



CONTRACT FARMING FOR BETTER FARMER-ENTERPRISE PARTNERSHIPS ADB'S EXPERIENCE IN THE PEOPLE'S REPUBLIC OF CHINA

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OF CHINA

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Foreword

Agriculture should provide safe and nutritious food to people. In the People's Republic of China (PRC) and many other developing members of the Asian Development Bank (ADB), agriculture is also the main source of income for rural residents. Yet as compared with the total labor force absorption, the contribution of agriculture to gross domestic product is very small, suggesting lower productivity, often resulting in poverty.

Recognizing the invaluable contribution of agriculture to the PRC's development, the government has been prioritizing agricultural modernization in its policy agenda with an aim to further improve the agricultural sector's productivity and efficiency.

ADB's support to the sustainable development of agriculture in the PRC covers broad areas ranging from irrigation infrastructure and farmland upgrading to agribusiness development and food safety.

The Dryland Sustainable Agriculture project commenced in 2009 with ADB assistance supports the development of partnerships between private agro-enterprises and farmers using contract farming arrangements to strengthen farm productivity, food production, and processing capacity in 27 counties in Gansu, Henan, and Shandong provinces.

After 6 years, the project has delivered considerable amount of outputs in terms of facilities established and farmers engaged, showing promise in achieving its outcome.

Concurring with the request from the Ministry of Agriculture, the project executing agency, ADB provided a grant to study the experiences arising from the project with respect to developing sustainable farmer-enterprise partnerships particularly contract farming models. Equally important, the study examines the issues involved in current contract farming practices and recommends policies that may help resolve them.

While the study was conducted in the context of the PRC, we hope that other developing countries will also benefit through proper generalization and customization of experience and cases learned from the report.



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Executive Summary

Commercially viable farmer–enterprise relationships built on equity, mutual trust, and shared benefits are seen by the PRC as a way to accelerate agricultural industrialization to benefit both enterprises and farmers.

This report examines ways in which contract farming, as understood in the international context, can help build “farmer–enterprise” relationships under the Dryland Sustainable Agriculture Project financed by ADB in the provinces of Gansu, Henan, and Shandong.

In addition, five national case studies from the project participating agro-enterprises as well as one international case of contract farming are presented in the Annex.

The PRC experience described here can be a useful guide to the key issues in contract farming for policy makers, agricultural advisors, enterprises, and other interested parties in countries other than the PRC. However, it is important to understand that it is rarely possible to take contract farming as practiced in one country and use it as a complete model for another country.

There are many technical and commercial aspects of contract farming described here that can be widely applied, but there are also social aspects that will be country specific.

For example, peer pressure and social guarantees at village level have been identified as important factors to reduce transaction cost in successful contract farming in the PRC. It cannot be assumed that these social factors will be equally important in countries that have social structures different from that of the PRC. It is for this reason that international and Chinese case studies are presented in the annex to this paper.

Those who use this report as a guide to introducing or developing contract farming practices are encouraged to consider, analyze, and discuss in detail both the narrative section of this report and the case studies, to use them as a guide to adapting the PRC experience to their own specific situation.

Research results reveal that effective contract farming is related to the following conditions:

- (i) Enterprises that can gain profits from high-quality products are more likely to implement contract farming.
- (ii) Guaranteed price is a key factor to motivate farmers to engage in contract farming. Lowest purchase price contracts, fixed basis purchase price contracts, and fixed price contracts are all observed in the project.

- (iii) Lowest purchase price and fixed basis purchase price tend to be associated with high-quality, value-added products, while fixed purchase price is more often associated with products with specific raw material requirements or low added value.
- (iv) When fixing contract price, enterprises need to know very well farmers' production costs and the return the enterprises can gain from their products.
- (v) Enterprises that are able to support farmers and bear market risks can win farmers' trust and promote the development of contract farming.
- (vi) Vertical integration is a successful model adopted by the surveyed enterprises.
- (vii) Enterprises establish departments responsible for *jidi*¹ construction or authorize cooperatives founded under the guidance of the enterprises to take charge of *jidi* establishment.
- (viii) Both government agricultural departments and village administrations play an essential role in the development of *jidi* and farmer–enterprise relationship.
- (ix) Trust networks of acquaintances and peer guarantees are important approaches to reduce contract-breaking rate.

As with any contractual relationship, problems with contract farming are inevitable. In the PRC these problems are:

- (i) Profit from high-quality, value-added products is the primary motivation for enterprises to secure the supply of raw materials with premium quality through contract farming. However, this is challenged by consumers who do not believe that the products are of high quality and thus do not want to pay a commensurate price.
- (ii) All enterprises are confronted with market risks in contract farming. Shortage of capital to allow the enterprise to bear these risks will directly affect the possibility of contract fulfillment, possibly even its survival.
- (iii) Most of the support from government favors large enterprises, with smaller ones receiving little support.
- (iv) The cost for enterprises to contract with individual small farmers is very high when compared with the cost of dealing with larger landholders.
- (v) Enterprises have purchased quality testing equipment and hired quality control technicians as their operations have grown. At the same time, they have gradually stopped using peer pressure through joint guarantees. This is unfortunate since peer pressure can be very effective in developing farmer–enterprise partnerships and reducing the incidence of contract default.

To achieve agricultural modernization through development of new agricultural management systems in the PRC, the problems confronting contract farming need to be prioritized and solved.

¹ *Jidi*, with direct translation as “(production) base” in English, can perhaps best be understood as an area of farmland with similar climate and soils where farmers specialize in growing one particular crop, often to serve an established buyer or market. The word *jidi* is used in this report to represent this specific concept in agriculture in the PRC context.

The following policy initiatives are recommended:

- (i) Support the development of the market for high-quality, value-added agricultural products through knowledge and information assistance.
- (ii) Establish information exchange platforms to share contract farming experience and farmland transfer information to reduce transaction costs and ensure legality of farmland transfer.
- (iii) Revise support policy for leading enterprises to ensure that smaller, but capable enterprises gain equal opportunities. Enterprises receiving government support should be regularly assessed in their performance in engaging farmers.
- (iv) Change the extension services for agricultural technologies through establishing demand-oriented mechanisms as those conducted by enterprises.
- (v) Take advantage of social capital in communities to supervise the raw material production and encourage farmers to fulfill their contracts.

Introduction

In the international context, a “farmer–enterprise” partnership for industrialization of agriculture can be interpreted as the model of contract farming that is widely practiced in many countries. It is generally accepted that sustainable, well-organized, and equitably implemented contract farming can bring benefits to both farmers and the enterprises.

The PRC has long endeavored to boost agricultural development and farmers’ income by strengthening farmer–enterprise partnerships. The 12th Five-Year Plan for National Economic and Social Development of the People’s Republic of China stresses the promotion of the industrialization of agriculture based on farmer–enterprise partnerships.

The goal is for 130 million farmers to benefit from the agricultural industrialization chain by the end of 2015. The No. 1 Document from Central Government in 2014 emphasized that farmer–enterprise partnerships should be established to attract more investments into agriculture and rural areas, and to build a market-oriented agricultural technology extension system. The government has always considered contract farming as an important means to strengthen farmer–enterprise partnerships.

However, the fact that farmers are unwilling to go into contract farming also arrests the development of farmer–enterprise partnerships. Many studies also reported that the fulfillment rate of contract farming in the PRC was low (Jingyong, 2007; Aiqun et al., 2007).

The Dryland Sustainable Agriculture Project began in 2009 when ADB financed loans to 49 leading agro-enterprises in 27 counties in Gansu, Henan, and Shandong provinces to engage farmers in contract farming. The midterm evaluation showed that the project enterprises have made remarkable achievements in boosting relationships with farmers through contract farming and the establishment of *jidi*.

In recognition of the achievements of the ADB project, the Ministry of Agriculture of the PRC requested support from ADB to summarize project experiences in the sustainable development of “enterprises–household” partnerships for future policy making and knowledge dissemination.

Based on extensive literature review and substantial fieldwork such as focus group discussions, interviews, and surveys, the authors prepared the report and case studies seeking to answer, among others, the following questions, which are arguably keys to developing sustainable contract farming models:

Which type of enterprises is most likely to implement and fulfill contract farming? Is it those that can gain economic rent from high-quality products using quality controlled raw materials sourced under contract farming? What motivates farmers to enter into contract farming agreements? What measures have been applied by the enterprises to attract farmers' participation and maintain their loyalty to the partnership?

What characterizes the different types of contracts used in contract farming? Is it possible to reduce contract default when natural risks or market price fluctuations arise? In light of these risks, how can enterprises arrive at realistic contract purchase prices for both themselves and farmers? Is there a workable mechanism to reduce the probability of breach of contract? How does building a *jidi* play a role in the contract farming practice?

The report also highlights some challenges contract farming has been facing in the PRC which call for policy interventions. Some of the policy recommendations as well as experiences identified may be found useful and informative in the context of other developing countries.

Definition and International Context of Contract Farming

Definition and Benefits

Contract farming has been defined by the Food and Agriculture Organization of the United Nations (FAO) as:

“Agricultural production carried out according to an agreement between a buyer and farmers, which establishes conditions for the production and marketing of a farm product or products. Typically, the farmer agrees to provide agreed quantities of a specific agricultural product. These should meet the quality standards of the purchaser and be supplied at the time determined by the purchaser. In turn, the buyer commits to purchase the product and, in some cases, to support production through, for example, the supply of farm inputs, land preparation and the provision of technical advice.”²

The key factors in any contract farming agreement are: (i) the farmer agrees to provide a specific agricultural product, (ii) the purchaser agrees in advance to buy the specified product, (iii) quality standards are agreed on, and (iv) the purchaser may provide support to the production process.

The principal benefits that arise from contract farming agreements for the enterprise are: (i) some measure of guarantee of regular and reliable supplies of raw materials; (ii) raw materials grown to meet the specific requirements of the processing enterprises; (iii) opportunity to ensure the necessary amount of raw materials are available as needed; and (iv) opportunity for contract farmers to grow early, main, and late season varieties, extending the period when fresh produce is available for processing.

For farmers, principal benefits will include: (i) the opportunity to know in advance that they have a guaranteed buyer for their produce; (ii) some advance knowledge of the price that they will receive; (iii) support from the enterprise in the form of short-term credit, either in cash or in kind (e.g., seeds, fertilizer, etc.); and (iv) agronomic advice and guidance from the buyer.

