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Merging Technology and Tradition: A Comparative and Unique Insight into Organic Farm Internships in New Zealand and China

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ABSTRACT

Internship plays a crucial part in preparing a student to deal with all kinds of challenges in one's professional life (Rastegari Henneberry, S., & Radmehr, R. 2020). It promotes the skills of an individual through experimentation in learning. The importance of theoretical learning cannot be underrated, yet a healthy balance between theory and practice polishes the individual to become a competitive person in the respective field. The skill enhancement even becomes more important for an agriculture student as agri-business is the matter of producing food, raw materials, and even more than 50% of revenue for a country. Agricultural practices in organic farming, coupled with theoretical knowledge, serve as a link between institutions of higher learning and agricultural producers (Ermatovich, Y. S. 2021). Thus, it is crucial to give students real-world experience, especially in the agricultural sector, to avoid any major blunders (Ermatovich, Y. S. 2021).

Introduction

Internship plays a crucial part in preparing a student to deal with all kinds of challenges in one's professional life (Rastegari Henneberry, S., & Radmehr, R. 2020). It promotes the skills of an individual through experimentation in learning. The importance of theoretical learning cannot be underrated, yet a healthy balance between theory and practice polishes the individual to become a competitive person in the respective field. The skill enhancement even becomes more important for an agriculture student as agri-business is the matter of producing food, raw materials, and even more than 50% of revenue for a country. Agricultural practices in organic farming, coupled with theoretical knowledge, serve as a link between institutions of higher learning and agricultural producers (Ermatovich, Y. S. 2021). Thus, it is crucial to give students real-world experience, especially in the agricultural sector, to avoid any major blunders (Ermatovich, Y. S. 2021).

Study Area

The current report presents the internship experience within the fields of New Zealand and China. The regions were selected for internship for their rising concern of organic farming coupled with technological advancements.

Internship Experience at New Zealand Organic Farm

The internship in New Zealand organic farms was an actual productive experience, which provided an opportunity to gain great skills in farming methods and implementation of advanced technologies. Organic farming needs skills as well as experience due to the fact that our environment has become reliant on synthetic fertilizers

or pesticides (Alotaibi, Bader Alhafi et al., 2021).

The usage of technology in New Zealand is growing with time. The major and commonly adopted techniques are automated irrigation systems, managing nutrients, the Internet of Things (IoT), and automated sensors (Brown & Roper, 2017). The farms were also independent in the production of their organic fertilizer through vermicomposting in technologically advanced pits (Naher et al., 2021). The research showed that the yield from organic farms is approximately 19.2% lower than conventional farming (Yang, 2014). New Zealand is currently spending approximately $217 million annually on the production of organic goods. Since 2012, approximately 127% of the rise has been recorded in sales (Stephenson, F. 2016). That's why the production rate showed a subsequent annual rise of 3.5% from the past decade due to the incorporation of technological advancements (Downs, David. 2019). Figure 1 shows the major differences between organic and conventional farming techniques and their potential outcomes.

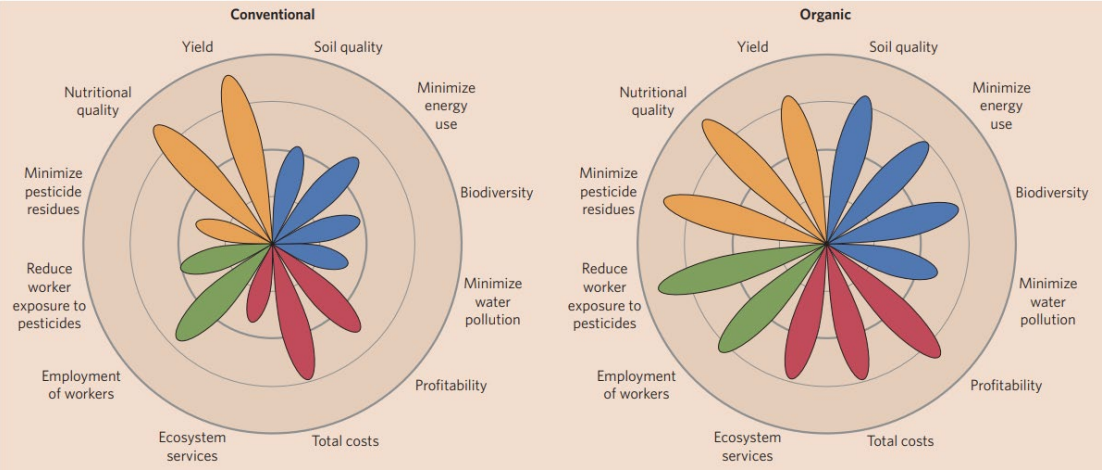

Figure 1. A comparative analysis of organic and conventional farming in major sustainability areas (Reganold, J. et al., 2014).

