

Chapter 4

Living with Nature's Cycle

Once a fossil fuel is burned, it can never return to its original state. In today's modern society, it is as if we are living comfortably on a runaway train with no brakes. On the other hand, the traditional life in the Edo Period was like living on a big disk making one revolution per year. The disk was linked to the sun, and moved on solar power, not fossil fuels.

The population of 18th century Edo Japan was between 30 and 31 million people. Japan's favorable climate allowed for lots of agricultural production, which allowed the country to produce enough food to support such a large population. Rice was the agricultural product that was most important and produced in the greatest amount.

In this traditional agriculture system, rice cultivation was 15 times more energy efficient than it is today. Moreover, the energy to cultivate rice (human power) was generated from the grains, potatoes, and other food that had been harvested in the previous year or two. In other words, people were able to grow rice using only the solar energy obtained in the preceding couple of years.

Modern agricultural technology allows a small number of people to produce a large amount of rice with incredible ease compared to the old days. However, today's advanced technology is dependent on massive amounts of fossil fuel, which basically means that modern agriculture wouldn't exist without oil. While we like to think that we eat domestically produced rice, our rice is in fact grown using petroleum imported all the way from oil producing countries. Thus, in an indirect sense, we live by drinking oil and are indeed very far from being a self-sufficient society.

Except for the harvested rice saved for its seeds and that placed in storage, the rest was used in various forms of food. Though people mostly ate it as boiled rice, they made some rice into steamed cakes, snacks, and sake. Rice was the staple of the traditional Japanese diet.

Needless to say, the rice people eat comes out of their bodies as excrement. A long time ago, when excrement was a precious fertilizer, it naturally belonged to the person who produced it. Farmers used to buy excrement for cash or trade it for a comparable amount of vegetables.

Fertilizer shortages were a chronic problem during the Edo period. As the standard of living in cities improved, surrounding villages needed an increasing amount of fertilizer. This resulted in further shortages, and thus fertilizer prices were continually rising.

Meanwhile, while inedible, harvested straw was in great demand for various uses during the period. Realizing that straw was an important natural resource, farmers chose to grow a particular type of rice that would produce a large amount of straw. In the Edo Period, farmers were able to harvest rice that yielded about the same amount of straw in terms of weight. Its greatest use was as fertilizer, with half of the amount produced used to make compost or barnyard manure.

About one third of straw produced was used as fuel. Straw burns easily and doesn't produce much heat, but large amounts were sufficient for heating bath water or for boiling rice. When people needed more

heat, they often used straw as the kindling to start a stronger fire. The resulting straw ash was then used as a high-quality potassium fertilizer.

The remaining straw was used by farmers to make a wide variety of straw products. They used these products at home or sold them to supplement their cash income. It is no exaggeration to say that Japan in the Edo Period was full of straw products. About half of the men at the time wore straw sandals. When moving to a new house, people usually wrapped their household goods with straw mats, binding them with straw rope. Used straw products were burned in the cooking oven, which was found in every household, or used as fuel at public baths. Farmers and "ash traders" then purchased the ash.

In this way, almost all of the nearly 10 million tons of rice and straw harvested every year returned to the soil in some way or another. Carbon dioxide generated through fermentation or combustion was absorbed by plants for photosynthesis and thus transformed back into living matter. All of the energy required for this process was supplied by the sun.

In other words, people in the Edo Period didn't have to think about recycling. All they had to do was to live normally and the rice and straw they produced (the key agricultural products) would end up back in the soil and sprout out again as rice seedlings next year.

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