2 Food and Agriculture Organization of the United Nations. <http://www.fao.org/ag/ags/contract-farming/faq/en/>

Factors Common to Contract Farming Agreements

Internationally, a wide range of models and mechanisms for contract farming can be identified. However, several factors can be identified that are common to all successful contract farming operations.

These are: (i) market orientation of enterprises, (ii) value-added specialized products, (iii) an export focus of enterprises, (iv) larger commercially oriented farmers, and (v) contractual agreement on pricing.

Market Orientation

International experience in contract farming clearly shows that the types of enterprises that are most successful with contract farming are larger, more commercial, market-oriented enterprises trading in national or international markets. These enterprises also have a market-led focus and not a production-led focus.

These enterprises have: (i) knowledge of where to sell their products before producing them because of good market research, and a business plan that identifies markets and products before they have a production plan; (ii) organizational, financial, and management capacity to successfully establish and implement contract farming agreements; and (iii) capacity to provide services to farmers such as input supply, agronomic advice, and credit that are necessary for successful contract farming.

This is well illustrated in the international case study presented in the Annex.

The potato processor Potato Crisp Enterprise (PCee) has a very strong market focus—it knows its buyers at both retail and consumer levels; it carries out frequent market research, product testing, and evaluation; and advertises regularly to maintain its market position. It provides interest-free credit in the form of seed supplied to growers and free agronomic advice.

An enterprise will have problems not only in contract farming, but in business in general, if it focuses only on one item, and produces this item in bulk thinking that someone, somewhere will want to buy it.

Value-Added Specialized Products

Contract farming agreements are more frequent with products that have substantial “added value” where the end product is substantially different from the raw material. An example would be frozen fruit juice concentrates. These products are often sold through major supermarkets where raw material specifications and traceability are rigidly enforced.

Quality starts at the farm level. If the raw agricultural produce entering the production process is of poor quality, then the final processed product will also be of poor quality. The acronym “GIGO” (garbage in, garbage out), usually applied in the field of computing, is equally relevant to the production of processed agricultural products. Contract farming allows enterprises to have some control over the quality of raw materials they buy.

High value-added processed products often require raw materials that are in some way different from the standard products normally grown. For example, a processor making tomato paste requires tomatoes that have higher percentages of soluble solids and thicker skin than fresh market tomatoes, to allow mechanical harvesting and bulk transport.

Processors of potatoes into products such as potato chips, crisps, and french fries require potatoes that are high in dry matters and low in reducing sugars to guarantee product quality. Raw materials like tomatoes and potatoes that are different from those that are normally grown for the fresh market are needed.

To obtain raw materials to meet their specific requirements, processing enterprises will frequently have contracts with growers where the enterprise provides seeds, agronomic advice, and a guaranteed market for the crop. Again, this is well illustrated by PCee.

Export Focus

Many enterprises that are involved in export markets of agricultural and food products have contract agreements with farmers. This is particularly the case with products such as cotton, wheat, and rice that are traded internationally as commodities. These products are not always subject to a high degree of processing, but are traded in large quantities, often against futures contracts.

Many large international companies that trade in these commodity products will use contract farming arrangements to ensure supplies of these commodities to meet their future trading obligations.

Larger Commercially Oriented Farmers

International experience suggests that there are two types of farmers who are more likely to succeed in contract farming agreements. These are:

Larger landholders. Farmers with more land than the average smallholder in developing countries tend to be more commercially aware, are better able to understand the issues relating to contract farming, and are less dependent on subsistence production.

Full-time farmers. There is some evidence that farmers who get most or all of their income from farming may be more ready to enter in contract farming agreements. Farmers who have other employment and who gain only a relatively small part of their income from farming may be more willing to gamble and “play the market,” hoping to get a high price for their produce.

For part-time farmers, cases of overproduction and unsold crops are not big problems as the part-time farmer can depend on other employment for income. In contrast, full-time farmers who depend on farming for their living are potentially more risk-averse, and are attracted by the possibility of a guaranteed market for their crops.

Contractual Agreement on Pricing

Contract farming has frequently been seen as a mechanism for farmers to achieve a guaranteed price for their produce. A guarantee of a price is certainly attractive, but it is not

the only benefit to be gained from contract farming, and arguably is not always the most important. Guaranteed access to a market, support with seeds, fertilizers and other inputs, agronomic advice, and credit are also important benefits.

Before discussing pricing mechanisms, it is important to state that contract farming is not some magic formula that will allow farmers to get prices way above the prevailing market price.

All agricultural products have to be sold eventually to the end consumer, and there is a limit to what the end consumer is willing to pay. The end consumer in the city who is far from the farm has no interest in whether the food product that the person is buying was grown under contract or sold on the free market. The consumer wants the product for its utility at a reasonable price compared with similar products.

Farmers often fail to understand this, and see contract farming as some “magic bullet” that will allow them to gain prices that are much higher than they could get from the open market. The unrealistic expectations of farmers are a frequent reason for failure of contract farming agreements.

There has been a substantial amount of academic research into contract farming pricing mechanisms, and a range of pricing mechanisms have been identified. These can be very broadly divided into two types:

The farmer is given a fixed price at the time the contract is signed. This price may be calculated on the basis of a formula that takes into account the farmer’s production costs and allows a margin for profit; it may be based on a future supply contract that the enterprise has with the end buyer, or it may just be based on the “best guess” the enterprise can make as to what it will be able to pay when the crop is delivered.

The farmer is not given a fixed price. There is some form of agreement that settles the price at the time the raw materials are delivered to the enterprise. This can be done by relating price to the current free market price, by paying the farmer the selling price minus the costs and commission for the enterprise, or by whatever other form of agreement is acceptable to both parties.

Identifying, listing, and categorizing “formal” mechanisms for pricing in contract farming can rapidly become an academic exercise, increasingly remote from actual practice. The best pricing mechanism is one that can be arrived at by negotiation between the farmer and the enterprise, and one that both parties are happy with. The best pricing mechanism is the one that is least complicated, easiest to understand, and benefits both parties.

Experience from the ADB Dryland Sustainable Agriculture Project in the PRC

Practice of Contract Farming

Contract farming in the PRC, and possibly some other developing countries, differs from the successful international cases in that the farmland per farming household in the PRC is smaller, and the transaction cost for contract farming is higher for enterprises and farmers.

Most farming households in the PRC have no more than 1 acre of farmland, while in many successful international contract farming practices, farmers have bigger lands.

For example, each Thai household engaged in contract rice farming has 10 acres of farmland on average (Setboonsarng, 2006), each Lao household has 6 acres of farmland (Setboonsarng, 2006), and each Cambodian household has 4 acres of farmland (Cai, 2008).

A few studies find that the size of a farmland is a significant factor for a farmer to go into contract farming (Honghui, et al., 2007; Fei, et al., 2008).

ADB's Dryland Sustainable Agriculture Project has promoted farmer–enterprise partnerships through contract farming in the PRC context. The rest of this section details the findings from authors interacting with the participating enterprises, farmers, and other stakeholders.

Enterprises Implementing Contract Farming

An analysis of factors such as output value, type of enterprise (i.e., national, provincial, or city-level leading enterprise designated by the government based on size), and if the enterprise is an exporter, showed that among the 49 enterprises surveyed, those in the export business are more likely to do contract farming.

City-level leading enterprises are more likely to do contract farming than nationally or provincially leading enterprises. The latter suggests that the size of an enterprise does not determine its willingness to engage in contract farming.

The export enterprises stressed that the implementation of contract farming is a result of clients' and government's requirements for high standards of product quality. Some nonexport enterprises targeting high-end domestic markets have also established strict quality traceability systems through contract farming.

High-quality, high value-added products will command a higher price in the end market, which in turn can allow the enterprises to offer a contract price to farmers higher than the market price.

As illustrated in the national case studies in the Annex:

- (i) Qingzhou Quancheng Food's duck series has over 30 kinds of products that are on sale in more than 20 provinces and cities. Most can be sold through reliable marketing channels because of high quality.
- (ii) Boxing Loamsun has built its business on a range of specialized organic processed food products. It exports to the European Union and has sales in the major cities of the PRC at premium prices.
- (iii) Henan Dream Food has more than 40 kinds of specialized flour, fortified flour, and wheat flour used to produce its own range of cookies. It exports to some 20 countries and regions, including Canada, the Republic of Korea, Malaysia, Mongolia, and South Africa.
- (iv) Henan Tianyu produces a wide range of specialized sweet potato starches and noodles, and exports to Australia, Japan, the Republic of Korea, New Zealand, Singapore, the United States, and other countries.
- (v) Tianshui Changsheng Food produces a range of processed fruit and vegetable products and exports to France, Germany, Ireland, Spain, the United Kingdom, and the United States.

Motivation of Farmers to Join Contract Farming

The key motivation for farmers to sell their produce to enterprises is to reduce their production risks and secure stable profits. Price-fixing contracts such as lowest purchase price, fixed basis purchase price, and fixed price contracts are central to this.

Lowest purchase price. The enterprise sets the lowest purchase price, based normally on the price in the previous year. If market price is higher than the lowest purchase price, the enterprise will pay the market price. If the lowest purchase price is higher than the market price, the enterprise will pay farmers the agreed lowest price. In other words, the enterprise is guaranteeing a price floor for farmers.

Fixed basis purchase price. The enterprise agrees to buy from the farmer at market price plus a fixed amount, which is the basis. For example, Boxing Loamsun Food contracts state that the enterprise would purchase wheat at a higher price per kilogram (kg) than the market price. If the market price of wheat was CNY2.60 per kg on delivery, the enterprise would purchase it at the price of CNY3.40 per kg, or an additional CNY0.8 per kg.

Lowest purchase price and fixed basis purchase price are applicable to high-quality products with high-profit margins. Enterprises adopting these mechanisms must make sure that they can remain profitable by charging a high price for their products through added value and/or guaranteed quality.

