

Full Length Research Paper

Organizational and institutional environment in wheat production chain in Mozambique

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Wheat's production chain is one of the sectors that have received a lot of attention not only by the Mozambican government, but also by its national and international partners alike. This is due to the interest of the government and its partners to raise production levels and as such, lower the need of importing these goods in the coming years. Due to efforts from Mozambican government to elevate production levels of wheat, the objectives of this research are to analyze the organizational and institutional effects on the development of Mozambican wheat production chain. The foundation of this project consists mainly of a new institutional economy as this institution recognizes the economic development of certain institutions. The primary and secondary data have been collected through interviews conducted with wheat producers and members of research institutes in the agrarian field in Mozambique. Some of the data have also been collected using the internet. Through the data collected and compiled, it was discovered that Mozambique in fact does not have specific policies concerned with the production of wheat, but rather information related to this exact matter are found in a greater policy which concerns itself with the promotion of agriculture itself. Therefore, the data indicates that concerning the production of wheat, there have been certain failures in the process of commercializing it, such as the inexistence of formal contracts, as well as failure in compliance with the few informal contracts which are in place. There has also been poor negotiation of pricing by the producers themselves, thus the need for an intervention in the matter by the Mozambican government.

Key words: Mozambique, agricultural policies, wheat production in Mozambique.

INTRODUCTION

Wheat has been in production since approximately 10,000 BC. The consumption of wheat has become popular in a number of countries; today wheat is the second most produced cereal crop worldwide, after maize (Awika, 2011). Wheat not only contributes to the

economy of the countries that produce and export it, but is also considered one of the main sources of energy to a great number of the human population. Wheat is also greatly used in the food industry, in the making of pasta, biscuits and breakfast cereals.

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Table 1. Projection and wheat production in Mozambique.

Item	Evolution's Projection		Amount produced	
	2008/2009	2009/2010	2010/2011	2013
Year				
Projected area (ha)	11.350	22.875	45.000	12.300
Estimated wheat production (ton.)	21.300	46.313	96.750	22.000

The demand for wheat is rising rapidly even though during the harvest of 2012/2013, the worldwide wheat's production was at approximately 658 million tons, compared to the 697 million tons during the 2011/2012 harvest, which was considered the highest yet recorded production of wheat in world history (Food and Agricultural Organization (FAO), 2012). At the forefront of wheat production, there is the European Union, China, India, Russia, the United States of America and Brazil (Brazil, 2013).

Egypt and Morocco occupy the fourteenth and fifteenth spots, respectively when referring to wheat production, they are considered the front runners in Africa (Brazil, 2014). Even though Africa has a low level of production when it comes to wheat, the International Maize and Wheat Improvement Center (CIMMYT, 2014) hope to make Africa the highest importers of this product. Africa could guarantee its food security through wheat production as there is the potential to be self-sufficient.

In Mozambique, the triticale area is a sector with great difficulties in the production chain. In the last couple of years, there have been great effort made by the Mozambican government to promote wheat production and increase its productivity, yet producers have not been meeting the effort made by the government, therefore the goals set by the ministry of agriculture in Mozambique are rarely met. One of the examples of the failure to meet the goals is the ratio between the quantity of wheat in the production forecast by Action Plan for Food Production (PAPA) and the quantity of wheat that has been produced so far, as seen in Table 1.

According to the program for the production of wheat represented by PAPA (Mozambique, 2008), the estimated wheat production of 2010/2011 was about 96.750 tons, which would reduce the current deficit in 387.9 thousand tons; this corresponds to 80% of the forecasted consumption. During 2013, the amount of wheat produced in Mozambique did not correspond with the goals set in 2008. Therefore, specific problems have been discovered in each sector of the productive chain of wheat production in Mozambique. The aim of this research is to analyze which factors on an institutional and organizational level affect the development of wheat production chain in Mozambique.

Wheat production in Manica is used as the data for the study; this is one of the regions with a relatively high number of wheat producers, and is also the location of one of the main organizations when it comes to studies in

the agrarian field (Institute of Agricultural Research of Mozambique (IIAM)).

Other than that, there are some universities and other educational institutions located in these regions that are dedicated to research in the agrarian field. As a baseline, a New Institutional Economy (NIE) was used as it was seen as the key role some institution play in the economic development and incorporating a concept often discussed in NIE (Economy of Transaction Costs (ETC)).

