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Japan: Innovating a sustainable and vast landscape

The year is 1933, and Daichi is going about the daily chores on his farm. He sips his morning tea and consumes a bowl of warm rice. Although numbers in this profession are declining, the farming business still dominates fifty percent of the job market. His five children will join him on this foggy morning shortly, and they will each be put to work in the nearby rice field to help earn the family its living. While much effort goes into this task of growing rice, other foods such as potatoes, beets, and radishes are grown, but these are mainly for the family and not for market. Luxuries such as tractors are not in use, but the village, comprised of ninety nine percent farmers, still finds a way to survive and produce more than American farmers in the process. (earthlypursuits.com)

Daichi's family alone will produce three times that of the typical farmer in the states with far less land, and his practices will ensure a far more fertile soil for the coming years. Though things are currently going well for him, the fact still remains that he and other farmers will have to get a few things from neighboring China because the U.S. has stopped purchasing many items from Japan, such as silk (hyperhistory.net). His small operation may be in trouble, but hopefully this career will continue to support him.

It is now over seventy years later, and Daichi's grandson, Aoki, has an issue he must face. The current facts are that the United States currently has around eighty times more land than Japan, and rice production has fallen twenty percent (ers.usda.gov). Despite the U.S. having a seemingly better scenario, Aoki isn't without some classic Japanese ingenuity. He has a hydroponic greenhouse, and his no-till practices will ensure that his farm continues to thrive. Even though he is doing his best, he still has to face the reoccurring issue: the land he has will dwindle until he and other farmers will not be able to provide for the country and, as a result, will have to pay for land in other countries. This is poor both economically and nutritionally.

This leads us to our current problem. How can we help Japan, a country full of people who lead the world in technology and innovation, to channel this gift into creating an independently stable country that can support itself through said innovative reputations? If they can grow *square watermelons*, why can't hydroponics and no-till be prevalent across every farmland (monitor.hubpages.com)? The actual process to this may be a bit complicated, as many of the agricultural practices are considerably more primitive than ours, but the future is certainly not unreachable.

Once we have established a sustainable plan, we must find the land to fulfill the search for this agricultural gold. It is no secret that there is a demand for more arable land in Japan, and the rapid growth of urban settings offers no aid to this. As children go through rigorous education, there is the hope that they won't have to live the farm life and can move into the big city. Such can be detrimental to the cause, but obviously still much potential to helping expand the agricultural horizons.

In Japan, the average family size is considerably smaller than in the United States. If a couple wants children, they will normally limit their youth to one or two. Since room at the house is sparse, the traditional model of having grandparents live with their child's family is becoming nonexistent in cities, but most rural families still follow this exercise. It is also common to see kids living with their parents until their thirties because of an issue of transportation and finding jobs (kunihome.blogspot.com). One

could hypothesize that providing jobs for a dwindling agricultural sector would be beneficial. With students studying two hundred and forty days a year, with sixty percent participating in juku, or “cram schools,” the room for growing a sustainable landscape with various technologies through educated hands is inspiring (factsanddetails.com). This could also allow for the encouragement of leaders to dedicate more room for farming and self-sufficiency.

A quick look at the average farm would prove the need for a movement. When all is taken into account, most farms are only around 5 acres. Also, when a farmer wants to plant certain foods, many will simply hire a specialist to do the labor for them. Coupled with that, they spend a large amount of money on equipment, both purchasing and repairing it. This practice of hiring others to help is not always the best solution for many farmers. The trade agreement they have with Mexico has also been a bit detrimental as the Japanese raise prices to barely get any money (ers.usda.gov).

Next, as mentioned previously, rice is one of the main crop outputs of Japan. Fifty five percent of a farmer’s land goes into rice paddy fields, but that’s not to say that there isn’t some land being set aside for more production. Much of the land will still be used for soybeans, wheat, and barley. Corn is also grown, but mainly used for animal feed. In regards to livestock, dairy production is one of the biggest production outputs. Pigs and cattle are next in line, with egg production being the only product that is bigger than ours. An automated feeding system is in use in some areas, but this isn’t very accessible to the ordinary family farmer (ers.usda.gov).

