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GRAPE EXPORTS UNDER GLOBALGAP CERTIFICATION

the Mahindra & Mahindra initiative in India

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SUMMARY

This study presents the supply chain developed by the Mahindra Shubhlabh Services Ltd (MSSL) in India for grape exports to the European Union under the GLOBALGAP quality assurance scheme. The company has contracted many grape producers who are supported technically by the company's extension staff to produce grapes under the strict requirements of GLOBALGAP. Although MSSL is not directly involved in providing financial services to its contract farmers, a policy of minimum guaranteed price for the produce harvested for MSSL provides a secure return to farmers involved in this supply chain. The study shows how the services provided by MSSL to its contract farmers contribute to mitigating the various risks faced by grape growers. This has been an incentive for grape growers, including small landholders, to join the supply chain. This case study thus illustrates a successful model of linkages between farmers and demanding export markets through a private company that has created exactly the right incentives to attract producers by contributing to lowering the various risks they face. The enabling environment created by the State Government of Maharashtra has also contributed to this success.

1. INTRODUCTION

The agricultural sector in India is in the midst of a rapid transformation. This change has been brought about by the liberalization of the agricultural sector which has traditionally been dominated by the government. In the past few years, there has been recognition of the potential of the agricultural sector as a driver of economic growth. To capitalize on this potential, government efforts and initiatives have been directed towards providing a fair playing ground to the private sector and investing in creating infrastructure and other facilities such as food parks, agri-export zones, and terminal markets to encourage private-sector participation. The thrust on the policy front is to bring about changes to create a level playing field for the private sector by relaxing the marketing norms to enable private businesses to procure directly from farmers. Modifying the Agricultural Produce Marketing Committee (APMC) Act, which regulates the marketing of agricultural produce, is a big step in this direction.

These government initiatives have created an enabling environment for the entry of the private sector in this industry. Many large Indian conglomerates are investing in developing the agribusiness segment by investing in agricultural exports, processing, and marketing. In recent years there has been a lot of activity in this area because of huge investments by companies such as ITC, Bharati's Field Fresh, Reliance Industries Limited, PepsiCo, M&M's Mahindra Shubhlabh, Aditya Birla Group, among others involved in agribusiness. A major activity is exporting fruit and fresh vegetables to supermarkets in the European Union and the Persian Gulf Region.

In the global market, trade in fresh produce is increasingly governed by multinational supermarkets setting increasingly stringent quality standards to meet the demands of quality-conscious consumers in the markets of industrialized countries. Lack of quality has been one of the major challenges for horticultural exports from India. Companies involved in agricultural exports have to work very closely with farmers to ensure compliance with international quality standards. Furthermore, these companies are also investing in developing cold chain infrastructure to maintain quality throughout their supply chain, which helps to bring modernization to the sector. India's diverse agroclimatic conditions present a huge potential for agricultural exports and this activity is likely to increase dramatically in the coming years. Huge investments by private companies in this area are driven by a vision to link India's small farmers to global supply chains in agriculture, just as its software writers and call centre workers have been linked to other segments of the global economy (International Herald Tribune, 2006). This vision represents a big jump from an agricultural sector barely eking out a living to one feeding the world: the true picture may lie in the existence of a truly emerging domestic market, with all the promises and all the challenges of an emerging market.

In this changing market environment, modern marketing chains are likely to increase in number in the coming years. It is important to document successful examples to get a comprehensive understanding of the different aspects of developing marketing chains and their impact on key stakeholders.

In this paper the Mahindra Shubhlabh Services Ltd's (MSSL) model of grape exports under GLOBALGAP certification has been studied. MSSL is the agribusiness arm of Mahindra & Mahindra Group which has long been involved in the agricultural sector by selling tractors, farm equipment and inputs; lately the group has set up the Mahindra Krishi Vihars, which are a one

stop shop for farmers providing production advice as well as inputs. The data for this study was collected by interacting with the company officials involved in developing the supply chain for grape exports and discussions with farmers at the procurement site in Nasik in the state of Maharashtra. Review of secondary literature and trade press articles on these issues have been used to complement the findings from the ground.

The next section gives an overview of the changing grape export sector in India in accordance with changes in quality requirements on international markets. An overview of the activities of MSSL is presented in Section 3. Section 4 describes in detail the supply chain of grape exports developed by MSSL with a focus on food safety and quality issues. A comparative analysis of gross margins and risks between the MSSL contract farmers and farmers selling to the traditional market is presented in section 5. Section 6 reports findings from the participatory system analysis and the last section concludes with lessons learned from this study.

2. THE CHANGING SITUATION OF THE GRAPE SECTOR IN INDIA

The grape sector in India is a good example of a very dynamic sector that has undergone significant changes in the past few years to gear up to international quality requirements. GLOBALGAP (erstwhile EurepGAP) is the most widely recognized quality assurance scheme for business-to-business trade in farm produce. A key requirement for exporting to European markets is GLOBALGAP certification because these markets are dominated by supermarkets that require this certificate from their suppliers. Before discussing the Indian grape sector an overview of the GLOBALGAP certification is presented to understand the changing market dynamics, and how the grape sector is gearing up to meet these new international quality requirements. Finally, initiatives undertaken by governments at the state and national level, farmers' groups and cooperatives, and private organizations and agencies in India to develop grape exports and processing are also discussed in detail.

2.1 GLOBALGAP certification requirements

This section and Box 1 present a brief overview of the history of GLOBALGAP, how it evolved and the process required for certification. The information presented in this section draws from the GLOBALGAP website (www.globalgap.org).

European Retailers Parties Good Agricultural Practices (EurepGAP) started in 1997 as an initiative by retailers belonging to the Euro-Retailer Produce Working Group. British retailers and supermarkets in continental Europe were the driving forces for the development of this sector. The initiation of EurepGAP was a reaction to growing concerns of the consumers regarding product safety, environmental and labour standards. On the other hand, the producers who had contractual relations with several retailers had to undergo multiple audits against different criteria every year. To address these growing concerns, EurepGAP was initiated to harmonize the standards and procedures for the development of Good Agricultural Practices (GAP) in conventional agriculture, including highlighting the importance of Integrated Crop Management and a responsible approach to workers' welfare.

