

Andrea Althoff
Dear Intern of the Year Committee,

September 20, 2019

I want you to concisely think of the fabric you are wearing. Does it contain cotton, and if so, do you know where it came from? There is a good chance it came from a cotton plant, which came from a cotton seed, which was delinted and processed carefully at a cotton seed site, having genetics that were handpicked carefully by scientists around the world to grow the highest quality cotton that you are now wearing. Now let us shift gears to changing the world. When I was young, I knew I wanted to change the world, but how was the problem. Little did I know, I would be given the chance to change the world, not directly but indirectly by helping shift the way we process cotton seed, which in turn, helps produce quality cotton that humans use daily and worldwide. Cotton is the most often used natural fiber in the world. In 2018, the value of production stood at around 6.71 billion, in U.S. dollars. The United States is ranked as the second leading cotton producing country worldwide. (US Department of Agriculture; National Agricultural Statistics Service). See how changing the cotton industry plays a role in making a difference worldwide?

This past summer I was given the opportunity of a lifetime to be the first intern from WT to work for Bayer U.S. Crop Sciences in Lubbock, Texas, which is the largest cotton seed processing site in the world. This site is a vital part to the cotton industry as their seed is shipped all over the world. I traveled all over the United States, flying to Iowa and St. Louis, viewing and assisting in labs and seed physiology research working with the most elite scientists and leadership teams in the cotton industry. I worked in the field with cotton growers, innovating and making recommendations to improve their crop. I worked on training a team of interns with multiple backgrounds including business and chemical engineering degrees. We worked on several projects from global engineering new technology for the production site, to assisting research in the cotton seed quality assurance lab, and engineering a 3-D printed model that shows

the public the processes of the cotton seed site which bridges the gap between the public eye and importance of cotton seed production. We kept this project sustainable by presenting it to engineers from Germany. Every day I helped guide my fellow interns to cultivate innovative ideas and drive vision and turn out quality results for problems the cotton industry faces daily.

One problem we faced this past season was that cool germination rate scores were lower than usual. The goal is to have 85% germination rates, however, this past year we had approximately 65% germination rates. Lower germination means lower production and lower profit for producers, due to cooler temperatures. Identifying the problem, I was quick to set up a team of seed physiology researchers and microbiologist all the way from Hawaii to Missouri. I interacted and led the group over email and conference calls to form proper research techniques and paperwork. I created standard work documents to teach lab assistants the sampling methods from my protocol to help them pull effective samples that we could measure for hormone imbalance. By presenting my ideas to leadership teams, my research project received full funding, making it sustainable. Using the data we collect, can change how we process cotton seed to improve germination rates, which in turn benefits agronomic producers around the world. This exploratory research project is very large and not completed yet, however, Bayer has given me the opportunity to see this project through until the end.

Bayer Crop Science gave me the chance of a lifetime to discover my passion and build a sustainable vocation. I am now confident, through this experience combined with three years of previous research experience that I will be able to gain a Doctorate of Plant Science. Cotton is the thread of our lives and to think I took a small problem and turned it into a sustainable research project that could change how we process cotton seed around the world is the most humbling and prideful experience I have ever had.



West Texas A&M University

Department of Agricultural Science

26 September 2019

Dear Steve and selection committee,

It is my honor to write this letter of support for Ms. Andrea Althoff for the Intern of the Year Award. I have known Andrea since she transferred to WT in Fall 2018. I am her academic advisor and have had her in multiple courses where she has performed extremely well. Andrea is currently a member of the WT Crops Team, officer in the Agronomy Club, an Agricultural Ambassador, member of LEAD WT and was a member of the horse judging and equestrian teams last year. Needless to say, Andrea is heavily involved in multiple extracurricular activities, performs at the highest level academically and continues to work part time for Bayer, the company she interned with during the summer of 2019. Andrea is an outstanding individual, a critical thinker, and a very dedicated and successful student.

The many interactions I have had with Andrea over the past year have provided me with a great perspective into the type of person she is and the type of person she will be after she leaves WT and lives, serves and works in the community. As a student, she is very serious about her studies, has always been dedicated to high quality work on class projects, worked extremely well with groups, and performed well academically. Outside of the classroom she has always represented WT, our department and the agriculture discipline in the most professional and positive way. She is a very mature and well-rounded individual and as a member of the Department of Agricultural Sciences, we are proud to have her in our department and representing us well in all that she does.

Andrea interned with Bayer Crop Science in Lubbock during the summer of 2019. She was part of a unique and prestigious internship where this global company only selects a few students each year to work for them. I expect her internship supervisor will speak to her performance for Bayer, but I can also add from my own observation. Bayer is one of the leading companies in the crop production industry and to land this internship with the company is already a significant accomplishment. Andrea received some great exposure to the cottonseed industry, but more importantly, she took initiative to help the company during her time with them. She went above and beyond the internship expectations to ask questions and propose solutions. They actually kept her on payroll to complete a project that she presented to the leaders of the facility and that says A LOT about what they thought of her and how much they trust her. I know she performed extremely well in this internship and, if it was not for her desire to move on to graduate school, I am confident that she would have accepted the full time position they offered her at the end of the summer.

