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Research Paper

Analysis of the Motivational Factors of Cotton Producers in the Commune of N'dali in Northern Benin

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Abstract. Despite the many problems in the cotton sector, producers seem to have some motivation to continue growing cotton. To better understand these motivations, data were collected from 80 people in four villages in the commune of N'Dali in northern Benin. Descriptive statistics and discourse analysis were used to analyze the data. The results showed that the constraints faced by farmers are related to a lack of inputs, the length of time it takes to pay cotton funds, the selling price considered low by some producers, and constraints such as difficulties related to the transport of inputs and cotton, ploughing, the lack of manpower, the poor quality of inputs, etc. The results also showed that producers are motivated for the most part by the control of market risks and uncertainties, the very remunerative prices for other producers, the ease of access to inputs, the level of adoption of agricultural technical innovations, the control of the production itinerary, the ease of access to credit and the organization of the commodity chain. The results will guide the authorities in charge of the commodity chain in their intervention efforts.

Keywords: Constraints, cotton, producers, motivation, N'Dali, North Benin.

INTRODUCTION

Following the loss of competitiveness in the global oil palm and coffee markets, cotton has become Benin's main source of foreign currency for almost three decades (Honfoga, 2012). Cotton cultivation plays a driving role for the Beninese economy and has become a development factor for producer communities, thus contributing to the fight against poverty. The leading export product and primary source of foreign exchange for Benin's economy, cotton contributes up to approximately 13% of the gross domestic product (GDP) and represents 60% of the industrial fabric (Kpadé and Boinon, 2011).

Despite this capital importance, cotton production faces enormous organizational and environmental difficulties, particularly related to the continued degradation of soil and vegetation, internal conflicts between stakeholders, etc. The continued increase in cultivated areas has led to the settling of crops with the corollary of soil degradation and reduced yields (Amonmide et al., 2019). This study also observed a dependence of producers on inputs and the practice of monoculture in cotton zones, which reinforces the questioning of the performance of agricultural systems (Biaou et al, 2016). The governance of the sector, the management of cotton markets, the quality of the inputs put in place and the supervision and extension service are often appreciated in a mixed way by producers (Touré et al., 2019). Despite all its problems, cotton production is increasing year after year in Benin. For example, production increased from 136,958 tonnes in 2009-2010 to 714,714 tonnes during the 2019-2020 campaign (INSAE, 2020). Faced with these realities, it becomes important to know the motivation factors of cotton producers in Benin.

The aim of this article is to highlight the motivations of cotton producers who, despite all the difficulties in the cotton sector, do not seek to leave cotton production. This

