Effects of Communication for Better Vegetable Production in Burkina Faso: Case of the Agricultural Plain of Mogtédö in the Province of Ganzourgou in the Central Plateau Region

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ABSTRACT

Vegetable production is the main activity directly linked to the impounding of the dam, its storage, its sustainable conservation for different uses. The article aims to be a support and reinforcement framework for aspects of communication and behavior change for the sustainable development of our off-season production in rural areas. Thus, communication can constitute strategies in the mobilization of water resources for a better consideration of the management of hydraulic works for a better market gardening production in the commune of Mogtédö and Zam. Is communication a tool for better vegetable production? In this study, the main objective is to analyze the effects of communication for better market gardening production around the agricultural plain of Mogtédö in the province of Ganzourgou in the Central Plateau region. To do this, quantitative and qualitative methods were used for the collection, processing and analysis of data using appropriate tools.

Keywords: Communication strategies, Market gardening, Mogtédö-Zam, Water resources.

I. INTRODUCTION

The climatic conditions in the Sahel have been marked, since the 1970s, by a drop in rainfall and a significant variation in the climate in space and time. Yet it is water that mainly conditions agricultural production and the availability of water resources. However, water is a resource so essential to life that it is no exaggeration to say that “life is nothing but organized water” [1]. Thus, the filling of dams constitutes one of the factors in the satisfaction of the basic needs of the life of rural populations. The economic importance of market gardening can be seen in the income they provide to S. Bognini market gardeners [2]. Market gardening is the main income-generating activity for most market gardeners on the socio-economic level. In the context of West Africa, especially in Burkina Faso, market gardening constitutes an important source of income in the household basket within both rural and urban populations in our country. According to the Ministry of Agriculture [3], the market gardening rate is estimated at 90%, all speculations combined. The total value of sales of market garden products is estimated at more than 82 billion FCFA.

A distribution of the value of sales by speculation shows that bulb onions, tomatoes, cabbage and lettuce bring in more than 63 billion FCFA, or 77% of the total value of sales. Thus, most of the income from market gardeners helps to improve the living conditions of households. Production plays a considerable economic role for people in Burkina Faso. Market gardening occupies a very important place in the two municipalities, as does rice cultivation around water reservoirs and in the lowlands (292 ha). Consequently, market garden production encounters difficulties which are linked, on the one hand, to the non-permanence and sustainability of water sources from one year to another, to the lack of pipes and the lack of motor pumps. And on the other hand, related to technical and commercial aspects. The producer is called upon to appropriate the water reservoir and take into account the preservation of the water resource when developing it [4]. Similarly, it is up to the authority to organize the vegetable sector market to avoid price fixing by traders [5]. Indeed, communication is a fundamental strategy in food production and marketing. Also, the marketing of market garden products mobilizes a large number of actors.

In the commune of Mogtédö and Zam, the trade in market gardening products contributes to the local economy thanks to production around the open-air structure (Talembika dam). The smooth running of this trade must be based on better market gardening production.

Therefore, a good information system strategy is needed for the market gardening sector, from production to marketing for sustainable development of rural areas.

This is why this article is interested in the question of the effects of communication for a better vegetable production in Burkina Faso: case of the Mogtédö-Zam dam in the province of Ganzourgou in the central plateau region. This article has two parts: the first part describes the geographical framework of the research and the methodology adopted; the second part presents the results obtained.
II. GEOGRAPHICAL AND METHODOLOGICAL FRAMEWORK

A. Geographic Framework

This study was carried out in Zam and Mogtédo, two neighboring rural communes in the province of Ganzourgou, located in the Central Plateau Region. The dam is shared between the two municipalities.

The structure is located in the village of Talemibika Rural Commune of ZAM and drains the water from the dam which irrigates the developed plain which is located in the rural commune of Mogtédo in the midst of a recession of water resources in our country. The rural municipality of Zam is located 87 km from the capital Ouagadougou, 72 km from Ziniaré (capital of the Region) and 35 km from the town of Zorgho (capital of the province of Ganzourgou).

The municipality of Zam covers an area of 786 km². Mogtédo is located 85 km from the capital Ouagadougou, 65 km from Ziniaré (capital of the Region) and 25 km from Zorgho (capital of the province of Ganzourgou). The commune of Mogtédo covers an area of 633 km². Some villages which remain inaccessible in the rainy season; confers Fig. 1 below of the Provincial of Ganzourgou in the geographical space of Burkina Faso.

