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Achieving Sustainable Growth in the Chinese Organic Industry

Qimei Agricultural Science and Technology: A Case Study

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In mid-February, 2011, Mrs. Yuqi Zhao, the CEO and co-founder of Hebei Qimei Agriculture Science and Technology Co., Ltd. (Qimei, 企美), attended the BioFach World Organic Trade Fair in Germany to exhibit her business. On her return flight to China, Mrs. Zhao reflected on how much Qimei had grown since 1999, at which time she quit her position as an English teacher and founded the organic agriculture firm. Although the first half of Qimei's history had been very rough, generating no profit, Mrs. Zhao and the management team had persevered by telling themselves, 'someday, we will make it.' They were right. Qimei turned a profit for the first time in 2004, and has since been growing at a high rate, predominantly through their export business.

However, by the time she was flying back from the fair in Germany, the quality of China's exports had received incredible scrutiny after numerous recalls and scares, and it had become clear to Mrs. Zhao that Qimei must begin to create a stable domestic base to offset the growing risk in China's position in international trade. Additionally, Mrs. Zhao felt that, through entering the domestic market, Qimei could help domestic consumers live healthier with its organic products, and ensure Chinese farmers a stable source of income to have happy and healthy lives. Qimei signifies 'to expect beauty and happiness,' and for Mrs. Zhao, happiness cannot be attained without the firm establishment of health. However, Mrs. Zhao also recognized the various challenges ahead that must be surmounted to enter the domestic organic market, among which include issues with organic certification, competition, low consumer awareness of organic products, and funding opportunities.

As the airplane entered China, Mrs. Zhao peered down at the vast land from her window and considered how Qimei can effectively enter and develop in the small but growing Chinese organic market.

Country Background

The country of China is a massive, complex, and varied place. It has over 1.3 billion citizens and is the fourth largest country in land size in the world. Politically, the ruling party is the Communist Party of China (CCP), which as a group does not experience significant political competition. The CCP also controls publications and information with significant filters on both the internet and the media. Internationally, China's government has been criticized as it is often seen as authoritarian with a high degree of dictatorial control. Furthermore, all land in the country is state-owned and leased out to individuals or private entities for established periods of time.

Largely due to the reform of economic policies in the late 1970s, which implemented a market-based economic system in the communist country, China underwent massive growth over the past three decades (CIA, 2010). GDP increased rapidly, growing often at double digit rates. In

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2010, China overtook Japan in annual GDP and became the second largest economy in the world, behind only the United States (CIA, 2010). However, urban cities rather than rural areas have disproportionately experienced such economic growth. As a result, average urban incomes are noticeably higher than the average rural income, and despite its growth, the country is still plagued by high levels of poverty. Approximately ten percent of the population lives below the poverty line, and GDP per capita is only $7,400 (CIA, 2010).

Culturally, China is considered a high-context culture that strongly values trust and interpersonal relationships. A high context culture is one in which people are closely and deeply involved with each other, and as a result, a structure of social hierarchy exists and individual inner feelings tend to be kept under strong self-control. The bonds between people imply commitment, expectation, and mutual goodwill, and thus businesses in high-context cultures depend strongly on relationships and trust (Kim, Pan and Park, 1998).

China's Agriculture Industry

Chinese Agriculture and Vegetables

Currently, China's agricultural sector accounts for 10.3% of China's GDP and 39.5% of its labor force (CIA, 2010). Among the agricultural sector, the vegetable industry is especially important, as it accounts for more than 10% of the total agricultural production (Yuman, Jinsong, Zhang, and Kamphuis, 2004). Roughly 78 million rural laborers work in vegetable production and an additional 80 million work in vegetable processing and marketing (Yuman, Jinsong, Zhang, and Kamphuis, 2004). While production costs of vegetables are low, labor costs have been rapidly rising, leading to an increase in vegetable prices of 60% between 2009 and 2010 (Ministry of Commerce, 2010).

There is an increasing demand for safer and higher quality vegetables in China, in part due to recent food scandals. These scandals were a series of failures in meeting international food safety standards, which raised concerns of both countries that imported food from China, but also the Chinese domestic consumers as well. Notably, in 2001, the European Union found excessive antibiotic residues in shrimp imported from China and banned its imports[1]. More recently, the 2008 Chinese milk scandal caused the deaths of at least six infants and resulted in 300,000 additional babies becoming ill due to the usage of the industrial chemical melamine (Jacobs, 2008). Such instances spiked awareness of food safety in Chinese domestic consumers.

Consequently, food safety became an important issue in China, which gave rise to the Chinese legislature's adoption of a law to establish a national framework for the monitoring and assurance of the safety of agricultural products (Calvin, Hu, Gale and Lohmar, 2006). In addition, to indicate produce that is free of toxic contaminants, the Chinese Ministry of Agriculture (MOA), which serves as a leading agency in food safety insurance, made efforts to promote no-harm and green food standards. The no-harm standard, which was introduced in 2002, requires all produce to be under a specific residue limit, and the green food program, initiated in the 1990s, enforces more stringent guidelines regarding the use of chemical pesticides. However, despite the MOA's

[1] See Exhibit 1 for other Chinese food scandals.

efforts, only about 6% of the volume of agricultural production was no-harm and 1% was green in 2005 (Calvin, Hu, Gale and Lohmar, 2006).

The Chinese Organic Vegetable Industry

From 2000-2006, China's organically cultivated land size jumped from forty-fifth to second place trailing only Australia. Currently, China cultivates nearly 3.5 million hectares of land under organic management (Paull, 2008). In 2007, the total domestic organic production reached nearly 3 million tons (USDA Foreign Agricultural Service, 2010) and the MOA expects that organic acreage and production will increase 20-30% per year through 2017.

The Chinese organic food and beverage sales for both exports and imports reached $7.2 billion in 2008, which is more than a 140% increase from 2003 (USDA Foreign Agricultural Service, 2010). Certain analysts predict that annual organic consumption will increase by 30-50% over the next decade, positioning China as the fourth largest organic market in the world by 2020. In 2007, domestic organic sales were $1.13 billion; by 2015, they are expected to be as high as $8.7billion (USDA Foreign Agricultural Service, 2010). Presently the majority of the organic products produced in country are being exported to Europe, the United States and Japan (Sheng, et al., 2009). By the end of 2007, China officially recognized approximately 30 categories and more than 500 varieties of organic products including grains, vegetables, fruits, beverage, and dairy products (Sheng, et al., 2009).

The domestic price for organic food in China is usually three to five times higher than conventional food, which is a large part of why organic consumers account for no more than 3% of China's total population, and why these consumers tend to be of middle and high income classes (Shuping and Miles, 2010). Nevertheless, the demand for organic products is projected to increase due to the growth in this middle-class population.

A recent survey conducted in Guangzhou found that more than 70% of its residents would be willing to pay double for safer foods (USDA Foreign Agricultural Service, 2010). In particular, young parents and grandparents have been recognized as purchasers of organic products as a health measure for their own children or grandchildren. Furthermore, general characteristics of the average organic buyer are females between the ages of 28 to 50 years old who are married, office workers, and have a university education (USDA Foreign Agricultural Service, 2010).

Imported Products

Due to low domestic demand, presently imports do not play a significant role in the Chinese organic vegetable market.

Certification Process

The Certification and Accreditation Administration of China (CNCA) promulgates policies and regulations as they relate to the organic agriculture industry in China. All organic products sold in China must have Chinese organic certification[2] and must be in compliance with the China National Organic Product Standards (CNOPS) (Biofach, 2011). Additionally, in conjunction with the

[2] See Exhibit 2 for the two labels that must be present on organic products legally sold in China.

