



# THE JAPAN RICE PARADOX

By Richard Moore

**Riddle:** How can it be that a country with an average land holding of only four acres can be nearly 100 percent self-sufficient in rice with domestic producer prices ten times higher than competing foreign countries?

**Answer:** The persistence of rice as the key crop and diet item in Japan must be understood in terms of long-term assumptions about local environmental conditions, quality of life, and sustainable community values. Demand is less, due to a decrease in the population number as well as consumption per capita. On the supply side, the government has maintained self-sufficiency in rice through “minimal access” to markets by foreign competition. By emphasizing the environmental adaptiveness of rice, the government protects rice through World Trade Organization “green-boxing,” whereby the commodity plays a key role in environmental protection and food security. For their part, the consumers favor locally grown rice for food safety, traceability, and connections to rural areas.

## TRADE TALKS ON RICE IN JAPAN

The Japanese government position on rice rests on two main points: food security and environmental adaptiveness. This enables Japan to “green box” rice<sup>1</sup> as essential to Japan’s environment, so there is no upper limit applied by the World Trade Organization (WTO). With respect to food security, Japan ranks as one of the lowest in the industrialized world with overall twenty-eight percent self-sufficiency in grains. Rice is the only commodity where self-sufficiency has been maintained.<sup>2</sup>

As a result, Japan has been able to fend off foreign demands to open domestic markets despite current lobbying efforts by the Rice Millers Association of the US to open up more. The present rate of eight percent of domestic consumption is considered as “minimal access” in the trade talks, and the United States provides about half of this amount. Outside this “minimal access,” foreign rice has a tariff equal to 341 yen per kilogram (2.2 pounds) making it uncompetitive. Japanese rice is subsidized through stabilizing farm income, insurance premiums, extension services, the school lunch program, and diversion subsidies to have farmers grow crops other than rice. The two largest items are the Rice Farming Income Stabilizing Program and the Production Adjustment Promotion Program (rice diversion program). Farmer incomes are stabilized through payments when the market price falls below the standard price, which is a moving average of the price over several years. The diversion crop program is a less direct subsidy but is green-boxed for WTO negotiations because it can be related to keeping acreage environmentally sound. However, originally it was and continues to be a form of compensation for the decreasing price of rice. Diversion crop subsidies are still tied to the 1970 rice crop acreages when farmers grew extra rice to cash in on the highly subsidized rice price at the time. The percentage of the acreage diverted has doubled since the program began in 1970 when a ten percent diversion of

rice crops was mandated. Japanese defending their policy note that American rice is indirectly subsidized through the cheap irrigation water used by California growers.

In recent years the government has been pushing the idea of the “multifunctionality” of rice. By multifunctionality they refer to the various roles agriculture plays, such as conservation of land, fostering water resources, preservation of the natural environment, development of favorable landscapes, maintenance of cultural heritage, recreation and relaxation, viability of rural communities, and food security.

Rice in paddies and soybeans and other vegetables in upland fields (*hatake*) were the mainstay of traditional Japan. The combination of rice and soybeans used both nutritional complementarity and agroecological nutrient cycling, the soybeans and other cover crops such as vetch creating green nitrogen fertilizer. Soybeans and rice, however, now stand in stark contrast to each other. While Japan maintains its policy of self-sufficiency in rice, it is only five to ten percent self-sufficient in soybeans, the largest number of imports coming from the US, Canada, Brazil, and China. This is an effort to recover from Japan’s soybean market collapse of the late 1960s and early 1970s following the Kennedy Round of GATT when Japan was forced to open its doors to trade, mainly as a concession to Japanese car imports flooding American and European markets. The soybean market collapse in Japan had contributed to the rice glut of 1970. So today, soybeans grown as a diversion crop for rice can earn farmers between 40,000 yen per ten acres (\$1,527/acre) basic diversion subsidy, and increase as much as double depending on the amount of acreage, cropping sequence, and if they are planning to reduce more rice acreage.

