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## Objective

To strengthen the on-going researches on corn and sorghum and to enhance sustainable corn and sorghum production for better quality of life and the environment in Asia

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## **An Innovative Marketing Model for linking small-scale Sorghum Farmers to Alcohol Industry in China: A case study**

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## Abstract

Market access is one of the most critical linkages in farming business for the rural farm households, it is also evident that they are a prerequisite for enhancing agriculture-based economic growth and increasing rural incomes. Rural incomes will not be substantially increased by exclusive emphasis on subsistence food crop production; rather, more market-oriented production systems are needed. These require intensification of agricultural production systems, increased commercialization and specialization of production.

In an effort to address the above production and market related constraints faced by the small-scale sorghum farmers; ICRISAT implemented a project on “Enhanced utilization of sorghum and pearl millet grains in poultry feed industry to improve the livelihoods of small scale farmers in Asia” funded by CFC in collaboration with the farmers in the dry land areas in Andhra Pradesh and Maharashtra states of India; Shenyang province of China and Suphan Buri, Kanchanaburi, Nakhon Sawan and Lopburi provinces of Thailand.

Efforts were made to link farmers to quality inputs supplies, improved low cost production technologies to enhance sorghum productivity. Arrangements were made with public sector banks to extend institutional credit to farmers. The market related constraints were addressed through innovative farmer- market linkages by linking groups of farmers with industrial end users (alcohol industry) by which the farmers were able to get assured and better prices for their farm produce. The innovative marketing linkages through contract farming have yielded positive results. The farmers and partners have gained practical experience in adopting the contract farming model. The lessons learnt in the project in supporting small-scale sorghum producers in accessing markets are interesting and have been able to address market constraints and help farmers in responding to new opportunities resulting in better incomes. This paper presents the experiences of contract farming model in China with alcohol industry.

## **Introduction**

The practice of contract farming is becoming increasingly common in various developing countries. The process involves buyers/end users/exporters/ industrial users entering into an agreement with farmers/group of farmers/farmers associations to buy a certain quantity of a product at a specific price. Such arrangements, for example, exist for sorghum in China, for bananas in Samoa, squash in Tonga, and root crops in Vanuatu. Such an arrangement can have some or all of the following advantages for the producing farmers.(a) Supply of quality inputs to the farmers by the potential buyer (b) Provide extension services to the farmers during the crop period (c) Support to the farmers in ensuring a good quality product(d) Buying of the farmers produce as per the agreement made with the farmers (f) In some cases, a way of providing a product for a distant market (in other words, export).

Contract farming relieves the producer of a great deal of uncertainty with respect to the marketing component, on both the input and output side. However, possible disadvantages for the producer are:(a) Some loss of control of what they can do on their farm;(b) Sometimes, some uncertainty about selling the product, if the quality does not satisfy the standards of the buyer (c) The possibility that the product price earlier agreed to by the producer ends up being lower than the market price when the crop is harvested.

On balance, however, contract farming is likely to be quite appealing for small farmers. It is also a way to reduce marketing risk. Individual small farmers may find it difficult to enter into contract farming agreements because buyers are more likely set up contracts with larger farmers in order to reduce overhead expenses. However, a group of small farmers might be attractive to buyers, and facilitators can potentially play a significant role in brokering such access and agreements.

### **A. The importance of market for the small -scale sorghum farmers**

To help the rural poor access efficient and more equitable market opportunities under the project support was extended through different types of interventions including field support for the farm families for enhancing and sharing of market related knowledge, reducing the transaction costs supporting the constitution of commodity oriented farmers associations ,helping and training farmers to identify new/alternative markets, linking farmers with end users and processors, etc. The project is trying to improve the farmers access to markets, and in this context, it is seeking ways to: a) effectively increase the market share of the rural poor and improve the terms in which they participate in markets; b) achieve greater market access and market development for the rural poor

Based on the findings of the baseline survey and based on the experiences of initial two years and in depth understanding of the constraints in marketing chain strategies were planned with the project partners to develop a marketing model to increase the production and linking to alcohol industry.