Fixed purchase price. The price in this mechanism is fixed based on the estimation of production cost and the market by enterprise. The enterprise is essentially guessing what the

market will be some months in advance. The two kinds of enterprises successfully implementing this mechanism are:

- (i) **Enterprises that require farmers to produce a certain kind of crop, or a crop with specific characteristics.** For example, Changsheng Food planned to produce canned sweet corn, but there was no established production of suitable sweet corn in their area. The enterprise had to introduce sweet corn, and encouraged farmers to grow the crop by offering seeds at a very low price. There was no demand for sweet corn in the local market, and the farmers sold to the enterprise at the price set in the contract. Changsheng Food had to guarantee that farmers could make more money by growing sweet corn than other crops. Otherwise, the farmers would not grow the crop for another year.
- (ii) **Enterprises where low added value of their products makes it difficult to fulfill lowest price contracts and fixed basis purchase price contracts.** In order to ensure the quality of produce and avoid the problem of supply shortage caused by market fluctuations, some enterprises designed a pricing mechanism where both farmers' inputs and returns are fixed. The cooperation model between Qingzhou Quancheng Food and its contracted poultry farmers is an example. The enterprise provided ducklings at an agreed price, supplied feed and medicine, and purchased fully grown ducks at an agreed contract price. If the cost of producing ducks grew by CNY2 per kg due to rising costs of feeds and medicine, the enterprise would purchase at the price CNY2 per kg higher than the price set in the contract. As long as the farmers managed their ducks properly, they were sure to make a fixed profit from each duck they supplied. Processed duck products do not have a particularly high added value and their sale is easily affected by bird flu, so the success of this model is largely determined by market stability and the enterprises' ability to bear risks. This is very similar to the contract mechanism used by PCee.

Setting Contract Prices. Successful price setting can lead to a win-win situation for the enterprise and for farmers, and ensure the effective implementation of contract farming.

A right contract price is set so that contracted farmers can make reasonable profits and the enterprise is allowed to be profitable in the long term. Right contract price is the result of good business management. Our study indicates that those enterprises that achieved success in contract farming know the production costs of their suppliers well and they can make relatively accurate estimates of sales volume and the market price of end products.

For instance, Qingzhou Quancheng Food obtained an accurate estimate of duck rearing costs and set contract prices based on this estimate to guarantee farmers' returns. The transaction avoided farmers' loss caused by price fluctuations and raised the rate of contract fulfillment.

Other Support Mechanisms to Motivate Farmers

Apart from setting pricing mechanisms with farmers to guarantee returns, enterprises also support farmers in reducing production costs, which is a key factor in attracting farmers to contract farming.

The enterprises often do either one or a combination of the following:

- (i) cooperating with agricultural technology research and extension departments to develop new varieties, pesticides, and fertilizers;
- (ii) bulk purchase of inputs such as fertilizers at a lower price, which are then sold to farmers at a lower price than the farmer has to pay in the open market;
- (iii) introduction of new varieties to optimize planting structure, diversify growing seasons, and reduce labor requirements; and
- (iv) providing financial support to farmers including loans for large contractors to consolidate land, and providing guarantees for farmers when they apply for loans to set up farms.

Vertical Integration and Risk Management

Market price fluctuations of agricultural inputs and products have presented a significant challenge in cost control and setting contract prices. How does a company mitigate the impacts of the price risks to maintain a win-win situation? Vertical integration turns out to be a key approach used by project enterprises to address this problem. Vertical integration makes it easier for the enterprises to control costs of inputs and production and reduce uncertainty in profit margins.

For instance, Qingzhou Quancheng Food's involvement in incubation, feed, breeding, sale, butchery, and processing contributes greatly to its ability to fix purchase prices and guarantee a fixed profit of CNY2 per duck for each poultry farmer.

In 2013, Qingzhou Quancheng Food incurred a loss of CNY20 million in duck processing due to bird flu, but it made a profit of CNY10 million and CNY5 million through the sale of feed and ducklings, respectively, resulting in an overall loss of CNY5 million.

The surveyed enterprises all believe that the interdependence between sections of their vertically integrated operations strengthens their capacity to manage risks, allowing them to sign contracts with farmers with attractive prices.

Establishing *Jidi* as a Platform for Contract Farming

Development of *jidi* plays a key role in carrying out contract farming in the PRC. All the surveyed project enterprises have established *jidi* management departments responsible for contract farming development and quality monitoring of production in *jidi*. Some *jidi* departments also have responsibility for implementing standardized production through providing technical support, training, and extension services to ensure the quality and quantity of raw materials. These departments are allowed to have independent accounting and their performance is assessed according to the expanded area of *jidi*.

Based on the extent of control that enterprises have, a *jidi* could be categorized into enterprise-managed and farmer-managed *jidi*. Enterprises that produce high-quality, high value-added products all seek to have a more substantial control over the way that raw materials are produced. They are more likely to get directly involved in establishing and managing *jidi*.

For example, Boxing Loamsun Food established an enterprise-managed *jidi* of 18,000 mu^3 to grow organic vegetable. Retrospecting into the past several years, Boxing Loamsun Food believes that if the enterprise must have a firm control on its products' quality, it is best achieved if the enterprise manages *jidi* directly, even if this type of *jidi* incurs higher costs.

Enterprises may adopt a farmer-managed model when it is relatively easy for farmers to manage quality risks in crop and livestock production. For example, Boxing Loamsun Food also developed a farmer-managed *jidi* to grow wheat for its organic flour. Quality control can be done with inputs supplied by the enterprise (i.e., seeds, fertilizers, and pesticide), as well as through group guarantees and sample tests.

Henan Tianyu Potato Industry also adopts a farmer-managed model in sweet potato growing, where the relatively simple crop production practice and few plant diseases means those farmers are able to manage quality.

Role of the Government and Villages Administration. Most *jidi* and contract farming are developed with a role played by the government and village administration in the PRC. To establish an enterprise-managed *jidi*, enterprises generally need to consolidate farmland from large continuous blocks.

The collective ownership of farmland in villages means that village committees are familiar with farmland status of every household. It is more efficient to have village committees to work as a major intermediary in the process of farmland consolidation.

For farmer-managed *jidi*, it is also more efficient for enterprises to engage local government and village committees. Besides contracting with farmers only, the enterprises often contract with farmers and village committees jointly, or with village committees only. Village committees can coordinate the large number of smallholding farmers involved in *jidi* for collective activities such as procurement of inputs and applying production techniques.

Agricultural Technology Extension Services. *Jidi* is often used as a platform for enterprises to collaborate with research institutions and promote sustainable agricultural technology among the contracted farmers.

Henan Tianyu Potato Industry developed new strains and formed its own extension team when it established its own sweet potato propagation *jidi*. Boxing Loamsun Food cooperated with several leading universities and research institutions such as Shanghai Jiao Tong University, Shandong Agricultural University, and Tsinghua University, and applied the newly developed technology in its *jidi*. Cooperation with research institutes helped Shandong Mishui Winery introduce quality grape seedlings and grape picking equipment to promote the localized standard cultivation.

Agricultural technology extension systems are set up on the basis of *jidi* favor market-oriented research on agricultural technology and are thus more likely to be sustainable. To support a system, the enterprises (i) employ agricultural technicians; (ii) introduce new strains; and (iii) pay in advance for inputs such as seedlings, young stock, and fertilizers. The

³ 1 acre = 6.07 *mu*.

farmers working as a stakeholder of *jidi* are more likely to adopt the technologies to produce what they are expected to produce.

Willingness of Enterprises to Bear Risks

Enterprises' willingness to bear certain risks is another prerequisite for effective contract farming arrangements. Market fluctuations, natural disasters, and crop failure all make farmers averse to taking risks. When enterprises are active in sharing risks and offer guarantees to their contracted partners, they can win farmers' trust and succeed in contract farming in the long term.

An example from the project is Henan Tianyu Potato Industry which adopts the lowest purchase price. It honored its contract price of CNY0.9 per kg even though the market price then was CNY0.6 per kg.

In another case, Henan Tianyu Potato Industry supplied seeds developed by a research institute to farmers. The new crop failed completely but the enterprise still compensated the farmers for their losses according to their estimated earnings. The move earned a favorable reputation for the enterprise and won the trust of farmers, leading to a more solid partnership.

Contract Default Management

Default on quantity and/or quality has been one of the most common problems for contract farming (Glover & Kusterer, 1990; Narayanan, 210). To complement price and production support mechanisms, the project enterprises also reduce the probability of contract default through a range of trust or networking mechanisms such as:

- (i) Contracted farmers must be known to the workers of the enterprise. For example, in Henan Tianyu Potato Industry, the contracted farmers are all acquaintances of the workers of the enterprise. The workers know the ability and credibility of the farmers, helping to ensure the smooth implementation of contracts.
- (ii) New farmers must be guaranteed by existing contracted farmers. For Qingzhou Quancheng Food, new farmers who are interested to sign a contract with the enterprise must have a reference and a guarantee letter from an established contractor, and the enterprise will check their credibility as well. This mechanism helps ensure that the enterprise contracts with capable and trustworthy farmers.
- (iii) Enterprises sign contracts with village committees and farmers, or with farmers through the coordination of village committees. Village committee staff who are familiar with villagers can help identify reliable farmers. The village committee staff are paid according to the final purchase quantity or the area of farmland involved in contract farming.
- (iv) Some enterprises reduce contract breach probability through group guarantees. All produce from a village will be rejected if an individual farmer does not follow the requirements of the contract. Boxing Loamsun Food requires that specified practices are followed for organic wheat growing, and conducts infield quality testing before purchase. If a farmer has used a banned pesticide and this is traced in quality testing, all wheat grown by the village is rejected. By taking advantage of

peer pressure in the community, Boxing Loamsun Food is applying a similar model to the microfinance guarantee created by Muhammad Yunus in Grameen Bank.

- (v) Most enterprises have established quality traceability systems, strict guarantees, and enforcement mechanism through the implementation of contract farming. The enterprises may demand compensation or refuse to pay the contractors in case of problems in product quality.

Application of these mechanisms varies with the size of a farmland. The first two are more likely to be seen with larger landholders, while the last two are more common with smallholders.

Problems in Establishing Farmer–Enterprise Partnerships

Although contract farming undertaken by enterprises is generally successful, the report was still able to identify a few main barriers and challenges confronting the partnership between enterprises and farmers:

Market Failure and Quality Premium

As discussed above, profit from high-quality, value-added products is an important motivation for enterprises to access high quality raw materials through contract farming.