The province of Ganzourgou is made up of eight (08) Communes which are the Commune of Zorgho, capital of the province, the Commune Kogho, the Commune of Salgo, the Commune of Méguet, the Commune of Zoungou, the Commune of Boudri, the Commune of Mogtédo and the Commune of Zam.

The populations of these eight (08) municipalities are mainly composed of farmers, breeders, craftsmen, fishermen and gold miners. Market gardening in Burkina Faso has experienced a very significant boom over the past thirty years, although marked by successive droughts. The climatic conditions enjoyed by Burkina Faso constitute a favourable asset for the development of market gardening even if the question of water availability remains the major constraint. This environment allows the production of market garden products throughout the year and throughout the territory with peak periods between November and March, on small farms of individual or family types. Organizing and supervising producers is very difficult, if not impossible, on undeveloped sites. On the other hand, on the large developed plains, the organization and supervision of producers is much easier. The map below shows the Mogtédo-Zam dam. The irrigated plain is located just behind the municipal market of Mogtédo, confers Fig. 2 presenting the geographical location of the Mogtédo-Zam dam in the province of Ganzourgou.

B. Methodological Framework

In the perspective of appreciating the effects of communication for a better market gardening production and the process which contributes to the improvement of the socio-economic conditions of the actors around the water reservoir of Mogtédo-Zam, it is the approach system that was used. It allowed the collection of quantitative and qualitative data in order to make the results communicable and to understand the evolution of the phenomena and the processes that drive them. This method is made first, around documentary research and field surveys for data collection, then by processing and finally by data analysis. The tools that were used for the collection are, among others, the digital questionnaire, the GPS, the interview guide and the camera. The survey concerned 21 users of the Mogtédo-Zam dam and the choice was made randomly. Also, interviews are conducted with resource persons including administrative authorities, technical agents of agriculture, sellers and buyers of market gardening products (14) and producers (7) in the municipalities of Zam and Mogtédo.

The processing of this information is done using tools such as the QGIS software, version 2.18.7 for the creation of maps; Microsoft Office Excel 2013 software, KoBo for statistics, tables, graphs and Microsoft Office Word 2013 software for writing the article.

III. RESULTS AND DISCUSSION

A. Factors of Production and Mode of Action of the Earth

The factors of production are the elements that contribute to market gardening production. Thus, the factors of production are essentially the availability of water, the mode of access to the land, the production materials.
1) A deficit of water availability during the year

Water is first of all a key factor for the issue of availability, i.e., supply (production and imports) to meet demand. Indeed, on the one hand, water is a fundamental resource for agricultural production [6]. Thus, irrigation can contribute to food intensification and diversification. However, market gardening is the main activity directly linked to the filling of the dam. The Mogtédo-Zam dam is located between two municipalities, including the water reservoir in the village of Talembika, in the municipality of Zam and the facilities in the municipality of Mogtédo. According to the results of field surveys, 95.24% of respondents say that access to water at the level of the dam's water reservoir is unconditional and is not subject to the payment of any tax. What is affirmed by "No user pays a fee for having used the water from the dam", on these works of small-scale village irrigation and food security in the province of Kourwéogo.

It should be noted that in the results of the work of Kiemdé [6] in the municipality of Zam with the market gardeners of the village of Talembika, it appears that these market gardeners levy taxes on access to water for agricultural users. The number of agricultural users of the dam varies from season to season. But it is difficult to know the exact number of users of the dam, especially in terms of agriculture. This is also explained by the lack of a register of dam operators in the two municipalities. This is supported by W. P. Tapsoba [7] and I quote: “Indeed, dams, because of their community nature, lack a register of operators.

This makes it difficult to assess the populations who work there”. Interviews with producers reveal that the dam dries up quickly with a high rate of siltation. “This year, the number of farmers is down because the State had promised to clean the dam and there should be no market gardening, the farmers you see are those who took the risk of producing, fortunately for us. that the State has not carried out its project to rehabilitate the dam”, said Kabore Rasmané, a market gardener on the developed plain of Mogtédo. The water from the dam does not only cover 7 to 8 months of the year.

2) A mode of access to land by rental or loan

Vegetable production around the Mogtédou-Zam dam is done downstream and upstream of the dam. Upstream where the open-air structure is located, crops are grown around the dyke and downstream where the facilities are located and on other plots. There are formal and informal facilities on both sides. The formal development of Talembika is not exploited (62 ha) and the non-formal around the work is estimated at 100 ha. A plain is developed for rice cultivation in the commune of Mogtédo and another around which is estimated at 125 ha. Access to land for market gardening is more by donation and loan because informal land is for families who work the plots themselves or lend them and rent them out. But the results show that 56.52% of respondents own the plots and 30.43% have access to the plots by donation. This explains why farmers work more with family members (90.25%) and only 8.7% are helped by agricultural workers. Fig. 3 below explains the distribution of market gardeners by mode of access to land.