## **B. Constraints of small scale farmers in china:**

The major constraint with the farmers in China is the availability of quality inputs to the farmers and in this regard the agricultural input dealers in the region exercise a great deal of influence over these farmers as these act as providers of inputs on credit and they also influence a great deal in final sale of the produce. The markets are growing rapidly in the areas close to urban centers, with relatively dense populations, and in higher-potential areas where levels of agricultural production and surpluses are greater. In areas that are away from the urban areas, remote, have weak infrastructure, less populated and have low agricultural potential, the process of market development has been far slower. Furthermore, different types of market relations have developed for different types of crops. The food crop markets being typically characterized by informal arrangements between producers and small-scale intermediaries, and export crop markets by 'formal' relations between producers and agro-processing firms which in case also supply inputs and provides production support services. In many countries, export crop markets have emerged faster and more smoothly than food crop markets.

In this rapidly evolving context, the policy and institutional frameworks established by the governments of developing countries have not been consistently supportive of private-sector-led market development. At the national level, improved farmer-to market linkages have been typically constrained by, for example, an overly restrictive legal framework for farmer group registration, the lack of an effective legal framework for contract enforcement, or by excessive licensing requirements for traders.

The small scale farmers in China are also constrained with regard to the access and operation in the markets. Markets no longer have fixed nominal prices. Instead, new commercial relations must be struck with a myriad of suppliers and buyers, and prices, whether for selling produce or purchasing inputs, are now largely negotiated. Most of the small scale farmers especially those trying to produce market staples in remote areas, it has created major problems. The issue of market access may usefully be considered according to three dimensions: physical access to markets; structure of the markets; and producers' lack of skills, information and organization. The contract farming model developed in the project was proposed on the basis of the extensive study of these constraints and identifying possible innovations that can be suggested and used in identifying appropriate input supply and marketing systems suitable to the farmers.

## **C. Contract farming in China**

Based on the baseline survey of project area, the constraints facing by the small-scale sorghum farmers in accessing to the inputs, credit and market were studied by SRI were documented. A contract farming model developed to suite the requirements of the sorghum farming community by involving coalition partners to have holistic approach for improving the livelihoods of sorghum farmers in Heishan and Benninin county villages. The project in China is led by Sorghum Research Institute (SRI) of Liaoning Academy of Agricultural Sciences (LAAS), Liaoning. The project developed on coalition approach mode and the important collaborating partners of the project include

- Liaoning Green Fangshan Organic Foodstuffs Co. Ltd.

- Jinzhou Jingchao Food and Mill Co. Ltd.
- Jinzhou Daoguang 25 Liquor Making Groups
- Heishan Xinhe Food and Oil Trade Co. Ltd
- Jinzhou Branch, Agricultural Bank of China
- Xiaodong Credit Agency Heishan County
- Xiaodong Means of Production Company
- Liangfeng Seed Company of LAAS

## **The model**

The contract farming model (Fig.1) specified the roles and responsibilities of the public sector (SRI ) and private sector (seed, oil, food, and alcohol industries) members involved in the process. ICRISAT is the project implementation agency (PIA) and the Sorghum Research Institute (SRI) is the lead partner in the project implementation has facilitated the adoption of the model by the company and the farmers. Both the organizations play complementary roles in the developing and implementation of the contract farming model in China. The important roles played by public and private sectors partners in implementing this model is given below .

### **a) Role of SRI**

#### **(i) Formation and strengthening of farmers' association in Heishan:**

SRI through the project were able to bring the sorghum farmers together into an association and build their capacities for joint action. Several meetings, exposure visits, field demonstrations, trainings, group discussions were organized for the benefits of the farmers. The farmers' association is given special inputs in managing the financial