The standard was developed using the Hazard Analysis and Critical Control Points (HACCP) guidelines published by FAO, and is governed according to the ISO Guidelines for certification schemes. To get certified the growers have to follow specific rules for production. Each production unit is assessed by independent third-party auditors. These auditors work for commercial certification companies who are licensed by the GLOBALGAP secretariat to conduct audits and award certificates where merited.

Box 1: Overview of GLOBALGAP:

The challenge of globalizing markets is nowhere greater than in the primary food sector. GLOBALGAP (formerly known as EUREPGAP) has established itself as a key reference for Good Agricultural Practices (GAP) in the global market place, by translating consumer requirements into agricultural production in a rapidly growing list of countries – currently more than 80 on every continent.

- GLOBALGAP is a private sector body that sets voluntary standards for the certification of agricultural products around the globe. The aim is to establish ONE standard for Good Agricultural Practice (GAP) with different product applications capable of fitting to the whole of global agriculture.
- GLOBALGAP is a pre-farmgate standard, which means that the certificate covers the process of the certified product from farm inputs like feed or seedlings and all the farming activities until the product leaves the farm.
- GLOBALGAP is a business-to-business label and is therefore not directly visible to consumers.
- GLOBALGAP certification is carried out by more than 100 independent and accredited certification bodies in more than 80 countries. It is open to all producers worldwide.
- GLOBALGAP includes annual inspections of the producers and additional unannounced inspections.
- GLOBALGAP consists of a set of normative documents. These documents cover the GLOBALGAP General Regulations, the GLOBALGAP Control Points and Compliance Criteria and the GLOBALGAP Checklist.

Source: www.globalgap.org

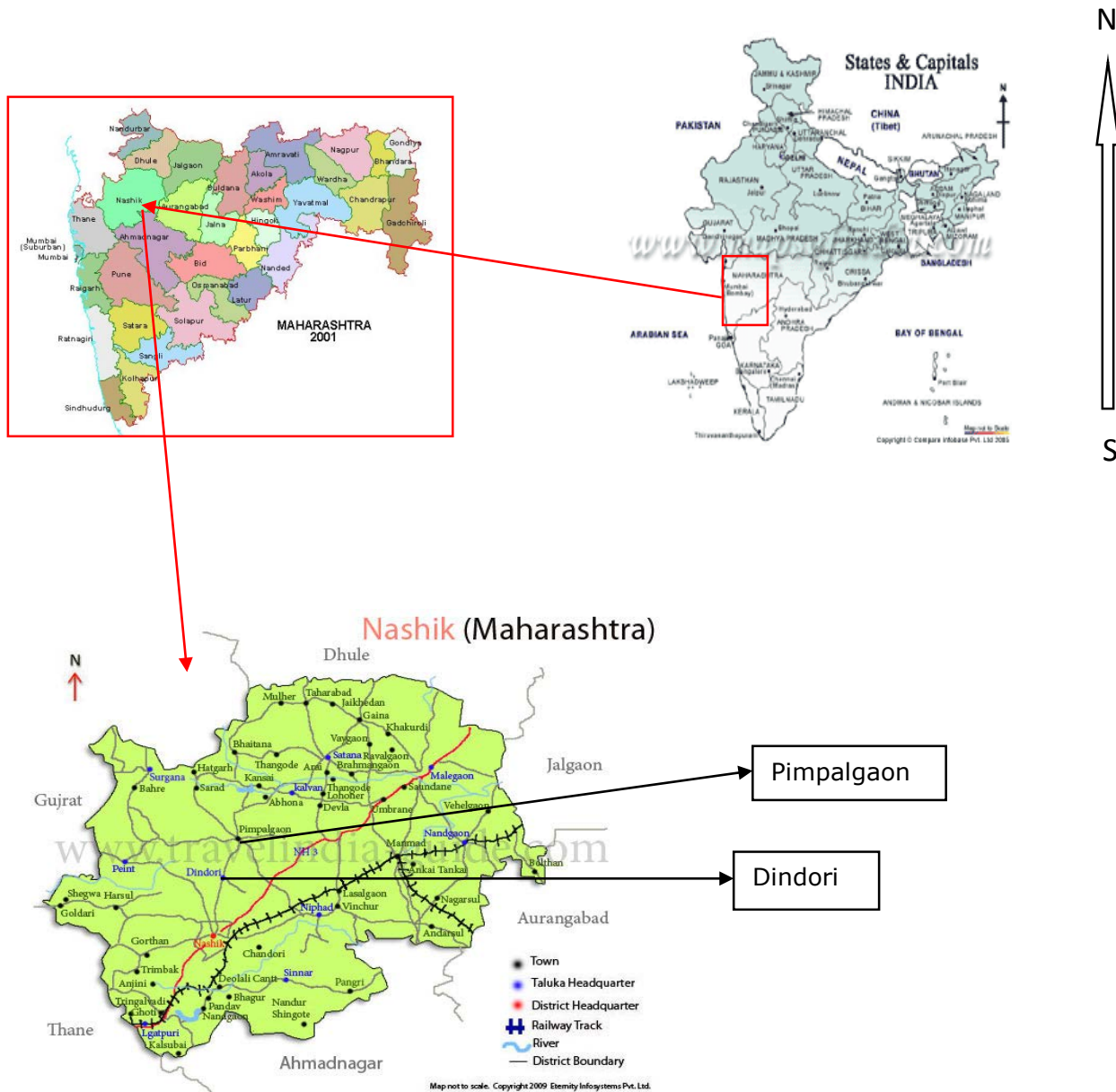
During the decade of 1997–2007 EurepGAP was widely accepted and gained global significance because it helped to encourage trade by establishing a common standard for farm produce. To align EurepGAP's name with a widely recognized international GAP assurance scheme, EurepGAP was renamed as GLOBALGAP in September 2007.

