Excerpt from *Animal, Vegetable, Miracle—A Year of Food Life* by Barbara Kingsolver

After dinner, the long evening of midsummer still stretched ahead of us. David was eager to show us the farm. We debated the relative merits of hitching up David's team and driving the wagon, versus our hybrid gas-electric vehicle, new to us, now on its first road trip. The horses had obvious appeal, but David and Hersh had heard about the new hybrids and were eager to check out this technology. David confessed to having long ago dreamed up (while cultivating his corn) the general scheme of harnessing the friction from a vehicle's braking, capturing that energy to assist with forward momentum. Turns out, Toyota was right behind him on that. We piled into the vehicle that does not eat oats, and rode up the dusty lane past the milking barn, up a small rise into the fields.

As Elsie had said, the drought here was manifest. The animal pastures looked parched, though David's corn still looked good—or fairly good, depending. The lane divided two fields of corn that betrayed different histories: the plot on our left had been conventionally farmed for thirty years before David took the helm; on our right lay soil that had never known anything but manure and rotation. The disparity between the two fields was almost comically dramatic, like a 1950s magazine ad, except that "new and improved" was not the winner here. Now David treated both sides identically, but even after a decade, the corn on the forever-organic side stood taller and greener.

The difference is an objective phenomenon of soil science; what we call "soil" is a community of living, mostly microscopic organisms in a nutrient matrix. Organic farming, by definition, enhances the soil's living and nonliving components. Modern conventional farming is an efficient reduction of that process that adds back just a few crucial nutrients of the many that are removed each year when biomass is harvested. At first, it works well. Over time, it's like trying to raise all children on bread, peanut butter, and the same bedtime story every night for ten years. (If they cry, give them *more* bread, *more* peanut butter, and the same story twice.) An observer from another planet might think all the bases were covered, but a parent would know skipping the subtleties adds up to slow starvation. In the same way, countless micronutrients are essential to plants. Chemicals that sterilize the soil destroy organisms that fight plant diseases, aerate, and manufacture fertility. Recent research has discovered that just adding phosphorus (the P in all "NPK" fertilizers) kills the tiny filaments of fungi that help plants absorb nutrients. The losses become most apparent in times of stress and drought.

"So many people were taken in by the pesticide-herbicide propaganda," David said. "Why would we fall for that?" He seemed to carry it like an old war wound, the enduring damage done to this field. By "we" he means farmers like himself, though he didn't apply the chemicals. He came of age early in the era of ammonia-based fertilizers and DDT, but still never saw the intrinsic logic in poisoning things to make a farm.