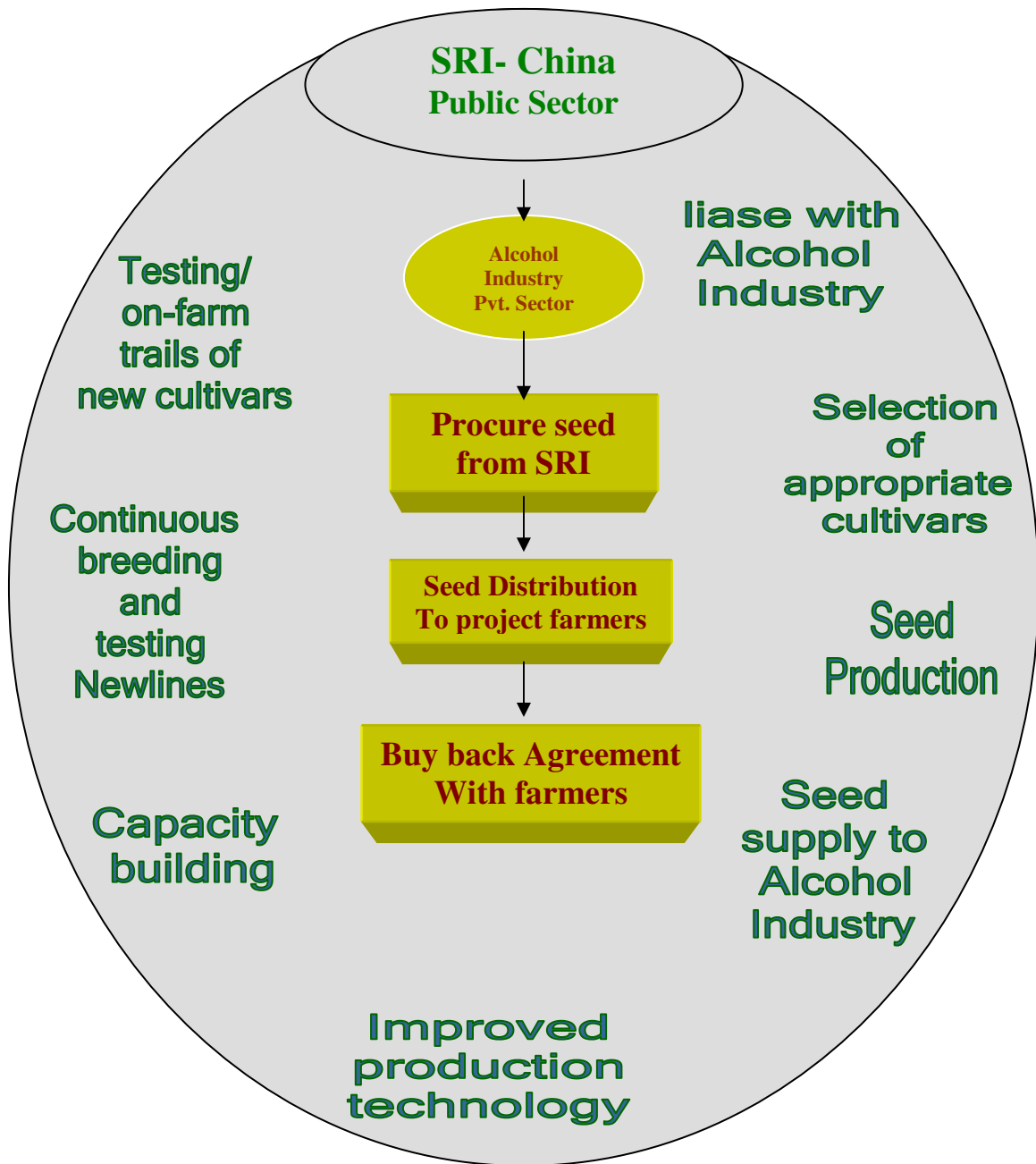


Fig.1. contract forming sketch

accounts and decision making processes. On-farm advice and field support was also extended to the farmers groups during the entire cropping season.

**(ii) Training and capacity building:**

Training and capacity building activities have been cross cutting themes and they aimed at enhancing the skills of farmer groups in crop production, selection and use of improved seed/fertilizer/chemical, demonstration of improved production technologies,

accessing institutional credit , bulking, storing, grading and marketing of farm produce within the target regions.

**(iii) Developing infrastructure in collaboration with private partners**

Storage in the villages is one of the major constraints that exert pressure on the farmers to sell the produce soon after the harvest of the crops. Farmers seldom in these villages used the storage facilities of the private sector as they are far away and the transaction cost of storing and selling small quantities are high. On the other hand, industrial users demand bulk quantities of grain in a single transaction. To overcome these constraints, under the project dialogues with the private sector and the storage structure was developed jointly by the company and the farmers association.

Apart from the storage structure a drier for the sorghum ear head drying has been installed in the central village to help the farmer to dry the sorghum ear heads after the harvest to reduce the moisture content of the grain up to 10-12% to hamper the growth of mold fungi.

**(iv) SRI** supply suitable high yielding cultivars and required quantity of seed material to alcohol company, they in turn distribute to project farmers

**(v) On-farm advice to the farmers**

The SRI also extends technical on-station and on- farm advice and field support in identifying and controlling pest and diseases, improved production technologies like IPM, INM to the farmers groups during the entire cropping season.