Figure 2 shows the percentage of leading challenges farmers are trying to solve with the help of technological advancements in New Zealand.

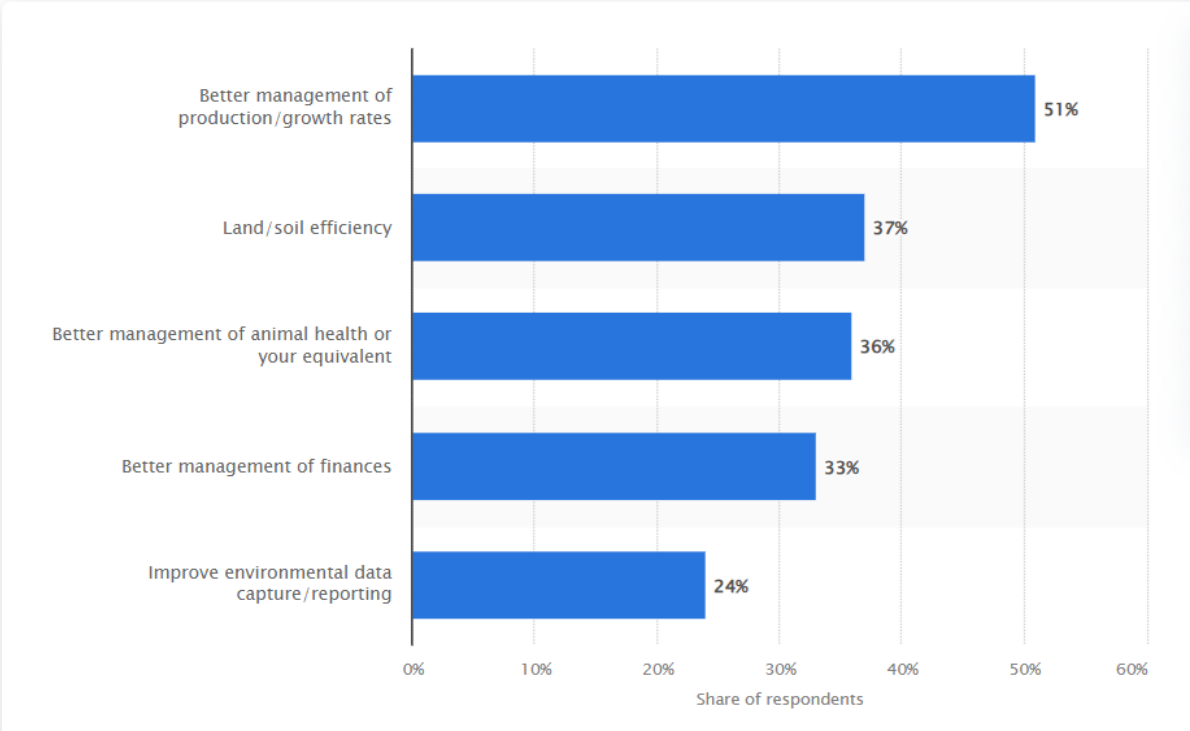

Figure 2. Leading challenges focused to be solved by technology in agribusiness in New Zealand (Statista, 2023)

Significant Outcomes of Internship at New Zealand Farms

The internship provided an opportunity to work with foreign labor and deeply analyze their innovations.

During my experience at the walnut patch, I noticed that New Zealand is using a bag that has a removeable bottom. The farmers use it to transfer walnuts from the bag to the truck when the walnuts are all ready to go. This technique resulted in saving labor from picking out the walnut one by one from the bag. Which resulted in more profit for the farms because labor wages are incredibly high in New Zealand.