There is an element of failure in the PRC market for high-quality value-added products, arising largely from the failure of suppliers to fully convince consumers that their products are indeed high-quality premium products. This can be seen as a form of “information asymmetry,” which means producers may be selling quality products but consumers do not believe this. This in turn can lead to “negative feedback” where producers bring quality products to the market but cannot get any price premium. They then rationally decide that there is no reason to produce high-quality products and revert to producing average-quality products.

One way to address this issue is through product safety and quality certification (e.g., organic, green, or chemical green product certification), though this has not been very effective in the PRC.

A survey (Xinyu, 2010) revealed that 58.9% of respondents had some doubts about safety marks on packaging, 15.3% did not trust them at all, 17.5% trust them to some extent, and only 8.3% had absolute trust in them. There is an urgent need to improve the credibility of the PRC food safety management authorities if product safety and certification are to play positive roles in supporting the market for high-quality, value-added products.

Financial Strength of Enterprises

Many enterprises are still in the growing phase. For a start-up enterprise, it is difficult to attract farmers by setting a contract price higher than the market price if the enterprise does not have adequate established sales channels for high value products.

The ability of the enterprise to bear the risks will directly affect the possibility of its contract fulfillment or even its survival.

Qingzhou Quancheng Food suffered poor sales due to bird flu. With its vertical integration and strong financial power, the company was able to accept the risks and purchase ducks from the contracted farmers at the price set in the contract. This helped the company gain farmers' trust since the contract price was far higher than the market price.

Most start-up enterprises, however, are often short of capital and are not established enough in a stable market. This can make it difficult for them to fulfill purchase contracts. If they break their contract, not only is their reputation damaged, adversely affecting their long-term development, but the whole concept of contract farming can be damaged in the eyes of farmers in the local area.

Unequal Policy Support from Government

The PRC has provided officially designated leading agricultural enterprises with considerable policy support, such as favorable taxes and subsidies for inputs and equipment purchases, in order to leverage their role in the agricultural development and poverty alleviation in rural areas.

Government has a size requirement for an enterprise that wishes to be recognized as a leading agro-enterprise. For example, the annual sales of a nationally leading enterprise in the western PRC should reach CNY60 million.

However, majority of agricultural enterprises do not meet this requirement. This means that they are excluded from many support programs that the government offers to nationally leading enterprises. This situation needs to be changed, as the study shows that larger enterprises in the project are not more likely to implement contract farming than the smaller enterprises. More equalized treatment of the agro-enterprises could better help farmers with their productivity and incomes.

High Transaction Costs

In the PRC, the majority of farmers are smallholders, with only about 1 acre for each household on average. The costs for enterprises to contract with these many individual farmers are very high compared with the costs of dealing with a few, larger landholders.

These costs mainly include cost of signing contracts with individual farmers, and cost incurred in supervising the production process to guarantee both the quality and quantity of their produce. Negotiating through village committees and requiring farmers to share accountability for their contracts are common measures taken to reduce the transaction costs, but they are applicable in certain circumstances only.

Increasing farmland transfer among farmers can contribute to large-scale farming. One barrier to farmland transfer is lack of trading platforms. In this case, enterprises can only contact those farmers who want to lease their land on a one-to-one basis or through village committees. It can be costly to obtain this information.

Dependency on Quality Testing Equipment

Enterprises have purchased quality testing equipment and hired quality control technicians as their operations have grown. At the same time, they have gradually stopped relying on peer pressure in the form of a joint guarantee.

Reliance on quality testing equipment does not necessarily solve quality problems, as shown in the melamine incident in the PRC's dairy industry in 2008.⁴ The dairy enterprises conduct strict quality testing, but there can still be fraud in the supply of raw milk by adding melamine. Well-managed contract farming arrangements can help establish not only quality traceability systems, but also supervision systems among farmers.

The joint guarantee model utilizing peer pressure requires farmers to monitor each other's farming practices. Some enterprises hire village committee members to manage the farmers and this can also effectively contribute in the farming community. It may be advisable to combine peer pressure among contracted farmers with quality testing to ensure the quality of raw materials.

⁴ U.S. News & World Report. 2008. *The Story Behind China's Tainted Milk Scandal*. 9 October. <http://www.usnews.com/news/world/articles/2008/10/09/the-story-behind-chinas-tainted-milk-scandal>

Conclusion and Recommendations

Conclusion

Many participating enterprises of the ADB Dryland Sustainable Agriculture Project in the PRC are already well on their way to conducting contract farming in line with the best international practices. The experience gained by these enterprises can be a valuable model for other agro-enterprises in the PRC and other developing countries with smallholders.

One of the keys to effective implementation of contract farming is that both enterprises and farmers benefit from the partnership. A well-operated contract farming project ensures a stable supply of quality raw materials or products for enterprises. If they can make more profit from it, contract farming will surely become more appealing to farmers.

Enterprises usually attract farmers to contract farming by offering protective prices which are generally higher than market prices, and reducing the production costs with the supply of accessible quality seeds, fertilizers, pesticides, loan guarantee, and free technical services.

For different products, protective price is offered in different forms. Lowest purchase price and fixed basis purchase price tend to be associated with high-quality, value-added products, while fixed purchase price is more common among specific raw materials or products with low value added.

Besides, most enterprises that achieved success in contract farming also minimized farmers' loss by bearing market risks and covering the damage caused by natural disasters which would naturally draw more farmers to contract farming.

However, the protective prices and support are not set or given at random. Instead, they are based on enterprises to calculate their production costs and potential profits in the entire value chain, and make a precise prediction of the market.

Those enterprises that managed to do it are all well vertically integrated and set up *jidi* as a platform to carry out contract farming. Local government agencies, in particular the village committees, play an active role to coordinate smallholding farmers participating in *jidi* development which reduces the transaction costs significantly. A market oriented technical support system is often in place for farmers to adopt proper technologies in order to produce the desired quality.

Yet contract default might still happen among many small farmers. Therefore, quite a few enterprises make use of trust networks of acquaintances and peer guarantees to reduce the incidence of contract default which have yielded good results.

There are still several obstacles for farmer–enterprise partnerships to overcome.

There is widespread mistrust of quality and safety certifications of agricultural products among the PRC's consumers. In this case, even when producers bring high-quality products to the market, they cannot get sufficient price premium. As a result, both enterprises and farmers are deprived of financial incentives.

Another problem is the potential market risks in contract farming. Shortage of capital to allow the enterprise to bear these risks will directly affect the possibility of its contract fulfillment, possibly even its survival. In addition, evidence shows that despite small agribusinesses' stronger interest to join contract farming, the current policies favor large enterprises with little support given to the smaller ones.

Moreover, the cost for enterprises to contract with individual small farmers and supervise their production remains high, whereas farmland transfer and consolidation, an essential means to move to large-scale agricultural production, still face issues to speed up.

Finally, it is found that some enterprises stopped using peer pressure through joint guarantees after they purchased quality testing equipment and hired quality control technicians. But the melamine scandal in the PRC's dairy industry revealed that quality problems cannot be solved merely by technical means.

Recommendations

To achieve agricultural modernization through the development of a new agricultural management system in the PRC, the problems confronting contract farming need to be prioritized and solved.

The following policy initiatives are recommended based on our study:

Support the development of the market for high-quality, value-added products and ensure that food safety and quality standards for these products are maintained.

Government initiatives are needed to support enterprises in developing new value-added products and in bringing these products to the market. The focus may be on knowledge and information support such as market research, business planning, and new product development instead of machinery and equipment.

The aim is to help enterprises move from a production-focus to a market-focus enterprise. External consultants and agribusiness specialists with “new knowledge” are in high demand in this regard. Government can help by partly funding the costs of external business consultants and capacity building activities of enterprises.

Government should work to enhance the credibility of agricultural product quality certification by introducing third-party certification, engaging consumers in certification, and building up credible certification agencies. Government should also make efforts to reverse the negative perception that consumers have of the system.

Enterprises should make efforts to build their brands with innovative strategies, such as forming alliances with other enterprises, publicizing high-quality products, promoting them in agricultural fairs, and inviting customers to participate in third-party certification.

Establish information exchange platforms. Government or nongovernment organizations can establish an open database and information exchange platform for farmer–enterprise partnerships to share contract farming experience.

The objective would be to build a platform where relevant government departments, enterprises, cooperatives, communities, and the academe can exchange experience to help reduce risks and costs in contract farming, and to promote the development of farmer–enterprise partnerships.

A number of enterprises which have established successful management models to implement contract farming and have accumulated a lot of experience in agricultural product quality and safety control, can extend⁵ their good practices through the platform.

Enterprises with experience in contract farming may be willing, for a fee, to allow their contract farming specialists to support other enterprises which are not direct competitors.

Information platforms for transferring land use rights at village, township, and county levels can help reduce information asymmetry and ensure legality of farmland circulation. They will be helpful to improving contract farming since a large proportion of contract farming practices involve farmland transfer and consolidation. The platforms will reduce the transaction costs as well as legal uncertainties incurred in contract farming.

Revisit support policy for leading enterprises. There is a need to revisit the qualifications required for enterprises to get financial support from government, so as to direct more public resources to enterprises that have the potential for successful contract farming.

One of the major reasons why the government and policy banks earmark funds to support agricultural enterprises is that they contribute to raising farmers' incomes as well as sustainable development of agriculture.

The risks incurred in contract farming mainly result from default on contracts, and enterprises with higher profitability are more able and willing to bear these risks. Their business scale is not necessarily relevant here. It is recommended to select enterprises and offer financial support based on their business profitability and viability rather than merely on their size.

⁵ “Extend” is used here in the context of “agricultural extension” where new knowledge of agricultural practices is “extended” to farmers through education.

When an enterprise is being considered for government support on the understanding that they will show some measure of social responsibility toward farmers, it should be asked to give a detailed plan of how it will implement social responsibility programs. After government support is granted, an assessment should be made of the extent to which the enterprise has implemented the plan.

The first priority of any commercial enterprise is that it should be profitable, but an enterprise that is able to show that it can be both profitable and effective in alleviating poverty and promoting sustainable agriculture should be a prime candidate for government support.

