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Japan, Agricultural Workforce

### **Japan: How to Bring the Youth Back to the Workforce**

Japan has been an industrial monolith for much of its history, but because of its island geography, its agriculture has been lacking. Additionally, Japanese youth have had an overall disinterest in agriculture in comparison to the appealing nature of urban life. There has been a struggle to find a solution for the decline in rural life in modern Japan. But, instead of seeing rural and urban living as two different lifestyles with separate goals, combining the two ways of living may be the solution Japan has been searching for.

Modern day Japan is a Parliamentary Constitutional Monarchy, meaning that the head of the state is a hereditary monarch, while there is also a parliament that exercises and enforces most of the executive powers. (Grote) Japan follows western governmental standards as well, having three branches. The Executive branch, co-led by Emperor Naruhito and Prime Minister Fumio Kishida, the legislative branch, a bicameral system with the House of Councilors and the House of Representatives, and a Supreme Court with a chief justice and fourteen associate judges. Japan itself has a limited amount of land to farm on, being an island archipelago with 80% of the islands being mountainous terrain. Additionally, Japan has a cool north and abundant earthquakes from being in the Ring of Fire, a geological group of volcanoes in the Pacific Ocean. (Petty) So only around 12.5% or 47,239 square kilometers (about twice the area of New Jersey) of Japan is agricultural land. Japan has a total land area of 364,485 square kilometers (CIA) which is just smaller than California at 423,967 square kilometers. There is about an average of thirty hectares per farm in Hokkaido, which is the highest agriculture producing island in Japan with fruit trees and vegetables. In other prefectures there is an average of about 2.2 hectares per farm. (MAFF) Thirty hectares is about equal to 2 ½ Pentagons and 2.2 hectares is equal to the area of two 400-meter tracks. Japan itself has a total population of 123,719,238 citizens, 92% of which being urban residents. Traditionally, a Japanese household had three generations, the grandparents of the husband, his wife, and their children. More recently, though, the family has just been two generations, the parents and their children. Before children, both spouses work, but when children are born, the mother will usually stay home and manage the household. (Scroope; Brown 1). The average annual income of a family would be around 14,600,000 yen or 94, 000 USD. (Statistics Bureau of Japan) The current diet of a family usually consists of rice, vegetables, and seafood, with small portions of meat. (CultureGrams.com)

In modern Japan, youth have been moving to cities like Tokyo, where there are currently 37 million people (approximately 16,121 residents per square mile) residing in the city and it has only been increasing due to the attractiveness of urban work. (World Population Review) This means that much of the rural towns in Japan have been losing their younger workforce. In 2006, the agricultural labor force under fifty years of age was around 266,000; it dropped to 210,000 four years later in 2010. (Dong 3) Meanwhile, the workforce at the age 70 and older increased from 844,000 to 870, 000 in the same period. Farmers that are 60 years old make up 72% of the workforce, farmers 70 years old or above make up

45.5% of the workforce, and workers under 39 only make up 4.8% of the workforce. Overall Japan's agricultural workforce has dropped from 4.14 million to 2.39 million from 1995 to 2010. There has been an explicit avoidance of agriculture from younger generations as many see it as dirty, rough, and unfulfilling work. This is because of the unsustainable pay that full time farmers get as well as the hard labor required for the job. (Dong 4) The large dissonance in age has much of the elderly population struggling to keep up with the demand of consumers. Older generations are less prone to adapt to recent technologies and sciences and are less likely to recognize emerging industries. They also rely on the growth of mostly rice, meaning that the land utilization rate is reduced, and the production structure is not adapting to the modern market demand. Many of the elderly are not full-time farmers because of their age, so many work part-time from their retirement as well. (Dong 2) The limited population in rural areas means there is much underutilized land. Japan has been trying to solve the issue of depopulated rural spaces through different subsidies, both offering money to farmers who are transferring land and prospective farmers and their families. Japan is encouraging families to move to rural areas and raise their children with a subsidy of one million yen, which is approximately \$7,100 USD. (Jozuka and Yeung) And for those who wish to begin farming, Japan has produced "land banks" in prefectures like Duado. Land banks are governmental property of abandoned land, with the goal to repurpose the land for the needs of the community. These attempts have been overall successful but will not be a long-term goal in keeping the workforce consistent. According to a questionnaire of middle school students done by the Institute of Agriculture in Hokkaido and counties in Northeast China, only 12.5% of the over 4,500 students surveyed planned to stay in their hometown and pursue agriculture (Dong 4). I propose, instead of trying to bring the youth to rural spaces for agriculture. Japan should focus on bringing agriculture to the youth living in urban spaces. With different forms of urban agriculture like vertical farming systems with aquaponics or aeroponics, farmers can use less land to farm horizontally, and instead, farm vertically. Aquaponics and aeroponics are the methods of soilless growth. Aquaponics is a mixture of two systems; aquaculture, which is the rearing of fish, and hydroponics, which is a soilless growth system where plants are grown on top of water. (Underwood and Dunn) Aquaponics uses the waste of the fish as the nutrients for the plants, meanwhile the plants clear toxicities like ammonia and reoxygenate the water so fish can survive and be farmed. Aeroponics, like hydroponics, is the process of growing plants without soil, but instead of growing on top of water, plants are grown in a mist environment with nutrients in the mist. (Bhatia and Sharma) These forms of soilless farming are especially workable solutions because of the high automation and more computer-based skills needed, appealing more to the younger population. Aquaponics also requires much less land than geponics, or farming with soil, requires. Meaning that aquaponics and aeroponics can be done on the rooftops of cities by both farmers and citizens. There have already been cases of rooftop farming in cities like Tokyo with the Central Tokyo Agriko Farms (Sagasaki), which offer jobs to those with disabilities and youth because there is less of a need for physical labor. Furthermore, many urban residents show interest in agriculture today but do not want to leave their cities. Over 85% of Tokyo residents would like their city to have farmland and while farms have remained constant or decreased over the last decade, cities have seen a 67% increase in agriculture. (Moreno-Peñaranda). Aquaponics, especially, gives Japan three major parts of their diet, fish, vegetables, and rice. As all three work well in aquaponic systems. Both aquaponics and aeroponics are water efficient and require almost no pesticides, reducing the chance of runoff water polluting Japan's bodies of water, which as an island society is crucial. (Underwood and Dunn) While aquaponics is a slightly expensive solution with a 5,300L fish tank costing about \$34,000 USD, these systems showed to have a positive net value at around \$10,000 to \$12,000 annually. (Zappernick 2)

Though, because of the two governmental groups the Ministry of Agriculture, Forestry, and Fisheries of Japan (MAFF) and the Ministry of Land, Infrastructure, Transportation, and Tourism (MLITT), regulation on urban farming has been very confusing as both Ministries have different zoning classifications which effect of how and where urban farming can be done by both citizens and farmers. (Moreno-Peñaranda). However, Japan also already has laws such as the Productive Green Areas Act (Satake 3) and Urban Farming Promotions Basic Acts (Umeda), which gives tax incentives for urban farming and educates about urban farming respectively. Reinforcing these laws would give Japan the opportunity to educate youth about urban agriculture as well as give those who are interested, a financial backing to start their agricultural journey in an urban space. Overall, I believe that by encouraging and fortifying efforts to promote urban farming techniques instead of traditional farming can both bring Japanese youth to the workforce as well as secure it for years to come.

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