Given that many other on-farm assurance systems have been in place for some time prior to the existence of GLOBALGAP, a way had to be found to encourage the development of regionally adjusted management systems and also to prevent farmers from having to undergo multiple audits. Existing national or regional farm assurance schemes can start a benchmarking process to gain recognition as a GLOBALGAP equivalent. Existing GAP schemes that have successfully completed their benchmarking process are recognized as an equivalent to GLOBALGAP. In Kenya, the KenyaGAP has been developed by the Fresh Produce Exporters' Association of Kenya and has been recognized by GLOBALGAP. Similarly in India, the Agricultural and Processed Foods Export Promotion Development Agency (APEDA) has developed the IndiaGAP as a benchmark standard equivalent to GLOBALGAP.

2.2 Overview of the Indian grape sector

The world production of grapes is estimated at 6 million tonnes out of which India accounts for 1.5 million tonnes. The grape production base in India is very narrow, with the state of Maharashtra accounting for about 80 percent of the production. Within Maharashtra also, Nasik and Sangli Districts produce about 75 percent of the state's production (see Figure 1).

Figure 1: Location map of grape producing villages under study in Maharashtra State



Source: www.MapsofIndia.com; http://www.travelindia-guide.com/maharashtra_details.php

Other producing states include Andhra Pradesh, Tamil Nadu, Karnataka, Haryana, Punjab and Rajasthan (see Table 1).

Table 1: Grape production in India (2004–2005)

States	Area ('000 ha)	Production ('000 tonnes)
Maharashtra	45.1	1 275
Karnataka	10.4	193
Tamil Nadu	2.6	85
Andhra Pradesh	1.9	40.3
Punjab	1.1	30.2
Others	2.3	37.5
Total	64.3	1 630

Source: Kumar et al. (2006)

The world trade in grapes stands at 1.5 million tonnes valued at US\$1.45 billion. India exported 36 000 tonnes of grapes in 2005, which had increased to 55 000 tonnes in 2007. About 80 percent of the grape exports were from Nasik. There are about 131 grape exporting firms in Nashik. In 2006–2007, there were around 11 938 grape growers, who had registered for exports. Phytosanitary certificates, which are mandatory for grape exporters, were given to 1 500 exporters. Freshrop Fruits, a local company, exported the highest in the district at 1 270 tonnes followed by Mahindra Shubhlabh with 708 tonnes, ND Grapes with 672 tonnes, Fieldfresh Foods with 623 tonnes and IndyaGlobal Venture with 617 tonnes (<http://nrcgrapes.nic.in>).

2.3 Initiatives to develop the grape sector

In India, 90 percent of the grape production is of table variety. Grape farming is a highly profitable venture for farmers, but it is also highly risky as farmers have to invest heavily for production. In case of a price crash, farmers face huge losses leading to an additional debt burden along with the initial high investments. Despite the challenges, the grape sector has a lot of potential. Being a high-value commodity, it is one of the largest foreign export earnings. To address the farmers' concerns and capitalize on the market opportunities, the state and central government agencies, farmers' organizations and other parastatal organizations and institutions have undertaken various initiatives to support processing, exports and marketing of grapes. The key initiatives are described below.

In order to boost the export of grapes from Maharashtra, the cooperative partnership firm "Mahagrapes" was established in 1991 with the help of the Maharashtra State Agricultural Marketing Board in Pune. Till date a total of 16 grape grower cooperative societies are member societies of Mahagrapes from Sangli, Solapur, Latur, Pune and Nasik areas. The main objective of Mahagrapes is to boost the export of grapes for which facilities like precooling and cold storages have been erected at each grape grower cooperative society. Mahagrapes is now a well-established brand in the international market; it has exported grapes to the European Union and the Middle East over the past ten years. All technical guidance and financial support has been given by the state marketing board.

Agri-export zones (AEZs) for grapes have been set up in Maharashtra and Andhra Pradesh. The objective of these AEZs is to promote the crop so that abundant raw material be available at low cost; AEZs integrate various assistance programmes of central and state government agencies. The zones provide fiscal incentives to exporters, integrating all the activities till the produce reaches the market. The AEZs are implemented through public and private sector participation. The Indian Council for Agricultural Research (ICAR) has set up the National Centre for Grape Research at Pune to cater to the research and extension needs to develop new varieties keeping in mind the need for processing and exports. Extension support is provided to extend the findings to the farmers.

APEDA has developed the “GrapeNet”, a web-based software that will help trace export of grapes from India to the European Union. This initiative was aimed at reducing the export rejects due to high pesticide residues. The GrapeNet tracking system will help to monitor pesticide residue and achieve product standardization, thus boosting grape exports to the European Union. If there are any complaints concerning pesticide residues being present in grapes, the software will be able to indicate the farms from where the grapes originated. The software will give details about the authorities issuing the certificate, inspection reports, laboratory analysis, certificate of residue analysis and the packing house details. It is designed to reach at the root of any grape export transaction. The software is already being used by about 40 000 farmers. Because of higher accountability and transparency in the system, the farmers’ returns have also increased according to APEDA¹

To give impetus to the grape processing and wine industry in the State of Maharashtra, the state government has specifically provided in Maharashtra's Industrial Policy, 2001, that Wine Parks be set up in Sangli and Nashik districts to encourage the wine industry in the state.

¹ <http://www.apeda.com/GrapeNet/Features.htm>

3. MAHINDRA SHUBHLABH SERVICES LTD

3.1 Overview of the Mahindra Group

The Mahindra Group, established in 1945, is among the top-ten industrial houses in India. The group started as an automotive company, which continues to be the core strength, but has grown over years to cover a wide spectrum of activities. Mahindra & Mahindra is the largest producer of tractors in India, and among the top-three tractor manufacturers in the world. The company is the market leader in utility vehicles in India, currently accounting for about half of India's market for utility vehicles. Mahindra has recently ventured into the passenger car segment.

