Preserving one of the world’s most precious cheeses with data

Italians call Parmigiano Reggiano—or, simply, Parmesan—the king of cheeses. A staple in the royal courts of Europe during the Renaissance, Parmesan is one of Italy’s oldest culinary exports. Today, it can be found in the world’s top restaurants and in decent pizza joints too. In 2014, sales hit $2.6 billion. To better satisfy consumers, particularly Italians, Parmigiano Reggiano is truly beloved. What makes this cheese so unique?

Ficarelli: It’s more than food. It’s our heritage. It’s older than Italy and even the Italian language. And it’s part of the history of Europe, too. Monks began making Parmigiano Reggiano 1,000 years ago. Because it’s a hard cheese, it was well suited to travel great distances. Traders and princes brought it to the royal courts of France, for instance, and its value was recognized at an early age. There are several historical citations, some dating back to the 15th Century, that Parmigiano Reggiano was an important part of people’s diets and of the local economy.

The goal is to track the entire supply chain from the cow to the farm to the store shelves to ensure quality for consumers and to help the brand stand out amid a confusing cast of knock-offs. It’s true that little has changed in the production philosophy; we want to be faithful to the old monk’s recipe, after all. But of course there have been advancements. First it was electricity and the switch from wood fire to steam. The second big push came more recently, in the deployment of data analytics rolled out across the 330 dairy farms in the consortium. The data help better track the production cycle. Another advancement can be seen on the farm with the cows themselves. Because Parmigiano Reggiano is a protected foodstuff, the cow’s diet is strictly controlled. They eat only grass and hay from this area, and this forage is free of chemicals. Sensors are fitted on the cows that signal if they’re eating too much. Also, it’s important to monitor their movements. They wear an electronic ankle brace that’s like a Fitbit. If a cheese maker from a previous generation were to travel forward in time to see how the dairies today are using analytics, sensors and sensors readers to track everything from the cows’ movements and diet to the ups and downs of the production cycle, they’d think it was science fiction!

Producers can use only milk, salt and a natural enzyme called calf rennet to make the cheese. But that doesn’t mean there are only three variables to measure, does it? Precisely. As I said, we’re loyal to the old monk’s recipe. That means we have to equip consumers with the power to verify at the point of purchase that this is in fact Parmesan that comes from one of our cheesemakers. Maybe this could be done with a smartphone. You could say, “OK, I’m in a supermarket. I’m going to buy a cheese.” Maybe consumers scan it and learn the day it was made, where and by whom. In this way, the consumer would become very conscious about the origin, and even about how they’re spending their money.

It’s true that little has changed in the production cycle. The cheesemakers’ hands are the most important key point in our production. Knowing better means spending better. It means eating better. It also means living better.

Each Parmigiano Reggiano cheese wheel faces a famously strict inspection regimen. Can data analytics help producers achieve even higher quality cheese? We think so. Last year, dairy farms within the consortium produced over 3 million wheels and each will be inspected by one of our experts after 12 months of aging. If there are any defects, the cheese is rejected. The rejected wheels do not get branded and this forage is free of chemicals. Sensors outside the EU, it’s more difficult. We have to educate consumers about the difference, that ours is an artisanal, additive-free cheese that follows a centuries-old tradition.

How might you use data to better protect your brand? We’d have to equip consumers with the power to verify at the point of purchase that this is in fact Parmesan that comes from one of our cheesemakers. Maybe this could be done with a smartphone. You could say, “OK, I’m in a supermarket. I’m going to buy a cheese.” Maybe consumers scan it and learn the day it was made, where and by whom. In this way, the consumer would become very conscious about the origin, and even about how they’re spending their money.

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This is one in a series of articles and infographics brought to you by IBM about innovators who are combining science, technology and ambition to change the world. Wild Ducks is produced by veteran journalists Jeffrey O’Brien and Bernhard Warner and designer Carl De Torres.