

**NC STATE
UNIVERSITY**

**College of Agriculture
and Life Sciences**

Department of Agricultural and Resource Economics

NC STATE UNIVERSITY

POOLE COLLEGE OF
MANAGEMENT

CIMS

CENTER FOR INNOVATION MANAGEMENT STUDIES


East Carolina
UNIVERSITY
COLLEGE OF
BUSINESS

Executive Farm
Management
Program

Brown Family Farm
Scenario:
Chapter 2

Scenario: Late Fall 2017

John Brown was at his kitchen table again, surrounded by papers. It was late in 2017, and John reflected on what had happened to the tobacco industry over the summer.

- On July 28, the FDA announced that it would regulate the nicotine content in tobacco products, seemingly driving another nail into that coffin.
- He learned during an EFM webinar that Philip Morris International (PMI) has invested \$3B in “reduced” or “modified risk” (also known as “heat not burn” (HnB)) products, and launched their IQOS line in Europe and Asia, where response has been very positive. Over the summer, they submitted a 2.3 *million* page application to the US Food and Drug Administration to claim it as a “reduced risk” product, and they expect approval in late 2018.
- An Italian producer of farm machinery said that they are shipping more equipment to Bahia in northern Brazil – a long-time producer of tobacco, but not (until now) cigarette tobacco. According to PMI scientists, the quality of Brazilian tobacco is approaching that of American leaf.
- Reynolds American was fully acquired by British American Tobacco.

“There’s always something to worry about,” sighed John. “If Brazil gets it right, it’s time to hang it up and go fishing.”

His thoughts drifted to his parents, who were increasingly being overwhelmed by the pace of change in the agricultural industry in general and in tobacco in particular. They still hadn’t adequately prepared for “retirement”, but were feeling more and more disconnected from the family business. John was shouldering more of the work, and felt that he would be needing to take some action, or at least make recommendations to Kent and Vicky, on how to change the business to prosper in the future and help provide the retirement income they’d require. Simply doing things the way they’ve always been done was going to lead the business into a death spiral. New, innovative thinking would be required.

Fortunately, John has a new array of business tools at his disposal, centered around the business model canvas from the EFM program.

“What does this ‘heat not burn’ technology mean to us?”, wondered John. “Does it represent new customer segments and the opportunity to create new value propositions; go-to-market strategies; and possibly key partnerships?”

The fact that these products require “high quality” leaf could be a blessing in disguise; North Carolina and Virginia farmers grow the highest quality tobacco in the world; that may bring the producers of the HnB product cartridges knocking. Of course, they could go to Brazil, too.

Ann graduated from NCSU in May of this year, and after taking a trip to Brazil, decided that she wants to return home and help the farm. John thinks this could be a fantastic idea; with her knowledge from her Agribusiness Management degree, and his expertise from the Executive Farm Management Program, they would form a great team.

The first thing John had Ann do was a new PESTEL analysis with CIMS to identify new threats and opportunities facing them. In particular, she did a deep dive into the emerging “HnB products” market. These HnB products may represent new customer segments that require new value propositions. John sees this as a great way to frame the response, and wants to put together a complete proposal to take to Kent and Vicky.

The new HnB products seem to represent a new, but very different, type of future. John sees that the Brown Family Farm needs to respond to these disruptions in the consumer market and regulatory environment, and maybe partner even more closely with tobacco providers so as to become a more valued supplier and not lose business to these emerging Brazilian growers.

But tobacco is just one part of the business – an important one, to be sure, but not the only one. All of the crops are a commodity, and it is very difficult to differentiate a commodity except on price. Earlier in the year, John considered going into poultry and/or hogs, but that was too big a stretch, required too much new equipment, and required totally different skills.

The Browns are looking at their options with other crops as well. Sweet potatoes have gone well for them, although they are concerned that the rapid expansion of production may exceed the growth in demand and depress prices. With other crop prices down, lots of farmers expanded their sweet potato production, and, as a result, prices were down this year. Still, they cleared about \$360 an acre over operating expenses. The future for sweet potatoes still looks fairly bright. It’s tasty, nutritious, inexpensive, and easy to prepare.

