

Perennial by Sabrina Artusa

Lola,

I miss you. I miss you, I miss you, I miss you. I miss you so much I am writing you a letter, just as you always wanted me to do. You're right, there is something cathartic about it – putting a pen on paper. I thought writing would comfort me, connect me to you by way of pen and paper and ink. It doesn't feel that way. Instead, I am trying to suppress images of you bent over scattered pages, hair falling over your shoulder, sometimes writing frantically, desperately, and other times intermittently, thinking. I bet you are laughing right now, maybe at my penmanship or maybe at my sentimentality. I wish I could be there to hear it; I could really use it right now.

We will be in Iowa a little longer to collaborate with the researchers at the American Agronomy Center for Research, which should be good news. We are still working out the details, but it looks like I will be here for at least another month, and that is assuming we will be working everyday. I know you are disappointed; I am too, but one month is nothing compared to what we have been through already. I hope that what I am about to tell you will make it a little bit worth it.

Last week, we went to the American Agronomy Center for Research to check on the progress of the genetically engineered bean plant. The building was situated about 40 minutes from our hotel in Iowa City. After the 26-hour drive from Washington to Iowa, 40 minutes was nothing. As important as I know it is to avoid flying, I often found myself daydreaming about sitting in a cramped plane and eating stale graham crackers. This fantasy was again in my mind when, on the drive to the center, I saw a Kernza farm for the first time. The thin, green-yellow stalks were about six feet tall, nearly indistinguishable from grass or normal wheat. I have seen the plants millions of times, but never so many. The dry September wind bent the bushy heads forward, as if pointing toward the direction of the center.

I must have lost myself in the scene because, once I regained command of myself, I realized Hugh was looking at me from the driver's seat, smirking. I then realized how I must have looked – face inches from the window, wide-eyed, and captivated by grass. Like a child at Disneyland. I met his gaze. His face was unshaven, rugged looking. The corner of his mouth was lifted in amusement, but there wasn't any trace of mockery or ridicule or even disappointment. Over these past few months, Hugh has been impenetrable, unmoving, but relentlessly dedicated. He has been so distant to my attempts at friendship, as you well know, that I was actually pleased to have caused him a moment of amusement, however embarrassing it was.

I have never met anyone so knowledgeable about agriculture and botany. When I first joined the team two years ago, Pete told me that Hugh used to be a commercial fisherman in the Netherlands before he went back to school to pursue botany. Cindy said he used to be a farmer before turning his attention to Kernza. I don't think either theory holds much truth, but they just go to show how much mystery surrounds this guy. If he weren't so impressive and intimidating, I would think it comical.

He turned back to the road, his profile distinct against the setting sun. “First time seeing a farm?”

“Yeah,” I said, stupidly. It was all I could get out. I was embarrassed. Here I am, among these serious, no-nonsense scientists, and I am gaping at the grass that we have spent months dissecting and improving. What impression does that give? I’ll tell you. It (wrongly) gives the impression that I am inexperienced and unsophisticated. Well, I may be unsophisticated but I sure as hell know my Kernza. I know the inner workings of the plant inside and out. I know about the strong, thick roots stretching three meters into the ground, clutching the Earth (“the Rapunzel of wheat,” I remember you called it, joking that the roots resemble a head of hair when unearthed). I know how the roots are strengthening the soil, fighting against erosion, and sequestering carbon from the soil. I have grown generations of the plants in my lab, yet I’ve never looked upon a commercial farm. I have seen and touched a Kernza plant, or a variation of one, nearly every day for years, and I have never seen a farm. It was like I was seeing it for the first time. In a way, I was, at least in a natural environment and not in a pristine, sanitized lab.

I could not take my eyes off the plants. Maybe a little overwhelmed by the lack of sleep, time zone switch, and being away from you, I felt myself get a little tearful. I felt a misplaced sense of victory and sentimentality at the sight of the farm. Here was a living, real-life, 21-year-old Kernza farm. It wasn’t a test or a trial. It was real. That farm had been supplying people with beer, cereal, pasta, and bread for 21 years. The view of that seemingly infinite stretch of land was eventually replaced by a parking lot. As I got out, stretched my legs, and looked up, I was struck by how all-encompassing the sky seemed. It was the first time I realized how accustomed I had gotten to the mountains of Washington. The sky seemed to be bursting and the heavy gray clouds finally gave way to a slow, light drizzle. We then walked through the rain and towards the entrance.

Of course, we knew better than to get our hopes up, especially when the years have provided enough downfalls to dissuade us from hope. Looking back at a career, littered with fragments of collapsed innovations – ideas that once seemed immense, inevitable, and promising (remember the Kernza/tomato hybrid?) – it is ruinous to remain optimistic. We began by discussing our team’s work in enhancing Kernza’s carbon sequestration effects. Hugh did a great job presenting our sparse progress in a positive light. After he had finished, the head researcher, Lynn, stood up. Last week, she said, a generation of *Phaseolus Intermedium* (the new bean plant) survived. In other words, a perennial bean plant was finally created! Of course, the plant is years away from being fully integrated into our diet, Lynn was quick to say. She described the hard work of lengthening and strengthening the short roots of a bean plant. Wheatgrass was modified into Kernza through selective breeding, but Lynn and her team altered the genome of the bean plant to produce longer roots. We were thrilled, but if Lynn felt any pride or excitement, she didn’t show it. She remained stoic and serious throughout her speech. She reminded me of Hugh in that way.

