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Hans H. Ruthenberg Award for Graduates 2012

Lilli Scheiterle “Opportunities and challenges in the production of maize in Northern Ghana: Insights from a household survey”

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Summary

The financial situation and political decision in the last years increased food prices and their volatility which severely affected food security and poverty reduction worldwide. The purpose of this study was to analyze whether farmers in the northern sector of Ghana have a comparative advantage in the production of maize as import substitution under the current world prices and domestic policies. Maize is one of the most important crops produced and consumed in Ghana, accounting for 58% of local cereal production (ISSER 2010). However, the gap between production and consumption of maize in recent years in Ghana present the country with growing import bills and higher prices for consumers. In the northern compartment, due to the geographical position on one hand and the harsh climatic conditions on the other, low investments have been undertaken in the last decades which translated into poor infrastructure development and low access to institutional services. Nevertheless, small scale farmers are here producing a considerable share of the total maize consumed in the country. This rather difficult frame conditions make this sector of Ghana similar to many other West African countries.

Furthermore, the results were compared with an earlier work, carried out in the same study area, before fertilizer subsidies were enforced. Input subsidies are one of the most popular policy programs in Africa, mainly after the success Malawian fertilizer success story between 2005 and 2007. The Ghanaian government subsidize, since August 2008, 50% of the costs of the major inputs. The study aims to assess the impact of the fertilizer subsidy program on maize yield it self and consequently on the private and social profitability of maize production, in the more neglected area of the country.

The achievable yield in the country is clearly above 3Mt/ha under rain fed conditions, but nowadays the average country yield is 1,5Mt/ha. In this work we used this value as threshold to distinguish between low and lowest output systems. The study is based on detailed survey data obtained from 199 farmers from 12 communities for the cropping season 2010. We applied a simple analytical tool, the Policy Analysis Matrix [PAM), to assess policy effects

private and social costs, and the Cobb-Douglas (C-D) production function to identify factors affecting the output, of each system. The questionnaire included as well, a grading of constraints affecting the agriculture production, perceived by those polled. Furthermore, data collected from the local ministries and institution were used to calculate the social cost, needed to compute the PAM and to complement the household data to examine the impact of agricultural policies on the domestic economic performance. The outcome of the analysis was used to identify the opportunities for the national economy performance and the current constraints to the enhancement of agricultural growth.

The results suggest that production systems with yields above the national average of 1.5 MT/ha are profitable at private level and contribute to growth of the national economy. Farming systems producing below this threshold report very low private profits and negative social profits, implying that they do not use scarce resources efficiently in the production of maize and depend on government intervention.

Comparing the data to the previous study, after the introduction of the subsidy program, the adoption of fertilizer was closed to 100%, which increased the total cost of the farming activity, but interestingly the maize yield did not improve. This data was confirmed by the Cobb-Douglas production function which showed that the use of fertilizer was not a determinant factor to explain the output. This is an important finding especially, looking at the controversial policy issue, debated in many Africa countries.

However, one of the a sensitivity analysis carried out, showed how the additional use of improved maize varieties, such as Open Pollinated Varieties [OPVs] would increase yield and consequently the private and social profits. In this scenario both systems above and below country average, in the four districts, would be profitable.

Among the most major constrains perceived by farmers we identified the high production cost, the limited access to credit and the quality of the extension service provided. Regarding this last point, the study showed a very low correlation between the extension service delivered and the problems faced.

In the recent past, the increase in agricultural productivity in Ghana was mainly based on expansion of cropping area. The country therefore has a high potential to exploit the advantages of the Green Revolution, but requires large investments and strong policy implementation. The challenge that Ghana face is to invest in efficient, productivity-driven, economically and environmentally sustainable agriculture. Ghana's agricultural spending remains low, less than 2% of public budget expenses, compared to 10% targeted during the Maputo declaration in 2003 (ISSER 2010).

The study points out that even the northern regions of Ghana, where the environmental conditions are harsh for crop production, more efficient systems have a comparative advantage in maize production compared to the imported commodity price. The constraints preventing small-scale farmers from realising the full potential of their farming system are a combination of lack of access to information and research findings on the physical and technological aspects of crop production, and to modern technologies. This is coupled with a weak financial and credit system and a poor infrastructure network.

The policy recommendations made, based on these findings are: The need to improve the quality of the extension services to target the real constraints farmers face (e.g. implementing the participatory approach). The use of fertilizer should be coupled with other inputs to

maximize the efficiency of each measure. Additionally, stable input markets would help to attract the private sector which is expected to increase the competition between wholesalers and wholesalers and importers, and improve the distribution network. The lack of access to credit should be addressed to decrease the risk aversion of farmers, in this case the recommendation made is to establish rural microfinance institutions and promote financial self-help groups (e.g. ROSCAs) or solidarity groups (e.g. Grameen-type of banks). The improvement of the infrastructure network is another urgent measure for communities in rural areas, to reduce the distance between markets, increase the access to them and reduce transport costs.

Any effort to enhance private and social incomes through higher yield, access to credit and market, improved infrastructure needs further analysis to ensure that revenue and savings are passed on to producers as higher profits.

In conclusion, we it consider essential to combine knowledge and access to new technologies to improve soft and hard infrastructure and reach larger numbers of rural communities. Single factors need to be combined and used in synergy to realise the full efficiency of each.