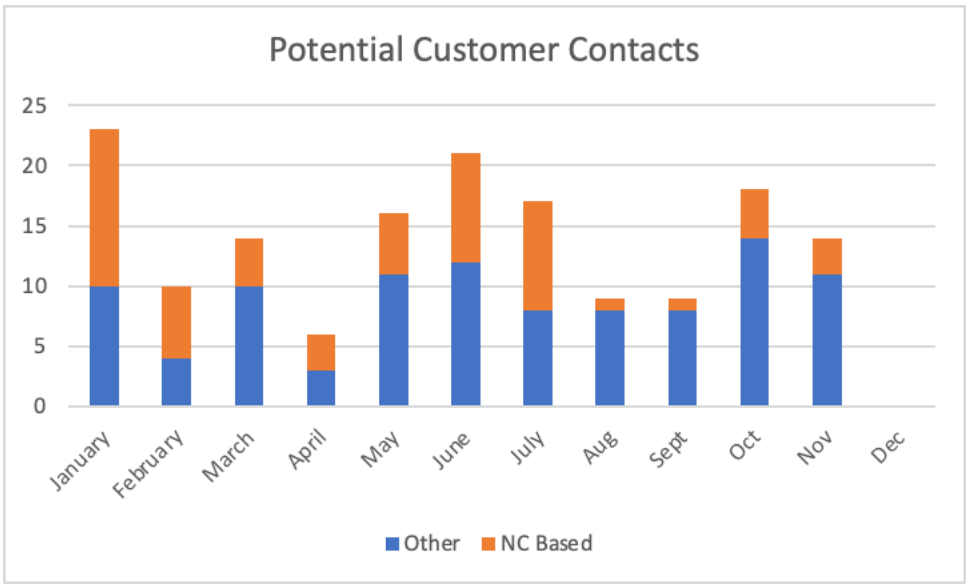
We must begin looking forward to what it will take to run a successful operation in NCFIL. It is a concern that NCFIL may need to limit the number of projects we can commit to because we just are stretched too thin.

We recognize this is a chicken and egg (or in our case a seed and plant) situation – we must have commitments to projects before we can hire. We are pursuing a few unique opportunities for partnerships and grants that will supplement some of the future personnel expenses. Additionally, and perhaps worrisome, is that we have approximately $150,000 in quotes for business not committed to yet. Even if we receive funding in the next 30 days, we will be challenged to fill positions given COVID and the tight labor pool. I am currently working on ten more quotes that will range from $1,000-35,000.

Potential Customer Engagement

A few companies have been able to work alongside NCFIL personnel in our Product Development Lab and Pilot Plant the last few months, but much of our effort has taken place via emails and virtual calls. While challenging, it has enabled us to continue to keep some projects moving forward and we had four new products approved from our product development to move toward scale-up and marketing. Additionally, the Pilot Plant bottled 1800 bottles of concord grape juice and placebo for a large clinical study. This project was funded by NIH money for three years.

The COVID-19 pandemic continues to greatly limit our face-to-face interaction in the facility with potential clients. Our virtual tour was well received by several organizations, but it still lacks the vibrancy one gets when they walk through the facility. We continued to track potential client interaction closely during this period, and as witnessed in the graphic below there have been cycles of activity:



We have now had commitments on 12 projects (7 different North Carolina companies) utilizing the Product Development Lab and the Pilot Plant. Fortunately, most companies have been patient during the pandemic for us to get to initiate their projects, but it has gotten harder

to tell clients we may not get to them for 6-8 weeks. We are optimistic this facility will continue to attract people as word.

NCFIL has connected with a total of 67 NC based companies and 187 national/international companies. As of this writing, we have entered into 18 confidential relationships with companies to conduct work and/or partner in NCFIL. We are currently in discussions on four major partnership arrangements.

We have not lost sight of our focus on the goals of outlining partnerships both for NCFIL and identifying key opportunities for the broader NC Food Manufacturing Initiative that would serve to (1) drive use of NC agricultural products, equipment or food, (2) increase number and economic value of food manufacturing companies in NC, and (3) increase employment and private capital investment in food manufacturing in NC. To that mission, we have assisted two of our clients in designing facilities to increase production or as a true start-up. The company expanding their operational capacity recently received $2 million in venture capital support and is design phase to build a 10,000 square foot manufacturing facility in Mecklenburg County.

Several virtual instructional courses are being developed by Dr. Marvin Moncada and myself. We are targeting the first course to be offered in late March or early April.

As we prepare to sunset the NC Food Processing Innovation Center Committee, I want to thank all of you that have been part of this endeavor. I wish our last committee meeting could have been in NCFIL so that you could see the outcome of your vision. Please feel free to contact me anytime you are in the Kannapolis area, and it would be my honor to give you a personal tour.

Thank you for your time and interest in the North Carolina Food Innovation Lab.