3) Production equipment for better performance

Production being all the operations essential to the realization of market gardening which requires appropriate equipment for better market gardening production D. S. Ndoninga [8]. Thus, equipment plays a decisive role in market gardening activities. At the Mogtédou-Zam structure, almost all the producers use the daba, the machete. 78.26% of producers use other tools (motor pump, market garden well, watering, etc.). The use of certain equipment, in particular the motor pump, is used by the wealthiest because the records that allow water to be driven into the plots are expensive. The following photos show some tools used in vegetable production.

Fig. 4 shows a motor pump installed in a market garden well to transport water to the different market garden plots. Transport is done using pipes that are laid out for irrigation, some market gardeners mastering the technique of pipe layout. Transport is also done from the water source (dam) or market garden dumps dug by the producers. This is why Tapsoba [7] explains that the motor pump is more efficient and requires little manpower when watering.

Fig. 5 shows a tool that allows market gardeners to spray market garden crops. The products used for spraying are chemical and/or organic products.

Fig. 6 presents a technique that market gardeners use to store water for watering plants in times of water shortage downstream of the dam. It is made from the pickets of the woods and a basset hound to form a basin finally to store the water. It should be noted that Fig. 6 was taken in a plot of women who produce vegetable plants in particular, lettuce, onions, and cabbage.
B. Indoor and Outdoor Marketing Channel

Traders of market gardening products are supported by groups and associations of market gardeners in the municipalities of Zam and Mogtédo. For example, we note in particular the group Noongue-taaba, Kis-wende-Sida, Sidnoonme-weendé, cooperative of the rice-growing site of Mogtédo and cooperative of market gardeners of Talembika. These partners help them in the marketing, supply (seeds and phytosanitary products) and conservation of market gardening products. The marketing of products takes place on the internal and external market and especially on the units of measurement.

1) Internal market

The domestic market is dominated by internal buyers from the municipality, other neighbouring municipalities and other cities. 90.47% of respondents confirm that the sale takes place in particular to Pouytenga, Ouagadougou, Tenkodogo, Mogtédo et Fada N’Gourma. L’offre des produits sur. The domestic market is dominated by internal buyers from the municipality, from other neighboring municipalities and from other towns. 90.47% of respondents confirm that the sale is made in particular in Pouytenga, Ouagadougou, Tenkodogo, Mogtédo and Fada N’Gourma. The supply of products on the markets is highly seasonal. Thus, the trade in market gardening products is not limited to the local market but also national. And this leads to fluctuation and variations in prices in the market. There are several circuits from production to consumption.

We have the producers of market gardening products; wholesalers, wholesale intermediaries, retailers and consumers. It even has a market for the sale of market garden products and the most influential days correspond to the days of the Mogtédo market. The market gardeners of the two municipalities sell their products there either directly with wholesalers and/or with wholesale intermediaries, retailers and sometimes to consumers. Indeed, there are local and national players in the marketing of market gardening products.

At the level of the local actors, there are in particular the actors of the villages where the development is located and the surrounding villages. It is mostly nationalists who come to buy market garden products and sell them to local consumers and to road users of the RN4. The activity is practiced more by women.

The latter go to the sites for the supply, which is done in small quantities. And the sale is done in the local markets which have heaps according to the product. Onion, cabbage, okra and tomato are the most demanded products on the market. Dominated by women, this type of buyer transports the products on bicycles and, to a lesser extent, motorbikes. They regularly visit the production sites, but the daily quantity purchased hardly exceeds a basket or a W. P. Tapsoba bag [7]. There are others who sell them right next to the site. Fig. 7 below illustrates this case well.

Fig. 7 shows a carrot retailer not far from the Mogtédo development. She gets her supplies from the producers. According to the woman, the purchase of carrots is done by plot depending on the number of places available. After the purchase, she does the harvesting herself or pays women (agricultural workers) who harvest the market garden produce, as shown in Fig. 8 below.

Fig. 8 shows plots where women (farm workers) harvest carrots in Mogtédo. The owner of these plots explains that he cultivates several products, particularly carrots, tomatoes, cabbage, and the harvest is always done by agricultural workers. Sometimes it is the buyers themselves who employ the agricultural workers for the harvest, because often the purchase is often made by plot.