CNOPS, all certifiers authorized by the CNCA to grant organic certifications are bound by the "Rule on Implementation of Organic Products Certification (Bugang, 2005)[3].

As of 2010, 26 agencies, which were comprised of private firms, NGO's, third-party agencies, and international firms, were authorized to certify organic products in China. Collectively, more than 4800 organic product certifications have been issued, which account for roughly 2.6 million hectares of organic agricultural land (USDA Foreign Agricultural Service, 2010; Tiandong, 2011). Certification is available for a number of different commodities, which are listed by the proportion of domestic sales they account for (from high to low): field crops, processed foods, wild-plants, aquaculture, honey, livestock, fungus, fertilizers, and pesticides (USDA Foreign Agricultural Service, 2010).

There exists a general process by which an entity is granted an organic certification[4]; however, each specific certifying entity may have additional requirements above and beyond those stipulated under CNCA, all of which must be in accordance with national standards and must be publicly published (Biofach, 2011).

Market Confusion

There are a host of challenges associated with the certification and sales of organic products in China. When taken collectively, the issues lead to low consumer confidence in the organic label and confusion surrounding the meaning of the term 'organic.' Certain accredited certifiers have better reputations than others for upholding the strict guidelines for organic certification. However, other groups stray from the standard, which can result in certifiers granting producers an organic certificate who are not truly organic as defined by the national standards. Additionally, organic standards have been known in the past to be poorly enforced, potentially flooding the market with more mislabeled and misrepresented products (USDA Foreign Agricultural Service, 2010).

In an effort to regain consumer confidence, private grocery stores have recently begun stamping organic products with their own label. While this practice has the potential to circumvent non-organic products being sold in their stores, it also may contribute to consumer confusion. However, despite the challenges associated with certifications, a 2010 investigation inspected 11 government certification agencies, 980 certified enterprises and 630 batches of organic products. The results demonstrated that the majority of the accredited certification agencies were in compliance with the national organic standards and that the pass rate of certified products was over 95% (Tiandong, 2011).

One final source of market confusion does not concern the certification of organic vegetables, but rather their very nature. Specifically, there are three general classifications of vegetables in Chinese supermarkets: organic, green, and no-harm. Chinese consumers are relatively unaware of the differences between such vegetables, which are associated with a wide variation in prices.

Retail Outlets

Organic products are sold through various channels. The products sold at store-based

[3] See Exhibit 3 for a more comprehensive list of what the standards and rules pertain to.
[4] See Exhibit 4 for an explanation of the certification process.

retailing sites, such as local supermarkets, hypermarkets, or specialty stores, account for 96.8% of sales while other methods include online stores and home delivery[5]. As a recent phenomenon, online shopping and home delivery can sometimes offer less expensive organic products as they eliminate the middleman and shorten the supply chain. For instance, organic choy sum (a green leaf vegetable) in Guangdong is sold for $2.7 per pound in mainstream supermarkets, while it is sold for $0.88-1 per pound online (USDA Foreign Agricultural Service, 2010).

Company Profile

Qimei's History

Qimei is a company with a storied history. The founder and current CEO, Mrs. Zhao, had a career as an English teacher in China in the mid-1990s working with children in Yunnan County in Hebei Province. In 1996, Mrs. Zhao first heard about organic agriculture and subsequently began an intense research campaign on the subject. Her hobby soon became her passion, and she left her teaching job to begin empirical research on the feasibility of organic vegetable production in China.

Mrs. Zhao spent the better part of the following two years doing field work, researching and administering surveys to farmers. Though she had minimal formal training in agricultural sciences, she picked up and learned the necessary skills as time went along. After much research, she heard of Professor Yie at the Beijing Agricultural Institute, a Chinese expert in organic agriculture. Mrs. Zhao and her husband, Mr. Li, made the trip to see Professor Yie shortly thereafter to ask for his help and support. Mrs. Zhao recounts,

> *Almost as soon as he met us, he looked away in disbelief that we could be taking on such an endeavor. He told me bluntly that my skin was far too light for me to understand the effort it takes to work in the fields. He told me to come back when I had figured out something else.*

Mrs. Zhao was taken aback but remained determined. She and her husband set out to gather support from various individuals around the area. In seven months time, she returned to Professor Yie's office with six partners (one other woman and five men) and a plot of land. She asked for his help in judging the quality of the land and the potential for the company to go forward. This time, with the aid of Professor Yie's wife, he reluctantly agreed to a site visit. Pleasantly surprised, he saw potential for the company, but quickly stated that the land must be worked and flattened to create a suitable environment for the plants to grow. Taking these considerations to heart, Mrs. Zhao thanked him for his help and began the long process of reforming the land. It was 1999.

By May of 2000, the sandy plot of land was flattened and the first asparagus crops were planted. The company was officially underway, under the name of Hebei Qimei Agriculture Science and Technology Co., Ltd. However, the company was still far from stable. Due to allergic reactions to the farming environment, Mr. Li had to relinquish his position with the company. Additionally, as the initial asparagus crop would take a full year to produce, and with debt piling on, one of the partners elected to leave the company in 2001.

[5] See Exhibit 5 for a breakdown distribution of retail outlets.

In 2002, the first batch of asparagus was harvested. As production increased, the company hurriedly searched for distribution channels and aimed at securing organic certifications. The company secured distribution through Chinese exporters who shipped their products under various labels to the EU, Thailand, Japan, and South Korea. Organic certifications, on the other hand, would require time as the certification process took upwards of three years.

Even with high prospects for growth and development, the internal issues amongst the founders continued to cause some tension. Soon, it was 2004, and the company had been successfully harvesting and contracting more work out to other farmers, but still had yet to turn a profit. By early 2004, all of the five founding men had left the company. Still undeterred, the remaining two women founders remained positive and proceeded to apply for loans and entered government-sponsored business competitions.

Five months after the final male founder left the company, Qimei turned its first profit. In the same year, the company won the Hebei Province Agriculture Bureau and Green Culture Projects Industrialization Presenting Competition, a government sponsored fund for presenting the most innovative and likely successful project in its local province. As 2004 progressed, the company received numerous supporting loans and investments from the government, a clear sign that the government saw great growth potential in the company.

As the business began to prosper, farmers eagerly looked to join the company. Capacity was expanding with the development of a new five-acre processing facility in the Hebei agricultural capital of Handan City, and more suppliers were needed. 2005 and 2006 were years of intense growth for the company, and the company solidified its export orientation. It supplied goods to a larger number of Chinese exporters who sent Qimei products around the world. In November 2006, the processing factory was completed and Qimei hired workers dedicated and passionate about furthering organic agriculture in China. The majority of these workers, from factory line workers to upper management, are still with the company to this day.

Despite promising growth, the issue of haphazard organic certification left room for concern as the company aimed to certify its products' integrity. As a stop-gap, the management decided to secure certifications from well known and respected organizations abroad instead of just Chinese certifiers. After intense scrutiny and numerous site visits over a period of three years, Qimei secured organic certification in 2007 from the United States Department of Agriculture (USDA) as well as the certification boards in Canada, Japan, South Korea and the EU.

Over the course of the next year, the company continued to grow, and began to market its own products under the Qimei label. As Qimei gained popularity as a provider of high quality organic vegetables, its yearly export volume further increased. Then, in 2008, Qimei received an amazing break. Having been noticed as a rising company with a commitment to quality, the Chinese National Olympic Committee sought out Qimei to be a provider of vegetable goods in the 2008 Summer Olympic Games in Beijing. Without hesitation, Mrs. Zhao jumped at the chance. With the help of the entire staff, she ran a successful operation that provided organic garlic, asparagus and peanuts for the entirety of the Olympic Games. Qimei's outstanding products and services earned them the highest marks from the Olympic Committee, signifying outstanding commitment, work, and execution during the Olympic Games.