Change the extension services for agricultural technologies. State-run agricultural advisory services need to be reformed to be relevant to the market and commercial business needs of agro-enterprises. As the FAO stated:⁶

“To improve farmers’ livelihoods, there is a critical need for good knowledge of the business aspects of running their farm and of how to market their products. To achieve this may require a re-orientation of extension services that do not focus on production but instead focus on farm management, marketing and agribusiness.”

To meet their own needs, enterprises have played an active role in developing and extending new varieties and technologies as well as offering farmers’ training when they set up *jidi* and conduct contract farming. They have taken the initiative in cooperating with scientific researchers and research institutes, recruited technicians, and allocated funds for technology extension. The practice proved to be profitable with remarkable economic returns.

Government can learn from this private sector exercise and begin to reform toward a more “demand-oriented agricultural advisory service.”

Take advantage of social capital in communities. Enterprises and cooperatives should continue to take advantage of social capital in communities. Social capital in the PRC’s rural communities is demonstrated by the strong social ties and mutual interests of community members.

Acquaintance guarantee is a typical example, where enterprises make use of social capital of a community. Enterprises can require farmers to obtain a guarantee from their acquaintances when signing contracts and a supervision system can be established among the farmers themselves. This can help enterprises with the supervision of raw material production and can encourage farmers to fulfill their contracts when selling to enterprises.

Government should encourage and guide farmers to participate in contract farming and expect this practice to lead to closer cooperation within the community and build the ability of the community to take collective action.

If successfully extended, this practice can become a model to promote community cooperation through market rather than social policy.

⁶ FAO. 2012. *Regional Consultation Workshop on Market Oriented Agricultural Advisory Services Workshop in Amman, Jordan*. <http://www.fao.org/nr/research-extension-systems/res-home/news/detail/en/c/174853/>

Annex

National Case Study 1: Qingzhou Quancheng Food

Overview of Qingzhou Quancheng Food

Qingzhou Quancheng Food was established in 2002 with a registered capital of CNY15.6 million. Located in the suburb of the ancient city of Qingzhou, the enterprise has easy access to transportation with the No. 309 National Highway and Jinan-Qingzhou Expressway close to it.

As a provincial enterprise, it has stuck to its management idea which—since its foundation—states: “To develop the enterprise is the key, and to increase farmers’ income is the core.” Its major business includes the incubation, breeding, sale, butchering and processing of Cherry Valley Ducks, and research on breeding, among others.

The enterprise owns facilities like the duckling breeding *jidi*, incubation center, standardized breeding farm, slaughterhouse, storehouse, and cold storage building. Its “split duck” series has over 30 kinds of products and are on sale in more than 20 provinces and cities.

Farmer–Enterprise Partnership Model

The enterprise adopts the management model of “enterprise + standardized breeding farm + farmers” and builds stable and reliable partnerships with poultry farmers. It carries out separate breeding and offers unified services to its contracted farmers including the supply of ducklings and feeds, technical support, epidemic prevention, purchase, and training.

The cooperation between the enterprise and farmers reduces breeding risks, increases profits, and promotes the development of efficient agriculture into scientific, large-scale, and standardized agriculture.

The project not only promotes the enterprise’s financial strength and improves the meat duck production chain. It also drives the development of the surrounding areas by signing breeding contracts and providing technical support.

Whole Vertical Chain Model. Qingzhou Quancheng Food has a whole vertical chain which helps to mitigate market risks and the disadvantages of agricultural enterprises

including the incubation center, feed processing factory, butchering and processing factory, storehouse, and cold storage building.

The main disadvantages of poultry-breeding enterprises are as follows: (i) labor-intensive industry with high costs, (ii) long production cycle, and (iii) the whole vertical chain would be at risk in difficult market conditions.

However, as a leading enterprise with a whole vertical chain, the enterprise has a strong capacity to withstand risks with enormous financial power.

For example, in 2013, due to bird flu, the enterprise had losses of CNY20 million in duck processing, but it made a profit of CNY10 million through the sale of feed and CNY5 million through the sale of ducklings.

Thus, the enterprise had a loss of CNY5 million. The interdependence between the sections of the production chain strengthens the enterprise's capacity to defend itself against risks.

Excellent Risk Management Measures. Excellent risk management measures not only strengthen the enterprise's ability to withstand market risks, but also guarantee the benefits of the contracted farmers. The price of ducklings, feeds, and purchase must be determined upon signing of contracts. Otherwise, the contracted farmers cannot be guaranteed to make profits. According to the costs of feeds, vaccines, and ducklings offered to the poultry farmers, the enterprise determines the contract clauses, including the price of ducklings and purchase.

The purchase price increases by CNY0.02 every time the feed price increases by CNY0.01. Farmers make fixed profits and the enterprise bears risks. So far, the enterprise has stimulated the breeding activity of almost 1,000 nearby poultry farmers.

At present, 100,000 ducklings are about to be hatched, and the enterprise has decided to supply the ducklings to poultry farmers to secure their benefits even though the industry is depressed and the enterprise will incur losses during the following 1-year breeding cycle.

Otherwise, the enterprise might be eliminated from the market within 5 years or so. The enterprise believes that it should take its social responsibility to stabilize the market and the production chain. Besides, it can recoup its losses when the market becomes profitable.

Also, the enterprise actively offers loan guarantees to its contracted farmers. In 2013, the total of the loan guaranteed was CNY6 million, with CNY250,000 to CNY400,000 being given per farmer. The fund was mainly used to buy feeds and establish breeding farms.

Stable Contracted Purchase. Contracted purchase is the main mode of the enterprise. In 2002, the enterprise bought ducks from the free market. In 2005, it had 100 to 150 contracted poultry farmers and since 2008, its total contracted poultry farmers has been 1,000.

The enterprise offers two additional free ducklings per 98 ducklings to every poultry farmer in case ducks die or get injured before purchase. After they mature, the 98 ducks will be purchased at the contracted price and the additional two ducks, if alive, will be purchased at market price.

The contract clauses are strict, making it difficult for poultry farmers to sell in the market or to buy ducks from the market as stopgaps. The enterprise employs several full-time technicians, each of whom is responsible for a section and checks it every day.

The enterprise helps dispose of sick ducks and will not purchase ducks in case of mass illness, which, thanks to the enterprise's strict epidemic prevention management, has not happened so far.

The enterprise only signs contracts with new farmers and saves established farmers' the trouble of signing contracts since they know very clearly about every procedure. Cost is reduced by trust management. Only farmers introduced and offered a guarantee by established poultry farmers can participate in contract farming. The enterprise also makes inquiries on creditworthiness. Upon signing contracts, poultry farmers need to pay CNY2 per duckling as a guarantee to ensure that they will sell ducks to the enterprise, and the enterprise will return the fee after its purchase.

Strict Quality Control System. The enterprise carries out quality control in every procedure. In terms of duckling supply, the enterprise breeds ducklings itself. It introduces ducklings from the United Kingdom and breeds them. The price of the ducklings is slightly high, but the enterprise sells them to poultry farmers with price concessions.

In terms of the epidemic prevention system, the enterprise has established an obligatory epidemic prevention system to check on ducks periodically. In each procedure, epidemic prevention agencies and examination agencies check on the quality of the products.

In terms of quality control, the enterprise employs workers to be the coordinators between poultry farmers and the enterprise. The coordinators will inform poultry farmers of the purchase one day before the due date and negotiate with poultry farmers on specific purchase time according to the consumption of feed.

Generally, the agreed purchase time is 1 day before or after the due date. A duck weighs 2.5 kg after taking 5.75 kg of feeds and poultry farmers make maximum profits if the enterprise purchases ducks at this time. In terms of butchery, every batch of ducks has its own batch number.

Poultry farmers are required not to feed ducks 5 hours before purchase and will not get paid if food debris is found in the ducks' stomach. The products are also traceable if other problems are found.

National Case Study 2: Boxing Loamsun Food

Overview of Boxing Loamsun Food

Founded in 2001, Boxing Loamsun Food from Boxing County, Shandong Province, is a modern agricultural enterprise engaged in planting, breeding, production, processing, and trade.

With a registered capital of CNY45.5 million and total assets reaching CNY350 million, the enterprise now has a workforce of 1,200. The company initially focused on exporting frozen vegetables, but it has been transformed into an agribusiness targeting both export and domestic sales since 2008.

The enterprise is now a leading enterprise in the Shandong agricultural industry, an implementing enterprise for the PRC's national Spark projects, and a model Spark enterprise in Binzhou City.

The core products of the enterprise include organic vegetables, organic canned food, organic flour, organic noodles, organic grains, and organic chilled meat products. Organic vegetables and canned food have entered international markets including Canada, Japan, and the United States.

Organic flour, noodles, and grains as well as livestock and poultry products have been sold in Ginza Supermarkets across Shandong Province and a dozen of large and medium-sized cities like Beijing, Guangzhou, Shanghai, and Shenzhen.

The enterprise currently has an 80,000 *mu jidi*, including 30,000 *mu* of circulated farmland and 50,000 *mu* of social *jidi*. It has an organic flour mill and an organic noodle production line with annual capacity for processing 100,000 tons of flour and producing 2,000 tons of noodles. It is also in possession of an annual storage of 9,000 tons of frozen vegetables.

Farmer–Enterprise Partnership Model

The farmer–enterprise partnership model is mainly applied in three aspects: (i) circulation of farmland, (ii) construction of infrastructure in social *jidi*, and (iii) extension of agricultural technology.

Farmland Management Model. Of the 30,000 *mu* of circulated farmland, 18,000 *mu* is operated by the enterprise and 12,000 *mu* is for rent-and-lease. In addition, the enterprise has another 50,000 *mu* of social *jidi*.

When confronted with holdouts who refuse to have their land leased, the enterprise first made efforts to negotiate with them with the help of rural cooperatives. If they failed to reach an agreement, the enterprise would give up the whole piece of land.

The circulated farmland is used for self-operated organic vegetables planting for export. The enterprise chose this model because organic vegetable planting demands a high standard of quality, and self-operation guarantees reliability and stability. It has invested CNY6 million to build an organic produce core *jidi* of 6,000 *mu* to drive the development of the social *jidi* and self-operated *jidi* with experimentations and demonstrations.

The rent-and-lease land is mainly used to grow wheat. It is leased to contractors in large quantities at the same price as the enterprise leased from the farmers. The enterprise provides the contractors with seeds, fertilizers, pesticides, and other farming materials, and then deducts the cost when purchasing produce.