As for national buyers, they are those who come from big cities like Zorgho, Ouagadougou, Pouytenga, Tenkodogo and Fada N’gourma. These players make up most of the wholesalers and/or wholesale retailers. They supply in large quantities to resell in the markets and along the main roads of the cities. Transportation is by motorcycle, tricycles and with large truck transporters.

Market garden products are one of the trade flows in the municipalities of Zam and Mogtédo. Consequently, the situation of the crossroads of the commune of Mogtédo and its location on the national road N°4 is a considerable asset for the flow of market gardening products to the outside.

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2) Flourishing foreign market oriented towards neighboring countries.

According to the results of the surveys, there are market gardeners who are wholesale traders and export products to neighboring countries. Onions are the most exported product abroad “I am a market gardener, I produce more onions because they are sold in neighboring countries such as Togo and Ghana, and I often buy from other producers to add because in these countries we manage to sell well at a much better price than in the country” (comment by K. M, a market gardener from Talembika on 04/23/2019). It should be noted the absence of a counter for the purchase of market gardening products in the two municipalities. What is affirmed by Tapsoba [7]: “The absence of a counter on these sites does not allow the evaluation of the annual quantity marketed towards foreign countries.”

3) Units of measurement

Thus, the sale of market garden products always remains informal with unapproved units of measurement.

In the municipality of Zam the units of measurement are varied and not approved. At the site level, the sale is most often made on the production plots. Fig. 9 below presents the different units of measurement around the structure.

![Fig. 9. The quantity in percentage (%) of the measurement units around the dam.](image)

Observing this Fig. 9 shows that the units of measurement used on the site include 50 kg bags, heaps, boards, baskets and boxes. The use of the modern rocker is little used. Which argues that the units are informal and unregistered. Each unit relates to a specific type of product. The crate and basket are used to measure tomatoes, the 50 kg bag for bulb onions, peppers, aubergines, peppers... and the 100 kg bag for cabbage. The sale by board mainly concerns leaves such as sorrel or leaf onion and the Tapsoba carrot [7]. The price of each unit varies according to campaigns or seasons.

The marketing of market garden products in the commune of Mogtédo and Zam is not well structured. It should be noted that the sale of market garden products is done individually.

This trade has enabled actors to create a bond of trust between producer-wholesaler buyers and between wholesaler-retail buyers. Which brings Kouakou [9] to say: “The strengthening of bonds of trust has even led wholesalers to accept that certain retailers pay the amount of money due after the sale of the products”. A female wholesaler and retailer support that The Alembika producer from whom she gets her supplies trusted her, and she can go and harvest the products (cabbage, tomato) and come and pay after the sale,” (comment by K. A, 03/28/2022).

The commune of Mogtédo constitutes an important market for the marketing of market gardening products. Due to its location on the RN°4, it contributes to a growth in demand due to the increase in traders and consumers. Thus, the market supply chain is maintained by a relationship between various actors based on a marketing circuit.

![Fig. 10. Active and inter-relational organization between different actors in the chain.](image)

The supply chain of the Mogtédoo commune market is maintained by a network of wholesale traders, retail traders and consumers (Fig. 10). First, market gardeners are the important links in marketing. Then there are the wholesale traders who drive the market. Wholesalers play an important role in the supply network in the market gardening sector. There is another category of wholesalers exporting market gardening products to the outside world (large cities and foreign countries). They are responsible for collecting or evacuating the production to the consumption areas [10]. They get their supplies from the producers on the site or on the market with the merchant producers and resell to retailers. Retailers are responsible for selling the products in the market with the consumers.

C. Constraints Related to Market Gardening

Producers face difficulties in vegetable production. The difficulties encountered on the site are in particular the factors of production, the problem of conservation, the problem of water.

1) Difficulties related to factors of production

The producers around the Mogtédoo-Zam structure face an under-equipment of production equipment.

The production tools used are still rudimentary (daba, machetes, etc.). Market gardeners do not benefit from any material or financial support. The technical services of the two municipalities explain this by the non-organization of market gardeners into groups/cooperatives. Market gardeners generally evolve in individual mode, which makes it difficult to support them at the level of the technical services of the State. The main constraints to market gardening are access to improved seeds, approved fertilizers and phytosanitary
products and suitable equipment. Another impediment to production is the low availability of water from dams.

This situation is mainly due to the non-filling of dams due to insufficient rainfall, siltation of water bodies and increased infiltration. The clearing upstream of the dike to make fields facilitate the transport of solid loads by runoff water to the bottom of the dams. The immediate consequences of this deposit are the sedimentation and progressive filling of the lakes, reducing their storage capacity.