On top of not always have the most innovative farming strategies; many rural farmers have minute political weight. The election maps are incredibly antiquated, and the central agricultural bureaucracy, The Agriculture, Forestry and Fisheries Ministry, has removed land from larger businesses and given it to smaller farming operations. While this sounds great for this cause, it is also removing a lot of productivity (factsanddetails.com). This productivity would be far larger if the operations were equipped with better technology, and a better nutritional variety would be available for market.

While on the topic of the food buying habits of this country, it must be mentioned that these people are actual quite healthy. They are not facing the issues that a third world country would in the sense that people are starving in large numbers and forced to eat whatever they can. What IS the issue is that there is a high food cost and less variety than what we are used to as citizens of the United States. Because of the long workdays, a convenience store diet is common for most workers in the cities. There is also the issue of the older population and their consumption patterns. Many are eating a plentiful amount of fish and vegetables, but when they pass, the market will be affected in a very dreadful way (ers.usda.gov).

The overall practices of the traditional family farm, which the main focus here, has room for improvement in the way of little things we may take for granted, or even use in classroom settings. For example, our FFA chapter, Chief Logan, has both a green house and a hydroponics system. The fact that students can harness greenhouse technology and grow plants without soil is a good step in the right direction. This should be a rather simple approach for helping the land issue in two ways. The first positive is that crops could be grown in the most urban of settings. Anyone could get started with some training, and have a fantastic career stemming from it. The process of getting this technology to the more traditional farmers will obviously be a bit more of a challenging task, but not insurmountable.

The clear obstacle is that Japanese farmers in the countryside are quite antiquated in their practices. They will often resort to back breaking hand labor, but are very slow to complain. Over many a year, they have continued to use the hand tools similar to what we used in the eighteen hundreds. When the group isn’t assaulting the ground in a quest for produce, they can oft be found chasing the livestock in hopes of pulling them into the ramshackle barns. This image, however, can be rather deceiving. Their famously

clever solutions consist of things such as water-powered scarecrows, and their strict yet calm lifestyle doesn't seem like it would leave much room for these plans of machinery.

This issue can be quickly solved with the other phase of the plan: sustainable agriculture. Forty nine percent of farmers share the same burden: not having access to suitable technologies. What's more, only point seventeen percent of food produced in Japan was declared organic by the Japanese Agricultural Standards, while over eighty percent of Japanese residents would love to eat organic food (japanfs.org). The somewhat disturbing truth is that sustainable agriculture is a more recent effort. Heavy pesticide usage is rampant, and perfectly fertile fields are not being maintained.

The government in Japan has been trying diligently to help this cause. This led to events like competitions in the early two thousands to see who could have the most environmentally friendly and sustainable farm. Despite these valiant efforts, organic farmers have only increased by 1,509 versus the almost 130,000 eco-farmers, and there has only been a .7 percent (tons) increase in organic food in five years. The probable cause for all of this is that the eco-farmers are facing a much easier obstacle. They only have to reduce pesticide usage by 50 percent, while organic farmers must comply with harsh international standards and annual inspections. What is desperately needed is some help for this dwindling profession (japanfs.org).

To help encourage this movement, the usage of sustainable and environmentally minded practices cannot be marketed as more complicated than regular farming. Once a farmer is certified to run a sustainable production, basic grants should and are mandatory for these farmers. With proper education and certification programs, this goal is much easier to attain.

The next step in this process is to make the market friendlier to the organic grower. Eliminating any middleman regulation and side business allows distribution to become far more wholesome and allows the farmer get their product out there in more manageable fashion. Letting the seller become more educated about the facts of this product will make everything far more inexpensive and safe. This will allow for a dynamic farmer-to-retailer system that makes it easier for all to have access to organic foods.

Finally, there has to be a connection ranging from the farmer to the store, and lastly, the consumer. The buyer must be able to understand in an intelligent and comprehensible way that purchasing food that was grown using non traditional methods is both better for them and the environment in which they live. In fact, by 2011, it is hopeful that over half of the population will understand the importance of their agricultural obtaining and production practices and what it affects. The government alone dropped 457 million yen in 2008 on promoting awareness in this department. These efforts are obviously not futile as this method of using the land uses one fifth as much water.