He thought about custom small packs of sweet potatoes, which could evolve into a farm-to-table business (). Essentially, fulfill the “job to be done” of providing healthy, tasty food in innovative ways. That would require new distribution partnerships and hiring sales people, but it could mean better prices, more reliable demand, and longer-term contracts. “It deserves consideration,” John thought.

It wasn’t just the tobacco market that got riled over the summer. Amazon entered into the food business with by purchasing Whole Foods. Blue Apron, a meal delivery service, had an initial public offering. Meal delivery services in general are popping up all over. It turns out that millennials don’t like to cook, and they don’t want to eat out. The whole distribution network for food looks like it is changing. “How will all that affect the farmer?”, John wondered. “Will I be selling to Amazon? That’s the only thing worse than selling directly to Wal-Mart!”

John is an avid reader of the News and Observer, and in June a headline caught his eye: “Lab-grown meat: Coming to a grocer near you?” The Brown Family Farm doesn’t raise any animals, but this struck John as something to keep an eye on.

The Farm has 3 full time employees and uses H2-A labor for the tobacco and sweet potatoes. In 2016 they had a crew of 45 H2-A workers for 26 weeks. Their average wage rate was \$10.75 per hour and it cost them \$700 per worker to get them here. They have good housing in place for the H2-A workers. This past season, 2017, they were only able to secure 30 H2-A visas. John got to wondering. "With all the pressure on the immigration issue, is there any way to use more mechanization or automation to harvest our crops? How can we find other innovative ways to improve operating efficiency?"

He sat down with Ann to brainstorm some more. Ann mentioned that she went to a seminar at NCSU where she was intrigued by two emerging trends.

The first is indoor farming (also known as vertical agriculture.) Indoor farming uses specially tuned LED lighting to optimize photosynthesis, alongside innovative irrigation methods, and operates inside shipping containers and warehouses. For the first time, farmers would not need to be at the mercy of the weather. These systems were ideal for fast growing, fragile products like microgreens, which are also a high-margin, quick-turning crop. With indoor farming, year-round production would be possible.

"That sounds interesting," John said. "What's the second trend?"

"Cannabis and hemp!" replied Ann. "And cannabis is also being grown in containers. It's legal in 26 states now."

John looked at his younger sister for a long moment. Then he asked, "Are you high?"

They both broke out laughing. "That may be the case for Colorado, but it's not going to happen in North Carolina," John said. "I think it will be a long time before that happens here!"

"Luck favors the prepared*," quoted Ann. "And the industrial hemp market looks very promising, with uses from food to manufactured products. And it is a great rotational crop for the soil."

"Let's put all our options on the board and see what we have," said John. This is what the list looks like:

- Tobacco for HnB products
- Custom pack sweet potatoes
- Indoor farming
- Industrial hemp
- Increased efficiency/automation

"How are we going to choose? They're all interesting," said John.

* Variation of "Chance favors the prepared mind" – Louis Pasteur

“Let’s put them on a Portfolio Management Matrix,” replied Ann. “We rate each of them on ‘Attractiveness’ and ‘Our Ability to Execute’, and then choose the one that is most attractive that aligns with our ability to make it happen.

“Why just one?”, asked John.

“Because we’re not crazy enough to try more than one new thing,” said Ann. “Are we?”

“Smart girl,” replied John.

