



How the Electric Car Killed the Corn Industry

If we all switch to driving electric vehicles, the market could drown in excess corn. Tobacco farmers offer solutions.

By Robert Turner



I am a farmer with a black-and-blue thumb and a science writer who's terrible at math. I embrace a science-based understanding of climate, but sometimes I still pray for rain. And over the coming months, I'll share in this new column some of the most pressing challenges facing how we feed ourselves and our communities, along with the most promising solutions I've come across for ensuring a food-secure future.

Scientists have sounded the alarm about serious problems impacting agriculture, including more frequent and severe floods and droughts, rising input costs, and dwindling water resources. Through conversations with a few of these scientists, along with executives and investors in the AgTech and sustainable-food sectors, I'll aim to illuminate innovation happening across the food-supply chain.

North Carolina's "Burley Belt" tobacco acreage declined by 95% in 15 years.



If you find yourself suspicious that technological solutions are the answer, know that I hear you. The organic agriculture movement of the 1960s was, in part, a reaction to the industrialized model for farming that was beginning to take over at the time and the chemical hazards it brought with it. Those early pioneers continue to point me toward a better path — one without fossil-fuel-derived fertilizers (which have risen in cost 200% since 2020), without pesticides harmful to bees and soil health, and without rampant food waste.

In other words, don't expect to hear me pushing for self-driving robot tractors with built-in espresso machines (which are currently at work in California vineyards, by the way), but rather stories of growers deploying new greenhouse technologies and advanced microbial inoculants that are showing promise for improving soil health in their fields today.

Which brings me to one pressing matter and the subject of today's story: as we navigate a future dominated by electric vehicles, what to do with all that corn!

Amber Waves of Grain

Electric vehicles (EVs) could drive corn farmers out of business and wreak havoc in the heartland. That prediction might surprise you, but consider this: Forty percent of the corn crop in the United States currently goes into our gas tanks, driven by a federal mandate requiring that gasoline must contain 10% ethanol.

Meanwhile, General Motors announced recently that it will most likely sell only EVs by 2035. Other car manufacturers have made similar predictions, foreshadowing a significant drop in demand for corn as a gasoline input — and a potential undermining of the Corn Belt economy.

To get a sense for the scale of this potential disruption, you must drive through corn country, as I recently did on a thousand-mile trip crossing the Midwest. The cornfields here span east to west from Pittsburgh to Grand Island, Nebraska, and reach north from Minneapolis down to south of St. Louis. At 250,000 square miles, corn covers an area nearly one-and-a-half times the size of California, or more than two-and-a-half times the size of all the Great Lakes combined.

That level of output has historically supported many jobs. Today, more than 300,000 corn farmers produce about 1 ton of corn annually for every person living in the United States. This is despite the average person eating only about 5 pounds each year (mostly sweet corn varieties). Aside from serving as a feedstock for ethanol, 36% of the corn crop goes into livestock feed, and a sizable proportion infuses processed foods and sweeteners, including high-fructose corn syrup.

The EV transition will only underscore a problem that has existed for many decades: We're growing way too much corn, and we've avoided lapsing into a lopsided supply-demand imbalance by leaning into ways to use it all up. Government subsidies to farmers have soared in recent years — to nearly 40% of net farm income in 2020 — only compounding these issues, while begging the question, should we continue to rev the corn engine with taxpayer subsidies as it begins to fail?

No one can be certain what will happen to these corn farmers when EVs finally take over in a few short decades, but few industries could smoothly handle a 40% drop in demand without a transition plan.

What Tobacco Farmers Can Teach Us

Farmers are a resilient bunch. Growers in western North Carolina, where I live and farm in a region formerly known as the “Burley Belt,” have experienced market disruption before, when, spurred by a sharp drop in demand for tobacco during the mid-1990s, the number of tobacco farms declined by 97% between 1997 and 2012. The impact closed a 70-year chapter in the story of our region as a dominant tobacco producer.

But while the risk of market collapse is entirely inherent in any local economy dependent on a single cash crop, its wholesale devastation wasn't inevitable.

The author diversified his Arden, North Carolina, farm by introducing cattle and vegetables.

Anticipating the impact the loss of tobacco could have on the region, a group of farmers and community stakeholders met in 1995 to look for solutions to the challenges facing those tobacco farmers. What came out of these conversations was the Appalachian Sustainable Agriculture Project (ASAP), a campaign to promote alternatives to growing tobacco that focused on building consumer demand for regionally grown farm products by connecting people directly to food. The passionate ASAP champions convinced farmers to grow fruits and vegetables while at the same time lobbying local restaurants and grocers to purchase their products. From 2002 to 2012, the former burley-dependent counties saw a 98% increase in the number of farms growing vegetables, melons, potatoes, and sweet potatoes. By 2000, the group had opened a downtown farmers market.



The result of these actions is a story rewritten. Agriculture shifted from monocropping tobacco to growing a diversity of crops, along with grass-fed beef and free-range chicken eggs. Much of that food is now grown using organic and regenerative practices that improve soil health and biodiversity.

The largest city in western North Carolina, Asheville, now promotes itself as a “foodtopia,” drawing tourists from around the country, who descend on downtown restaurants to sample the area’s cuisine. Local food adds significantly to the local economy and underpins a workforce that has expanded to become much larger than farmers alone.

A High-Tech, Low-Waste Future

While the size and scale of the transition needed in the Midwestern Corn Belt is significantly greater than the shift we went through in North Carolina — including the need for new markets, equipment and technologies, labor, cold food storage, and transportation and distribution networks — I believe that, with intention, we can discover and scale solutions.

New tools and technologies that growers and scientists are testing today will help farms in the Midwest once again feed Chicago, St. Louis, and Minneapolis (and the towns in between and beyond). Solutions that build soil health while sequestering carbon are among these, including using multi-species cover crops, better crop rotations, smarter inputs monitoring, and no-till planting methods.

Will precision technologies make satellites, drones, and sensors ubiquitous on modern farms?



Controlled environment agriculture (CEA), or indoor greenhouse and vertical growing solutions, can help produce food year-round for local consumption and reduce our dependence on food from far-away places. New — or even old — methods might allow us to better target pests and disease and deliver the nutrients plants need more efficiently with less environmental damage to streams and waterways from fertilizer and chemical runoff.

Precision agriculture using satellites, drones, and high-tech sensors in the field will give farmers the data they need to make smarter field-management decisions. Imagine farm-optimization solutions that reduce inputs and costs, labor, and waste, while improving yields — all from an app on your phone! New food-preservation and waste-reduction technologies can greatly increase shelf life. Better tracking, real-time data, and distribution systems can ensure food gets from the farm gate to the consumer's plate quickly (and that any food donated to food banks arrives while it's still fresh).

Disruption, like the fall of tobacco or the demise of the gas-powered engine, can bring positive change. After decades of monocropping, building soil health will be our first step as we walk through an era of agricultural (and cultural) change.

As I explore the scientific advances that might unlock avenues for solving some of the greatest troubles looming out there, from [climate change](#) to superbugs, I invite you to tap into your curiosity and walk with me. Until then, I'll be sitting on the porch at my little mountain farm, watching cows on the green, distant hillsides, and writing about them; the solutions, not the cows. Well, maybe about the cows too.

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