The Group has a strong presence in many key sectors including financial services (Mahindra & Mahindra Financial Services Ltd, Mahindra Insurance Brokers Ltd, Mahindra Rural Housing Ltd), trade and logistics (Mahindra Inter-trade Ltd, Mahindra Steel Service Ltd, Mahindra Middle-east Electrical Steel Service Centre FZE, Mahindra Logistics) automotive components, information technology (Tech Mahindra, Bristlecone), and infrastructure development (Mahindra GESCO, Mahindra Holidays & Resorts India Ltd, Mahindra World City). With subsidiaries spread in various parts of the world, Mahindra is a global company with presence in five continents.

3.2 Overview of Mahindra Shubhlabh Services Ltd

Mahindra Shubhlabh Services Limited (MSSL), the agribusiness arm of the Mahindra Group, was established in 2000 with an equity stake from the International Finance Corporation. The goal was to integrate the agriculture and food chains from agricultural inputs right through to agricultural commodities. The Company has established agricultural centres in various districts of the country either under the Mahindra Krishi Vihar franchise model or directly as Mahindra Agribusiness.

Currently, the operations are spread over eight states and cover several crops. Focus is on crops like Basmati rice, maize, barley, cotton, lentils, soybeans, durum wheat, and oilseeds like sunflower and mustard. Within the agricultural inputs area, the company is involved in seed potato, wheat, maize, sunflower, peanut and a range of vegetable seeds as well as agrochemicals.

Because of its involvement in agricultural inputs over the years, the company has developed a strong network at the grassroots level that can be capitalized to develop supply chains for high value crops through contract farming. Currently the company is involved in organic cultivation, aromatic medicinal crops like geranium, patchouli, etc., and other crops like pomegranates, grapes, gherkins, garlic, onions, potatoes, as well as crops destined for modern retailers and the seed industry. The company has recently taken an initiative in processing and exporting gherkins grown by its farmer network.

Other areas of activity include setting up a Research and Development Facility for seed and saplings in Pune. Given the involvement in automotives, development of biofuels is becoming an area of top priority for the company.

3.3 Scope and size of grape exports operation

MSSL is the first Indian corporation to be awarded a GLOBALGAP certificate as “primary marketing organisation” for grapes. They are the biggest corporate exporter of grapes to the European Union.

MSSL ventured into grape exports in 2004–2005 by exporting 72 tonnes to Europe. Though a recent player in grape exports, its export volumes have grown dramatically. Exports increased to 360 tonnes in 2005–2006 mostly to the Netherlands, Norway, Italy and Greece. During the last grape season (2006–2007), the company exported 1 224 tonnes to the Netherlands and the United Kingdom. The company has set an export target of (2 400 tonnes) for the present grape season (2007–2008), of which two-thirds will be sourced from Nasik and the rest from Sangli. In Nasik District, the company has signed contracts with 250 grape growers to source export quality grapes from their 607 ha of vineyards. In Sangli District, the company has signed contracts with 50 grape growers to source grapes from their 101 ha of vineyards. MSSL exports 95 percent of its produce to Europe with the United Kingdom being the biggest importer, and the rest going to the Gulf Region and Southeast Asia. It sells to several European retail chains including Albert Heijn, Metro, Dansk, Rewe Co-Op, and Sainsbury’s.

3.4 Creating a brand in the international market

At present, Indian companies involved in agricultural exports sell fruit and vegetables through two channels. They sell directly to a few supermarkets, especially those in the United Kingdom or use the wholesalers for sales to retailers in the continent. Major Indian players in the export market are looking at developing associations with international companies for cobranding.

MSSL is the first Indian company involved in a cobranding tie-up with South Africa's Capespan, one of the top three fresh fruit marketers in the continent. The brand “Cape Mahindra” will be used for MSSL's grapes and pomegranates when sold to supermarkets where Capespan is the category manager. In supermarkets where Capespan is not a category manager, Mahindra's own name will be used. Capespan, a specialized world-class leader in global marketing of fresh fruit, has begun promoting the new brand to select supermarkets. For MSSL, cobranding will help to expand the existing supply chain tie-up and improve revenue streams. For Capespan, the advantage is widening the source of supply of quality fruits (FnBnews, 2006).

4. GRAPE EXPORT SUPPLY CHAIN DEVELOPED BY MSSL: MEETING QUALITY REQUIREMENTS FOR GLOBALGAP CERTIFICATION

It is evident from the above discussion that a sophisticated supply chain is required to cater to international quality requirements. MSSL works with contract farmers to meet the quality requirements for exports. The company has a written contract with the farmers, which is renewed every year. The contract specifies the quantity to be supplied by the farmer, the quality specifications required for the export market and the price. Quality includes physical as well as food safety aspects. The minimum support price for grapes is INR25/kg². The price that the farmers receive over and above this minimum support price is the price in export market minus the cost for harvesting, post-harvest storage and transportation, and the company's commission. As mentioned earlier, MSSL has the GLOBALGAP certification given its role as the primary marketing organization and the supplying farmers are registered with the company. As the primary marketing organization, MSSL has the responsibility of ensuring the quality of grapes which go to the export market. Hence the company is involved in all aspects of production and marketing to maintain quality throughout the supply chain.

4.1 Research and development

The company collaborated with the National Research Centre for Grapes in Pune to develop a package of practices to ensure quality at the production level. Apart from the differences in safety requirements and pesticide residues, there is a significant difference between the table grapes for exports and those for the domestic market. The grapes destined for the export market are much bigger in size than the grapes sold in the domestic market. Developing a bigger fruit requires specific pruning practices to achieve larger berry size.