The money the enterprise pays the contractors is their profit. When land is leased to smallholder farmers, problems like poor quality or difficult management arise. Therefore, the enterprise usually leases the land to big contractors. By doing so, the enterprise can cut back on management costs, and the contractors can achieve economies of scale.

The 50,000 *mu* of social *jidi* is mainly used for planting grains and wheat, providing materials for the enterprise to produce flour and noodles. The requirement for planting such major farm produce is relatively less strict.

“Enterprise–Committee–Farmers” Order Management Model. With the village committees acting as intermediaries, the enterprise sets up *jidi* with farmers so that the farmers could grow organic wheat in the social *jidi*, and then sign the contracts to purchase their wheat and guarantee the lowest price.

The price is set based on the fixed basis purchase price which is CNY0.35 higher than the market price per kg. After more than 10 years of development and maturity, a model integrating the enterprise, farmers, and the organic farming *jidi* has been established.

In this mode of setting up cooperation *jidi* with farmers, the enterprise adopts the “five unified” strategy, which refers to the unified provision of seeds, fertilizer, pesticides, technology, and purchase, and takes advantage of its own technology and human resources to provide the farmers with services at the preproduction, production, and postproduction stages.

Establishing Technology Research, Development, and Extension Model Guided by Demands of Enterprises. Despite the technical challenges in organic farming, the enterprise has had its products certified organic by many countries due to its absorption of technical talents.

Cooperating with the agricultural technicians sent by local agricultural bureaus allowed enterprises to explore organic farming technologies, achieve breakthroughs in intercropping, crop rotation, and variety improvement, and accumulate experience in increasing the yield and improving the productivity of organic farming.

In addition, the enterprise also conducted research on bio-organic fertilizer and bio-pesticides in cooperation with universities in Shandong and across the country, and provided them with experiment *jidi* to discover new modes for organic farming.

This profit distribution model is a win-win strategy for the enterprise and farmers, as they are all willing to improve the standardized construction of organic farming *jidi* with high-tech means, including the use of insect-proof nets and black light, the release of insects that are deadly enemies of harmful insects, and the application of safe, efficient, environmentally friendly microbial fertilizer to improve the fertility of soil.

The enterprise made full use of its technologies and talents to monitor the environment of the organic farming *jidi* and provide farmers with vegetable seeds and microbial fertilizer before production. This also allowed enterprises to offer training and consultation on organic production technologies during production, and to test the quality of their organic produce and purchase it.

The enterprise also increased its investment in the improvement of the infrastructure in *jidi*, extension and application of high technologies, as well as the subsidies to compensate farmers' loss if there are any.

This has led to the development of the organic farming *jidi*, and also enhanced both the quality and quantity of the raw products produced. The enterprise carries out unified management in its self-operated *jidi*. The *jidi*, having been certified organic, is divided into 12 farms, with each assigned a full-time manager who is selected from the village where the farm is located, a technician, and workers dispatched by the enterprise.

Attracting Farmers to Join Contract Farming by Bearing Risks. Helping farmers hedge against risks is one of the significant achievements made by the enterprise through the “enterprise–farmers–*jidi*” mode. Farmers are vulnerable when faced with the fluctuating produce market, but leading enterprises can offer them stable protection. Thus, the enterprises' integrity has become particularly important if they want to establish a long-term partnership with farmers.

In earlier attempts to cooperate with farmers, some companies failed to offer fair deals. The prices of seeds were higher than market prices. They were unreasonably strict with the quality of farmer's produce, which made it impossible for the farmers to sell at a good price. Many farmers did not trust the companies. Boxing Loamsun Food has started to rent land to build its own farming *jidi* since 2002. It operated with the motto of “Doing fair and honest business with farmers.”

In 2012, an ice storm hit the local area, causing the decline in both quality and quantity of produce. Though the enterprise could not purchase the substandard products, it gave farmers CNY50 per *mu* to compensate for their loss. Slowly, some farmers were attracted to join the *jidi*, and by word of mouth, the enterprise gradually expanded its farming business.

National Case Study 3: Henan Dream Food

Overview of Henan Dream Food

Founded in 1993, Henan Dream Food is an exporter specializing in the production and sale of cookies, flour, and flour products. As a leading national agribusiness corporation, it now has six sales districts with 36 offices divided into 126 subdistricts covering more than 200 cities. It has also established cooperative relationships with more than 400 distributors.

With a specialized flour production line with an annual capacity for processing 150,000 tons of wheat, the enterprise is the most modern flour production enterprise in Henan. It can produce eight different series and more than 40 kinds of specialized flour, fortified flour, and wheat flour which not only meet the needs for its own production of cookies and noodles, but are also sold across the whole country. Its products have entered the international market and have been sold to more than 20 countries and regions such as Canada, the Republic of Korea, Malaysia, Mongolia, and South Africa.

Farmer–Enterprise Partnership Model

In the past few years, the enterprise as a leading processor of agricultural products, has been following the path of agricultural modernization and endeavoring to build up large-scale, standardized, intensive, green raw material *jidi*, and form a community of interest with farmers to ensure the steady production of raw materials and boost farmers' income.

Helping Establish Farmers' Association and Specialized Cooperative. The enterprise processes 150,000 tons of wheat each year, part of which is used to produce cookies and noodles, the rest being sold across the whole country. To ensure a reliable and sustainable supply of wheat flour both for the enterprise's production of cookies and the market demand, the enterprise helped establish Ruzhou City Dream Green Wheat Planting Association in 2006.

It set up quality wheat planting *jidi* covering 100,000 *mu* of land in Jiaocun, Shangzhuang, Yanglou, and Zhifang townships of Ruzhou City, and started to cooperate with the association and farmers in the production of raw product. It offered farmers technical training on standardized and large-scale farming, provided them with wheat seeds suitable for cookie production and standardized planting technology, and purchased the wheat from the farmers.

The enterprise first signed contracts with the association and then signed contracts with farmers to ensure the quality of the raw product it needs.

In order to further standardize cooperation with wheat growers, the enterprise cofounded the Dream Wheat Planting Specialized Cooperative in 2010 and built a 20,000-*mu* Dream Wheat Planting Model Park. The cooperative absorbed 7,560 farmer households. Through the cooperative, the enterprise provided farmers with unified soil testing, fertilization, and pest control. It also supplied the farmers with seeds and technical support.

The enterprise conducted scientific farming and extended new technologies. It compiled a series of field management and technical specifications covering every procedure in planting, including seeding, fertilizing and irrigation, etc. These specifications were then distributed to farmers who were also offered training.

The enterprise also hired agriculture experts to go to the field and teach farmers planting and field management skills, and tracking preplanting, planting, and postplanting information.

The last 3 years since the founding of the cooperative witnessed an increasing cooperation between the enterprise and the association, the cooperative, and the farmers. The association and the cooperative have been playing an increasingly important role as the bridge linking the enterprise and farmers.

Through technical training, greatly strengthened were the farmers' group purchase of production material, unified seeding, management, harvesting and purchase by the enterprise, and the unity and solidarity among the households in the cooperative.

Storing Crops for Farmers During Shortage of Purchase Fund. When there was a shortage of funds, the enterprise helped process crops for farmers with the assistance of the cooperative. The farmers were also provided the option to exchange with the enterprise crops for flour, or to store their crops in the enterprise and then sell them when there is a higher market price.

Establishing Quality Traceability System. To ensure the successful monitoring of wheat quality and provide evidence for scientific farming, the enterprise built a laboratory, bought advanced testing and monitoring equipment, set up a research center, established product traceability systems, and adopted food recall systems to keep the entire process of food production under effective supervision.

In addition, the enterprise cooperated with the quality testing center of the local agricultural authorities to test the soil and water for heavy metal elements and other pollutants in *jidi*. It also played a leading role in ensuring food safety by supervising every procedure from the field to the table.

It studied the changes and distribution of different varieties of wheat, and kept farmers informed of everything involved in their wheat planting, standardized the management, and tested pesticide residues during the growing period. Finally, it tested the quality of wheat when purchasing the product.

Setting Lowest Purchase Price in Contracts Signed with Farmers. In terms of wheat purchase, the price set by the enterprise was higher than the market price as well as the protective price later adopted by the government by about 5%, or CNY0.1-0.2 per kg. The enterprise tested and rated the quality of the wheat produced in *jidi*. The difference in the prices of wheat of different qualities was nearly CNY0.04 per kg.

Helping Establish Model Jidi of Wheat Planting. The enterprise played a leading role in helping farmers to coplant, sell, or rent their land to large contractors, cooperatives, and key enterprises. It built an experimental field of high-quality, high-output wheat planting on the highly fertilized wheat field rented from farmers. The nearby fields were used as planting models.

The enterprise also signed wheat purchase contracts of the model fields with farmers to make them feel secure about planting wheat in the hope of developing more planting *jidi*. This way, the enterprise could achieve unified purchase.

National Case Study 4: Henan Tianyu Potato Industry

Overview of Henan Tianyu Potato Industry

Henan Tianyu Potato Industry is a leading enterprise in Henan, a key industrial enterprise in Zhoukou City, and one of the top 50 enterprises in the local food industry.

As an exporter, the enterprise is noted for its high growth, reliability, honesty, and its important role in alleviating poverty in Henan Province. Founded in September 1993, the enterprise was first named Dancheng Tianyu Starch Products, later renamed as Dancheng Tianyu Trade in September 2002. Finally, it was changed to Henan Tianyu Potato Industry in October 2008. The enterprise is located in Huanglou Village, Jizhong Town, Dancheng County, covering an area of 107,000 square meters.

The enterprise obtained the right to export in 2002, and in the same year, was certified by ISO9001 Quality Management Systems. Its *jidi* were certified by Henan Green Produce *Jidi* Certification in 2003. Its products were certified by GAP in October 2008, and by GB/T22000-2006 and ISO22000:2005 in August 2009.

They were also recognized as Class A by PRC Green Food Association (LB-24-1009162641A). Its products have been sold to 260 large- and medium-sized cities in 538 outlets across the country, and exported to Australia, the Republic of Korea, Japan, New Zealand, Singapore, the United States, and other countries and regions, with exports accounting for more than 75% of its sales.