The success of the Olympic Games boosted the sales of the company further. Meanwhile, additional scares, such as the aforementioned 2008 milk scandal caused significant concern for the safety of the Chinese public and their food. In response, Qimei's management began to consider reorienting the business to include domestic sales as well as exports, a move that would require further investment in the expansion of the company's capacity. Additionally, this provided a hedge against uncertainty in China's position in the international trade market. This strategy was supported by the market: in 2009, banks came to Qimei's headquarters, and asked for the company to take more loans to expand its business. Additionally, banks, investors, government officials and communities began talks about the company going public to fund the next stage of growth.

In 2010, Qimei began construction on a new processing facility to expand capacity. The new 55-acre facility is some ten times larger than their current facility. The additional capacity of the facility will allow the company to take a huge step in expanding their supply chain, adding the potential to incorporate roughly 50,000 acres of source land.

Qimei's Vision, Mission and Objectives

While a profit-focused company, Qimei also views part of its mission as having a positive social impact on China and its local communities. Specifically, Qimei's strong focus on social responsibility is inherent in its mission statement: "Food safety is our responsibility, environmental protection is our mission." The management of Qimei feels that by producing organic food, they are enacting environmental protection on a local level, and as they scale up, this environmental protection will become more and more widespread. Similarly, the management believes that by producing food without pesticides or GMOs, they advance the cause of food safety in China, preventing repeats of the earlier food scandals.

Furthermore, Qimei aims to support what they have termed the "organic cycle"[6]. A feature of the long-term vision of the company, Qimei developed the organic cycle in collaboration with the Nanking Agriculture University Institute of Organic Food Research. The central idea of this cycle is sustainable agriculture. Specifically, the cycle is a model for how to achieve a truly sustainable system in organic food production and is part of the company's three-year plan.

In addition to goals oriented around food safety and preserving the environment, Qimei also wants to ensure a better quality of life for the communities in which it works, and thus it has enacted policies and standards for farmers that work toward this end. Once becoming Qimei suppliers, farmers see a drastic change in their lifestyle, which is enacted in three main categories: income, ease of occupation, and security.

In terms of income, most of the farmers for Qimei were previously growing and selling grains and simple crops such as cabbage and potatoes. Once they switched to selling organic vegetables for Qimei, they saw a drastic increase in income, often moving from an average of earning 500 Yuan/mu to as much as 7000 Yuan/mu[7]. The effects of this type of change are often massive: one farmer, Mrs. Yuan, not only moved from a one-story to a two-story house and bought a car, but she also became the dominant wage-earner in her family.

[6] See Exhibit 6.
[7] Based on the conversion rates 100mu = 16.47acre and US$1=6.57China Yuan Renminbi, 500 Yuan/mu is approximately US$462/acre and 7000 Yuan/mu is approximately US$6469/acre.

The second major impact on farmer's livelihoods is the ease of their occupation. Before partnering with Qimei, farmers would have had to travel as many as 30 miles each way to bring their food to the market. To the contrary, Qimei collects produce from the farms directly, allowing farmers to spend more time cultivating their land, and less time loading and transporting crops.

Finally, Qimei provides a level of security that had never been experienced before by the farmers. Qimei has an arrangement with suppliers where they guarantee a target price for their goods, no matter what the market bears, meaning that farmers are no longer at the whim of the fluctuations in the price for vegetables. Farmers can be certain in their return on their crops, rather than worrying about a drop in the price they will receive. The positive externalities of this arrangement are numerous, ranging from the ability of farmers to make profit-maximizing decisions, to simple peace of mind in their households.

For these reasons, farmers with Qimei are uniformly very happy to be suppliers to the company. Furthermore, given the social goals of Qimei for a safer and more environmentally friendly world, they feel that they are contributing to a larger and beneficial mission while making money.

Political Relations

A major strength of Qimei is the support that it has attained from the local government in Handan and surrounding counties. Agricultural and economic development officers are greatly invested in the continued growth of Qimei, and their relationship with the company is not only professional, but personal as well.

The reason for this support by the government has been the massive beneficial effects that Qimei has had for the local community. It has increased the quality of life for many farmers and their families, and brought a great deal of business to the province. Furthermore, the company is contributing to food safety and environmental protection in the region, and its status as a supplier to the Olympic Games made local government believe that Qimei could continue to grow dramatically. The officials remain very vocal about the fact that they want to continue to support Qimei's growth.

Furthermore, Qimei's mission is in line with greater national Chinese policies. China is looking to limit its overall environmental impact and have a greater degree of food safety. Local government believes that by supporting Qimei, they can support these national missions.

The type of support that Qimei receives from the government is varied but incredibly useful. Specifically, the government has pushed to provide Qimei with low-interest rate loans so that it can continue to develop its business. Furthermore, the government has granted permission for Qimei to go public in the future, so that it can continue to attract investors and have more available capital. Finally, the government is looking to advertise to consumers the potential benefits of organic food, so that a more educated populace may be interested in Qimei's products. In the heavily government-controlled environment of China, this support is invaluable and necessary to become a successful company.

Certifications and Awards

Both Qimei's impressive growth and its dedication to organic food have earned it a large degree of recognition. First, Qimei's vegetable production processes, farms, and products have been certified as organic by a wide range of international organizations including the USDA, Canada, EU, and Japan.[8]

Second, Qimei and Mrs. Zhao have been the recipients of many different awards from a variety of organizations. For example, the Hebei Industry and Commerce Administration awarded Qimei an honorary credential, recognizing Qimei's products as a famous trademark for Hebei Province. Also, acknowledging Qimei as a regional leader for agricultural development, Dragon Head Enterprise Awards for Agriculture Industrialization have been awarded from the province, district and county where Qimei is located. Not only has Qimei been recognized as an excellent and leading business in its area, but also Qimei has been acknowledged as a socially conscious one, especially with their work in enhancing women's rights. Various women's associations have recognized the company and Mrs. Zhao for their important contributions.

Qimei's Production Activities

The supply chain[9] Qimei employs is relatively simple, yet it cannot be completed without several key inputs which are vital to maintaining and increasing Qimei's crop yield and their subsequent processing capacity. Included among these inputs are healthy soil, organic seeds, and organic fertilizer.

Essential to the success of Qimei's organic cycle is the quality of their soil. Agriculturalists have long argued for effective and efficient soil management practices, as healthy soil produces higher yields with less effort, leads to less rainwater runoff, and lowers the rate of erosion. One of the major components of healthy soil is organic matter. Increased concentrations of organic matter offer a multitude of varying benefits, including: higher crop yields, drought-resistant crops, reductions in diseases and pests, the sequestration of carbon, protection against harmful natural chemicals, less compacted soil, and assistance with seed germination. Furthermore, the presence of organic matter increases the availability of nutrients, such as nitrogen, phosphorous and sulfur, which are essential to crop growth. An increase of 1% in organic matter has been correlated to a 12% increase in crop yields (Magdoff and Van Es, 2009). Equally, pH is in important factor to assess and monitor, as varying levels can affect crop production and yields. According to samples taken in 2007, on average, Qimei's soil has fairly low organic matter composition and is slightly alkaline[10].