As for infiltration, it is favored by the continuous plowing of the land released by the waters and the installation of an informal and artisanal water pipe network. Pipes are generally long and deep holes that market gardeners make to bring water to their plot. The realization of the conduits mobilizes, by group, the producers whose plots are close to each other. This type of channel is most often built upstream of the dike and evolves according to the level of water withdrawal.

2) Difficulties related to marketing

Marketing is one of the major constraints of vegetable production in the municipality of Zam and Mogtédo, which shares the same dam. Indeed, we have difficulties related to communication, transport, conservation, etc.

- Communication is a problem for many players in the market gardening sector. Some traders who do not have easy access to information on the quality of products and the market price encounter losses and are in a situation of under-information compared to other traders. This creates a situation of inferiority between the players, in particular retailers, intermediaries and wholesalers. This situation is due to the lack of a sales counter and the standardization of prices and units of measurement. It should be noted that this situation influences the adjustments between supply and demand in the markets.

- At the level of the commune of Mogtédo and Zam, the construction of the structure has given rise to socio-economic development. Thus, the development of market gardening lacked a system of market development policy for the evacuation of products. However, the sale of the productions of the two municipalities is done more on the Mogtédo market. Indeed, there is a poor organization of the market. There is the appearance of markets on the arteries of the road and street vendors. These producers and traders face a problem of product conservation. In particular, there is the absence of storage warehouses, cold rooms and processing units. Consequently, these actors suffer production and sales losses because they do not have the capacity to process and store their products. During the period of large productions, the losses are enormous due to the perishability of certain products. “During the period of high production, for example the tomato, we have difficulties for conservation because we know the prices are very low and the market is flooded with tomatoes. However, the tomato is perishable so we face huge losses during this period” (Comment by a producer in Mogtédo, 03/24/2022). But, the losses are more among the sellers than the producers. These losses are significant and vary from one product to another. It is noted that a large part of the unsold products remains used as animal feed or self-consumed.

- These producers encounter difficulties related to the transport of products to the markets. These difficulties are often linked to the lack of transporters (motorcycle taxi, car, etc.) and the degraded state of the access roads to the market. The lack of adequate facilities for producers poses the problem of product quality and health risks.

3) Health risks

Hydro-agricultural developments are sometimes sources of disease for users. Among these affected users are farmers and also breeders. Diseases are water-related. Thus, during the period of off-season activities on the development of the Mogtédo-Zam dam, producers face these waterborne diseases. Indeed, the respondents affirm that the most frequent diseases are in particular malaria and other diseases (dysentery, diarrhea and respiratory diseases) respectively with 55.9% and 44.1%. These results corroborate those Tapsoba [7] who states that that “Around the Kourwéogo irrigation schemes, water-related diseases are mainly malaria and dysentery. In fact, 47.89% of those questioned admitted to having fallen ill at least once during the campaign. Among them, 83.83% suffered from malaria and 3.7% from stomach aches”. These health risks are due to the consumption of water which is of questionable quality. It should be noted that most producers consume water from traditional wells that they have made for market gardening. This has an impact on the health of producers and can affect the production of market gardening.

D. Prospects for Better Production

Communication, being a fundamental element in the marketing of market gardening products, requires the establishment of a communication unit for better collaboration between the various actors. This will allow the standardization of prices and units of measurement for all players in the trading system and reduce the imbalance between small trader and wholesaler. Vegetable production is essentially based on the availability of water resources. The rapid silting up of rivers and the reduction in the level of water reservoirs hinder better production and the reduction of production space. All of this requires better communication between the different actors on the management of the structure. Above all, the two municipalities must have an information system on the establishment of a policy for the management of water resources and a good marketing system. Local authorities must therefore take an interest in the organization of market gardening actors.

IV. CONCLUSION

This study is part of a context where communication is considered as a tool for raising awareness and awareness for the benefit of the various actors involved in the chain of production through marketing. Also, this chain produces favorable effects thus contributing to a better production of market gardening products on the one hand on the site of the Mogtédo-Zam dam and on the other hand to all similar works in Burkina Faso. It is intended to be a contribution to the
proper functioning of the market gardening sector through better production on a national and international scale.

Market gardening in the commune of Mogtédo and Zam contributes to the fight against food insecurity, poverty and to the improvement of the living conditions of the population through socio-economic activities around the dam. The difficulties of these producers are mainly related to the non-permanence of the water source, production and marketing. There is also a lack of communication between the two municipalities managing the structure and between the players in the market gardening sector.

REFERENCES