The farm was also producing telegraph cucumbers, which were not being cultivated around the year through the greenhouse technique. There, I got a completely different experience of working with hydroponic techniques in cocoa fiber slabs. It took approximately six weeks to get 1st batch of cucumber that was enriched with nutrients.

Another experience was in watermelon production. There, I realized that warm soil and limited water supply is the key to the successful production of a sugary and crisp watermelon.

New Zealand Agriculture Policy

The agriculture policy of New Zealand states that the government does not provide any subsidy to its agriculture activities. Hence, this motive compels farmers to innovate and introduce competitive strategies of farming to make revenue (Fiblfilm, 2020).

Internship experience from China's Organic Farm

Organic farming in China is lacking in technological advancements. It was noticed that Chinese farms are still

working on their traditional techniques, such as hand tilting, planting with hand, plowing with animals, and manual irrigation methods (Wu et al., 2019). The research showed that the technological advancement in China's agriculture has remained very slow (i.e., S-shaped), as during 8000 years, it showed growth of only 10 folds. Later, advancement in tangible tools resulted in 40% growth, and technological advancement coupled with theories resulted in a 50% growth (Wu, S. et al., 2019). The major reason behind this slow growth graph is the geographical situation of China. The surveys showed that approximately 69% of the geography comprises mountains, hills, and highlands (Facts and Details), which make the areas out of access to introducing technologies. The cultural aspects of these areas are also highly preserved, which makes it difficult to introduce new technologies in their agricultural systems. The unawareness of technology results in a significant loss of annual agriculture yield.

However, it was noticed during the internship that the traditional methods of farming at China's farms are much more feasible than organic farming. This is because organic farming tends to require a lot of time, effort and money; China has a huge population to feed. In order to be an organic farm, the government requires a patent first. However, that patent could cost up to years to acquire. During the period of trying to get the patent farms may not sell anything in the market which means that there is no income made. Moreover, people in other provinces depend on the agriculture from the "agricultural provinces". So if one farm is trying to turn from conventional farming to organic farming then the people who are depending on this farm for agricultural is all going to starve.

During my internship at Highland Farms, I noticed that the regional people were using animal-driven plows in their fields. While here, rice cultivation was also manual transplanting or seed throwing. Both traditional techniques were well adopted but took considerable time.

Eco-Tourism Model

China has been promoting its eco-tourism for the past few decades (New China TV, 2023). During 2022, the revenue generated from eco-tourism surpassed approximately two trillion Yuan, which proved to be a major supporting sign for the local and government economy (Statista, 2023). This revenue generated was linked with cultural activities and farming practices (New China TV, 2023).

Technological Challenges in Chinese Agriculture System

China is facing immense pressure to cope with rising concerns of a food crisis due to the presence of a high population and supply chain tension. While China is also sticking to its traditional techniques due to its cultural and geographical aspects (Daxueconsulting, 2022). Such situations are resulting in limiting the production of local seed varieties. Hence, the government has to import seeds from other countries to support their organic farms.

Another important factor I noticed is that China is reducing its arable land area (Figure 3). Due to limited technology and reduced land, agricultural products, especially organic farming, are also reduced.