Of additional importance is the procurement of high quality organic seeds, which Qimei currently sources from Rutgers University and the University of California at Davis, whom they have partnered with since the inception of the company. Qimei has begun to think about producing their own organic seeds, but this an endeavor they have yet to embark upon. Once the seeds are procured from the United States, they are delivered to the farmers, who in turn begin to cultivate their lands. When it is time to harvest, Qimei picks up the crops directly from the farmers and

[8] See Exhibit 7 for examples of organic certifications.
[9] See Exhibit 8 for a detailed supply chain.
[10] See Exhibit 12 for Qimei's detailed soil report.

brings them back to the processing factory, at which time the fresh products are sorted, cleaned and delivered to either domestic retail outlets, directly to the consumers, or to the export intermediary. Crops that are intended to be manufactured into processed goods follow the same supply chain as the fresh products, however they are processed in-house which can add time before distribution. An additional key input is organic fertilizer, which Qimei purchases from local livestock farmers and fertilizer producers.

The combination of the inputs and processes culminate in the production of a number of different outputs. Included among their fresh and frozen products are asparagus, peppers, cauliflower, broccoli, snap peas, sweet corn, soybeans, sweet potatoes, and yellow beans. Additionally, Qimei farmers are growing legumes such as peanuts and soybeans as well as tree nuts, such as chestnuts. Furthermore, they are manufacturing a line of processed foods, to include asparagus dumpling, sweet potato chips and cereal.

Qimei's Human Resources

Organizational Structure

As a mid-size and growing company, Qimei employs and works with a great number of people. Broadly, they can be separated into three large groups: management, factory workers, and farmers.

The management team consists of 12 individuals who work out of the Qimei headquarters, and run the various parts of the business. They are organized by hierarchy under Mrs. Zhao, and they run departments such as quality control and advertising[11]. The next set of employees is the factory workers, who work at Qimei's processing plant. They examine, process, and package food, as well as complete other odd jobs around the factory. Currently, there are roughly 120 factory workers. Finally, the largest set of employees are the farmers, many of whom are not direct employees but rather have contracts with Qimei either individually or cooperatively through their village. Currently, approximately 3,000 farmers scattered throughout 11 villages are contracted with Qimei.

Notably, over 90% of the Qimei employees are women. This is in line with Qimei's goal to increase the rights and status of women in the local community. It also reflects a belief by the CEO that women often do better work than men.

Qimei's Work Culture

Though the company is growing and aims to continue with the rapid expansion of the entire organic agriculture sector, Mrs. Zhao has also fostered a unique company culture that nurtures each individual's talent and offers employees the opportunity to learn from one another. For example, an important part of the Qimei work day is a daily tai chi exercise session. One employee at the Yunnan facility is a world-renowned tai chi martial artist and regularly leads employees through tai chi exercises in the hope of helping each employee improve his or her health and also to create a sense of camaraderie. Mrs. Zhao herself participates on a regular basis. Others share their talent through performances of Beijing-style opera, cooking, or traditional Chinese drumming. The

[11] See Exhibit 9 for a full organizational chart.

inviting and lively culture of the company keeps employees engaged and also facilitates a strong sense of belonging. Mrs. Zhao stated:

> *Harnessing each person's talents and having them know how much Qimei cares about their contributions is very important. Our main goal is to ensure the health and safety of our employees and we embody that through our lively and vibrant company culture. Eating well is important for health, but a happy work atmosphere is one way to improve health, too!*

Qimei's Finances

Source of start-up capital and current funding sources

The company originally took out a bank loan for 1.3 million Yuan or approximately US$200,000[12]. As the company continued to develop, Qimei relied heavily on owner equity and bank lines of credit. However, as the company began to prosper and generate profits after 2004, Qimei was able to diversify its funding sources and reinvest its own retained earnings into its operations. After the success of the 2008 Beijing Summer Olympics, banks began approaching Qimei urging the company to acquire more capital. In turn, in 2009 and 2010, investment banks as well as government support brought forward the option of taking the company public with an initial public offering (IPO). The company has yet to move on the offer for IPO, but is considering it as a viable solution to their future funding issues. Qimei now holds title to over 130 million Yuan of assets, which is a 100-fold increase since their initial inception in 1999.

Financial and Production Trends

Financial data were hard to keep track of during the first years of production. Qimei did not have the capacity or software to accurately track the financial data until the latter half of the 2000s[13]. However, within the three-year period from 2008-2010, the company's sales revenue doubled. Similarly, production tonnage has skyrocketed from 2002, with gross tonnage figures increasing almost thirty fold[14]. At the start of 2011, the first quarter sales were estimated to exceed expectations, as sales during the Chinese New Year in late winter have so far surpassed previous years.

Qimei Marketing

Current and Future Products

In the past couple of years, Qimei has added five more frozen products to its lineup, including broccoli, garden beans, and chestnuts. Moreover, in addition to vegetables and fruits, Qimei is currently undergoing site inspections to acquire organic livestock farms. Eventually, Qimei is planning to diversify its product offerings to include organic eggs, chicken, ducks, wheat, cotton, yams, leeks, and squash. Producing organic livestock allows Qimei to complete the organic cycle,

[12] Based on the current conversion rate of US$1=6.57CNY.
[13] See Exhibit 10 for financial data.
[14] See Exhibit 11 for production data.

which consists of organic cropping, processing, livestock, and fertilizers.

Export Oriented

Qimei traditionally exported the majority of its products through intermediary export companies to Sweden, Thailand, Japan, Spain, Germany, Holland, and South Korea, and did not label the products as their own but rather used the intermediaries' labels. However, with the recent growth in Qimei's name, the company adopted a hybrid export model in which a portion of their own goods are labeled with the Qimei mark and the remainder is labeled with the aforementioned intermediaries' brand.

Domestic Market

Currently, Qimei has product stands stationed in three local high-end supermarkets in Hebei Province. One stand is positioned in Sunshine Supermarket, which caters to middle and high class families. The remaining two stands are both in North Country Supermarket, located in Shijiazhuang, the capital of Hebei province. In addition, Qimei recently signed a contract to shelf their products in the Handan City Wal-Mart.

Potential geographic markets Qimei is hoping to expand into include Beijing, Shanghai, Nanjing, Tianjin, and Hong Kong, with a particular focus towards high-end retail stores and centralized downtown areas. Specific target locations include Wal-Mart stores in Tianjing and Beijing, Carrefour in Beijing, and Lotus Supermarket in Beijing. The contract regarding shelf space between Qimei and the supermarkets varies with each location. Some stores offer the shelf space for free, whereas others charge as much as 20% of Qimei's sales.

Qimei also engages in direct selling to a small but dedicated base of consumers. Customers pay an annual membership fee, which enables them to purchase products at a discounted price. Currently Qimei is supplying approximately 310 families; however, they hope to see a growth in direct membership sales in the near future. Once high-speed railways and highways near the new processing plant are completed, delivery to new and existing members will become much simpler. Targeted areas of expansion of the direct consumer market include the eastern coast of China and north of the Yangtze River.

Qimei, operating under the assumption that its company cannot drive domestic demand for organic produce on its own, is also currently aiming to create a cooperative of organic agriculture producers to help coalesce and drive domestic demand.

Promotion strategies

Qimei advertises its products through fliers, posters, and broadcasts in retail stores. Additionally, the government is actively engaging multimedia efforts to inform consumers about organic food and its healthful benefits. These efforts include news broadcasts on television and ads in newspapers and on the Internet. Moreover, articles concerning food safety often mention Qimei in a positive manner, which has the potential to serve as a catalyst in Qimei's promotional efforts.

Competitors

Due to the rapid growth of businesses and the large size of China, it's difficult for Qimei to determine exactly who their main competitors are. However, judging by the volume of organic certificates granted in 2010, and the fact that crops and processed food (which are presently Qimei's main product offerings) accounted for roughly 55% of total domestic organic sales in 2007, there is likely quite a bit of competition in the domestic organic food market.