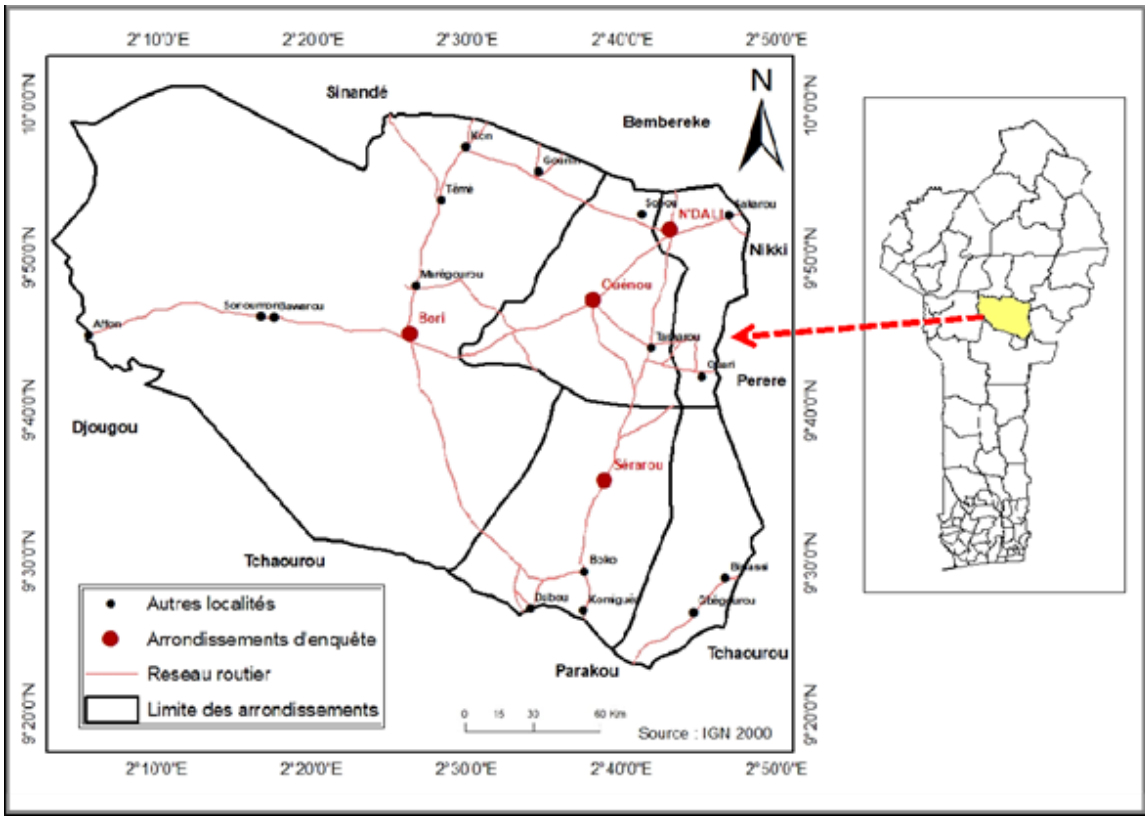

Figure 1. Mapping of the commune of N'Dali.

article attempts to address this concern using data collected in the commune of N'Dali in North Benin.

METHODOLOGY OF THE STUDY

Presentation of the study area

Located in the centre and in the Borgou department, between 2° and 2° 40" East longitude; 9° and 10° north latitude, the commune of N'Dali is limited in the south by the communes of Parakou and Tchaourou, in the north by the communes of Bembéréké and Sinendé, in the west by the communes of Djougou and Péhunco and in the East by the municipalities of Nikki and Pèrèrè (Figure 1). It covers an area of 3748 km² representing 14.50% of the area of the department and 3.27% of the total area of Benin. N'Dali center, capital of the commune, is approximately 56 km from Parakou (capital of the Borgou department). The position of the municipality of N'Dali constitutes an asset in commercial and transport development and then in intercommunal relations which could develop with neighboring municipalities. Indeed, the capital of the commune is located on Interstate Routes No. 2 and No. 6 and also constitutes a major crossroads connecting Nikki, Djougou, Parakou and Bembèrèkè. (PDC N'Dali, 2017).

The climate that reigns in the commune is of the continental Sudano-Guinean type characterized by a rainy season (April to October) and a dry season (October to April) with the harmattan, a dry and cold wind which blows from November to February. The average rainfall varies between 1100 mm and 1200 mm which can go down to 900 mm. It is recording more and more disturbances characterized by the onset of rains with pockets of drought, stormy precipitation, and scorching heat during the dry season.

The economy of the commune of N'Dali is dominated by agriculture and livestock which employ most of the active population. However, a significant part of the population is engaged in small commerce and crafts. The crops encountered are cereals, primarily corn, roots and tubers, legumes and vegetables. The commune of N'Dali has had irregular cereal production over the last five years, probably due to climatic hazards. The annual average production observed over six years is 12,728 tonnes (PDC N'dali, 2017).

Within this cereal group, the preponderance of corn with approximately 60.32% of the tonnage followed by sorghum with 37.52% is noted. Rice contributes only about 2.16% of cereal production. The roots and tubers produced are yam, cassava and sweet potato. From the 1997-1998 campaign to the 2002-2003 campaign, average annual production is estimated at 58,821 tonnes. Vegetables such

Table 1. Study sample

District	Villages	Effective	total effective
Ouenou	Ouenou	20	40
	Wèrèkè	20	
Bori	Bori	20	40
	Marégourou	20	
Total			80

Table 2. Socio-demographic characteristics of respondents

Qualitative variables		
Variables	**Modality**	**Percentage (%)**
Main Activity	Agriculture	31,87
	Lumbering	25
	Commerce	20,62
	Craft	13,12
	Breeding	7,5
	Agricultural products processing	1,87
	Total	100
Matrimonial Status	Married	97
	Single	1,2
	Divorced/widows	1,8
	Total	100
Instruction/ Illiteracy	None	71
	Illiterate	15
	Educated	14
	Total	100
Members of an OP apart from CVPC	Yes	63%
	No	27%
	Total	100
Quantitative variables		
Variables	**Minimum**	**Medium**
Age (year)	23	44 (+/-14,18)
Size (ha)	0,5	5,5 (+/-3,42)
Family size	3	9 (+/-3,78)

as tomatoes, peppers and okra are also produced in this area.

Sampling

The choice of villages was made with the help of agents from the Territorial Agricultural Development Agency (ATDA) and support structures for cotton producers following an exploratory phase. The research units are cotton producers in the commune.