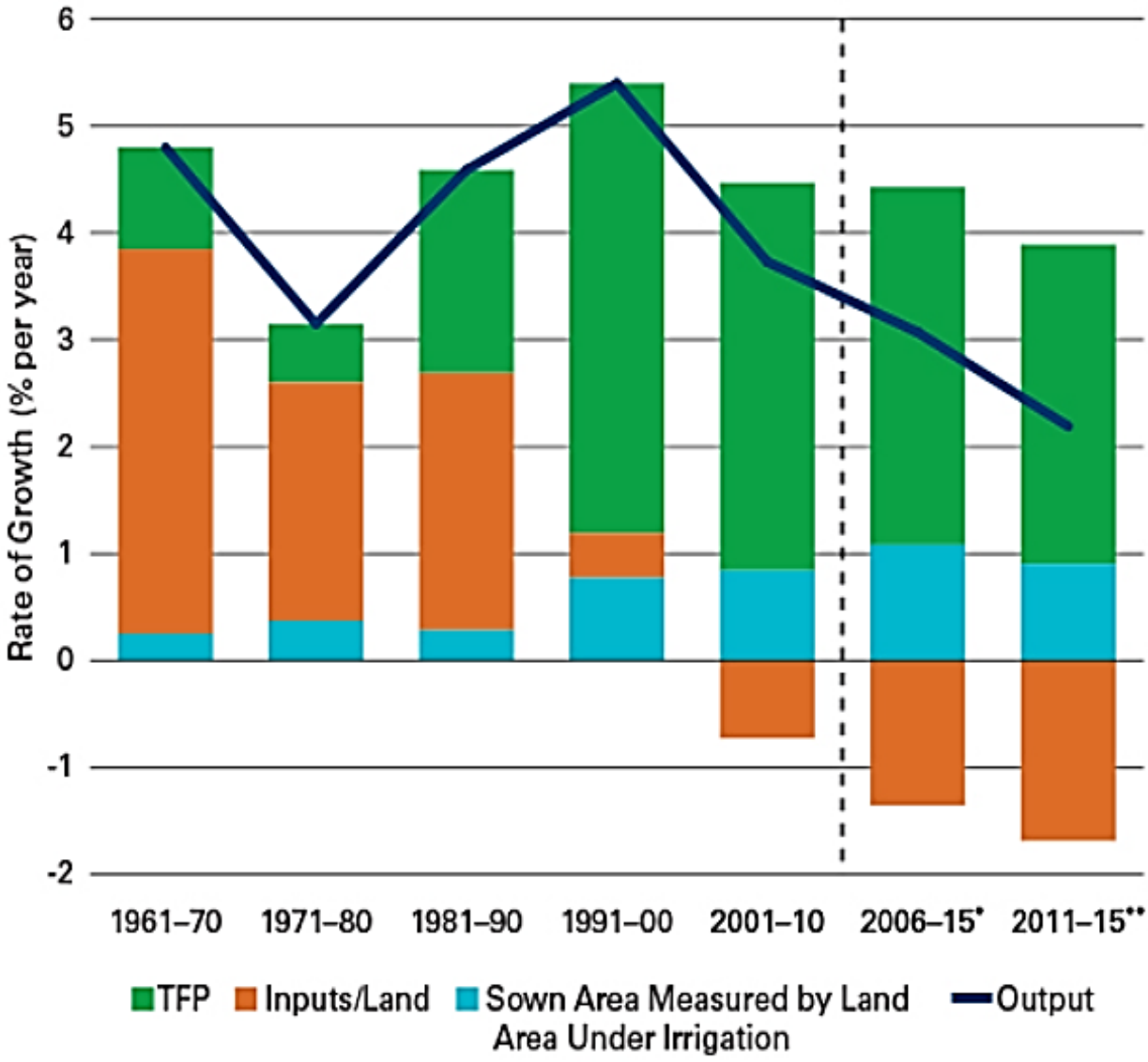

Figure 3. Estimated agricultural land and rate of growth (China's Agricultural Productivity Imperative, 2018)

Furthermore, research showed that initially, the speed and acceleration of development showed a steady rise and eventually started declining. The maximum growth rate was reached between 0 and 2000 AD (Figure 4) (Wu, S. et al., 2019).