According to North (1990), NIE concentrate its effort in studying institutions or formal and informal rules of engagement that shapes social, economic and political interaction and its role in coordinating human actions. According to Azevedo (2000), NIE can be seen from two points:

- (1) In an institutional view (formed by macro institutions) or
- (2) The economy of transaction costs - ETC (this is formed in micro-institutions, that are responsible for regulating specific transactions).

Even though the study done by NIE is about the economic view of things, NIE also uses other resources to explain the nature and evolution of a variety of institutes. One of its main objectives is to study the economic functionality and efficiency of various types of institutional systems (laws, contracts and organizational methods), not to mention the influence that economic motivation has, and the kind of institutional changes that come with it.

Therefore, the results acquired through theories developed by NIE provide an important instrument that can be used to better comprehend the different interactions between economic systems, legal and juristic institutions that condition economic activity and transactions (Pondé, 2007).

Through the use of its main theory (ETC), NIE signals the importance of organizational environment to be the contingency plan for organizations. The organizational environment is set up by informal rules (sanctions, taboos, traditions and codes of conduct), including well formal rules (constitutional, laws and rights of property).

For this reason, NIE is used by many researchers as an argument which is more efficient than traditional economic theories due to its inclusion of facts that are often neglected, especially when it comes to the behavior of individuals or agents.

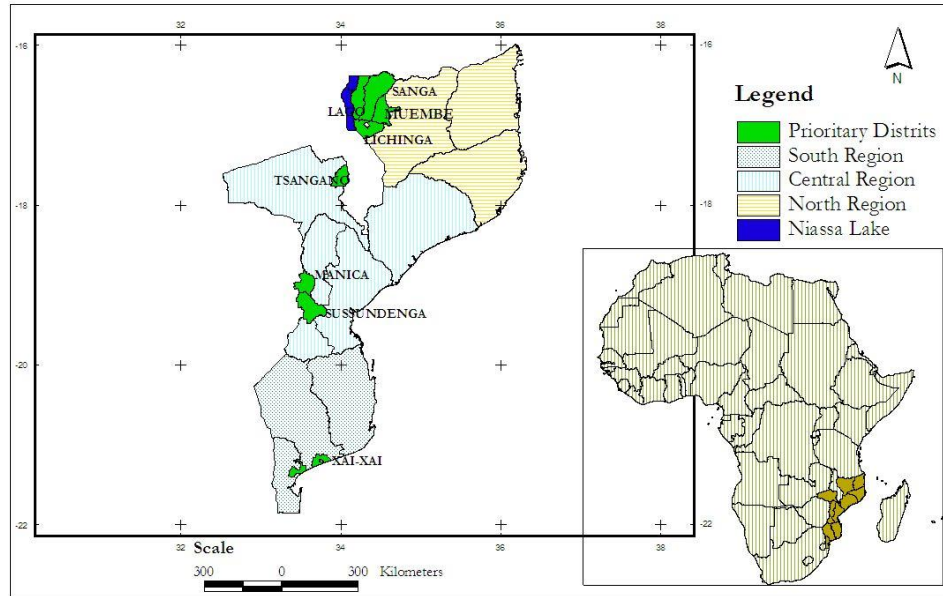


Figure 1. Location of key areas for wheat production in Mozambique according to PAPA (Mozambique, 2008).

Source: Elmer de Matos, GEOLAB/UEM.

One of the main reasons why NIE became a respected theory by various scholars and schools is due to its assumptions on the limited rationality by agents (Breitenbach and Silva, 2010). According to Williamson (1996), NIE preoccupies itself with the relation between institutions and efficiency, using:

- (1) Organizational environment and
- (2) Modes of governance.

The organizational environment studies the effects and changes the environment has on economic results, therefore this part is mainly dedicated with the rules of the game. The area of modes of governance concentrates on the transaction with a focus on governance structures that rule the economic agents (in this case, the general rules in society are also considered). In the study of modes of governance there is also the identification of how different governance structures deal with the transaction costs.

Wheat production in Mozambique

Other than the aspects concerned with agrarian affairs in Mozambique, brief demonstration of the wheat production chain was discussed, especially aspects that came from supplies and equipment, wheat production, and agroindustry with respect to the distribution and consumption of wheat.