“Obviously, the bean plant is far from perfect,” Lynn said, interrupting the excited murmur that had spread across the room. She wanted to get out the bad part before we could get our hopes up, a technique I have used dozens of times. In sustainability, there never is just good news. “The plant may not die every winter, but the roots are not durable or strong enough to support the plant for more than two years.”

The words filled the air, dampening our previous excitement. This means the bean plant’s benefits to the soil are marginal at best. Years of hard work reduced to a one-year addition to a bean plant. I, irrationally, grew angry – not at Lynn, not at anyone actually, but at the situation. It was a familiar anger, one to which we’ve all become too accustomed. A fearful anger, a sorrowful anger. An anger that feels a lot like dread, a lot like mourning. Everything is disappearing. Animals, plants, land. Coral reefs, icebergs – whole countries. Everything is disappearing. And all we have is a fucking perennial bean plant that can’t survive longer than two years. The climate becomes more tempestuous each year. Every winter is the warmest to date and we need plants that can survive the toxic climate. We are working on borrowed time.

The worst part is, it is all our fault. It is our fault we couldn’t protect our planet. We failed again and again. Not only did we fail, but we caused this. We contributed to it. I know even one year is a tremendous improvement, I know. But we are approaching the threshold for what our planet can take; we can’t afford to relish in every small accomplishment. We all know better than to become distracted by small victories. Small victories don’t exist. I looked around the table at my team. I looked at Lynn. In her face I knew she empathized. There was anger, yes, but there was also resolve.

“Kernza has been perfected over the course of 50 years and can now survive up to 25 years,” Lynn reminded us, “Phaseolus Intermedium is in the developmental stage, but it will get there.” Then, she smiled, which is something I hadn’t seen her do all morning. “I know one year isn’t enough,” she continued. “I know we need more. That is why we are tentatively continuing research with the use of basic AI technology. We plan on using machine learning and computational intelligence technologies. The AI will be able to draw connections and identify systems from other successful perennial plants that could be applicable to our perennial bean plant. This would speed up our trial processes by up to 30 percent, according to our pre....”

“That sounds great in theory,” Pete said, “but have you weighed the benefits with the margin of error and probability of malfunction, which, according to the Wall Street Journal, is around 34 percent? There have been countless studies and failures. How will you account for human ingenuity, the real life experience that fuels innovative ideas?”

Pete was trying to stay professional. His voice lost its friendliness, replaced instead by a cold intellectualism. Pete could be fun and kind with his friends, but he also knew how to appeal to scientists.

“Just how much decision-making authority are you giving the tech over the experiments,” he continued. “And how much funding will be taken from sustainability efforts and other, more pertinent endeavors?”

His words echoed in the room. How odd to think that just moments before I was ready to pop a bottle of champagne.

The change in Lynn’s face was nearly indistinguishable, but her expression grew hard. A slight furrowing of her eyebrows as she took a step forward. “The tech will not replace humans – that is clear – but it will analyze the facts and apply them. Researchers will of course remain a part of this process, but just to a lesser degree. They could instead apply themselves to more urgent tasks. In essence, the AI will not make any decisions, it will only theorize, problem solve, help out – whatever you want to call it. Humans will always have the final say. The funding is to be determined, but we will have to allocate a significant portion of our current budget to the tech. Azalea Corporations released some tech, reviewed and approved of course, that could be especially helpful to us. I will send out a full description after this meeting.” She looked down, sighed.

When she looked up, she remained resolute. Making eye-contact with Pete, she said, “It’s controversial – a risk – I know. I don’t know what will come of it. But I am hopeful it will improve our work. It is time to be bold.”

At this point, I was sweating. I felt like a shaken can of soda. Too much was happening and I didn’t know what to think; I still don’t. I know you probably have words for me, about how AI isn’t to be trusted, but Lynn proposed using a strictly scientific and basic AI. Actually, she wasn’t proposing as much as informing. Apparently, the board already signed off. The only obstacle is finding the money.

After Lynn talked on for 40 more minutes, we blandly thanked her and followed Hugh into his room. “What the fuck?” Pete said. “‘Be bold’ my ass. How could they be considering AI? Willingly sinking millions into...just to appease some desire to keep up with the times! Ridiculous...vain...just reckless! What about that University of Minnesota study?” Pete was usually so witty, eloquent. He could barely get out a full thought. I had never seen him so angry.

“That was four years ago, Pete. It was monumental in that surgery at New York-Presbyterian Hospital!” Cindy fired back.

“We’re not in goddamn medicine Cindy! This is...different. What about...”

We became aware that Hugh was silent. Then, it dawned on me. “You knew already.”

Hugh nodded. “I will be proposing the integration of AI into our own research at the next board meeting. We don’t have time to argue about efficiency or ethics. We don’t have time. I don’t have to tell you all; you already know we are in trouble. We all did amazing work, but AI would

be able to do it quicker. It is a risk, but this option is better than failing, which will inevitably happen if we continue to work at the rate we are.”

