



## **Hans H. Ruthenberg-Graduierten-Förderpreis 2006/**

### **Hans H. Ruthenberg Award for Graduates 2006**

Uli Kleinwechter "The Significance and Adoption of Quality and Safety Standards in International Agricultural Trade - A Developing Country Case Study of the Mango Export Sector in Piura, Peru"

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#### **1. Problem Definition**

In recent decades, international agricultural markets experience an ongoing process of liberalisation, which also should provide better export opportunities for developing countries. Yet since the early 1980s food quality and safety standards have become increasingly significant. Standards in agricultural trade can play an especially important role for developing countries. On the one hand, their participation in agricultural export trade is widely recognised to be of a special importance, due to the high importance of agriculture for many developing countries' economies. On the other hand, high standards are prevailingly applied in industrialised countries which represent the main markets for developing countries. For this reason, the question of whether a standard acts as a barrier to trade or not can have severe implications for a developing country's agricultural sector and economy.

The application of standards can have effects within agricultural sectors, even at the farm level. The standards can unfold exclusion effects which affect certain groups of farmers, due to their inability to comply. This is especially important in the context of rural poverty and food security. The majority of poor and hungry people live in rural areas. While improved market access and increased agricultural trade are often proposed as a means to combat rural poverty and raise food security, the marginalisation of developing country farmers in the international trade System is seen as a "major driver of persistent poverty in the world". To avoid this and to ensure that trade serves as an Instrument to alleviate poverty and to improve food security, a broad and non-discriminative participation in trade, especially by vulnerable and marginalised groups is necessary.

In this context it is of great importance to assess the role of agricultural standards in developing countries' agricultural exports and to analyse their impact on agricultural sectors? However, at the beginning of this study the empirical literature available on the topic was scanty and possible implications of standards at the farm level were widely neglected. Nevertheless, knowing about these implications is crucial to understanding the real impacts of standards on trade and forms the basic condition to assess the development and food security dimensions of the topic.

Taking this into account, this MSc study was performed in the form of a case study of the mango export sector in Piura, Peru. The work was aimed to bridge the gap in the existing

literature and sought adding a development point of view to the current debate on standards in trade.

## 2. Objective of the Research

The general objective pursued by the study was to analyse the adoption of and the compliance with quality and safety standards by Piuran mango producers and thereby assess possible impacts of these standards on the Peruvian mango export sector.

The specific objectives of the study were as follows:

1. Analyse the process of compliance with a standard. Identify factors that influence the adoption of standards and assess the significance of these factors.
2. Determine, whether differences exist between producers who comply with quality and safety standards and those who do not.
3. Measure and analyse the costs of compliance, determine influencing factors and assess the impact of the costs of compliance on the adoption of standards.
4. Assess possible impacts of quality and safety standards on the Piuran mango export sector.

## 3. Methodological Approach

The conceptual framework of the study is a concept of a three-staged process of compliance with a standard, consisting of three stages: 1) information, 2) decision and 3) implementation. At the first stage the producer obtains information on the standard and becomes aware of the existence of the standard and gains knowledge on how the standard works. At the second stage, the producer makes a decision on the implementation of the standard. At the third stage, the producer enters the implementation stage. The implementation stage consists of the introduction of the standard on the farm. At the end of this compliance process, a producer should comply with the standard and the standard can be considered as adopted.

At each of the stages a dependent variable and influencing factors are assumed. At the information stage, the dependent variable is the quality of information a producer has and by that the diffusion of information among the producers. At the decision stage the dependent variable is the actual decision a producer has taken toward an implementation. At both stages it is assumed that the dependent variables are influenced by a set of socio-economic characteristics specific to each farm.

Once the decision to implement the standard is made, the producer enters the implementation stage of the compliance process. At this stage, the costs of compliance generated by the standard on the farm level, are measured and the perceived problems and benefits of the implementation of the standard are determined. Furthermore, possible determinants of the amount of the costs of compliance were tested for correlations with the level of the costs of compliance.

Data was collected in San Lorenzo in Piura, Peru. Out of a population of 2,451 producers producing mango for exportation in general and a group of 80 producers certified with the European Eurepgap-standard a stratified sample consisting of altogether 61 producers was taken. The stratification of the sample by the outcome variable "compliance with Eurepgap" lead to an *ex-post facto* research design. The design allows the comparison of the group of producers complying with Eurepgap to a reference group which is representative for the mango export sector in San Lorenzo.