By taking the climate, soil and crop management variables into consideration (PAPA (Mozambique, 2008))

regions with the right potential for wheat production were chosen, which are Manhica (in the Maputo province), Xai Xai (in the Gaza province), Sussundenga and Manica (in the Manica province), Tsangano (in the Tete province) as well as Lichinga, Muembe, Lago and Sanga (in the Niassa Province), as represented in Figure 1. All efforts were made to fortify the promotion of studies and production of certified seed, the import of seeds and fertilizers as well as the allocation of bonified loans.

The National Institute of Statistics (INE) has forecasted that the Mozambican population until 2015 will rise to about 25.7 million inhabitants, and 70% of this number represent inhabitants of rural areas (Arndt et al., 2010). Since the formation of the constitution of the Peoples Republic of Mozambique in 1975, land has been defined as something owned by the state, therefore it cannot be sold in any way, and it also defines agriculture as the basis of developing the country.

The agricultural system in Mozambique is mainly made up of small-holders farms, which in average are about 1.4 hectares large. In 2014 the agriculture sector contributed about 23% to the national Gross Domestic Product (GDP) per capita, and it also employed about 80% of the economically active population. Through strategic measures, the green revolution was introduced in 2008, it was primarily discussed in politics in 2007. With this program the Mozambican government is interested in modernizing agriculture by introducing mechanized agriculture, as well as the use of improved seeds, the promotion of the use of irrigation systems, and a higher use of fertilizers and pesticides.

The green revolution has though been faced by a

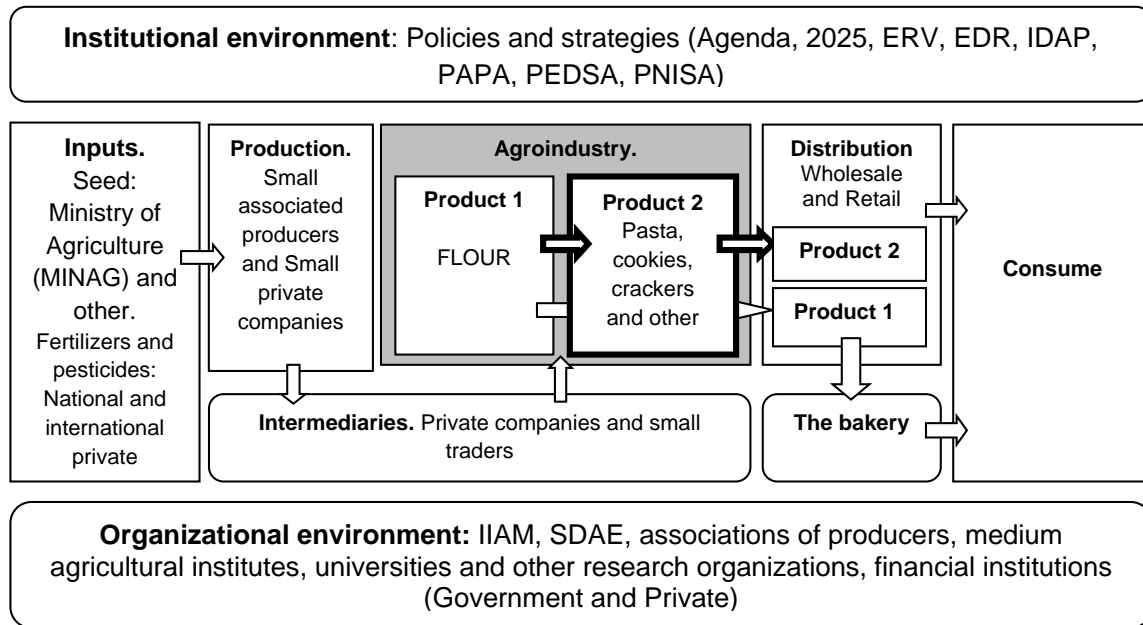


Figure 2. Representation of wheat productive chain in Mozambique.

number of obstacles, such as the fact that most producers in Mozambique practice agriculture of auto-consumption (food crops), while many farmers and farms are in areas that are difficult to access, and a very small number of people contribute to the Mozambican agriculture, and therefore it is mainly done for subsistence.

Just like other agriculture crops, the production of wheat in Mozambique is mainly done by self-sustenance farmers and small producers. Location of key areas for wheat production in Mozambique (Mozambique, 2008) form part of the associations of producers that are registered (name of association, objectives, members of management and other information) by the District Services for Economic Activities (SDAE). Other than the production of wheat, self-sustenance farmers also produce other crops such as maize, cassava, beans, sorghum, rice, soya and cashew nuts. According to the farmers that were interviewed, wheat production is maintained even with the problems encountered. Family members of the farmers are involved in the production of wheat (and other products); during the time of soil preparation and time of harvest, members of the community and the association do help with the activities needed on the farms.