Japan rests its case with the WTO on the environmental aspects of rice. Located in the Asian monsoon zone, Japan has an annual pre-

precipitation of seventy-one inches, almost twice as high as the world average, and short swift rivers because most of the terrain is mountainous. Rains come in the form of seasonal torrential rainfalls that come with the summer rainy season and typhoons. The 124 million people living in such a small country also necessitate a large water supply. Thus, the government emphasizes that rice has environmental functions that are worth more than the rice grain itself. First among these is preventing floods. The steep slopes of Japan are terraced so that they serve as miniature dams slowing up the water, minimizing the need for dams. A second function of rice paddies is to convert rainwater into irrigation and drinking water. Since the paddies have standing water in them during all but a week or two of the growing season, much of the water becomes underground water that serves as a very inexpensive supply of drinking water for much of Japan. Underground water also resurfaces through springs and other seeps and thereby contributes to the prolonged flow of rivers, particularly needed during the part of the growing season when the rivers have low flow and when paddy irrigation water is at a premium. Other functions of rice cultivation include preventing soil erosion and landslides, and soil and air purification. Comparing the value of these functions of rice (\$42.8 billion)<sup>3</sup> to the value of the rice itself (8.5 million tons of production times the world market price of approximately \$250 per ton which equals approximately two billion), we see the externalities are about twenty-one times that of the value of the rice itself!

#### THE RICE PRICE

Retail Japanese consumer prices for rice tend to be two and a half to three times higher than what American consumers pay at retail for the same items, although the higher quality and packaging for Japanese rice makes the comparison somewhat imprecise.<sup>4</sup> The rice belt in the Tōhoku (NE) region is where famous varieties such as Akita Komachi, Koshihikari, and Hitomebore are produced. In 2004 Akita Komachi rice produced in northern Japan's Akita Prefecture retailed for Y2,400 to Y2,700 per five kilograms at supermarkets in

the greater Tokyo area (\$1.00 equals approximately Y105.51). However, rice in Japan is usually marketed by the farmers in 132-pound bags. A 132-pound bag of the higher grades cost between Y18,000 and Y20,500 in 2004.

Of course, the most effective way to decrease the rice price would be to lower the costs of production. Increasing the scale of production to further lower the labor costs would be most effective. Labor has been decreased to one-third that of fifty years ago mainly through the introduction of machinery, but the scale of four acres per farm remains a problem.

The high price of farmland in the rice belt makes it nearly impossible for most farmers to increase the scale of their farms. The price of a quarter of an acre of farmland in Tōhoku was 1,020,000 yen (about US \$38,000/acre) in 2000.<sup>5</sup> The government forecasts that by 2010 the number of farming households will decline significantly and that sixty percent of the land under production will be farmed by farmers who have an average of thirty-five acres. The only way this can happen, however, is through subsidies that would encourage the leasing of land.

#### CHANGING LEVELS OF RICE CONSUMPTION IN JAPAN

In 2002 the amount of rice consumed per capita per year was 136 pounds, a dramatic drop to fifty-six percent of its 1965 level. During the same time, beef consumption increased fivefold while dairy products and oils and fats in the diet increased fourfold and threefold, respectively. These trends were no doubt encouraged by external factors that affected taste preference, such as the introduction of wheat into the school lunch program during the Occupation in the 1950s. In 2004 rice represented only 4.4 percent of the average household's food expenditures whereas in 1985 it was 8.3 percent. Because Japanese are eating more calories than they did in 1965, rice contributes only twenty-four percent of their total caloric intake compared to forty-eight percent in 1965. One way of seeing how this has affected their dietary balance is the PFC balance ratio where

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protein (P), fats (F), and carbohydrates (C) are calculated as the percentage of the diet attributed to each component. This can differ quite radically by country. For instance, Vietnamese score 9-14-77 as a result of eating much more rice (C) than Japanese. Americans, on the other hand, have a score of 12-37-51 as a result of high levels of fat in their diet. So with the decrease of rice consumption, Japanese have started a long “low-carb” trend, decreasing the PFC ratio in 1965 from 12-11-77 (similar to the current Vietnamese diet) to a projected 13-30-57 by 2010. While this is one of the best ratios worldwide—and probably a large contributing factor to Japanese longevity—it does exhibit a trend of increasing fats over the ideal ratio of 13-27-60.<sup>6</sup>