This is what they arrived at on the board:

- HnB (aka Reduced Risk, or Modified Risk) TOBACCO PRODUCTS
 - **Attractiveness:** High – profitable crop; NC ecosystem very strong (NCSU, Extension Service, etc.); NC leaf quality high; still some unknowns; could become partners with Big Tobacco to develop new strains; maybe create higher value products
 - **Ability to Execute:** High – we do this already; need to learn more about exact requirements

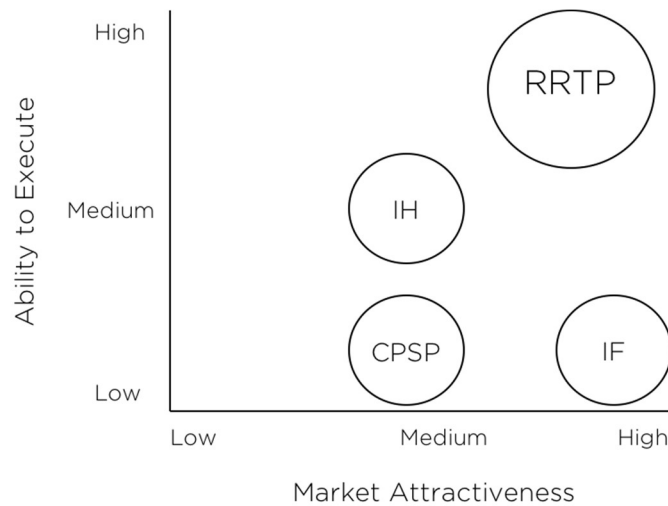
- CUSTOM PACK SWEET POTATOES
 - **Attractiveness:** Medium – don’t know if there is a big market for this
 - **Ability to Execute:** Low – we currently don’t know how to do small packs nor distribute to these kinds of customers

- INDOOR FARMING
 - **Attractiveness:** High – removes the weather element; fast growing field; multiple turnovers per year
 - **Ability to Execute:** Low – we know nothing about this

- INDUSTRIAL HEMP
 - **Attractiveness:** Medium – still a lot of people skeptical; federal laws regarding cannabis of any type, even very low THC levels in hemp
 - **Ability to Execute:** Low/Medium – it is another row crop, but we don’t know the soil, pesticide, herbicide, or fertilizer requirements; will we need new equipment?

- INCREASED EFFICIENCY/AUTOMATION
 - We ought to be doing this anyway

“Well,” John said. “It’s pretty clear to me that the new reduced risk tobacco products are what we build our new business case around. We might get around to some of these other opportunities in the future; for now, this one looks like enough to bite off.”



“What more do we know about the requirements for HnB?”, asked John.

“I’ve been doing some research into that, too,” said Ann. “One major requirement for the consumable part of this system is ‘high quality’ leaf – but the exact definition of ‘high quality’ is somewhat vague. Assume from the top half to third of the stalk. In any event, there is a much smaller amount of tobacco per unit than a regular cigarette – 320 mg instead of 700+ mg in traditional product. It is highly processed into sheets of non-combustible, high purity material, which is chopped into thin strips and packed into a cartridge.”

“There are many questions about whether the products will be adopted by the majority of traditional smokers,” she continued. “Some companies think that the persona of the ‘new smoker’ is someone who is younger, lives in the city, has a corporate job that limits smoking, and is willing to learn the new experience of products like iQOS, which have a complete different user experience, or UX, than lighting up a Marlboro. In other words, a typical ‘early adopter’. On the other hand, physicians and family members might recommend that *all* smokers switch – or at least try – HnB products because they are less harmful and smell better than cigarettes. Also, early results in Europe and Asia are very strong, particularly in Japan. Starts to look like PMI might have invested \$3B pretty well.”

John thought about all this. He thought he should talk to Maria Hernandez, his extension agent, about what “high quality” means for Big Tobacco, and then do something in the field to make his leaf more attractive – and command higher prices – for HnB.

A couple days later, Maria stopped by for a chat with John and Ann. “The most important concern that tobacco companies have is consistency year to year for these HnB products. Since the products are highly purified, any flavor variations – changes in the chemical properties of the leaf – are magnified. This is also why American tobacco may be preferred over imported tobacco. Even though Brazilian tobacco is pretty close – and ‘good enough’ for regular

cigarettes – the shortfall may be more obvious in HnB sticks. That said, we know that international tobacco companies are investing heavily in Brazil. The companies seem to have a chemical ‘signature’ in mind, and have extensive analytic laboratories to test leaf and model the ideal product.” John flashed back to his “if they get it right, we can just go fishing” thought from earlier.