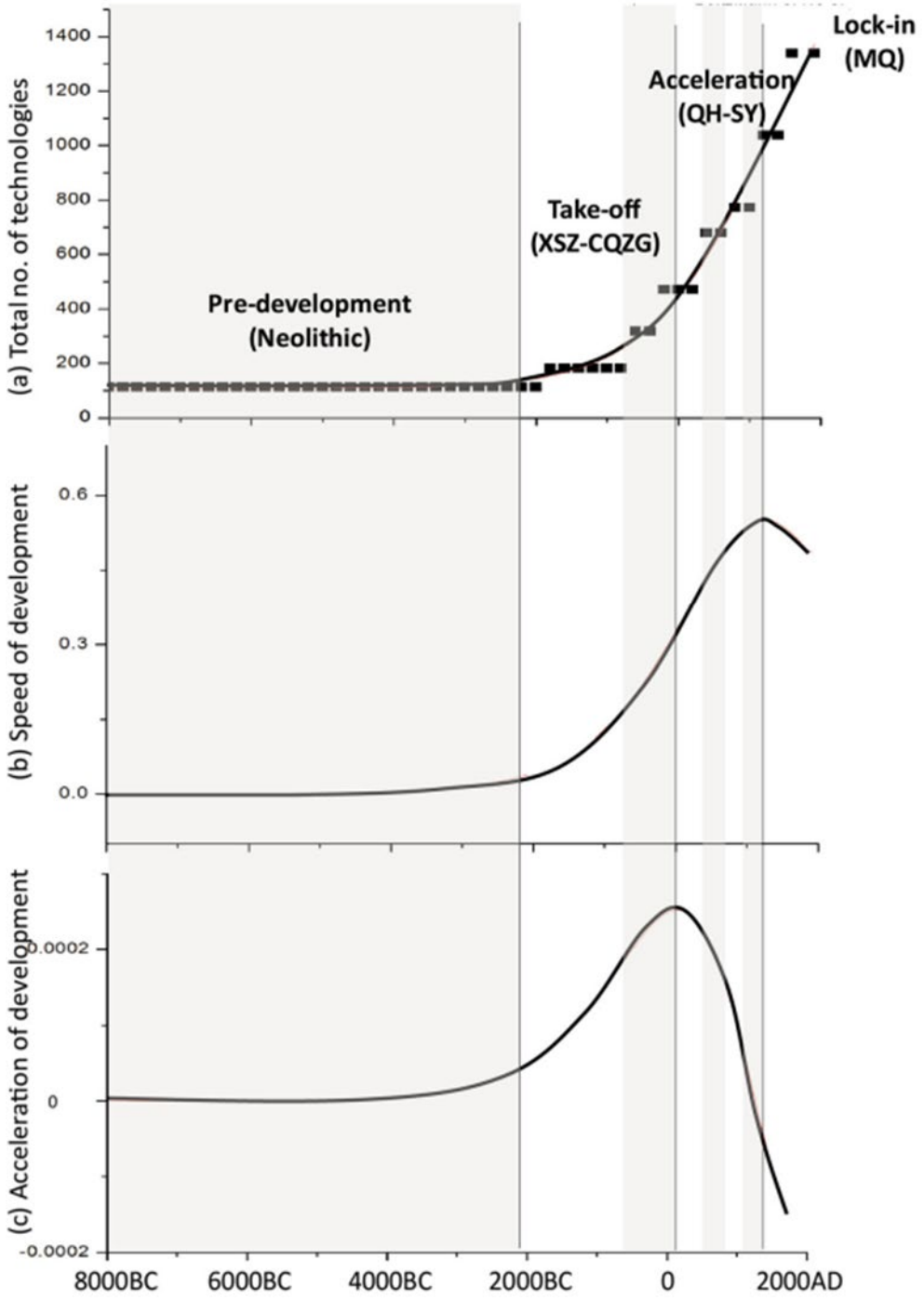

Figure 4. Historical overview of development of agricultural technologies in China (Wu, S. et al., 2019)

Current Scenario of Organic farming in China

Currently, China has become the third largest country in the production of organic food. The country produces approximately 4.93 million tons of organic products, and the number of certified projects is nearly 1600, producing approximately 300 – 400 different varieties (Zhang, F. et al., 2007).