#### TRUST IN LABELING AND THE RISE OF CONSUMER COOPERATIVES

Throughout the post-war period there have always been problems with the false labeling of rice. Urban consumers had to deal with the problem of rice dealers blending various grades and varieties of rice; they would try to get around this by having relatives in rural areas send rice. When I conducted research in the rice belt, nearly five to ten percent of the average production was sent to relatives in the city. The problem of urban dealers blending different grades and varieties of rice worsened when the government started to deregulate “government rice” (rice directly regulated and subsidized by the government) during the 1980s and 1990s. During that time, black market rice, defined as rice marketed outside of approved government regulations, reached the consumers as blended rice sold under regional name varieties. This situation was exacerbated by a number of food-labeling scandals that occurred starting in 2000. The first major scandal involved tainted milk that left 14,500 people in the Osaka area sick. Since then a number of labeling scandals have included Australian and American beef being mislabeled as Japanese beef, imported pork from the US being sold as domestic Japanese pork, Thai and Brazilian chicken being sold as Japanese chicken, white pig pork being sold as black pig pork, and finally, the outbreak of mad cow disease. These labeling scandals resulted in the creation of the Food Safety Agency in 2002. However, even with the creation of this new agency, consumer confidence has been shaken and it remains as consumers’ number one concern, especially for food items coming from abroad.

The most surprising trend in Japan has been the rise of consumer cooperatives (*Seikyō*) as the leading retailer of food in Japan. Today these co-ops exist in urban and rural neighborhoods and are going head to head with the national chain stores. Co-ops are an aggregation of 572 individual co-ops situated throughout the country, operating some 1,149 retail outlets excluding institutional and university. Co-op membership was twenty-two million in 2003. Turnover continues to expand, with fresh food the main component of retail sales. Total cooperative sales in 2003 were 3,306 billion yen (US \$30 billion at 110 yen/dollar) of which forty-seven percent was fresh food and twenty-three percent was dry food. Forty-five per-

cent of sales were direct to consumers mainly in the form of small neighborhood buying groups who put in weekly orders. It is also possible for individuals to have direct delivery to their homes. These cooperatives are legally limited to activity within each of the forty-seven prefectures but have created a national federation. Many co-ops were started on college campuses during the 1960s and 1970s, the founders having been active in college campus anti-Vietnam War and citizen movements at the time. The cooperatives’ policy is to favor fresh, prefecturally grown, healthy, safe, and inexpensive food. As such, they have been the watchdog of food problems such as labeling scandals, protesting against genetically modified (GM) food, and pressuring the government to change the policies to favor consumers.

According to a survey by the Prime Minister’s office in 2003, ninety-one percent of the respondents’ top food concern was the safety of imported farm products while sixty-two percent were “not concerned” about food handling at home. Ninety-one percent of these consumers also thought that traceability was an important issue. Approximately eighty percent of people don’t trust labels.<sup>7</sup> The consumer cooperatives were the first to bridge this traceability issue with their creation of “face-to-face” relations between producers and consumers through the Sanchoku (direct marketing) Movement, an idea that soon spread to the competing chain stores. Trust is about ten percent higher for the cooperatives than the large chains.<sup>8</sup> Sanchoku producer groups are usually small groups of seven to fifteen producers from the same area who market their goods together and form a bond with the consumers to whom they market. The consumer cooperative fosters the interactions through having consumers visit the farms and farmers visit the co-op stores. As a result, the rice sold at the co-op stores sometimes has the names, photos, or addresses of the actual producers.

#### THE GENETICALLY MODIFIED RICE ISSUE

About seventy percent of Japanese consumers strongly oppose buying GM products because they are concerned about foreign company control of seed patents and because of health concerns. Today China and the International Rice Research Institute (IRRI) are moving forward with “Super Rice,” a combination of hybridization and genetically modified rice. When browsing the aisles of the consumer co-ops it is easy to spot “GM-free” products. This is most prevalent for imported soybeans which mainly come from the US where the rate of use of GM crops is over 80 percent. In the case of soybeans, GM has mainly been associated with the company Monsanto which made “Round-up” herbicide. The genetics of the soybean plant were altered so that the plant itself is resistant to the herbicide “Round-up” and were accordingly called “Round-up Ready.” So as a result, much of the tofu sold in Japan has labels which state that no transgenic soybeans were used or that kokusan (domestic) soybeans were used. Either way it means non-GM.