4.2 Input availability

In many cases, companies working with farmers through contract farming are involved in ensuring availability of quality inputs for the farmers. In this case, availability of inputs is not an issue as Maharashtra farmers are well informed by the state services about the inputs available in the market. Hence the company gives guidance and information regarding specific inputs to be used, but does not coordinate the purchase of inputs.

The grape-related activity is capital-intensive and requires financial assistance from banks. Nasik District has a good network of commercial and cooperative banks. The Nasik District Cooperative Bank is present throughout the district. The Bank of Maharashtra, the leading bank of the district and other major nationalized banks like SBI are catering to farmers for their long-term and short-term financial needs. Because of the existing credit support system, MSSL is not involved in financial services for its contract farmers (Bhosale, 2001).

4.3 Farm production

As mentioned above, a prescribed package of practices has been developed for grape production for exports, specifying requirements and spraying time of fertilizers and pesticides. The company has employed agricultural graduates as extension officers who work closely with farmers to monitor the production in their area. They are local people who have been involved

² At the time of study US\$1 ≈ INR40

in grape cultivation for years and can communicate well with the farmers. One extension officer manages about 16 ha.

The extension officers regularly monitor the fields through the growing season. If a pest outbreak is expected they inform the farmers about timely spraying. In times of risk due to weather factors, they advise the farmers to stagger production so as to minimize loss of yield. In case of any major problems, company agricultural specialists take prompt action to provide technical input to manage the problem. Historically, a major reason for rejection of exported grapes was high levels of pesticide residue. The package of practices developed for export grapes includes better pest and weed management by mulching, which is not a common practice, but is effective in weed management. Effective pruning helps to maintain good amounts of grapes without overcrowding the vines. Out of an average yield of 25 tonnes per hectare, approximately 6 tonnes meet the export size requirement, the rest go to the domestic market.

So far risk management for contract farmers through insurance was not a part of the company activity. In general, it is difficult for insurance companies to deal with individual farmers because of high transaction costs which in turn lead to high premium rates. In case of companies working with farmers, they might be able to negotiate a better premium rate for the farmers as the transaction cost for the insurance company will be lower by working through the exporting partner. Also, in recent years there have been some initiatives in weather insurance in India although the process is still in a nascent stage. The insurance companies need to develop the infrastructure for capturing data close enough to the farming area and should also be able to cover various causes of weather risk. These are future potential areas of action where the linking companies can be involved in minimizing production risks for their contracted farmers.

In terms of marketing, only the grape berries that meet the international requirements for export are purchased by the company while the rest of the produce goes to domestic marketing chains. Though good farming practices have been maintained for the entire crop, there is no premium on the produce which goes to the domestic market. In the coming years as the retail market and supermarkets become more evolved in India, it will be possible to explore possibilities of collaboration with domestic supermarkets for the sale of the produce the grade of which does not qualify for exports.

4.4 Harvesting, packaging and storage management

After the production at farmers' level, the responsibility of harvesting, post-harvest management and packaging lies with the company. The company is also involved in training labourers for harvesting. Grapes meeting the specific requirements of export markets are collected and taken to the company pack house where the fruit is sorted, weighed and packed for export.

Traceability is an important component of the GLOBALGAP requirement. In case there is a problem with quality, traceability helps to identify the source of problem immediately. This helps manage the problem efficiently and can significantly minimize losses in supply chains. Only the packages belonging to the identified lot with problems can be recalled whereas the rest of the good quality produce does not get affected. In the supply chain developed by MSSSL, every half-kilogram punnet can be traced back to the farmer block.

4.5 Managing the certification requirements

GLOBALGAP certification is cumbersome and complicated for the farmers to manage on their own. The certification requires detailed record-keeping about the operations at the farm level, such as quantity of input used, frequency and time of use, etc. The extension officers employed by the company help farmers to maintain these records. For the first two-to-three years they “hold the hand” of the farmer till he or she becomes capable of maintaining these records alone.

Cost of certification is the other aspect of certification that has often come up as a factor limiting the number of farmers involved in certification. In India, APEDA is currently partly subsidizing the cost of certification. The rest of the money is paid by the farmers themselves. The company passes on the subsidy provided by APEDA to the farmers. Certification costs per farmer are significantly reduced by aggregating farmers under MSSL as the primary marketing organization. Because the certification cost is spread over a large number of farmers, the cost of certification per farmer is reduced significantly. The certification cost increases with an increase in the number of farmers, but less proportionately than the increase in number of farmers.

The company does not subsidize the certification cost for the farmers. The company takes a deposit of INR7 500 from each farmer working with them. This is a very different strategy than usually encountered, but has been possible because the company has developed trust by working closely with farmers overtime. This money is in essence a charge for the provision of extension services and the support in keeping records for certification. Further, it ensures farmer loyalty and hence ensures availability of grapes for marketing, since the company already has a contract with the supermarkets and other buyers specifying quality and quantity. From the farmer’s perspective, this deposit ensures a long-term relationship with the company and that he or she can ask for services when required.

4.6 Issues in developing supply chains

From the company’s perspective there are two key issues in managing the supply chain for export grapes:

1. Intellectual property rights (IPR). The current IPR norms in India do not encourage investment in the development of new varieties. Research and development of new varieties for the export market will help to cater to the specific market requirements. Farmers in this area have been largely dependent on the variety Thomson seedless and its mutations for many years. Instead of extending the harvesting period of existing varieties by the use of different cultivation practices, it is preferable to experiment with new varieties that would grow naturally to suit market requirements. This will also lower the cost of production.
2. Contract regulation. Currently there is no regulation in place to ensure compliance to the contract between both parties – farmers as well as company. The functioning of the contract depends on trust between the two parties. A system is needed to allow effective conflict resolution.

5. COMPARATIVE ANALYSIS OF MARGINS AND RISKS OF MSSL CONTRACT FARMERS AND FARMERS SELLING TO TRADITIONAL MARKETS

Detailed information regarding production costs and revenues for the two groups – MSSL contract farmers and farmers selling to the traditional market is presented in Table 2. Based on this information the gross margins for both the groups are calculated. The economic life of grape orchards in Nasik District is around 20–25 years. In fact, the cost and returns vary from orchard to orchard depending upon the age of the trees in the orchard. This study uses a simplistic approach to returns by focusing on variable costs incurred annually.