Cindy nodded. Pete’s mouth was pressed into a white line, his eyes trained on the floor. He knew Hugh was right. Hugh’s voice softened. “I am not blaming any of you. We are all doing the best we can, but we are just not fast enough.” He started walking down the hall, footsteps echoing. And we followed behind.

A week later, the center hosted a banquet to raise money, which would have been good to know before I packed. I thought this would be a perfect excuse to get out of it, but Pete had an extra tuxedo (don’t ask why; I don’t know). I dressed, expecting a perfectly agonizing night. I wish you were there with me, so we could both suffer together.

We all drove together at Hugh’s insistence, or rather demand. I think he just wanted to ensure that we all went, which would be more likely under his supervision. Before we went in, Hugh gathered us for a pep talk. “You know the drill,” he said. “Talk about our mission without making them feel guilty. We want to inspire them to act, not blame them or make them feel responsible. You guys got this.”

It is hard not to feel spiteful, but Hugh is right. Blame never got anyone anywhere. I spent the first hour making small talk and discussing research. I kept thinking about the last fundraiser that we went attended. It was the annual fundraiser in May. We were just married and I couldn’t stop looking at the ring on your hand. The hand of my wife, I kept thinking. That one sentence played on repeat in my brain. When I think back to that night, that is the sentence I remember first. The hand of my wife. It’s a weird sentence. You probably are insulted about how possessive it sounds, but I couldn’t help it; maybe I was a little possessive. And I will always love saying it.

The one highlight of the night was the meal. It was brilliant. It was ravioli made from Kernza, with a vegan ricotta made from soymilk, seasoned vegetables, and kelp salad. It was amazing. The nutty sweet flavor of the Kernza layered with the soymilk ricotta created an amazing effect. The kelp salad wasn’t as good as yours though. Too lemony. The head chef was there, Jeremy Nichols. Apparently, he is a high-class chef with a restaurant in New York. Have you heard of him? He has a stringy brown beard and narrow dark eyes, which darted from guest to guest as they ate. I mentioned your name to him and the narrow eyes lit up. He nearly shouted with excitement. He said he uses your cookbook religiously and loved the Kelp-based udon noodles. Anyway, he said you would be glad to know that he only uses locally grown Kernza and vegetables. As for the kelp salad, he actually said your kelp cookbook “changed his life.” No joke. We talked a little about kelp farms and how they help decrease ocean acidification before he revealed himself as your biggest fan. He grew suddenly serious as he said, “She was the first to show me that cooking is a political act. That is why I started looking beyond the product.”

“My recipes are a form of activism. I tell all my employees that. Cooking, food, ingredients – every decision that goes into a meal – send a message. Using food as activism allows me to

showcase my beliefs to consumers. I believe in a future of sustainable cooking; I believe in delicious cooking. So... that is what I produce. I used to work under a chef who told me, 'taste and flavor above all.' It was a mantra that shaped much of my career. I taught it to my own employees. I ignored the merit laying in the process, choosing instead to prioritize food as a mere product. Food can be so much more; it can be a form of activism. It really can. Every dish is an argument, whether it is intentional or not. Opting for more sustainable options, avoiding beef, ensuring that ingredients are ethically produced; these are all forms of activism. Your wife is responsible for changing the discourse in the industry. And it desperately needed to be changed." He was flustered and seemed a little embarrassed by his passionate monologue. He dropped his hands, which he had been waving emphatically, and excused himself, saying he had to return to the kitchen. I thanked him for the conversation.

For dessert, we were served brownies with coconut milk ice cream. The brownies were dry and gummy, yet dense. They resembled a puck more than a brownie. Painfully and reluctantly, I swallowed. What was Jeremy thinking? I felt disappointed in this man I had only just met. It truly was terrible. While we were eating, or in my case, mincing my brownie into pieces and scraping the ice cream from the top, Lynn stood up and hit her spoon against her glass. She gave a conventional thank you speech. I was turning my attention back to my brownie when she said, "I have one last surprise to show my appreciation for your attendance, charity, and hard work. The brownie in front of you was made from the beans from our plant *Phaseolus Intermedium*. Years of research and dedication went into this meal. This moment is symbolic of the years of sustainable farming to come. And don't worry, this bean was thoroughly tested and reviewed. I sincerely thank you all for coming."

I reminded myself to breath. The whole room felt devoid of air. This was the first meal with the perennial, sustainable bean plant. I turned to Jeremy inquisitively as he appeared by my side. "Lynn gave me less than five days to try to concoct a recipe out of those beans. I did what I could. I barely had time to analyze the flavor profile, water absorption, nutritional breakdown, starch content, fat content..."

I could see he was becoming exasperated and defensive. "It's ok, it's ok." I put a hand on his shoulder. "This is only the beginning. You will get it. Don't worry, you will get it."

Tomorrow we will be starting the real work. Helping out where we can. I love you, Lola. I will see you in a month. Write soon.

P.S. Maybe send an autograph for Jeremy too; I am sure he would cherish it.

Love,

Micah