Figure 2 shows the representation of the productive chain of wheat in Mozambique. One of the aspects that need to be commented on in this production chain is that the Mozambican government through the ministry of Agriculture is the biggest supplier and importer of wheat seeds. Even though there are private companies (both national and international) that are input suppliers, these

companies are more focused on the sales of fertilizers, pesticides and other agricultural products used in different regions of the country.

According to the findings after the acquisition of seeds and fertilizers, the farmers produce wheat under close supervision by personnel of SDAE. The area for each farm consists of areas up to two hectares. After the harvest, the wheat is stored until the intermediaries between farmers and agro industries oversee a sale. The sale is one of the most critical parts in wheat production chains, as there are no pre-established contracts when it comes to the sales between the intermediaries and the farmers, therefore, intermediaries use this to their advantage.

With the farmers not having sundry alternatives, they end up selling their products at a price established by the intermediaries, which is dissatisfying to them resulting to a decline in wheat production. Some farmers that were interviewed in Manica affirmed that the only reason they have not given up on wheat production is because it is a part of their culture (Figure 2).

The agroindustry section of the productive chain of wheat in Mozambique is composed of big companies (such as Matola Industrial Company, Beira milling and Industrial Company of Nacala), these companies buy wheat from farmers through intermediaries, and then transform it into flour. The agroindustries in Mozambique work in two lines:

- (1) Production of flour presented in Figure 2 is represented by product 1; and
- (2) The production of pastas, biscuits and other foodstuffs

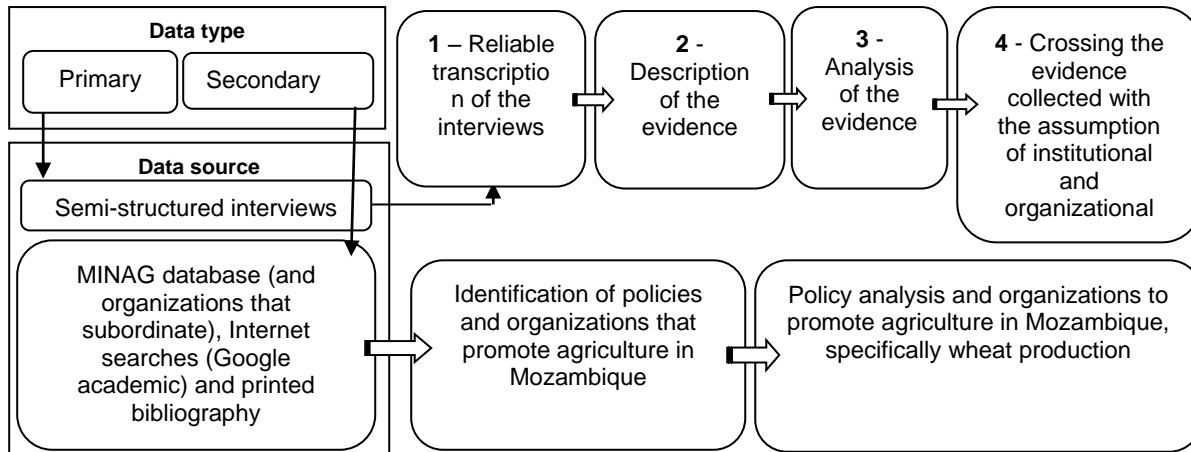


Figure 3. Data analysis work flow.

presented in Figure 2 is represented by product 2.

Product 1 of agroindustry which consists of flour is distributed to different bakeries all around the country, being used as the primary material in the making of bread and other products. A major part of the products is acquired by the consumer through bakeries. Product 2 which consists of pastas and biscuits are acquired by the consumer through informal sellers and stores.

The organizational environment of the production chain of wheat flour in Mozambique is characterized by the lack of specific politics to promote the increase in productivity and production. The main policies and strategies to motivate the increase in production of wheat in Mozambique are mainly part of the bigger general policies about the production of food and development of agriculture in Mozambique, for example Agenda 2025, strategies concerned with the green revolution, strategies for rural development, Program to Support the Intensification and Diversification of Agriculture and Livestock in Mozambique (IDAP), Action Plan for Food Production (PAPA), Strategic Plan for the Development of the Agrarian Sector (PEDSA) and National Agrarian Sector Investment Plan (PNISA), these policies are shown in this study.