Farmer–Enterprise Partnership Model

Building Farming *Jidi*. As one of the largest *jidi* in rain-fed agriculture, the *jidi* owned by the enterprise covers more than 100,000 *mu* with an annual output of 200,000 tons of products operated in the form of contract farming. The contracted farmers are from the nearby towns including Baji, Chengjiao, Huji, Jizhong, Lilou, and Qiandian.

About 2,500 farmer households in Dancheng County are currently engaged in contract production of sweet potatoes. Contract farming is operated by the enterprise in three forms: (i) leasing the self-operated *jidi* to farmers in large quantities and signing contracts with them, (ii) signing contracts with village committees, and (iii) signing contracts with farmers working on their own.

In the contracts signed with the farmers, the enterprise sets the lowest purchase price, i.e., the lowest selling price for the contractors. But if the market price is higher than the lowest purchase price, the enterprise will purchase their produce at the market price.

The practice of renting land from farmers and then leasing it to contractors facilitates the enterprise's development of large-scale and mechanized production. There is no limit to the scale of land the contractors can lease from the enterprise. They can decide the area based on their own workforce and finances.

At present, the amount of land leased to each household ranges from 200 *mu* to 300 *mu* with the total reaching 30,000 *mu*. The land is mainly located in the areas surrounding the enterprise. The enterprise will help the newly founded cooperative provide technical instructions for farmers. To motivate the contractors to lease more land, the enterprise makes it clear in the contracts that it will offer them subsidies. Contractors leasing from 100 to 200 *mu* will receive CNY100 per *mu*, while those leasing more than 200 *mu* will receive CNY200 per *mu*.

When selecting contractors to lease the land, the enterprise will take three aspects into consideration. First, do the farmers have a good reputation? The enterprise generally chooses those who can strictly follow its instructions and requirements and honor the contract. Second, are they financially qualified? Third, are they skilled in growing sweet potatoes?

The second type of contracts refers to those signed with village committees. The enterprise purchases the produce at the market price. There are now 112 villages and 10 towns in Dancheng County. The enterprise first signs contracts with the village committees, and then the committees will sign contracts with farmers.

The total area of the land involved in this type of contracting arrangement has reached 120,000 *mu*. A land use map of a village is enclosed in the contract so the enterprise can do overall planning and develop large-scale farming.

The third type of contracts refers to those signed with individual farmers working on their own. The land involved covers some 10,000 *mu*. These farmers are not associated with the enterprise's self-operated *jidi*. The area of the land they farm ranges from 3 to several hundred *mu*. The enterprise also sets the lowest purchase price in the contracts. If the market price is higher than the lowest purchase price, the enterprise will purchase their produce at the market price.

Setting up Technical Support System Tailored to Demands of Enterprise. After building its own green, toxin-free sweet potato *jidi*, Henan Tianyu Potato Industry used the farmers' specialization cooperative as a bridge to establish connections with farmers. Responding to market demands, it has now set up a technical alliance incorporating five parties, namely, the enterprise, *jidi*, research institutions, the cooperative, and farmers.

With 16 core technicians paid by the enterprise, the cooperative was established under the guidance of the enterprise to guarantee the quality and quantity of raw products needed. It is mainly responsible for the circulation of land, i.e., renting land from farmers and leasing it

to contractors, signing purchase contracts, paying advance money for fertilizer, and offering farmers technical support.

Though affiliated with the raw product purchase department of the enterprise, the cooperative has different responsibilities—the enterprise purchases roughly processed starch, while the cooperative purchases sweet potatoes from farmers. They are financially independent of each other.

In terms of research, development, and extension of new technologies, the enterprise made efforts to establish its own technical support system mainly from the following aspects:

- (i) The enterprise cooperated with the Country Agricultural Bureau, and hired experts to conduct publicity for new technologies among farmers and provide them with technical instructions. This ensured that the technicians could have direct communication with farmers and bring improved seeds and good farming technologies.
- (ii) The enterprise conducted long-term cooperation with research and teaching institutions. For example, it cofounded a national sweet potato breeding *jidi* with the National Sweet Potato Research Center, and set up an improved seeds extension and breeding *jidi* together with Shangqiu Agriculture and Forestry Academy. Not only did this speed up the process of applying the institutions' new research results and new technologies in farming, but it also drove the update of local cultivars and helped improve the quality, output, and productivity of farming.
- (iii) The enterprise has set up its own new farming technology research department. It hired technical experts retired from the government's technology extension departments, agricultural college graduates, and local technical talents to build up its own farming technology promotion team. It extended its focus on production to processing and has become a new force in extending farming technologies among grassroots.

At the same time, the enterprise also raised nearly CNY10 million to establish a high-quality, toxin-free sweet potato breeding center and the Henan Potato Starch Technology Research Center, which laid a solid foundation for the establishment of its own technical support system.

- (iv) The enterprise has built a 3,000 *mu* Sweet Potato Science and Technology Demonstration Garden of Tianyu Potato Industry, where 32 new varieties were developed. The enterprise now owns the intellectual property rights of six varieties. The garden is also responsible for providing and extending sweet potato seedlings and technology for the enterprise's self-operated farming *jidi*, contract *jidi*, and other joint *jidi*.

The stable provision of seedlings and technical assistance give solid support to all the Tianyu sweet potato planting *jidi*.

Underwriting the Loss in Contract Farming. When there is a risk in production, Henan Tianyu Potato Industry is always the first to underwrite farmers' losses, which is an important reason for its successful operation of contract farming.

In 1 year, the enterprise delivered new seedlings to farmers (developed by an agricultural science academy) although the result was a complete harvest failure. The enterprise took responsibility in the interest of farmers and the academy. This earned the enterprise a good reputation among farmers and gained the academy's trust. Since then, the academy has been more willing to sell its research findings to the enterprise at a relatively lower price.

The enterprise thought it was not easy to cultivate a new variety, much more a good, easy-to-grow variety. The harvest failure might have been a result of a number of factors. Soil, temperature, and rainfall might all have had a role to play. It was unwise to blame the researchers because this would affect the cooperation between the enterprise and research institutions.

The enterprise also took farmers' interest into consideration. No yield from the seedlings meant huge losses for farmers. Though the enterprise was under no obligation to cover the losses, it still decided to grant subsidies to farmers at its own expense. From the farmers' perspective, it was natural that harvest failure might happen.

After the incident, the enterprise placed more weight on the control of new varieties. The head of research and development said that the development and extension of new sweet potato varieties would take 4 to 5 years, maybe even longer, so they would reduce the risk by ensuring the safety of growing new varieties at the source.

National Case Study 5: Tianshui Changsheng Food

Overview of Tianshui Changsheng Food

Tianshui Changsheng Food is located in Shili Industrial Park east of the Economic Development Zone in Tianshui City, Gansu Province, covering an area of 60 *mu*. The enterprise was founded in 2003 with a registered capital of CNY5 million.

It was also recognized as a key agribusiness corporation by the Gansu Provincial Government and Tianshui Municipal Government as: (i) a leading poverty alleviating enterprise by the State Council Leading Group Office of Poverty Alleviation and Development, (ii) a technological innovation center of the National Spark Project, and (iii) a leading enterprise in agricultural industrialization by the Ministry of Science and Technology.

The enterprise is mainly engaged in the planting, processing, and selling of fruit and vegetable products—including sweet corn, sticky corn, asparagus, sweet pepper, edible mushrooms, corn juice, apple jam, and canned dried apples—as well as the development and production of new and special agriculture products.

After years of development, it has set up a business system incorporating the planting, refined processing, storage and preservation, and an effective quality traceability system for exported produce. The canned sweet corn produced by the enterprise was recognized as green food and its canned asparagus was recognized as Gansu's famous food.

Canned asparagus, together with canned dried apples, canned mushrooms, and canned peppers are exported to a dozen countries and regions, including France, Germany, Ireland, Spain, the United Kingdom, and the United States.

Farmer–Enterprise Partnership Model

In 2013, the enterprise owned 17,000 *mu* of sweet corn planting *jidi*. All *jidi* are operated in the form of contract farming to guarantee the supply of raw product and the quality of products.

In contract farming, the enterprise first signs contracts with village committees with the assistance of town governments, and the committees keep a record of farmers who grow corn. In order to ensure the consistency between the corn-planted area and its demands, the enterprise usually makes an estimate of the market demand for the next year, and then assigns the department responsible for *jidi* to arrange the contracts.

To ensure that farmers grow sweet corn, the enterprise needs to guarantee that they can get a better return from it than from growing any other crops. The enterprise's decision to grow sweet corn in its *jidi* was due to the farmers' demand for cost reduction and profit increase.

For one thing, the planting cost of sweet corn is lower than that of field corn. The enterprise supplies the sweet corn seeds to the committees in accordance with the acreage of *jidi*.

After that, farmers can purchase sweet corn seeds for CNY10 per kg which is CNY20 per kg lower than the price of field corn seeds. Also the growth cycle of sweet corn is relatively short and its harvest time is different from that of field corn, allowing farmers to work in different seasons. With a massive outflow of male labor to cities, there is a severe labor shortage in rural areas. Thus, the different harvest times of sweet corn and other crops makes it less tiring for farmers to harvest, and the labor intensity is also further lessened since sweet corn need not be dried and threshed.

These are the two major factors why farmers chose to grow sweet corn. Moreover, the enterprise set the lowest purchase price in the contracts signed with village committees. It was CNY850 per ton in 2011, CNY900 per ton in 2012, and CNY950 per ton in 2013. Ensuring farmers' profits is an important means to ensuring the success of contract farming.

For quality control, the department responsible for *jidi* inspects, supervises, and manages every stage of the planting of raw product, and also supplies new varieties and technologies to farmers. It also conducts unified management on the planting *jidi* in accordance with the requirements of standardized and green farming. It also provides technical support at preplanting, planting, and postplanting stages to guarantee the quality of raw product and the supply for the enterprise's production.

For motivation, the enterprise and the village committees decided to pay CNY5 per ton to village officials responsible for the contracts, to encourage them to offer farmers more help.

International Case Study: Potato Crisp Enterprise

Background

In many countries, growing urban populations, rising incomes, changing diets, and lifestyles have all contributed to a substantial increase in the consumption of processed food products.

Increasingly in urban societies, people are “money-rich, time-poor,” with high disposable incomes, well-paying jobs but with relatively little leisure time.