Table 2: Gross margins per ha of MSSL farmers and farmers selling to the traditional market

Parameters	MSSL contract farmers	Farmers selling to the traditional market
Total labour cost (INR100/day)	44 477	37 064
Input costs (INR)*		
Growth regulator and intercultivation	56 832	28 416
Fertilizers (NPK)	74 129	43 242
Pesticides	49 419	49 419
Irrigation water	12 355	12 355
Total input cost	192 735	133 432
Cost of production	237 212	170 496
Yield for exports (tonnes/ha)	6.2	--
Certification costs (INR/year)	5 000	--
Yield for domestic market (tonnes/ha)	18.5	24.7
Average export price (INR/kg)	37	--
Average domestic market price (INR/kg)	12	12
Value of production* (INR/ha)	450 951	296 516
Type of marketing relationship	- Contract for export - Spot for domestic market	Spot market
Gross margin (INR/ha)	201 384	126 019

* Value of production is based on export price and domestic price and relative volumes going through each channel.

For the export market, the company has a minimum support price of INR25/kg. The final export price depends on the market situation at the time of arrival to the market. The eventual export price over and above the support price is passed on to the farmers after subtracting the cost of packaging, precooling, transportation and the company commission. Average price realization by MSSL farmers after deducting the costs is INR37/kg while the highest price received by farmers was INR48/kg. The farmgate price of grapes in the domestic market varies: INR10–14/kg but the average price is INR12/kg. Average prices have been used in calculating the gross margins for the farmers. Based on the costs, yields and price information in Table 2, the average gross margin for contract farmers working with MSSL is 60 percent higher than that of their counterparts selling only to the traditional market.

5.1 Risk analysis for contract farmers and farmers selling to the traditional market

Along with the gross margins, the level of risk is another important factor in determining the economic status of the farmers. Table 3 shows the risk analysis of MSSL contract farmers and

farmers selling to the open market. The third column shows whether the risk for the contract farmers is higher, lower or same as that of the farmers selling to the traditional market.

Table 3: Risk analysis for MSSL contract farmers and farmers selling to the traditional market

	MSSL contract farmers	Comparison of risk: increased (↑) minimized (↓) same (↔)	Farmers selling to traditional markets
Weather- or drought-related risks	This risk is minimized as the company's extension officials are in touch with the farmers. In case of expected outbreak or weather change, they inform the farmers to take necessary action	↓	The farmers themselves have to decide what to do in a critical situation
Risk from short-term commodity price fluctuation	This risk is also minimized as the minimum price for export crop is fixed.	↓	Farmers selling to the spot market face higher risk because of price fluctuations in the market.
Risk from long-term price fluctuation		↔	
Asset risks	There is no provision for asset risk management in the contract	↔	
Financial risks (loans and credit)	Company policy as of now is not to engage in this area	↔	
Exchange rate risks	Risks due to price fluctuations are managed by the trader company which negotiates a good contract with the buyers to ensure a good price for farmers	↔	
Risks of poor or deficient information	This risk is minimized as the company extension officers inform the farmers if a disease outbreak is expected.	↓	
Biological risks	These risks are also minimized as the company extension officers are scouting the fields regularly	↓	
Legal and governmental risks	Currently, there are no regulations in the country. Consequently, risks from defaulting and legal implications are not very high.	↔	
Farm management risks (impact on technical production systems)	Company extension officers are also providing information on maintaining long-term soil fertility	↓	
Personal risks	No provision in the contract	↔	

6. PARTICIPATORY SYSTEM ANALYSIS OF GRAPE PRODUCERS

In order to elucidate further the factors that have led farmers to join the grape supply chain of MSSL, a participatory system analysis was undertaken. Focus groups with farmers were held in the villages of Pimpalgaon and Dindori in Maharashtra State (cf. Figure 1). After a brief introduction and explanation on the rationale and methodology of the study to the participant farmers, they were asked “What are the reasons that have made you decide to start GLOBALGAP grape production for Mahindra?” to farmers who are involved in the MSSL supply chain and “What are the reasons that have made you decide NOT to start GLOBALGAP grape production for Mahindra?” to farmers who are currently not involved in a contract with the company.

6.1 Results from focus group discussions

Farmers involved in the grape supply chain with MSSL identified the following elements as factors that had influenced their decision:

1. Guaranteed return. Farmers are sure of the return from MSSL.
2. Proper harvesting. Farmers feel that the right amount of crops is harvested by MSSL.
3. Minimum guaranteed price. MSSL announces the minimum guaranteed price per kilogram well in advance before the harvesting season providing assured returns.
4. Market requirements. As MSSL has a large market share, they harvest more according to their customers' need.
5. Quality differentiation. Different markets allow MSSL to harvest a wide quality range.
6. Extension services. Good and dedicated work force at grassroots level.
7. Access to resources. GLOBALGAP certificate allows farmers to access credit from financial institutions.
8. Low risk. Very low price risk due to security of payment on minimum guaranteed price and after export season.
9. No surface restriction. Any farmer is eligible for membership irrespective of their land surface under grape.
10. Infrastructure. Have access to good soft infrastructure like skilled manpower during the export season.

The graph sorting results in this village is presented in Figure 2. Guaranteed return, minimum guaranteed price and proper harvesting were identified as critical elements indicating that these are major deciding factors for farmers to participate in MSSL supply chains. Access to credit resources no land surface restriction are classified as motor elements. The symptom zone has proper harvesting, low risk and market requirement, indicating that for this group of farmers these elements were not crucial for collaborating closely with MSSL.