**(vii) Facilitating bulking and grading**

The SRI also advise the farmers on timely harvesting ( physiological maturity) and drying of grain to keep up the quality of the produce. The farmers will be guided for grading and bulking of the produce. The systems of bulking and grading were introduced to the farmers and the importance, advantages and the requirements of grading, bulking and storing were explained through training programs.

**b) Role of the alcohol company**

The company plays an important role in liaison with the SRI to implement contract farming model for the benefit of the farmers and the company in a win-win mode.

**(i) Providing inputs:**

The company provides good quality and required quantity seed material and other inputs such as fertilizers and the plant protection chemicals to the farmers on timely basis. The company will also enter into agreement with farmers association to supply inputs (seeds, fertilizer, pesticide) at reasonable price and minimum price for procuring the produce.

**(ii) Commitment of the procurement price**

The company at the time of entering into the contract with the farmers will also quote a minimum price for procuring the sorghum from the farmers. Interesting point to note here is that if the market prices of sorghum go up in the market at the time of the sale of the produce by the farmer, the company will pay the increased price to the farmers as per market price and not the pre agreed price. On the contrary if the market prices for sorghum fall below that of the agreed price, the company will pay the pre agreed price to

the farmers. This is one reason why the farmers were interested in entering into the contract agreement with the company.

**(iii) Bulk purchase of grains**

The company will organize for the bulk purchase of the grain from the farmers at the mutually agreed price at the village.

**c) Socio -economic consequences of contract farming**

These communities have seen an increase in the productivity at the farm level due to adoption of best cultivars and cultivation practices and is also related to the development of new markets for the sorghum farmers. The remote communities in low-potential areas, or households lacking adequate levels of assets and organization, technical know how have been unable to cope with new technologies have been benefited by the project interventions.

**E. Impact**

The efforts under the project for contract farming have yielded good results. the farmers and partners have gained practical experience in adopting the farming model with the small scale farmers. The lessons learnt in the project in assisting poor rural producers in accessing markets more effectively through contract farming have yielded results in addressing production and market constraints by the small scale farmers and helped the farmers in enabling them to respond to new opportunities and increase their production(Table 1) and income levels through better markets (Table 2) apart from helping them to confront and respond to the unpredictable and inequitable markets. The other benefits to the farmers in this model are 1. Farmers get extra income about 58 USD/ha from selling glumes to Sorghum pigment industry 2. Get 5-10% discount on seed price. 3. get 5% of discount on fertilizer price. 4. Less seed usage per ha (17% decrease) 5. Optimum fertilizer usage per ha (20-25% reduction).

The project directly assists smallholder producers in understanding better how the contract farming model work, how to gear their production to the demands of potential buyers and how to access such markets. Key to achieving this is the provision of support to help them to form commercially oriented organizations (farmers associations) and training them so as to enable them to develop the understanding and skills required to interact effectively with markets. The innovative contract farming model was an holistic approach encompassing enhancing production aspects, capacity building and assured market linkage has been an essential element to overcome fragmented production system, improve the quality and competitiveness and raise the income of rural households.



**Table 1. Area, production and yield of sorghum**

Year	Total Area (ha)	Yield (kg/ha)		Percent increase in yield
		Project farmer	non- participants (control)	
2005	109.4	7950	7050	12.76
2006	110.2	9000	7500	20.00
2007	500	7800	6750	15.56
2008	510	8190	7230	13.28

**Table 2. Details of grain production, quantity marketed and price realized**

Year	Total production (tons)	Grain Sold in Free marketing (tons)	Grain sold in Contract marketing (tons)	Average price per kg grain (USD/kg)		Price increase over market (%)
				Market price	Project farmers	
2005	874.5	567.5	232.0	0.146	0.175	19.9
2006	990.0	661.0	254.0	0.161	0.182	13.0
2007	3900.0	2741.5	1050.0	0.204	0.226	10.8
2008	4177.0	1412.0	2661.0	0.199	0.219	10.1

*Note: 1 US Dollar = 6.85 Yuan*

### Other benefits to the farmers

1. Farmers get extra income from selling glumes Sorghum pigment industry buy sorghum glumes from farmers, so farmers can get about 58 USD/ha for glumes.
2. Farmers get 5-10% of discount on seed price.
3. Farmers get 5% of discount on fertilizer price.
4. Less seed usage (17% decrease)
5. Optimum fertilizer usage (20-25% reduction)