In Beijing, the Beijing Organic Farm Development (BOFD) occupies a large share of the shelf space dedicated to fresh organic products. Like Qimei, BOFD was founded more than a decade ago and holds a number of organic product certifications, including the Chinese certificate and a host of respected international certifications. BOFD is presently managing roughly 900 Mu on five different organic farms, and their product is being shelved domestically in over 80 retail outlets. They are also participating in a number of different farming techniques to ensure the long-term viability of their land, are offering educational seminars on their farms and have implemented a "traceability code system," which enables the customer to trace the point of origin for any of their products (Beijing Organic Farm Development, 2006).

BOFD serves only as an example of the potential competition in the market place. Other companies like BOFD have been serving the domestic market as long as Qimei has and they have managed to shelf their products in a multitude of different retail outlets. Additionally, the types of practices these companies are engaging in are targeted directly at local consumer education, long-term sustainability of their farms and enhancing consumer confidence. These initiatives, if unparalleled by other companies, will likely only amplify their market position.

Formal and Informal Markets

Formal markets are growing in China primarily in the form of multi-level one-stop-shop hypermarkets and supermarkets that include simply fresh produce and foods but also incorporate daily living necessities into the store layout. Approximately 30% of the urban retail sector is made up of hypermarkets and over 50% by supermarkets (Reardon et. al 2003; Talking Retail, 2007). The remainder is made up of smaller boutique shops, traditional wet markets, and other forms of informal markets. The formal markets are most visited by individuals seeking convenience shopping.

Informal markets such as wet markets still tend to find prevalence in the rural outlying areas, often taking the form of street bazaars or open-air markets that mimic summer farmers' markets in the United States. However, there is almost no quality control or sanitation standards for these markets, as these often take place in villages far outside the jurisdiction of the formalized regulatory institutions of urban centers. These are most frequented by rural locals.

Looking Ahead

Challenges in the Domestic Market

As Qimei moves to sell its products domestically in China, there are a number of challenges

specific to the market that lie ahead.

The first challenge is identifying the current competition in the market. Additionally, as domestic demand increases, more competitors will likely spring up. Qimei will need to find a way both to determine who its major competitors are in the Chinese market, and to devise a strategy to keep ahead of the competition and attain the status of market leader.

The second challenge is the confusion of domestic consumers regarding the nature of organic produce. Currently, most consumers do not know what organic food is, how it differs from other types of vegetables, and why they should pay more for it. Unless this confusion is mitigated, Qimei will have trouble enjoying any significant level of customer demand for its products.

The third challenge is developing efficient and effective methods to strategically enter the domestic market on a large scale. This includes identifying potential supermarket partners and other retail opportunities and developing mechanisms to receive feedback from consumers.

All three of these challenges will need to be overcome as Qimei moves forward with entering the Chinese market, and, as of now, the solutions remain very unclear.

Long Term Sustainability

Sustainable Agriculture

The organic cycle Qimei developed with the aid of various industry experts serves as a model for their long-term goal of establishing a holistic approach to sustainable agriculture. However, Qimei's soil test report indicates that improvements in soil management and maintenance ought to be considered and potentially implemented. Broadly speaking, typical agricultural land contains approximately 1-6% organic matter and pH levels should fall between 6.5-7.5. Qimei's report found pH levels of 8.05-8.42, which are slightly alkaline, and a mean organic matter level to range from 0.38-1.02, which barely breaks the minimum average of typical agricultural land.[15]

There are a number of different soil management practices that can potentially aid in the overall improvement of Qimei's soils. The use of cover crops and crop rotations are two such examples of beneficial soil management practices; however, these two suggestions are general remedies to improve soil health, and not a blanket prescription for Qimei's farms. For example, the decision regarding the types of crops and the timing of the plantings with respect to cover crops and/or the types of crop rotations cycles to employ is something that needs to be researched, bearing in mind a number of factors such as the desired outcomes, the existing soil quality, the region's climate and the types of production crop already being grown.

Qimei is presently in a situation in which there is potential for massive growth in both processing capabilities and in the amount of agricultural land under cultivation. For Qimei to be successful in their vision as a sustainable agricultural company, while simultaneously navigating this potentially unprecedented growth, questions regarding soil management and maintenance

[15] See Exhibit 12 for Qimei's detailed soil report.

must be addressed.

Human Resource Limitations

Despite its current network of factory workers and farmers, Qimei expects that its staffing needs will grow largely in the coming years. The recent decision to build a large new factory, ten times the size of their current processing plant will massively increase their capacity and present a need for many more workers and suppliers. Specifically, they expect to hire 2,600 people to run their new factory, and to sign contracts with 70,000 new farmers. This will be almost twenty-times the current workforce the company contracts with and employs.

This enormous expected increase in capacity also impacts the staffing needs of the other branches of Qimei. The increased food production means that sales will need to be handled by a much larger marketing and accounting team. If Qimei is selling in Chinese supermarkets, they may want to hire salespeople to represent their products in the stores. In addition, there will be room for more mid-level management in factory supervision, and Qimei will require a larger group to train and oversee farmers.

Finally, Qimei will also have to develop its depth of agricultural expertise to keep up with its growth, as it cannot rely solely on third-party consultants to develop sustainable practices. Currently, they do not employ the best possible practices for maintaining soil qualities, and have very little capacity in terms of research and development. To become the much larger company they envision, they will need to hire specialists who can both develop new products as well as new farming practices.

Future Funding Sources

Mrs. Zhao, Mrs. Hou, the chief financial officer, and the management team at Qimei will have to weigh the different options available to the company carefully going forward. There is an increasing interest by investment banks ready to underwrite the IPO of the company, expecting a great potential for investment earnings. At the same time, Qimei must consider its business operations and future carefully. The stock markets in China are not as regulated or stable as their counterparts in Europe and the United States. Qimei thus far has survived and prospered immensely through the help and connections of the government as well as banks willing to provide loans.

At the same time, considering the rate of growth expected in the industry as well as within the company, the management team forecasts a substantial amount of capital necessary to make the proper investments for future growth, viability and sustainability, an investment that far exceeds what was necessary in the past.

The Future

Though Qimei has achieved remarkable growth, it faces overwhelming challenges, including improving soil quality, securing solid funding sources, and, most importantly, tackling a highly-unpredictable domestic market. All of these issues weigh heavily on Mrs. Zhao's mind.

As she returned from the BioFach World Organic Trade Fair in Germany, Mrs. Zhao drew a deep breath and began walking toward the gate where her husband was waiting for her. Though remaining calm and firmly determined to make Qimei a Chinese dragonhead company, Mrs. Zhao pondered how Qimei will surmount the challenges ahead and prove to be the company that she knows it can be. The question remains: what is the next step for Qimei and how will the company continue its growth and record of achievement?

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Exhibit 1: Food Scandal List

Year	Product	Country	Problem
2001	Shrimp	European Union (EU)	Excessive antibiotic residues
2001	Poultry	EU, Japan	Excessive antibiotic residues
2002	Honey	EU	Excessive antibiotic residues
2002-2003	Frozen spinach	Japan	Excessive pesticide residues
2002	Tea	EU, Japan	Excessive pesticide residues
2005	Fermented cabbage	South Korea	Parasites

Source: Calvin, L., Hu, D., Gale, F., & Lohmar, B., 2006. Food Safety Improvements Underway in China. *Amber Waves: The Economics of Food, Farming, Natural Resources, and Rural America*, November Issue, pp. 16-21.