At the end of the discussions, two districts are chosen with two villages per district. In each village, 20 producers are selected after a focus group using the stratified random sampling method. Thus, each district have a sample of 40 cotton producers. A total of eighty (80) individuals were interviewed throughout the study area (Table 1).

Data collected and data analysis

The data collected concerns socio-demographic characteristics (sex, age, marital status, etc.), the situation of access to inputs, and the situation of the workforce, the motivations and constraints of production.

Descriptive statistics were used in order to be able to deduce the main motivations which lead producers to produce cotton in the study commune. In addition, an analysis of the content of the speeches was carried out to clearly explain the motivations of producers to continue cotton production despite the constraints they face.

RESULTS

Socio-economic characteristics of respondents

Table 2 presents the socio-economic characteristics of the producers surveyed. The analysis of the main activities carried out on farms shows that 31.87% of producers have agriculture as their main activity. Producers mainly engaged in forestry represent 25% of the total workforce. In addition to these two activities, other activities are

Table 3. The main crops grown by the producers surveyed.

Productions	Effective	Percentage
Cotton, legume	3	3,75
Cotton, maize, soy	5	6,25
Cotton, maize, soy , rice, mil/sorghum, yam, *niébé*, others	72	90
Total	80	100,0

Source: Field data of November 2020.

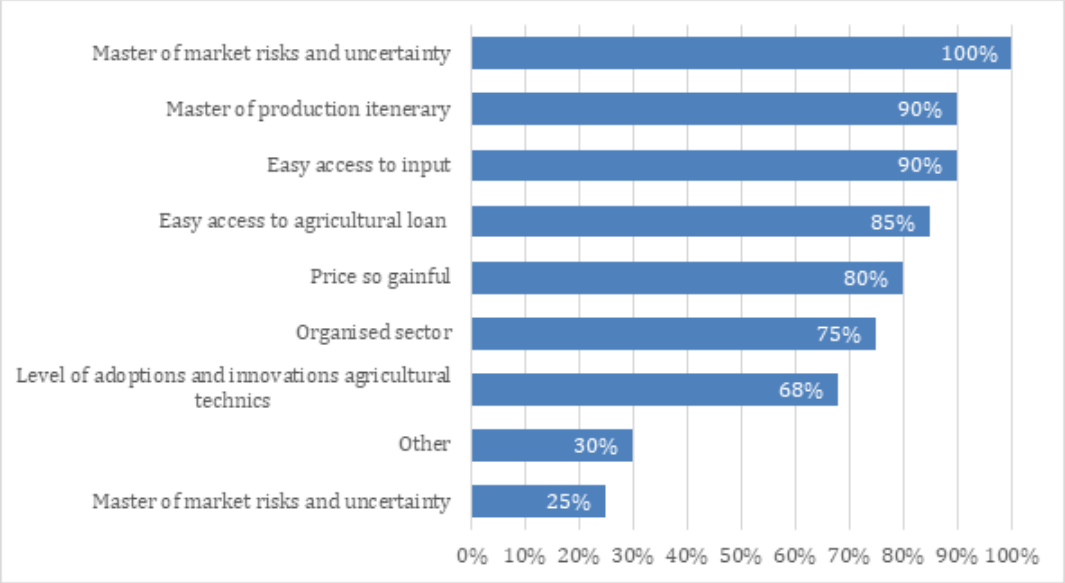

Figure 2: Motivations to produce cotton

carried out by cotton producers. These are commerce, crafts, breeding and processing of agricultural products with 20.62%, 13.12%, 7.5% and 1.87% respectively.

The average age of farm managers is 44 years old. Among them, 97% are married compared to 1.2% who are single and 1.8% who are widowed or divorced. They belong to generally large households with an average of 9 members per household for producers, who constitute the family workforce which largely participates in the production and collection of cashew nuts.

The results of field data show that 61% of respondents cannot read or write. Women represent 88% of this category. Also, 15% of producers have taken literacy courses. Only 14% have been to school and know how to read and write. This could negatively affect their ability to meet the requirements of MFIs for establishing credit files. Belonging to an organization or cooperative has become a requirement in order to benefit from certain services, including input credit, subsidies, defense of rights and interests, access to information and financing, access to training and capacity building for members. As a result, 100% of cotton farmers belong to a Village Cotton Producers Cooperative (CVPC). Among them, 63% of respondents declared belonging to at least one organization other than cotton.

The average size of the farms studied varies between 0.5 and 12 hectares with an average of 5.5 ha.