The organizational environment of the productive chain of wheat in Mozambique is characterized by the existence of organizations of studies, or rather academic organizations and loan organizations. In recognizing the limitation of some of these organizations, it is important to mention the main characteristics of the organizational environment and the lack of dialogue between producers, research organization and the loan organizations.

MATERIALS AND METHODS

The research was conducted using primary and secondary data. The primary data consisted mostly of interviews that were

conducted between May and July, 2013 with wheat producers in the Sussundenga district in the Manica Province in Mozambique. It was also conducted using available data and information (nominal relation of farmers, products produced, local and ease of access as well as the size of property) which have been provided by the Manica Provincial Department of Agriculture, picking out groups of producers with a great variety of products. The people were specifically picked with the help of SDAE personnel, an organization under the Ministry of Agriculture.

The interviews were conducted in the properties of the interviewees, and afterwards in the company of SDAE personnel; a visit to other producers of wheat allowed the study to come to a conclusion. For the interview, routine questionnaires with semi structured questions were used, which would be announced by the researcher; the answers were recorded. Due to consent by the interviewees, names of the farmers will not be revealed (Figure 3).

A second encounter has been marked where the description of the data were collected (Miguel, 2007). According to Zanelli (2002), there is a necessity to join the data and the theoretic presumptions that guide the study in a way to compose a consistent view.

According to Yin (2001), the third phase of the process consists of the analysis of evidence collected and case studies. The fourth and ultimate phase is the process that is characterized by crossing collected data and the theoretic presumptions of the organizational environment which contributes in arriving to a conclusion about the role played by organizations and institutions in the production chain of wheat in Mozambique.

The secondary data and information is constituted by policies, plans and strategies, and some other document elaborated and or implemented by the government of Mozambique to promote agriculture and wheat production in Mozambique, which were obtained by the ministry of agriculture and other subordinate organizations. Some information was also obtained by using the worldwide web.

RESULTS

Aspects ranging from organizational environment to the organization of the wheat production chain in Mozambique, and how these influence the development of the triticale sector were discussed. In the first section, the organizational environment is discussed separately

on how it affects the sector, after this the organizations that support the productive chain of wheat production in Mozambique will be discussed.

Organizational environment of the productive chain of wheat in Mozambique

According to Williamson (1996), the organizational environment is defined as the rule of the game, formal and informal alike; they contribute towards the promotion and development of economic activity, in this specific case, the development of the production chain of wheat.

In Mozambique, the organizational environment of triticale sector is composed of a number of policies, plans and strategies which all aim at the promotion of agriculture in one or other of the groups involved in food production in order to obtain national food security and to increase export of national produce.

No specific policy for the promotion of wheat production has been identified, the production of wheat is included in other documents that have the general goal of promoting agricultural activity in Mozambique, it is also incorporated in documents that have been set up to promote the group in the production chain that is represented by agroindustries.

According to Satolani et al. (2008) when the organizational environment is unstable in its political, social and economic systems, there will be uncertainty especially with the action of opportunists, and the instability of the politics, legal and social institutional environment may trigger the high transaction cost which might discourage investments.

PAPA in 2008, as well as PNISA in 2013, mentioned the strength of the production chain as a whole, but with more focus on only one of the elements of the production of wheat, in this case being the producers, but the rest of the chain remains fragile due to the opportunism of intermediaries, the high price of transaction which according to Satolani et al. (2008) could demotivate the investment into the sector.

According to the producers interviewed and the representative of IIAM, one of the major problems identified in the production chain of wheat in Mozambique is the lack of official contracts between the producers and the intermediaries or the agroindustry's, which on many occasions causes the disagreement between the two parties about the selling price. This is one of the main causes of the reluctance of farmers to continue planting wheat and their willingness to produce crops, in which formal and informal contracts are already in place. Between a productive chain's firms, transaction is assured by a governance structure defined by Fleury and Fleury (2003) and Williamson (2005), as a group of institutions and individuals directly involved in the transactions including sharing costs and profits derived from the process.

Most of the producers in Mozambique have organized themselves into associations of producers, and in the wheat production sector this is also the case. This kind of organization is an alternative to acquire some conditions required for production since some sort of governance capable of coordinating the relationships between the agents of the production chain is needed.

