

## Research Proposal

The incidence of low yield amongst farming households is still a common feature in most developing countries. The cause for this disparity is often traced back to the production choices farmers make. Pakistan is a case in point where per-acre yields of its important crops such as wheat, rice and cotton lag behind both regionally and globally. Since the green revolution the country has seen a retardation in agricultural productivity growth, and there is a plethora of literature that links growth in agricultural productivity to economic growth and poverty reduction. Furthermore, there is ample empirical evidence supporting the idea that growth in the agricultural sector is more effective in reducing absolute and relative poverty as compared to growth in other sectors. Hence, agriculture holds immense importance for a country like Pakistan where increasing poverty is a concern and 62 percent of the people live in rural areas and are dependent on agricultural activities for their livelihood. The existence of persistent yield gaps between an average farmer and a progressive farmer in Pakistan suggests that output growth can be achieved through improving efficiency rather than resource-led growth.

The objective of my research is to measure the farm-level efficiency of farmers in Pakistan and identify the sources of inefficiency that lead to these yield gaps. The study aims to answer the following questions, and will examine data on wheat, cotton and rice to achieve its objectives:

- Given prevailing input-use intensity levels, how efficient are small-scale farmers in Pakistan?
- What factors drive the difference in efficiency among farmers, and how much of this inefficiency can be explained by socioeconomic factors (e.g., education), resource-based differences (e.g., ownership of farm equipment) and institutional factors (e.g., extension)?
- What policy interventions can help improve efficiency?

The three crops have been chosen due to their significance for food security and economic well-being in Pakistan. Wheat is the staple diet for most of the population, and with population growth increasing at an average rate of 2 percent per annum, wheat plays a very important role for food security. Cotton and rice, on the other hand, are major cash crops of the country, an important source of foreign exchange, and a basic feedstock of the domestic textile sector.

A stochastic frontier model will be used to explore technical efficiency among small-scale farmers in Pakistan. This method explicitly accounts for inefficiency that can help in identifying factors that explain productivity variations among households, despite the fact that they have access to similar production technologies. The study will also control for household and agro-economic characteristics to ascertain the extent to which complementarities such as water, market access, fertilizer responsiveness, land, education, and access to extension services make farmers more efficient. The choice of inputs (specifically fertilizer) would be of particular interest to the study.

The International Food Policy Research Institute (IFPRI), in collaboration with a local firm, is currently implementing the Pakistan Strategy Support Program (PSSP) in Islamabad, Pakistan. This is a multi-dimensional, multi-partner initiative to provide analytic policy support and capacity strengthening, while working closely with the Planning Commission, Government of Pakistan. I have an opportunity to work closely with these researchers in Pakistan and support them with data collection, data cleaning, descriptive analysis, quality monitoring and other research activities as required by the Islamabad office within the realm of production and productivity analysis topics.

The source of data for the proposed research is the Rural Household Panel Survey (RHPS) conducted by the Pakistan Strategy Support Program (PSSP) in three provinces of Pakistan (Punjab, Sindh, and KPK). Data from the 2012 Round of the RHPS, which has already been collected, and from the 2013 Round, which is currently underway, will be used to develop an efficiency index at the plot level.