For the analysis of the results at the information stage, qualitative analysis was used to evaluate the quality of information producers have on the standard. To describe the distribution of information among the producers, descriptive statistics were applied. The analysis of factors that may have an influence on information access was performed using t-test and Chi<sup>2</sup>-test. At the decision stage, qualitative analysis for the analysis of reasons for and against a certification was combined with t-tests and Chi<sup>2</sup>-tests to analyse possible influencing factors. The monetary costs of compliance were calculated for each farm. Factors that possibly influence the costs of compliance were analysed applying t-test and correlation analysis. To determine perceived problems and perceived benefits of the standard, qualitative analysis was applied.

#### 4. Results

The main result at the information stage is the distribution of information within the sector. The analysis reveals a large information gap. Out of 61 producers, 33 have sufficient and 28 insufficient knowledge on the standard. A comparison of the two groups shows that there are clear differences between the producers with respect to socio-economic characteristics. Results indicate a possible influence of these factors on the access to information and suggest that the problems in accessing information can be lead back to limitations caused by socio-economic constraints. It could be concluded that the access to information constitutes a first major barrier to the adoption of the standard. It was also shown that typically poorer and smaller producers are disadvantaged in accessing information. Nevertheless, most shortcomings that originate from socio-economic constraints can be overcome by the activities of exporter enterprises. Thus, vertical Integration can be seen as the most important influencing factor for the access to information.

The research at the decision stage consists of an analysis of the reasons in favor and against certification with the standard and a comparison of the producers with respect to socio-economic characteristics. Out of the analyzed cases, 28 producers have decided in favor and 18 producers against implementation. The analysis of the decision making shows that a proactive approaching of producers to the standard rarely occurs. The idea of an implementation is rather brought to producers by exporter enterprises and the decision is mostly made at the instance of the enterprises. Decisions against an implementation were mostly explained by the lack of financial resources. Similarly to the information stage, the analysis of possible influencing factors shows clear differences between the producers and the only variable that appears to be necessary for a favorable decision is the vertical Integration. The results at the decision stage again point to a key role of the exporter enterprises in the adoption process.

At the implementation stage, the measurement of the costs of compliance showed that costs range between 10 and 580 US\$/ha/year, accounting for 145 US\$/ha/year on average. In relation to the farm gate price, the costs of compliance add up to 3.8% in the mean, ranging from 0.3% and 15.2%. That means that the costs of compliance can, at least in single cases, result in a considerable economic burden. The analysis of factors that influence the amount of the costs of compliance revealed no significant relation between the ex ante expected influencing factors and the costs of compliance. Alternatively, three other explanations for the variability of the costs of compliance could be specified, attributing differences in the costs of compliance to the starting point of the farm, the target level, and the role of exporter enterprises. The assessment of perceived problems and benefits shows that the most common problem caused by the standard are the elevated costs. The most important perceived benefits were an increase of productivity, better marketing conditions, an elevation of knowledge of

workers and farm owners and improved working conditions. In general, producers who had implemented the standard saw a positive cost-benefit ratio.

The results of the analysis of the compliance process allow to draw a number of conclusions on the adoption of the standard and its diffusion as well as on its possible impact on the sector. A first important result is the observation that the first impediment for the adoption of the standard is the access of information by the producers. The majority of the producers is not even able to do the first step toward compliance as they do not obtain the necessary information. The second important finding is the important role of the exporter enterprises for the adoption of the standard by the producers. Despite of clear differences between the producers with respect to a number of socio-economic characteristics which point to a possible influence of these factors on the adoption, the role of the exporter enterprises appears to surmount their significance. By providing the necessary information to producers, influencing the decision making and supporting the producers in the implementation, the exporter enterprises turn into the key factor for the adoption of the standard and its diffusion. This strong role of the exporter enterprises has to be assessed ambiguously. On the one hand, the enterprises help poorer and smaller producers which otherwise would not be able to comply with the standard to obtain a certification and run the risk of being excluded from the lucrative European markets. On the other hand, the standard can lead to an increased dependency of producers on the enterprises. In general, the little initiative of producers toward an adoption and the lack of actors other than the exporter enterprises that support the diffusion of the standard involves the risk of the exclusion of those producers from the Eurepgap markets which are not considered by the enterprises to be worthwhile to obtain a certification. Another conclusion can be drawn regarding the standard's impacts on the development of the sector. With respect to the observation that the standard on the one hand helps certified producers to raise their productivity and by that their competitiveness and on the other hand entails the risk of exclusion of certain producer groups it can be expected that the standard leads to a consolidation of the value chains. These consolidated value chains are likely to include the more competitive producers but may exclude other producers. As the producers in risk of exclusion were typically already in advance the more disadvantaged, this can imply negative effects on income distribution and food security in the region.