GM rice is being developed in the rice belt of Japan funded both

by the government and by private industry. For example, the Iwate Biotechnology Research Center was established in April 1992 with 100 percent funding from Iwate Prefecture. On 3 April 2003, the MAFF approved outdoor trials for a low-temperature resistant rice variety "Sub29." The popular rice variety Sasanishiki DNA was inserted with the glutathione-S-transferase gene, which imparts multiple functions such as herbicide resistance and improved cold resistance. Although this development could be marketed as "frost-free rice" and would ease production for the farmers, a concern by the opposing citizen groups is that it produces enzymes with multiple functions, and thus contains many uncertain factors.

The GM varieties with the most potential are health-related ones being developed that contain a gene related to cedar pollen tolerance. In Japan many people suffer from cedar pollen allergies. MAFF is currently discussing how to tighten the regulation of outdoor experimental releases of GM crops at research centers, in order to be in accord with the Cartagena Protocol on Biosafety, which came into force in Japan from 19 February 2004.

### THE 3 K'S

In the end, the sustainability of rice in Japan will be dependent on how well Japan can overcome a new set of "3 K's." In the 1960s the 3 K's of Kome (rice), KDD (the telephone monopoly), and Kokutetsu (Japan National Railways) were causing major deficits for the national economy. KDD and JNR monopolies were broken up and the government red ink on rice was significantly lowered through decreasing subsidies and prices, and lowering consumption. However, a new set of "3 K's" seems more basic to the sustainability of rice in Japan. These are Koreika (the aging society), Kokeisha (successor) problem, and Kasochiiki (depopulated rural areas). These all hinge on solving basic demographic and social problems. Aging of the Japanese nation affects both rice production and consumption. In 2001 the number of Japanese farmers over the age of sixty represented sixty-six percent of those employed in farming.<sup>9</sup> Likewise, younger people eat less rice than does the older generation. Thus, if the trend continues there will be a need for less rice.

In rural Japan farms are generally passed on to the next generation through single heir succession. Because farming isn't as attractive to the youth, the number of farms sold or rice paddies abandoned as a result of not having someone to farm them is increasing. Women still avoid marrying farm boys, and in the years between 1985 and 2002, the number of single-person households and unmarried working women nearly doubled. Because of this and the fact that people are moving to the cities, the number of rural depopulated areas has grown to 48,689 out of the total of 135,000 agricultural hamlets. Part of this is just that there are fewer and fewer farmers. While twenty-seven percent of the population were in farming families in 1965, by 2003 it had decreased to eight percent. However, there is some hope that the number of people returning to their native towns or regions is increasing, and this relates to the fact that people in general still think that rural communities represent a better quality of life. Fifty-seven percent of people in Japan view rural villages as being a place of psychological well-being. Fully eighty-three percent highly valued the beautiful natural scenery in rural areas and an almost equal number noted its clean air, water, and healthful environment.<sup>10,11</sup>

### CONCLUSION

There is no question that the amount of rice being produced and consumed in Japan is rapidly decreasing along with its price. The government has forced down the price of rice but the price will remain high as long as minimal access by foreign competition continues. But how can rice production be justified even from an environmental perspective if the number of people producing and consuming it continue to decline at these rates? Today the economic value of rice is overshadowed by its environmental significance, effectively blocking foreign efforts demanding free trade. This may prove to be a wise strategy for Japan to protect its domestic rice production as environmental awareness in the world continues to mount.

Japanese consumers are probably the most discerning in the world and right now their trust in how domestic and foreign production methods are labeled is at an all time low. However, the bond between consumers and producers as a result of the growth of the consumer cooperatives will likely ensure high traceability and freshness standards difficult to match by foreign producers. GM rice will not be an issue unless it can be proven to be safe environmentally and promote good human health. In the end it appears that the shift towards quality of life issues is defining the future of rice in Japan.

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**RICHARD MOORE** is author of the book *Japanese Agriculture: Patterns of Rural Development* (Westview, 1991) and is a visiting scholar at the Japanese Ministry of Agriculture National Research Institute for Agricultural Policy in 2004. He is an Associate Professor in the Department of Human and Community Resource Development and member of the Ohio State University Agroecosystem Management Program; Organic Food, Farm, Education, and Research Program; Environmental Sciences Program, and Department of Anthropology.