“The next most important thing is traceability through the supply chain,” she said.

“We already do some traceability – we can probably meet those requirements,” said John. “But how can I translate this chemical signature into practical terms that I can plant, manage, and grow?”

“Maybe you can set up a test plot of 10 acres to micromanage – maybe applying PRC practices. Record every piece of information that you can measure so that you can repeat it again the next year, adjusting for variations in temperature, rainfall, and so on,” suggested Maria. “You might want to explore fertigation, or at least what all of your options for irrigation may be. And you might have to control the curing – or at least monitor it – more closely, too.

“Microbac, in Wilson, is an analytical laboratory that might be able to design a program to provide lab analysis of test tobacco against your regular crop at several points throughout the year.”

“Hmmm,” thought John. “I’m getting the feeling that the HnB train is bearing down on us, and we’re not real ready for when it gets here. We’re going to have to do things differently, and probably do some different things. But what? And how?”

The Characters

John: John Brown is 31 years old and a crop science graduate from NCSU. He's married with a toddler. His wife is a school teacher and is not involved in the farm. He worked five years in sales for Crop Production Services, Inc. before returning to the farm three years ago. John was extremely successful in the relationship building and selling process. He didn't love the structure and the extensive time away from his family and found that he struggled to meet his documentation deadlines. In Brown Family Farm partnership with father, mother and sister. John is outgoing and has never met a stranger. He loves to talk, socialize and has always been considered the life of the party. He has a great vision for the farm and how to grow and expand, but hasn't been able to settle on any one solution.

Kent: Father of John, husband to Vicky. Kent has worked hard to build this farm. He is dedicated, driven and works from sun up to sun down. He has seen the farm be sustainable over the years and it has supported his family. Technology, consolidation, pressure about retirement are all things on his mind. He has always spoken his mind and it has worked well. His kids used to call him the drill sergeant, but in his farming world, sometimes you had to bark orders in order to get work done. Farming is dangerous, hard work, but he loves it and wouldn't trade it for the world. He has ideas about how to grow his retirement and sustain the farm, but that is going to mean a few changes around the business. He anticipates some difficult conversations in the days ahead.

Vicky: Wife of Kent and farm office manager. She is the backbone and everyone knows it. She handles all the reporting, payroll, recording keeping. You name it and she can put her fingers on it and do it. It's a big job that requires detail and patience. She is known around the place for asking lots of questions and keeping track of the all the details. The kids know her for her "to do" lists; her long hours in the farm office; and her ability to run their household like a champ. No one seems to understand how she gets everything done, but she manages it. However, it's time for someone else to begin learning the operational/reporting side of the business as she is not getting younger, and the operations are becoming much more complex and labor intensive. She has many questions about what is going to happen in the future. She is looking to her husband to help her family set the direction for the future.

Robert: He is a banker. Like John, he is at times outgoing, but not nearly as much. He likes the role of the banker. He is constantly finding solutions and bringing people together to solve problems. It seems like that is the role he has played during his entire life. He has been bridging the gap in his family forever. They come to him to talk through family issues and

dynamics and he gets pulled back into family decisions to help them work through disagreements and challenges. He likes that role, but doesn't see himself fully immersed in running the farm anytime in the near future.

Ann: She graduated from NCSU in May 2017 and a ball of fire. She has had the passion of farming in her blood since a little girl. She isn't afraid to speak her mind and often stands up to all her family. She has been studying farm management and is intrigued with the work her mom does in the office as she loves technology, numbers and the facets that make the business work, yet she is thinking about how to take the family farm to the next level in order to support the growing family. She is direct and passionate when she speaks, but not the outgoing personality of her older brothers. John and Kent are excited to have her join the farm but would really prefer she work away from the farm to gain valuable experience that she can return to the business. Ann was chomping at the bit to use her school knowledge immediately to help the business, and as you see from the case, won the day.