The main function of these governance structures is to reduce the cost of transactions by having organizational supplies which can lower costs through some organizational tools capable of lowering contractual costs, monitoring the performance, organization and adaptation of activities (Farina et al., 1997).

In the productive chain of wheat in Mozambique, there is inequality when it comes to the effort being made in promoting the wheat production chain, as most of the promotion is being done on the level of production itself, the rest of the production is relatively neglected which keeps their incentive low. High number of faults within the market could negatively affect the few contracts that are in place, and are being subjected to opportunistic agents.

According to the interviewed, given the dissatisfaction about the price of wheat in Mozambique, some producers from Manica opted to join the barley production project disseminated by Beers from Mozambique (CDM) in 2012 campaign. Here, seeds were distributed and technical support was given to the producers throughout the production and at the end CDM bought all harvested barley. Different from wheat's productive chain, barley has had an efficient governance structure with good incentive to the producers and the contracts were kept intact with no rooms for opportunists.

Reports state that producers only regrets was that the CDM project did not continue since they could not generate incomes, and had the will to keep producing it. The disconnection between wheat producers and the market can annul every effort made by the government to boost wheat production in Mozambique because the decision made by producers to produce wheat depends on the existence of low transaction cost.

Organizational environment of the production chain of wheat in Mozambique

Satolani et al. (2008) constitutes organizations as a group of individuals that come together to reach a common goal and some of their coordinated actions can have a political and economic outcome. In Mozambique, the organizational environment that is in charge of the productive chain of wheat is characterized by the existence of public research organizations, universities and institutions of secondary education working in agrarian sciences, in association with farmers and loan organizations.

Out of the public entities, the Ministry Of Agriculture is the one responsible for promoting agriculture in

Mozambique. Though several other entities (National Directions, Provincial Offices, District Economic Services, Mozambique Agronomic Research Institute, Center for the Promotion of Agriculture (CEPAGRI) among others) have been made to promote agriculture in general or a specific production chain.

According to Satolani et al. (2008), organizations can be characterized by having a political or economic goal, in the case of associations of wheat farmers in Mozambique, they mostly have economic gain in mind, according to the farmers interviewed, their main aim of joining an organization is to obtain economic gain.

Saes (1999) sees the market as a mechanism of coordinated action of individuals, in this mechanism, each individual act independently in making decisions about their actions. The power of the market is that through it, different goals can be pursued yet no one can impose its own goal above everyone.

According to Williamson (1996), there is an incentive and control mechanism for organizations to achieve their goal. In Mozambique, wheat productive chain is an attempt to lower transaction cost, though opportunism has always been the main problem between producers and the middle men generating dissatisfaction among producers.

Even though wheat producer's associations in Mozambique are filled with individuals who make their living from agriculture, they have their own goals and families and they are very attached to cultural beliefs. An example is the affiliation of a single producer to two or more associations with different goals in terms of production. Saes (2000) states that organizations can only achieve their goals if there are coordination of their member's action. In this productive chain, there are some mistakes identified in the process of obtaining seeds. The data reveal that due to logistic issues producers are unable to get seeds to sow as at when due. With this uncertainty, producers occupy wheat destined areas with other crops in order to feed their families.

Conclusion

Wheat productive chain in Mozambique is one that faces many difficulties to boost its production and productivity. Considering that governance structure is one of the mechanisms and control used by organizations to reach their goals, the productive chain has a hierarchical governance structure where:

- (1) The incentives to the producers are weak,
- (2) There are mistakes in the commercialization of wheat,
- (3) Lack of formal contracts and the few existent informal contracts are violated,
- (4) Producers have no authority to negotiate the price, and
- (5) There is a need for intervention by Mozambican government through Ministry of Agriculture and other

organization ruled by it.

In the development and introduction of policies and strategies aiming at the promotion and increase of production, Mozambican government can and could ponder on social and economic aspects of wheat producers, and the focus should be related to:

- (1) For how long have they been producing wheat in that region?
- (2) During this period, was there an increase of production area?
- (3) Before MINAG (Ministry of Agriculture, the Mozambican institution responsible for agriculture.) stepped in as seed supplier, where did they get the seeds?
- (4) What have been the objectives of the production?
- (5) Is there any possibility of an area increase by these producers?

These and other questions may help to figure out the possibility of these producers to boost the country's wheat production and productivity or if there is a need to persuade more producers.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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