On the other hand, farmers who were not involved with MSSL indicated the following elements to explain their decision not to join the company's grape supply chain:

1. Financial constraint. Economic constraints to fund requirements to GLOBALGAP norms.
2. High rejection. Rejection percentage of MSSL is higher than that of the other exporters.
3. Local market. For some farmers, marketing their produce in domestic and regional (Bangladesh) markets gets them a better price.
4. Incomplete harvest. Farmers feel that MSSL does not harvest all the harvestable produce from their field.

5. Low risk. The domestic market provides low risk as there is not much of a quality differentiation.
6. Immediate payment. Local buyers pay very quickly, which eases cash flow for the farmers.
7. Costly inputs. For some farmers, grape is only a secondary source of income and they wish to avoid the high input costs for GLOBALGAP grape production.
8. Varietal issue. Non availability of export varieties of grape.

No negotiation. There is no possibility to negotiate prices at the time of purchase with MSSL. The factor coordinates and graph are shown in Figure 3. Low risk and incomplete harvesting are categorized as critical elements. The non-participating group also identified high rejection, varietal issue and financial constraint as elements in the motor zone. Immediate payment, no negotiation and costly inputs fall under buffer while local market is classified as a symptom.

6.2 Analysis of PSA graphs

As MSSL is an old and trusted brand for their tractors and off-road vehicles in the grape-growing region of the state the minimum guaranteed price proposed by the company was a catalyst for farmers to join its grape supply chain. These farmers have also used MSSL as a risk mitigation strategy to avoid revenue loss due to poor production and fluctuation of market prices. The perception of farmers that MSSL has not defaulted on their payment commitment and can handle large consignments given that Mahindra is a large corporate house also encouraged them to participate. Finally the absence of restriction on the surface under grapes has allowed small landholders to participate in this supply chain, which may not be the case with other exporters.

With increased pressure on high input costs, farmers identified proper harvesting (more crop sold to MSSL equaling higher returns) as a critical element ensuring better return. Other farmers also under contract with MSSL also identified the harvesting labour provided by the company and its extension services as motor elements that had pushed to join the company's supply chain and nullifying problems associated with sourcing and managing labour during harvesting time. Participating farmers are also satisfied with the staff from the extension services and their regular interaction with them, providing guidance throughout the growing season.

On the other hand, the groups of farmers who are not involved in the MSSL supply chain identified financial constraints as an impediment to collaborate with MSSL given that grape production under GLOBALGAP certification requires higher input costs than conventional production. The high rejection rate at the MSSL packhouse also translates into lower returns for the farmers, which is a motor element in their decision not to join this supply chain.

Figure 2: PSA graph for participating group in MSSL GLOBALGAP grape supply chain

Coordinates of elements			
No.	Elements	Activity ratio	Degree of inter-relationship
1	Guaranteed return	1.05	63.96
2	Proper harvesting	1.19	70.84
3	Minimum guaranteed price	1.01	74.82
4	Market requirements	0.86	44.64
5	Quality differentiation	0.85	22.88
6	Extension services	0.59	11.44
7	Access to resources	2	3.38
8	Low risk	0.94	64.74
9	No surface restriction	6	4.68
10	Infrastructure	0.74	24.94

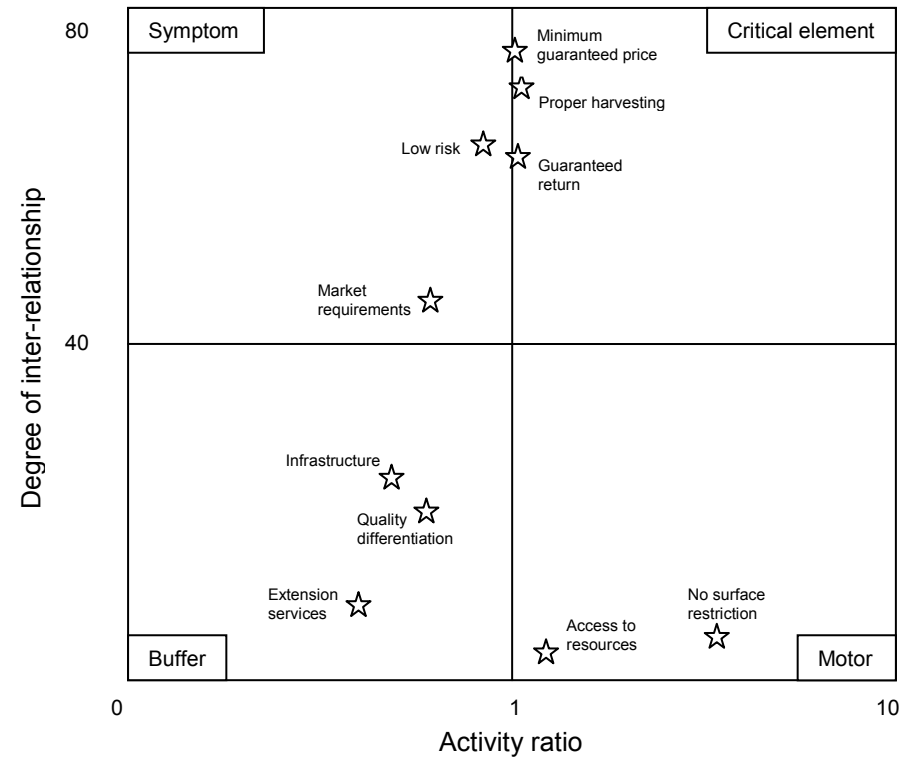
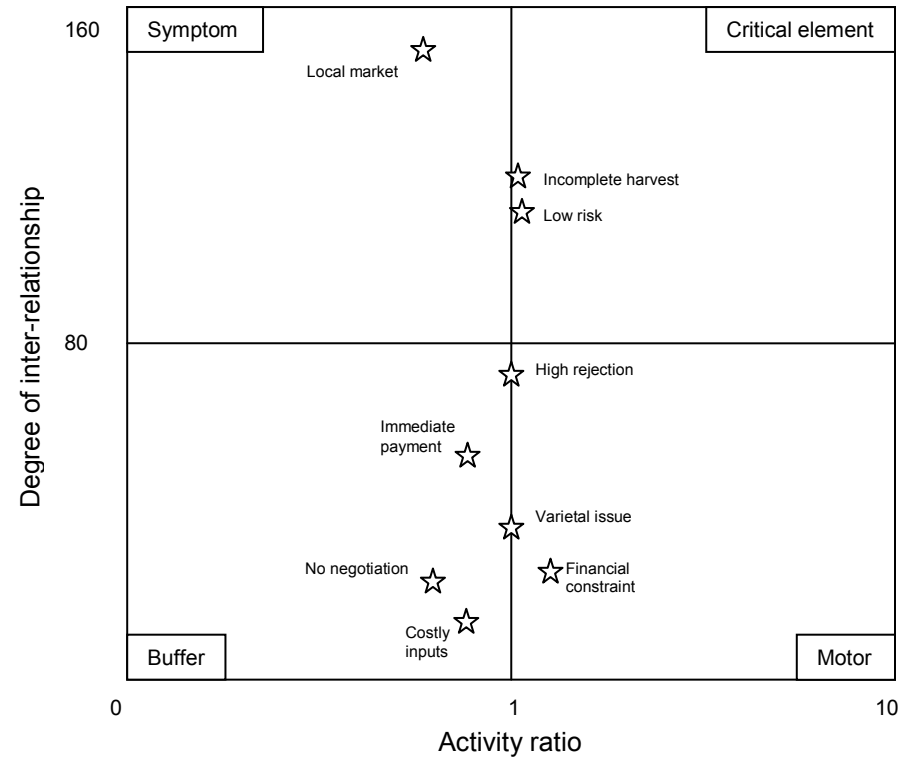


