1   Introduction

1.1   Research problem

Many of the rural poor in developing countries such as India and Nepal rely on a diverse range of little-known crops for food security and nutrition. These are often neglected by scientists and are hence referred to as 'orphan crops'. Commonly described as underutilized or neglected plant species, orphan crops can be identified by the following characteristics:

a) they are locally abundant in developing countries, however they are globally rare;

b) there is scant scientific information and knowledge about them, and

c) their use is limited relative to their economic potential (GRUERE ET AL. 2006).

Although orphan crops are important to rural livelihoods on a local level, particularly in poor areas, they have been largely overlooked by the research community. The majority of orphan crops are locally maintained because they are well adapted to the low-input conditions typical of marginal areas.

1.2   Objectives

The overall purpose of this study is to analyse the potential role of one particular orphan crop in improving food security and livelihoods in India and Nepal. Ricebean (*Vigna umbellata*), in particular was the focus of a EC funded multi-partner research project that aimed to popularise and promote its adoption in order to improve food security in marginal areas and to make it much more widely grown than it is now by providing improved varieties that match farmers' and consumers' needs.

If breeders aspire to develop an improved ricebean variety it should meet farmers' and consumers' preferences. Farmers should not only be able to reap the benefits of an improved ricebean variety with higher yields and good pest resistance, but also be able to exploit the yield gain, and improve their financial status above mere subsistence levels by selling the crop to generate income. Ricebean will most probably be accepted by consumers if it meets their requirements, regardless of the farmers' agronomic constraints. Hence, it is essential to identify consumers' preferences. In the end, there must be a compromise between breeding in order to secure better yields, other agronomic objectives, and the preferences of consumers.

As an improved ricebean variety would not automatically diffuse in Indian and Nepalese markets, a marketing strategy is required for its successful introduction. A precondition to designing a marketing strategy is the analysis of the agricultural marketing systems by which ricebean would be moved from producers to consumers. This implies that agents at each stage, transaction practices, and conditions of the marketing systems have to be identified. The analysis and description of the agricultural marketing systems may reveal where along the chain product value is lost and where savings are possible in transport, storage, handling, and transaction costs.

1.3   Research approaches

Consumer preferences are determined by using hedonic price analysis which explains price variation of products with their characteristics. For this purpose ricebean samples were bought in markets in India and Nepal. These samples were analysed in laboratories to assess characteristics. The hedonic price analysis permits us to put a money value on important traits that reflects consumers' preferences for that trait. The valued traits can be used to develop an index which we call the Consumer Preference Index (CPI). The CPI allows plant breeders to put a monetary value on the traits they incorporate into new varieties. With this index, breeders can assess the expected price of an improved ricebean variety at an early stage in plant breeding since quantities of just 100 to 200 grams of ricebean are sufficient to calculate the CPI.

The introduction of the improved ricebean variety is based on a marketing strategy which requires a detailed analysis of the marketing systems in India and Nepal. The agricultural marketing systems in India and in Nepal are known to be fragmented, complex and even chaotic (WORLD BANK 2008). This complexity cannot be covered adequately by one single theoretical perspective. Therefore, four perspectives were selected to get a more complete picture and to accommodate the complexity of the pulse marketing systems in the two countries. In particular, this study employs the perspectives of:

(i)   market places;

(ii)   market channels;

(iii)   supply chains and networks, and

(iv)   generalized markets.

The perspectives are not perfectly separated from each other. Therefore, the key concepts of the different perspectives were consolidated into a 'toolbox', which represents a comprehensive perspective to analyse and describe the marketing systems for pulses in India and Nepal. Data and information about the marketing systems were obtained from literature reviews, data bases, and surveys that were conducted for this study.

1.4   Outline

This study is organized into six sections. Following this introduction, ricebean as an orphan crop is introduced, in terms of its agronomic characteristics and requirements, its origin, its distribution and its diversity. Further, the nutritional importance of pulses in general is highlighted and the composition of ricebean is explained.

In Section Three, the method for estimating values for ricebean traits, hedonic price analysis, is presented. The first sub-section provides a literature review, followed by the presentation of the hedonic model. Details of the model and the variables included in the hedonic equation for ricebean are explained. In this section we also provide details of the data collection. The last sub-section presents the estimated coefficients and evaluates ricebean varieties from India by applying the CPI.

Section Four includes an analysis of markets and marketing options for ricebean. Ricebean is grown in remote areas where semi-subsistence consumption prevails. Therefore, the marketing section starts with a model of subsistence households. Subsequently, the four perspectives used to analyse and describe the marketing system are presented.

In Section Five, the toolbox of perspectives is employed for the description and analysis of the pulse sectors in India and Nepal of which ricebean markets are a small part. Additionally, results of surveys that were carried out in 2008 and 2009 in India and Nepal are reported.

Section Six summarises the results, presents the conclusions of the study and provides suggestions for further research.