Dick and Sharon Thompson operate a diversified crop and livestock farm near Boone, Iowa. Originally, the Thompsons practiced high-intensity, monocrop farming using synthetic pesticides and fertilizers just as all their neighbors did. But they felt that something was wrong. Their hogs and cattle were sick. Fertilizer, pesticide, and petroleum prices were rising faster than crop prices. They began looking for a better way to farm. Through 30 years of careful experimentation and meticulous recordkeeping, they have developed a set of alternative farming techniques they call “regenerative agriculture” because it relies on natural processes to rebuild and protect soil.

Rather than depend on synthetic chemical herbicides and pesticides to keep their fields clean of weeds and pests, the Thompsons use a variety of old and new techniques including crop rotation, cover crops, and mechanical cultivation. Instead of growing corn and beans over and over again in the same fields as most of their neighbors do, the Thompsons change crops every year so that no one weed species can become dominant and all species remain relatively easy to control. In the fall, nitrogen-fixing cover crops are planted to hold soil against wind erosion and to keep down weeds.

Before planting, animal manure is spread on fields to rebuild fertility. During the summer, cattle are pastured on fallow land, using intensive grazing techniques that discourage weed growth and spread of manure over the whole field. The soil organic content—the sentinel indicator of soil health—registers at 6 percent, which is more than twice that of their neighbors. Untouched Midwestern prairie usually has about 7 percent organic content. The capacity to store extra carbon in soil might allow farmers to bid on carbon set-aside contracts.