The problem that holds back this exciting revolution is that only past landowners can utilize the land, making the new guys face many hurdles. This fact coupled with the fact that there is a desperate need for land shows that getting these new tools into use will take some time and working more with the government. There is also the problem of feeding over 126 million people in an efficient way that isn't quite so simple with organic farming (worldpopulationreview.com). Telling agriculturalists that they must use tougher tactics in already difficult times isn't effortless, but it is already going in the right direction.

There is, however, more to creating a sustainable market than simply making safer food. There are also smarter techniques for planting and having exceptional hindsight while doing so. Such careful planning and thoughtfulness are but one leg on the stool of sustainable agriculture. There are things we police very diligently over here, but such standards are not often put on the table in Japan. With unfertile soil and generally polluted waters, the landscape is in need of some basic modes of protection. Again, this harks

back to the mentality that innovation doesn't always have to be fantastic concoctions that were made only seconds ago. The listed strategies are but simple suggestions from services we use all of the time across the Pacific.

For starters, no-till usage is a must. Constant tilling can continue to erode and cause major damage to the already sparse and fragile soil in Japan. While the older and more traditional way of farming may seem like it already handles the problem, most of the fields have been continuously utilized without much mercy. This will not allow for nutritious soil that gives the best outcome for the people who really need it. No-till also offers many benefits such as fuel savings, less time and less impactation. (rolf-derpsch.com)

Another process that would support no-till is crop rotation. Along with avoiding unnecessary displacement of soil, planting the same crops continuously is an awful drain on nutrients. Monocultures, or fields with the same variety of plant every year, host pests and diseases. Certain crops will also allow for more activity to be happening in the soil on the biological end of things. It should also be noted that on top of changing crops, different types of root systems and mineral gathering types should also be applied (wiso.boku.ac.at).

The last step to be addressed is precision in fertilizer placement. Similar to the no-till issue, not having accuracy in placement of lime, potash, and other nutrients is a large waste. Not adopting these strategies would also lead to a waste of money and pollution. Since pollution is an important topic in Japan, especially with water, it would be wise to implement this technique. To go about this, a simple testing of the soil would be needed to see what type of fertilizer to use and how much of it is required. There are also special implements that can be used from both the tractor and the application source that can be used to control how much is being released and where it is needed (striptillfarmer.com).

So, the question remains of just how will this be brought to farms in the focus country. Starting with the cities, a bigger excitement must be injected into the fertile minds of the youth. A firm investment in education will pay off in the end, and wouldn't be exciting to completely change the views of a country from, fearing an agricultural career, to desiring it? It certainly wouldn't take long to help the population make up for some of its land lost through advanced green house technology, hydroponics, and maybe even community gardens. Overall, there is plenty of room for setting a wildfire of farming passion and agriscience research that can cause a renewed sense of importance for the field.

While the possibilities look up for the urban areas, the more traditional rural sectors may seem like a lost cause. It is more than likely that someone who simply looks at one of these farms may see lost hope, but not someone who is in a leadership position in agriculture. In fact, it is more than probable that the majority of our practices come from this land and its brilliant people, so why can't some more basic steps be taken to lead them to better production? It may be unlikely that, in a few months, these classic agriculturalists will be using combines and sprayers, but it is FAR more likely that they can be rotating crops, using less tillage, and stopping fertilizer waste. They built this country on its farming potential and their work ethics. If they can use a small greenhouse or maybe some more advanced implements, it would show the government that providing aid for this part of this economy would not go in vain. They are not only producing fantastic money saving and nutritional sources, but they are leaving an impact on the citizens that will last a lifetime. Even if Aoki's children decide to not continue with the farm life, the lessons they will have learned will continue, even if its not in the same way it has for centuries.

All of this should be taken as an example of both the types and effects of innovation. All that the future needs to flourish is a simple seed, as does any great farm. Long live Aoki's family, and long live the quest to end world hunger through innovation.

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