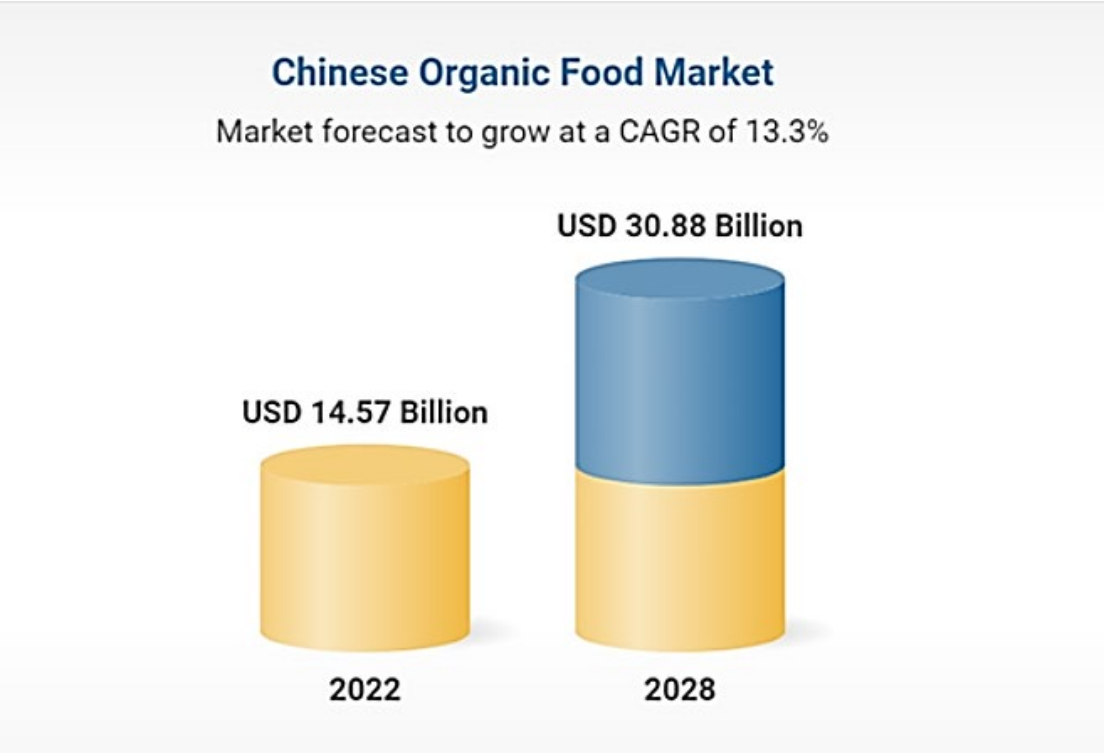

Figure 5. China's Organic Food market trends (China's Organic Food market, 2023)

China is also investing in technological advancements and agriculture policy. The Chinese government's agricultural policies gradually strengthened domestic assistance, improving farmer income levels and advancing in securing long-term security objectives of food products. China's government is getting involved in the market by introducing and then slowly increasing price support in order to achieve these objectives. Due to this interference, there is now a difference in pricing between domestic and foreign markets for agricultural commodities (Hejazi, M. & Marchant, M. 2017). China is also implementing various subsidy policies. The major purpose of these policies is to boost farmers' motivation income and ensure food security (Li C. et al., 2022).

Comparison Between China and New Zealand Organic Farming

The above discussion shows internship experience at two agricultural lands, i.e., China and New Zealand. The major differences in agriculture activities of both regions are as follows;

New Zealand	China
• Working on technological advancements, i.e., robotics, digital irrigation systems, etc.	• Following traditional techniques
• Farming is non-subsidize	• Farming is subsidized
• Works on innovations	• Traditional farming is prioritized
• Independent in agricultural products	• Imports seeds

• Greenhouse techniques and vertical gardening are used to increase yield	• Depends on imports
• Allowing foreigners to join their fields and apply more sustainable technologies	• Allow eco-tourism to generate revenue
• Geographical features support technology and innovation	• Geographical features do not support innovation and technology

Conclusion

The internship proved to be a productive experience in getting hands-on in agricultural techniques of growing organic products. New Zealand provides a great insight into the fact that if we adopt technology in our agriculture practices, it will be easier for a nation to survive in the agricultural race. Technological advancements in the farms of New Zealand made them capable of dealing with the rising need for organic products despite limited arable land resources. The techniques of multiple cropping have made them highly skillful and able to produce multiple products at the same time. In contrast, technological advancements such as sensors have made organic cropping a force and resource-saving technique.

On the other hand, China opened an insight that the traditional methods of farming were even more eco-friendly and sustainable but resulted in low yields. The incorporation of traditional techniques in farming was associated with the cultural and traditional aspects of China, while geographical limitations were also the key factors that limited technological fusion. Hence, it is crucial to introduce a sustainable combination of traditional farming coupled with innovation to revolutionize the agriculture industry.

Recommendations

It has become important for China to incorporate technology with traditional techniques of Chinese agricultural practices and organic farming. Such advancements will help to boost crop yield further and make agriculture sustainable and self-sufficient. The traditional agricultural techniques were found to be feasible for organic farming due to their less use of chemicals, but coupling it with technology can increase acre crop yield.

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