I highly recommend Andrea Althoff for Intern of the Year. She is exactly the type of person, and her internship was of the highest caliber, to receive this award and to represent WT at the national intern of the year competition. Of the several thousand students I have taught in my career, and the few hundred I have personally advised, I do not hesitate to say that Andrea is in the top 1%! She is the type of person that people want to be around, work with, and have on their team. She is extremely respectful, mature, professional, and hardworking. I would hire her in a heartbeat! I am confident that she will continue to make a great name for herself, her family, her profession and her alma mater of WT.

If you have questions or need know more information, please let me know!



Dr. Brock Blaser
Associate Professor of Plant Science
Department of Agricultural Sciences

Discover the **BUFF** in You.

Dear Intern of the Year Committee,

It is with great honor that I have the opportunity to support Andrea Althoff in her application to the West Texas A&M University Intern of the Year award. The Bayer Crop Science 2019 Intern program brought Andrea to Lubbock, Texas to work at the brand-new State of the Art Cotton Seed Manufacturing Facility. In this role Andrea got the opportunity to work with various members of the site across multiple departments in learning our Cotton Seed process from growing cotton in the field to a final product in the bag and all the steps in between.

The Cotton plant here in Lubbock is a State of the Art facility and the largest Cotton Manufacturing facility in the world. This summer we had numerous engineers on site working on optimizing the equipment for optimal throughput. On day one Andrea was assigned to work side by side with the Engineers to test all the equipment. Andrea got the opportunity to see how the delinting process works in removing the cotton lint from the seed. She was instrumental in assisting the Engineers in running strict testing protocols to optimize the equipment. She helped pull data on all the different pieces of equipment and analysis it, so the Engineers could take that information and improve the operation process.

The Lubbock facility is setup on what we call the Hub & Spoke model. The facility is the Hub and our 4 growing regions are the Spokes. We grow production seed in the Mississippi Delta region, Texas, Arizona, and California. All this seed is Ginned in those regions and then follows the "Spokes" to Lubbock for processing. Once the seed is processed and packaged it then follows the "Spokes" out to be distributed across the Southern United States. With this model there is a large Logistical Coordination that must take place to keep product moving. This summer Andrea worked with the Logistical team to pull data from the past year, analysis it, and come up with ways to drive efficiency. Andrea looked at multiple ways to improve the process from how we store product in our warehouse to staging it to ship

out. She also looked at how we track inventory in our SAP system, and the use of Ipads to move product and track product.

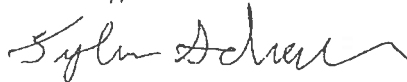
The last project that Andrea worked on and is still working on is a testing protocol for breaking cotton seed dormancy. When producing large scale cotton seed production one of the biggest challenges is dealing with cotton seeds natural desire to stay dormant. The balance between two hormones controls whether the seed will germinate or stay dormant. The key driver is the percent of abscisic acid in the seed to signal the seed to stay dormant because of abnormal environmental conditions that stress the seed. The way this has been handled in the past is to just give the seed time and it will eventually break dormancy on its own. This however is time consuming and inefficient.

With little research work done on cotton seed for this, Andrea has taken it on herself to start doing research on cotton seed dormancy. Andrea has reached out to the Bayer Seed Physiology Innovation team to start up a research project on how to measure the amount of abscisic acid (ABA) in a seed and what processes can we implement to rebalance the amount of abscisic acid in the seed to improve the germination and the vigor of the seed. I have been so impressed with the work that Andrea has done on this in such a short time. Andrea has build a robust team of expertise from all over the company to assist with this research project. She has gotten Research Scientist, Biochemist, Analytical Leads, and Seed Physiology Leads to join her team. Working with this team Andrea has developed a full-scale testing protocol that will start this Fall at harvest.

If Andrea is successful in her testing this could be a break through in Cotton Seed Manufacturing and completely change the way we process seed. Bayer always strives to be an innovation driven company and leader in the Agricultural world, but it takes great people to accomplish this. Andrea is one of these people that makes our company better. Her ability to come in here and see things from a different point of view has been a true asset to our team.

It has been truly wonderful working with Andrea this summer and seeing her ability to work across multiple departments, engage in different functions of the business, and her ability to think outside the box are all excellent skills future employers are looking for. Andrea is most deserving of this award recognition and will continue to represent West Texas A&M with honor and respect. I have no doubt that Andrea will take the education she is earning and be a successful individual. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Tyler Schacher", with a stylized, flowing script.

Tyler Schacher

Production Lead

Bayer Cottonseed Production