Exhibit 2: Organic Labels



Certified Organic Products

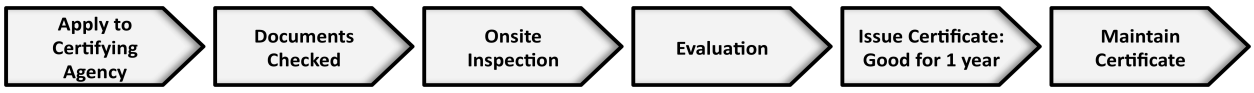


Imports with Conversion to Organic

Exhibit 3: Standards & Rules for Organic Certification

China National Organic Product Standards	These standards define the scope of organic certification by establishing guidelines for the certification procedure, the requirements for certification bodies, the use of the organic product certification seal, labeling, and the importation of organic food products (Biofach, 2011).
Rule on Implementation of Organic Products Certification	Established in 2005, these rules serve mainly an administrative purpose as they specify procedures for organic certification approval, suspension, and termination of certification. Additionally, they establish procedures for dispute resolution (Bugang, 2005)

Exhibit 4: Certification Process



Source: USDA Foreign Agricultural Service, 2010. *Global Agricultural Information Network Report: Organic Report.* Beijing: USDA Foreign Agricultural Service.

Exhibit 5: Breakdown Distribution of Retail Outlets

	2002	2003	2004	2005	2006	2007
Organic food and beverages						
Store-based Retailing	97	97	97	97	97	97
Supermarkets/Hypermarkets	35	36	36	36	37	37
Small Grocery Retailers	26	27	28	29	29	30
Convenience Stores	15	16	16	17	17	18
Independent Grocers	10	11	11	11	11	12
Forecourt Retailers	1	1	1	1	1	1
Other Store-based Retailing	36	34	33	32	31	30
Other Grocery Retailers	36	34	33	32	31	30
Non-store Retailing	3	3	3	3	3	3
Vending	0	0	0	0	0	0
Internet Retailing	0	0	0	0	0	0
Direct Selling	2	3	3	3	3	3
Total	100	100	100	100	100	100

Source: USDA Foreign Agricultural Service, 2010. *Global Agricultural Information Network Report: Organic Report.* Beijing: USDA Foreign Agricultural Service.

Exhibit 6: Qimei's Organic Cycle

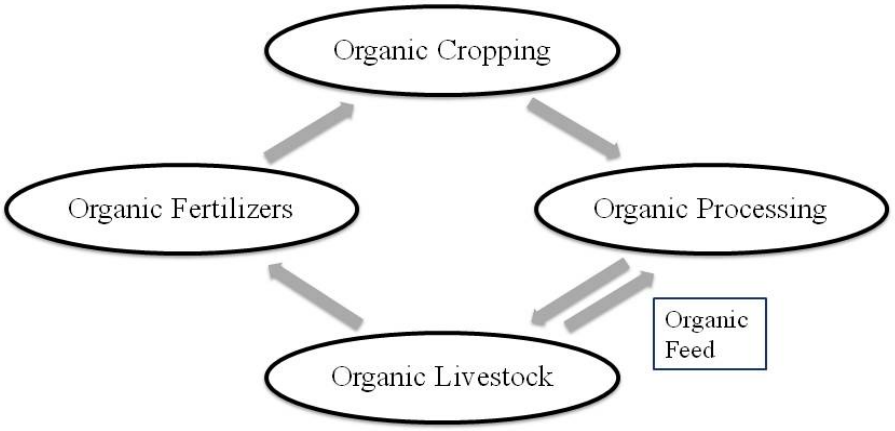


Exhibit 7: Examples of Organic Certifications



CERTIFICATE VOID IF COPIED OR FAXED

OCIA International Organic Certification

46497 (Associate/ID Number) | OFDC - Partnership (Chapter) | 4649719 (Certificate Number)

Hebei Qimei Agricultural Science and Technology Co., Ltd.

East Tip, Jianan St., Yongnian County
Handan, Hebei 057150
CHINA

The Organic Crop Improvement Association has inspected this operation and determined that it is in compliance with the following certification programs:

US National Organic Program (NOP)

The operation is certified for the following category of production:

Processor/Manufacturer

Asparagus, Peanuts, Strawberries, Purslane

This certificate is valid only to document the OCIA certification of the operation named on this certificate. This certificate is not valid for trade, but only validates that the above operation may have product for the program identified eligible for certification. Eligible product can be verified by filing a Transaction Certificate Authorization form with OCIA International.

USDA ORGANIC

Executive Director

16-Nov-07 (First Certified)

74111P030-07 (OCIA Producer Number) | 04-Aug-09 (Last Annual Inspection Date)

This certificate is valid until certification is surrendered, suspended or revoked. An updated organic management plan and on-site inspection are required annually. Any questions regarding the verification of this Certificate should be directed to:

Organic Crop Improvement Association International (OCIA)
1340 North Cotner, Lincoln, NE
68505, 402-477-2323

CERTIFICATE VOID IF COPIED OR FAXED



CERTIFICATE VOID IF COPIED OR FAXED

OCIA International Organic Certification

46498 (Associate/ID Number) | OFDC - Partnership (Chapter) | 46498-09 (Certificate Number)

Organic Farm of Hebei Qimei Agricultural Science and Technology Co., Ltd.

East Tip, Jianan St., Yongnian County
Handan, Hebei 057150
CHINA

The Organic Crop Improvement Association has inspected this operation and determined that it is in compliance with the following certification programs:

OCIA International (IFOAM-accredited)

The operation is certified for the following category of production:

Farm

Asparagus, Peanuts, Purslane, Strawberries

This certificate is valid only to document the OCIA certification of the operation named on this certificate. This certificate is not valid for trade, but only validates that the above operation may have product eligible for certification. Eligible product can be verified by filing a Transaction Certificate Authorization form with OCIA International.

CERTIFIED ORGANIC OCIA

Executive Director

21-Oct-09 (Effective Date) | 21-Oct-10 (Expiration Date)

74111G029-07 (OCIA Producer Number) | 05-Aug-09 (Last Annual Inspection Date)

This certificate is valid until certification is surrendered, suspended or revoked. An updated organic management plan and on-site inspection are required annually. Any questions regarding the verification of this Certificate should be directed to:

Organic Crop Improvement Association International (OCIA)
1340 North Cotner, Lincoln, NE
68505, 402-477-2323

CERTIFICATE VOID IF COPIED OR FAXED



CERTIFICATE VOID IF COPIED OR FAXED

OCIA International Organic Certification

46497 (Associate/ID Number) | 46497-09 (Certificate Number)

Hebei Qimei Agricultural Science and Technology Co., Ltd.