Figure 3: PSA graph for non-participating group in MSSL GLOBALGAP grape supply chain

Coordinates of elements			
No.	Elements	Activity ratio	Degree of inter-relationship
1	Financial constraint	2.2	25.5
2	High rejection	1	73.96
3	Local market	0.76	148.4
4	Incomplete harvest	1.01	122.1
5	Low risk	1.38	114.66
6	Immediate payment	0.92	56.16
7	Costly inputs	0.91	16.77
8	Varietal issue	1	34.81
9	No negotiation	0.83	22.42



7. CONCLUDING COMMENTS

GLOBALGAP is one of the most stringent quality requirements for fresh produce. Apart from maintaining quality of produce, regular records of farm activities have to be maintained. Hence the general perception is that GLOBALGAP certification is very cumbersome and serves as a barrier to farmer participation in export-driven supply chains. On the other hand, returns from selling to the quality-led market are much higher. This case study illustrates how MSSL is involved with farmers in meeting these demanding quality requirements. Farmers working with the company can access global markets and multinational supermarkets which might not be accessible to them otherwise. The farmers become aware of the latest technologies for farming through company extension officers. Evidently the farmers working as contract growers have benefited on several fronts:

- Higher gross margins due to higher farmgate prices;
- Lower price risk due to minimum guaranteed price;
- Production risks from infestation and weather changes are also minimized as the company's extension officers are constantly working with the farmers to give timely input on these issues.

In the coming years, there is potential for MSSL to be involved in insurance to minimize risk for their growers. Furthermore, as the domestic retailing industry becomes more developed the company can be involved in marketing the produce which does not qualify to go to the export market.

A key issue in developing supply chains is the current intellectual property rights norms which do not encourage investment in research. This is a limiting factor to investment in research and development, in particular towards exploring other varieties which are in demand on the international market. Furthermore, in the absence of a legal framework issues arising between farmers and customer companies cannot be addressed in court. Thus, trust between both parties is important for success in contract farming. MSSL has a strong history of working with farmers as an input supplier. This has enabled it to develop trust in the company over time. From the farmer's perspective, assurance of a minimum support price goes a long way in ensuring that the farmers do not default on the contract.

It is also obvious that the role played by the government bodies and other agencies and organizations in Maharashtra has created an enabling environment by providing the basic infrastructure which encourages and provides the elements for the private sector to become involved in supply chain development. In this case, the existence of the National Grape Research Centre was very important in providing inputs on grape research. Furthermore, laboratories and other facilities set up in the region have also helped immensely to boost exports.

Finally, it is important to bring more farmers under modern marketing chains so that they can benefit from new markets. It is evident from the global literature that private-sector involvement in agriculture is mostly limited to working with larger and more resourceful farmers, and in more progressive regions. In this case study, the private company MSSL is found to provide some of the means that allow farmers to mitigate their farming risk:

- Minimum guaranteed price. This strategy assures farmers with a secure return per area for the harvested crop;
- Security of payment and building of trust;
- Expanding market. The company's growth means more harvest from farmers' field entering its supply chain, thus lowering farmers' risk;
- No restriction on land surface under grapes increases the confidence amongst small farmers to participate.

Other organizations who would want to build such a supply chain for the long term should investigate farmers' risk perception and their ability to bear those risks. If the customer company can propose instruments for risk mitigation to farmers, the latter will be more inclined to enter a supply relationship with it.

REFERENCES

Bhosale, S. 2001. *Diagnostic study SME: grape cluster Nasik (Maharashtra)*. State Bank of India, Pune, UNIDO CDP, New Delhi and the Entrepreneurship Development Institute of India, (EDII), Ahmedabad.

FnBnews. 2006. *Indian fruits pass export tests*, *Food and Beverage News*, New Delhi, 1st April 2006 (available at <http://www.fnbnews.com>).

International Herald Tribune. 2006. *Growing in India: food for the world*, *International Herald Tribune*, 31 May 2006 (available at www.iht.com).

Kumar, B., Mistry, N.C., Singh, B., Gandhi, C.P., eds. 2006. *Indian Horticulture Database 2006*, National Horticulture Board, Gurgaon.