One aspect of this is that there is less time for traditional cooking of family meals, leading to an increased consumption of ready-to-eat meals and processed food products. This trend will almost certainly continue.

This process has had a major influence on the way that potatoes are grown and consumed. The consumption of fresh potatoes is decreasing in many countries. Each year a greater percentage of worldwide potato production is processed into a wide range of products to meet ever-increasing demand.

According to the FAO, the international potato trade has doubled in volume and has risen to almost four times in value since the mid-1980s. This is almost completely due to the increased international demand for processed products, particularly frozen and dehydrated potato products.

Processed potato products in the form of potato chips, crisps, or french fries have become an increasingly popular snack in many countries and are now a major international business. Various international fast food outlets sell french fries in vast quantities.

Production of french fries and crisps requires potatoes with higher dry matter content, typically above 20%, and low reducing sugars, normally less than 250 mg per 100 g fresh weight. High dry matters mean that less oil is used in the cooking process, while low sugars give a better taste. High sugars produce a fry that is black with a burnt taste. Not all varieties of potatoes meet these standards, and the major processors have their own preferred varieties. These are almost always grown under contract farming agreements.

The exact details of the contract will vary with the processor, but the general elements are illustrated in this case study, which is based on the contract system that a large processor operates in the eastern part of England.

Overview of Potato Crisp Enterprise

Potato Crisp Enterprise (PCee) is a leading manufacturer of potato-based snack products. It has a large processing plant in the east of England that uses more than 275,000 tons of potatoes per year. PCee is one of the largest crisp producers in the United Kingdom, supplying the major supermarket groups that now sell more than 80% of the food eaten in

the United Kingdom. To ensure that it has regular supplies of potatoes, PCee has contracts with more than 150 farmers throughout the United Kingdom.

This contracting system operates as follows:

- (i) **Seed.** Under the contract, PCee supplies the farmer with seeds. The cost of seeds is deducted from the farmers' payment after harvest, effectively giving them an interest-free loan. PCee chooses to supply seeds because this allows PCee to (i) make sure that it will have supplies of varieties of potatoes that have the right characteristics for crisp manufacture as discussed above, (ii) have some control over the flow of potatoes from the field into its factory, and (iii) reduce to some extent the amount of potatoes it has to store.

Potatoes can be harvested for about 4 months of the year in the United Kingdom from late June in the south of the country to October in the north. However, the PCee factory operates throughout the year. This means that large quantities of potatoes have to be stored to supply the factory between harvest periods. Storage is an additional cost which PCee tries to reduce.

PCee has contracts with growers in the south of England to grow "earlies" and "second earlies" (potatoes that are the first to be harvested from mid-June to the end of August) and contracts with other growers further north to grow "maincrop" potatoes that are harvested in September and October.

PCee's policy of supplying early variety seed to some contracted growers means that it has supplies of potatoes that are suitable for crisping direct from the field starting in late June. This allows the company to avoid more than 2 months of storage costs, a substantial savings.

- (ii) **Agronomy.** PCee has a team of qualified agronomists who act as field advisers, visiting growers on a regular basis to give agronomic advice. Farmers are advised on all their production activities—from cultivation, planting, fertilizer, chemical applications, and irrigation to harvesting.

Field advisers also keep watch for early signs of disease, and "crop watch" bulletins are sent to all growers in a particular area if there are signs of potential problems such as potato blight (*Phytophthora infestans*). The farmer is required to observe a strict regime of chemical applications and keep detailed records of all chemicals applied.

- (iii) **Quality Control.** Potatoes arrive at the PCee factory in 25-ton consignments by road transport. Before potatoes are accepted for processing, a sample of about 15 kg is taken and tested for size, visual appearance, signs of disease, pest damage, and other disorders. Laboratory staff tests for dry matters and fry color, all of which must be within specified tolerances before potatoes are accepted. If the sample is not acceptable, the entire 25-ton consignment is rejected.

Although consignments are occasionally rejected, the procedures that are in place for growing, harvesting, handling, storage, and transport are such that rejections are relatively rare. It should be remembered that PCee has no interest in rejecting

potatoes from contracted growers. The enterprise has invested a considerable amount of time and effort in supporting the grower, and rejected potatoes are a loss to the enterprise as well as to the grower. However, PCee's high public profile, media interests, and the demands of supermarkets mean that PCee cannot risk accepting substandard potatoes for processing.

- (iv) **Price.** The price paid to the grower is set by a formula that takes into account all the grower's costs and allows a fixed percentage margin above costs for the farmers' profit. The formula reflects annual price changes in the various inputs that the grower has to purchase. One of the United Kingdom's main agricultural consultancy firms acts as an independent and impartial auditor to ensure that the formula is fair to both parties.

Discussion

Pricing. A key aspect of this system is that PCee knows the price it will receive for its products from the supermarkets and other retailers before it exchanges contracts with farmers.

Changing prices cause problems for supermarkets and food outlets. They try as far as possible to set their retail prices well in advance and avoid price increases. They agree with PCee well in advance on the price they will pay, and PCee in turn uses this to check that the price it pays to contracted farmers will allow it to make a profit on sales. Free market potato prices in the United Kingdom can vary widely from season to season, e.g., farm free market prices since 2000 have ranged from a low of £80 per ton to a high of over £300 per ton (£1 is approximately CNY10). Price fluctuations of this magnitude can cause major problems for PCee.

The contract price paid to the farmer has no relation to the market price. It is possible for the price paid under contract to be higher or lower than the market price, depending on the season on the free market. This means that there are two ways by which the farmer can increase profits: (i) increase the yield per ha through good management and (ii) reduce costs per ha.

This means that the more efficient the farmer is, the better the contract deal becomes. A well-organized and efficient farmer can make money from a PCee contract. Those that are not well-organized and inefficient may not fare as well.

This has also had the effect of tending to increase the area of potatoes individual farmers plant. Potato production in the United Kingdom is now highly mechanized, with large and specialized equipment being increasingly used. This equipment is expensive, and a large area of potatoes is needed to justify the purchase and use of this equipment.

Farmers' Independence. Some have argued that these kinds of contracts reduce the level of independence of farmers. Farmers are told what to grow, when to plant, exactly what agronomic practices they must follow, when to harvest, and when to sell.

Farmers become workers on their own land for the processor. All of this may be true, but it is also true that farmers are not free agents and do not need to have a contract with a processing enterprise if they do not want to.

The reason processors such as PCee seek to have this level of control over farmers is that they are required to do so by their supermarket customers. Food scares such as salmonella in eggs, “Mad Cow Disease,” intense media scrutiny, and animal welfare have all contributed to increased demands by supermarkets for traceability all the way from the farmer through the food chain to the end consumer.

Under European Union law, traceability means “the ability to track any food, feed, food-producing animal or substance that will be used for consumption, through all stages of production, processing, and distribution.” Traceability is essential to supermarkets. They impose strict requirements on processors such as PCee, who in turn have no choice but to impose these requirements on their growers. All of this adds cost, and it is not something that PCee would choose to do unless it had to.

Farm Planning. Some farmers will indeed see the kind of contract used by PCee as too rigid, and will not accept this kind of control over their operations. Others see a contract of this kind as a key part of their overall farming system, and they use it.

As discussed, potato growing in the United Kingdom has become increasingly mechanized, both in terms of field equipment and handling and storage. Farmers find it increasingly difficult to finance this level of expenditure from their own resources, and will either lease equipment or take long-term credit from their bank. This borrowing has to be repaid in regular installments, regardless of whether or not farmers have a good profitable season with their potatoes.

Farmers can use a contract to ensure they have a reasonable and certain level of income that will allow them to cover costs regardless of free market prices. For example, farmers may calculate that if they contract, say 60% or 70% of their potato crop, they can cover growing costs. The remaining 30% can be sold on the market at whatever the prevailing price is, or can be offered to the processor on what is known as “free buy.”

Most processors such as PCee will buy some potatoes from the free market in addition to those that are on contract. A contract allows farmers to have some certainty that they can meet their debt obligations while at the same time “playing the market.” The ultimate decision rests with the farmer and the farmer’s level of risk aversion. Some may be gamblers, who will be happy to take their chances on the free market. They may get rich or they may go bankrupt. Others are more cautious, and may prefer the security of a contract for at least part of their crop.

Contract Enforcement. It is inevitable that there will be occasions when a processor such as PCee and a contracted farmer will have a disagreement they cannot settle. As a last resort, the contract will be reviewed based on the United Kingdom’s contract laws which cover the rights and responsibilities of the parties under any business agreement.

In practice, PCee would rarely resort to law to enforce a contract with an individual farmer. Given that PCee has contracts with over 150 growers, the default of one grower would not be a huge problem, and taking a farmer to court can do more damage to PCee’s reputation in the farming community than loss from the contract default.

In the early stage of a contract agreement, PCee will be flexible on its enforcement of the agreement as farmers may be new to contract farming. These farmers may not fully understand what is expected of them and they may make mistakes. Once the farmers gain some experience in contract farming, and there is some mutual trust and understanding, contract disputes become relatively rare. When disputes arise, most are eventually settled with a handshake.

Over time, a processor such as PCee gets to know who it can work with and the system settles down and runs smoothly to the benefit of both parties.

Also, most processors will allow farmers to default on part of their contract in the case of crop failure due to drought, disease, or some other factors outside the farmers' control. This could be by way of agreeing that the farmer can deliver fewer potatoes than what was contracted.

PCee will not be happy if it agrees to this, then finds that the farmer has also sold potatoes on the free market at a higher price. Both parties have to act fairly and honestly for the relationship to be sustainable in the long term.

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Contract Farming for Better Farmer–Enterprise Partnerships

ADB's Experience in the People's Republic of China

This report looks into the many challenges that agriculture in the People's Republic of China (PRC) faces and how stakeholders are meeting the challenges head-on with the establishment of farmer–enterprise partnerships. It offers case studies and an in-depth look into several enterprises in the PRC and highlights the experiences of these companies which can be used as guidelines for farmer–enterprise partnerships. This report represents the Asian Development Bank's efforts in pursuing its Finance++ strategy to promoting development. While the study was conducted in the context of the PRC, other developing economies could also benefit through proper generalization and customization of experience and cases learned.

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