East Tip, Jianan St., Yongnian County
Handan, Hebei 057150
CHINA

The Organic Crop Improvement Association has inspected this operation and determined that it is in compliance with the following certification programs:

Canada Organic Regime (COR)

Certification Type: Processor Manufacturer

See Product Listing Addendum for certified list of products

This certificate is valid only to document the OCIA certification of the operation named on this certificate. This certificate is not valid for trade, but only validates that the above operation may have product eligible for certification. By accepting this Certificate, the named operator agrees to maintain compliance and follow the approved management plan. The named operator agrees that this certificate will only be used as outlined in the regulations for the COR program.

biologique Canada organic

OCIA Executive Director

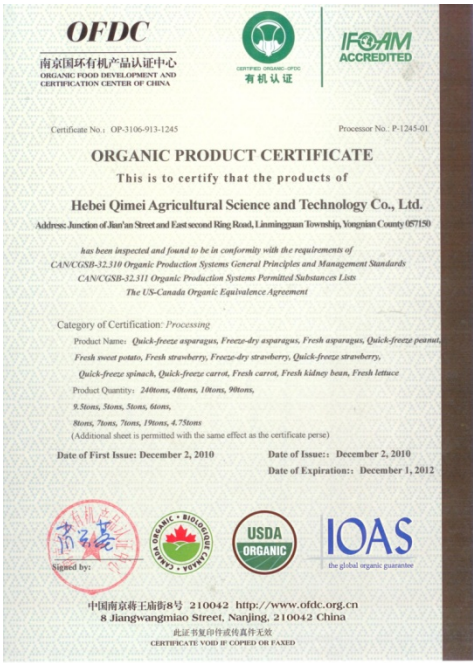
19-Oct-09 (Effective Date)

19-Oct-10 (Expiration Date) | 04-Aug-09 (Last Annual Inspection Date)

This certificate is valid until certification is surrendered, suspended or revoked or expires. An updated organic management plan and on-site inspection are required annually. Any questions regarding the verification of this Certificate should be directed to:

Organic Crop Improvement Association International (OCIA)
1340 North Cotner, Lincoln, NE
68505, 402-477-2323

CERTIFICATE VOID IF COPIED OR FAXED



OFDC

南京国环有机产品认证中心
ORGANIC FOOD DEVELOPMENT AND CERTIFICATION CENTER OF CHINA

有机认证

IFOAM ACCREDITED

Certificate No.: OP-3106-913-1245 Processor No.: P-1245-01

ORGANIC PRODUCT CERTIFICATE

This is to certify that the products of

Hebei Qimei Agricultural Science and Technology Co., Ltd.

Address: Junction of Jian'an Street and East second Ring Road, Linmingguan Township, Yongnian County 057150

has been inspected and found to be in conformity with the requirements of
CAN/CGSB-32.310 Organic Production Systems General Principles and Management Standards
CAN/CGSB-32.311 Organic Production Systems Permitted Substances Lists
The US-Canada Organic Equivalence Agreement

Category of Certification: *Processing*

Product Name: *Quick-freeze asparagus, Freeze-dry asparagus, Fresh asparagus, Quick-freeze peanut, Fresh sweet potato, Fresh strawberry, Freeze-dry strawberry, Quick-freeze strawberry, Quick-freeze spinach, Quick-freeze carrot, Fresh carrot, Fresh kidney bean, Fresh lettuce*

Product Quantity: *240tons, 40tons, 10tons, 90tons, 9.5tons, 5tons, 5tons, 6tons, 8tons, 7tons, 7tons, 19tons, 4.75tons*

(Additional sheet is permitted with the same effect as the certificate perse)

Date of First Issue: December 2, 2010 **Date of Issue:: December 2, 2010**
Date of Expiration:: December 1, 2012

Signed by:

USDA ORGANIC

IOAS the global organic guarantee

中国南京蒋王庙街8号 210042 http://www.ofdc.org.cn
8 Jiangwangmiao Street, Nanjing, 210042 China

