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It's just after 5:00am and I'm standing in my kitchen clumsily grinding coffee beans. As my coffee brews, I scroll through my email inbox: a couple newsletters, a shipping confirmation. But one email, from a contact at the New York Department of Agriculture and Markets, catches my eye. "It's happening. Press conference @ noon." My heart skips a beat. Today the governor will announce an unprecedented initiative to support the state's farm families. At the heart of the plan lies a sizeable allocation for low cost loans, the Pasture Protection Program, with which dairy farmers can effectively buy grazing land on the state's dime, as long as that land is to be managed indefinitely as diverse grazing land. Other states are expected to follow New York's lead, lest New York milk producers seize a competitive advantage. While I know I can't take credit for this initiative, I hope some of my work over the last several years will help farmers and cheesemakers take full advantage of the new opportunities it presents.

In the spring of 2020, while the coronavirus pandemic swiftly upended the global economy, I had devoted much of my free time to an unlikely form of escapism: steeping myself in the sort of climate change literature that would have made for great science fiction – if only it were fiction. Klein, Monbiot, McKibben — their outlook was unanimously grim. Though with varying fervor, each concluded that animal agriculture had to change. And in large part, I agreed.

Somewhere along the way we had forgotten the inherent wisdom of animal agriculture — its ability to put otherwise marginal land to productive use — and the wisdom of cheese: the ability to capture, store and transport the nutrients and nuance gleaned from that land. A large scale transition back to grass-based dairying seemed, despite its challenges, the only way to improve the character, and therefore the economic value, of milk, while farming in a way that was more ecologically sound, requiring far fewer synthetic inputs. But through my early research, I came to view a feed management system not as a binary choice but as a continuum, with a high input-low value management system on the left and a high value holistic system on the right. How, I wondered, could we help cheesemakers and their farmers make incremental shifts to the right side of that continuum? The economic fallout from the pandemic had left much of the industry badly bruised. The ecological benefits of such a management system may come as a welcome side effect, but I knew that in order to see change, a strong case had to be made for some advantage within the increasingly competitive market for specialty cheese.

The more that we, as an industry, understood the specific effects of feed choices on cheese character, the more empowered we were to decide which styles of cheese may serve as the best expression of our milk or, conversely, what sort of diet was needed to elevate the styles of cheese we wanted to make. Could we more fully capture a taste of place? How precisely could we hone cheese texture by tweaking its fatty acid profile? Could sowing pasture with specific perennials coax out a desired flavor or aroma compound? Most importantly, could the consumer understand and appreciate the added effort?

In the summer of 2020, I was presented with the Daphne Zepos Teaching Award with the goal of answering these very questions. I set out to learn from some of Europe's most renowned researchers and cheese producers and, just as importantly, the farmers that supplied their milk. I traveled first to the Auvergne to learn about recent work by Dr. Bruno Martin in which he and his team at INRA had quantitatively demonstrated the importance of diverse forage systems on the character of classic mountain cheeses. Martin's research was compelling and suggested that consumers could discern cheeses from a more extensive production system. I traveled to the Jura to see these systems in action and learn more about the research that the Comité Interprofessionnel du Gruyère de Comté had done to link cheese flavor and pasture biodiversity. I spent time with the farmers who produced milk for the cheeses of the Fruitière des Lacs. Their farmland is made up of lush grasslands used for both grazing and haymaking, boasting 20-30 different species of plants, as well as drier grasslands which are exclusively grazed, as rocky outcroppings make hay production impossible. From the Jura, I made my way south to Emilia-Romagna, not so much to see the production of Parmigiano Reggiano, as to see its beginnings in the fields. I had read that despite following seemingly identical production processes, Parmigiano made in the mountains was notably different than that produced nearer the River Po. How, I wondered, did differences in diet, environment, and climate impact the milk and make for such noticeably different flavor and texture? Surely there could be no better way to explore the effect of a place on its product than to compare multiple iterations from very different environmental contexts.

While the slopes of southern Europe made for ideal grazing lands, I knew that their unique terrain was unlike most US farmland so I set out northward, hoping to see how a philosophically similar approach to extensive herd management was being applied in a variety of growing climates. A friend in the UK had connected me with Patrick Holden of Bwlchwernen Fawr, the home of Hafod cheese. Patrick had, in a recent interview, been quite candid about the challenges of producing enough feed for his modest herd. Despite farming Bwlchwernen Fawr for some 40 years, he was still forced to rely on other farmers to supply a

percentage of his feed. I knew this would surely be the case for a great many small farmers back home and I was keen to learn more about how he navigated these relationships in order to ensure a feed supply that was congruent with his own values and practices.

I had originally imagined that my presentation at the 2021 ACS conference would entail a comprehensive survey of all that we knew about how an extensive, grass-based management system could enhance cheese character. The incentive to transition to this method of farming, I imagined, would be obvious to all. In the course of my research, however, it became apparent that farmers and cheesemakers didn't need convincing as much as they needed actionable information: guidance that would allow them to weigh the costs and benefits of management changes with eyes wide open. A set of overlapping decision trees took shape: do I currently have access to ample pasture? Is my current herd well-suited to a largely grass-based diet? Will any projected loss in yield be offset by a higher unit price? Meanwhile, an artisan cheesemaker might wonder: will I see greater variation in componentry throughout the year? And will my recipes be tolerant of this variation?

In the end, I modeled my ACS presentation on a childhood favorite: choose your own adventure. After recapping my travels briefly, I explained my decision tree and then polled the audience to see which questions were of greatest interest. The responses were quickly tallied and ranked and we spent the remainder of the session tackling the top three. I wove together case studies from producers abroad with those closer to home, interspersed with relevant academic research.

The response in the coming weeks was positive, but it was clear that the conversation was far from over. Ultimately, I dusted off a little-used journalism degree and set about writing a quarterly brief, concise but thorough, each focused on one of the topics identified in my decision tree. These articles, published on the DZTA website, drew a small audience at first, but grew in time to an online community of cheesemakers, farmers, aspiring farmers, cooperative extension experts and an enterprising consultants. Nearly four years later, my briefs, though still published, have become an afterthought when compared to the lively community of stakeholders prepared to debate best practices, disseminate new research and offer support to their peers. It's these stakeholders who will carry us forward.