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Exhibit 8: Supply Chain

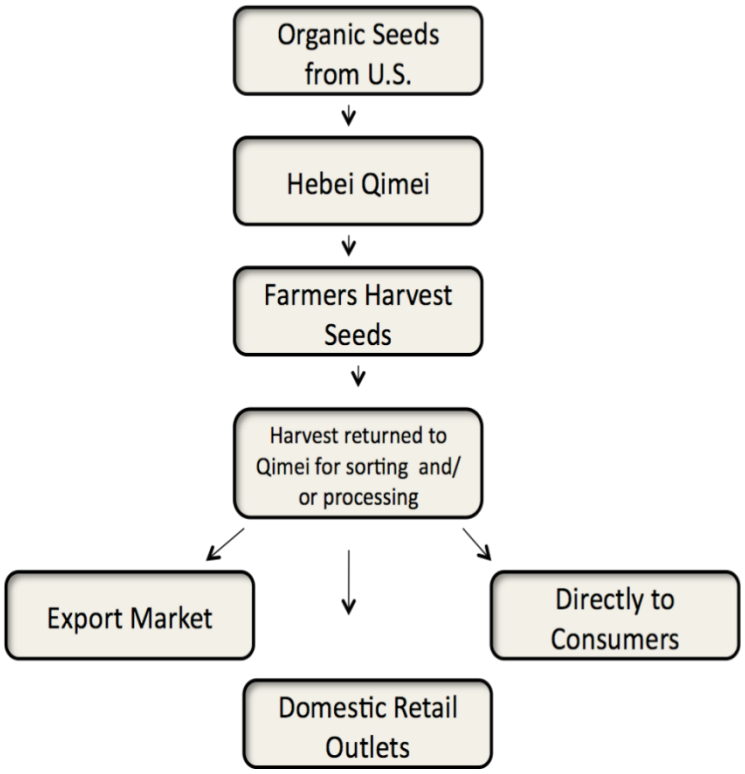


Exhibit 9: Organizational Structure

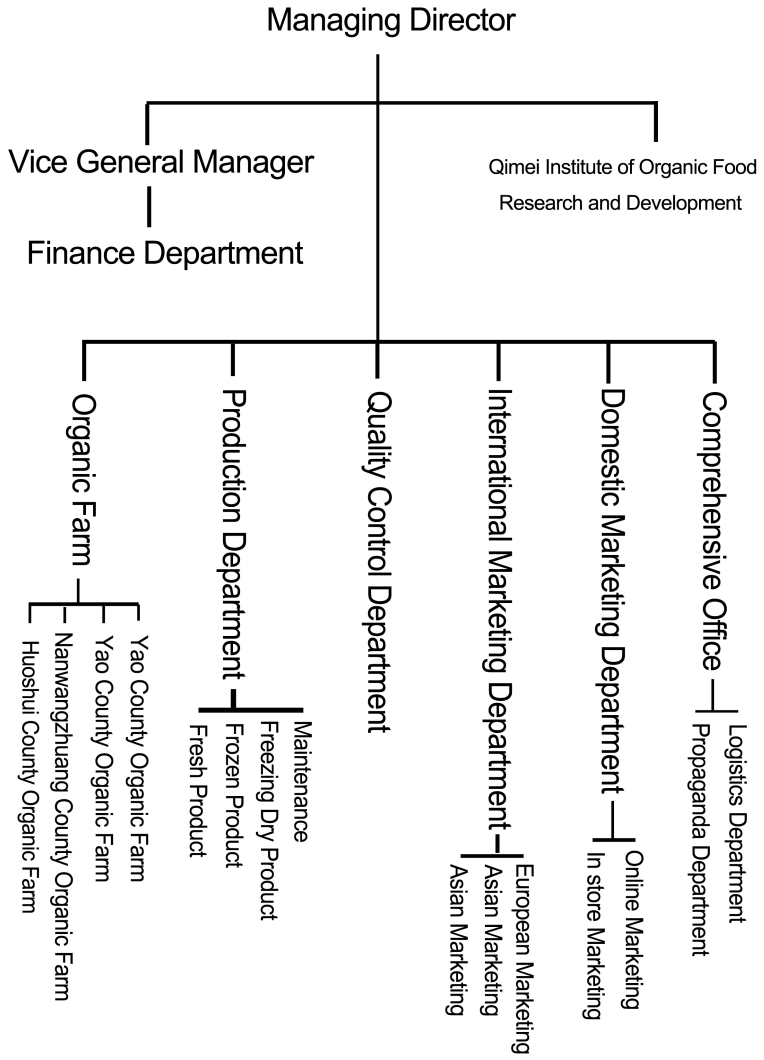


Exhibit 10: Qimei Financial Data QIMEI INC 2008--2010 SALES

Unit：ton、10000 CNY

Variety	2008				2009				2010			
	Quantity	Cost/Ton	Price/Ton	Sales	Quantity	Cost/Ton	Price/Ton	Sales	Quantity	Cost/Ton	Price/Ton	Sales
Frozen asparagus	1690	0.97	1.33	2247.70	1625	1.03	1.51	2453.75	1715	1.08	1.85	3172.75
Frozen cauliflowers	346	0.33	0.45	155.70	1013	0.41	0.48	486.24	1235	0.42	0.48	592.8
Frozen colorful pepper	327	0.27	0.48	156.96	865	0.32	0.50	432.50	186.2	0.33	0.48	89.38
Frozen garlic	810	0.23	0.34	275.40	205	0.25	0.35	71.75				
Frozen strawberry	390	0.60	0.78	304.20	651	0.62	0.79	514.29	458.2	0.64	0.8	366.56
Frozen pepper	145	0.17	0.30	43.50								
Frozen broccoli					705	0.47	0.56	394.80	439	0.5	0.63	276.57
Frozen garden beans					1088	0.42	0.55	598.40	1135	0.43	0.56	635.6
Frozen chestnuts					145	1.07	1.5	217.50	163	1.07	1.5	244.5
Frozen peanuts									472	0.85	1.05	495.6
Frozen soybeans									355	0.43	0.65	230.75
Cereal												11.5
Others				2.10				3.50				7.8
Total				3185.56				5172.73	6158.5			6123.81

Exhibit 11: Qimei Production by Year

Qimei - Tons of Vegetable Produced and Processed

Year	Tons of Vegetables
2002	267.9
2003	399.5
2004	1159.5
2005	1595.6
2006	2395.6
2007	2609.19
2008	3708
2009	6297
2010	6158.5

Exhibit 12: 2007 Qimei Soil Report

Farm/Sample	N(mg/kg)	P(mg/kg)	K(mg/kg)	Organic Matter (%)	pH
YC'1	40.70	8.84	18.50	0.44	8.54
YC'2	53.32	13.55	14.00	0.32	7.96
YC'3	37.84	19.81	23.00	0.43	8.48
YC'4	39.75	13.58	26.50	0.32	8.44
YC'5	32.49	16.69	22.50	0.36	8.07
YC'6	42.23	11.50	42.50	0.66	8.31
YC'7	13.57	4.19	16.00	0.22	8.55
YC'8	22.55	0.59	20.50	0.31	8.57
YC'9	26.75	1.64	30.50	0.34	8.53
YC'10	28.28	5.81	20.50	0.31	8.31
Mean	33.75	9.62	23.45	0.37	8.38
St Deviation	11.40	6.48	8.23	0.12	0.21
Min	13.57	0.59	14.00	0.22	7.96
Max	53.32	19.81	42.50	0.66	8.57

Farm/Sample	N(mg/kg)	P(mg/kg)	K(mg/kg)	Organic Matter (%)	pH
YC1	28.11	11.08	27.70	0.33	8.49
YC2	28.06	10.91	27.90	0.34	8.46
YC3	28.09	10.95	27.50	0.34	8.48
YC4	26.52	4.01	16.80	0.29	8.55
YC5	26.60	4.08	17.20	0.30	8.56
YC6	26.56	4.04	17.00	0.28	8.56
YC7	13.54	10.56	21.30	0.25	8.55
YC8	13.58	10.57	21.60	0.26	8.62
YC9	13.57	10.54	21.00	0.23	8.60
YC10	26.38	28.64	42.80	0.22	8.33
YC11	26.38	28.72	43.10	0.23	8.29
YC12	26.37	28.61	43.00	0.22	8.32
YC13	29.58	9.14	38.20	0.21	8.25
YC14	29.63	9.17	38.80	0.22	8.35
YC15	29.62	9.13	38.50	0.22	8.36
YC16	24.25	10.53	31.10	0.33	8.28
YC17	24.29	10.62	31.60	0.38	8.31
YC18	24.27	10.59	31.00	0.31	8.30
Mean	24.74	12.33	29.78	0.28	8.43
St Deviation	5.41	7.90	9.32	0.05	0.13
Min	13.54	4.01	16.80	0.21	8.25
Max	29.63	28.72	43.1	0.38	8.62

Farm/Sample	N(mg/kg)	P(mg/kg)	K(mg/kg)	Organic Matter (%)	pH
MY1A	66.14	5.72	172.10	1.02	8.25
MY1B	66.11	5.75	171.80	1.01	8.24
MY1C	66.12	5.74	171.50	1.01	8.26
MY2A	53.68	4.62	137.80	0.83	8.30
MY2B	53.72	4.71	138.80	0.86	8.29
MY2C	53.70	4.59	138.00	0.81	8.33
MY3A	39.78	8.34	119.90	0.65	8.42
MY3B	39.23	8.27	119.20	0.66	8.44
MY3C	39.75	8.32	119.50	0.66	8.43
MY4A	46.82	7.66	159.80	0.81	8.56
MY4B	46.86	7.65	158.90	0.84	8.62
MY4C	46.82	7.63	159.50	0.82	8.60
MY5A	49.83	4.36	125.10	0.77	8.52
MY5B	50.00	4.39	124.80	0.79	8.51
MY5C	49.88	4.37	125.00	0.79	8.53
Mean	51.23	6.14	142.78	0.82	8.42
St Deviation	9.08	1.64	20.69	0.12	0.13
Min	39.23	4.36	119.20	0.65	8.24
Max	66.14	8.34	172.10	1.02	8.62

Farm/Sample	N(mg/kg)	P(mg/kg)	K(mg/kg)	Organic Matter (%)	pH
MY'1	30.78	1.87	148.20	0.59	7.70
MY'2	31.76	1.98	148.30	0.61	7.80
MY'3	30.80	1.65	147.70	0.56	7.90
MY'4	30.77	1.79	146.90	0.54	7.80
MY'5	30.82	1.83	147.30	0.59	7.80
MY'6	30.79	1.88	147.60	0.58	7.60
MY'7	30.98	1.92	148.40	0.60	7.70
MY'8	31.02	1.97	148.70	0.57	7.70
MY'9	30.99	1.82	147.90	0.55	7.90
MY'10	30.77	1.88	147.50	0.58	7.90
MY'11	34.38	2.36	175.30	0.82	7.80
MY'12	34.56	2.45	174.70	0.82	7.80
MY'13	34.17	2.41	175.80	0.77	7.70
MY'14	34.29	2.43	174.90	0.80	7.90
MY'15	34.21	2.40	175.00	0.80	7.80
MY'16	35.60	1.36	206.90	0.88	7.81
MY'17	35.32	1.33	206.10	0.91	7.83
MY'18	35.71	1.33	206.50	0.84	7.86
MY'19	35.55	1.34	206.50	0.87	7.85
MY'20	14.16	1.33	39.00	0.22	8.50
MY'21	14.12	1.29	28.80	0.21	8.52
MY'22	14.20	1.42	29.10	0.18	8.54
MY'23	14.17	1.41	29.50	0.24	8.53
MY'24	14.14	1.37	29.00	0.21	8.54
MY'25	19.27	1.65	48.30	0.33	8.65
MY'26	19.44	1.54	47.90	0.32	8.64
MY'27	19.33	1.50	48.60	0.31	8.62
MY'28	19.30	1.59	48.00	0.32	8.64
Mean	27.55	1.75	126.01	0.56	8.05
St Deviation	8.09	0.38	64.44	0.24	0.38
Min	14.12	1.29	28.80	0.18	7.60
Max	35.71	2.45	206.90	0.91	8.65