Value of cotton on cotton farms

Table 3 presents the main crops grown by the producers surveyed. From its exploitation it appears that, of the 80 producers surveyed 3 or 3.75% produce cotton alone; 5 or 6.25% produce cotton, corn and rice; 72 or 90% cultivate cotton, corn, soybeans, rice, millet/sorghum, yams, cowpeas and others (peanuts, mahogany, beans).

This table perfectly illustrates the place occupied by cotton and corn in the cropping systems and the daily lives of agricultural households in N'Dali. Indeed, cotton appears in all production systems in the commune of N'Dali. According to the respondents, cotton has become part of their traditions. An agricultural campaign without cotton is not possible in households.

Motivation to produce cotton

Figure 2 presents the motivations that encourage farmers to produce cotton. The analysis of this indicates that the

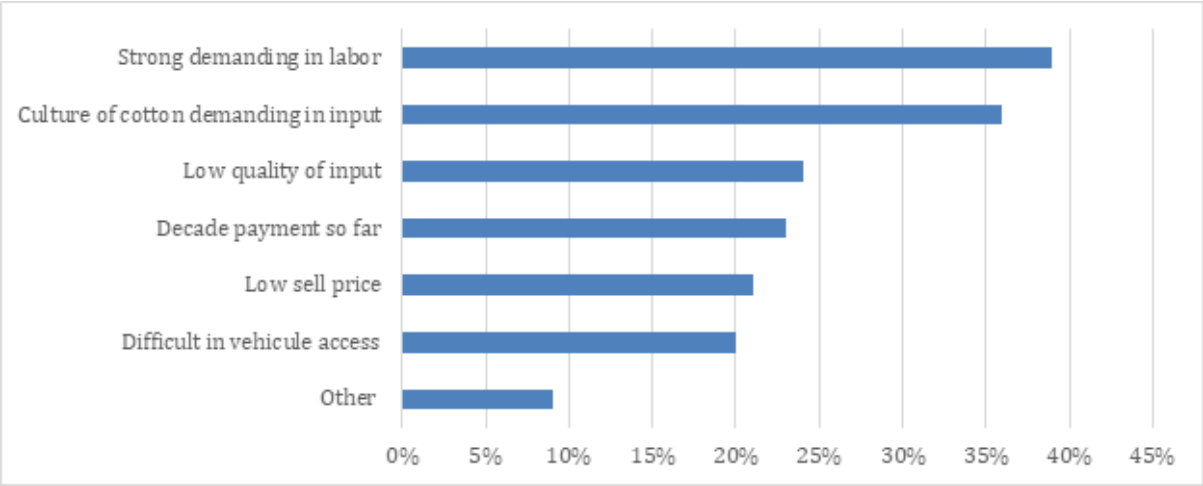

Figure 3: Constraints linked to cotton production

factors which lead farmers to accelerate cotton production are the following: control of risks and uncertainties on the market, the very remunerative price, ease of access to inputs, level of adoption of innovations agricultural techniques, mastery of the production route, ease of access to credit and the organization of the sector.

Control of risks and uncertainties in the market

According to the respondents, cotton is the only product whose marketing is well organized. The sale price is known in advance and so is the buyer. There is therefore no risk regarding the flow of the product. There is also no risk of price fluctuation on the market or even a partial sale or payment in instalments. The cotton money is given in cash and in full at once. This allows you to resolve your health, education or construction needs without worry. This is one of the main reasons that lead all producers to produce it.

Very profitable price

For 80% of respondents, the purchase price of cotton is very profitable. It makes it possible to achieve very positive balances among all producers except among bad producers or among those who divert inputs collected on credit for other crops such as corn. It is this remunerative price that allows them to remain in cotton production.
As a reminder, producers in rural areas still do not have any guarantees or administrative fees, and it is becoming imperative to secure the credit allocated by moral guarantees from their cooperatives. Thus, the members of the group constitute a guarantee vis-à-vis the other members; hence the ease of access to credit for cotton.

Good organization of the sector from local to national level

The cotton sector is the only one in which state actors are involved from input distribution to marketing. This facilitates access to inputs, support on technical routes and the organization of marketing. For 75% of producers, it is this level of organization that leads them to stay in cotton production.

Analysis of constraints linked to cotton production

Alongside motivating factors, there are constraining factors. Figure 3 below presents the major constraints that producers face in cotton production. From its operation, it appears that the most listed constraint concerns the availability of labour. This is followed by the heavy dependence of cotton on synthetic inputs, the poor quality of inputs and the duration of payments for decades. Added to this is the unattractive selling price according to certain producers and the difficult access to trucks.

High labour requirements for cotton

Regarding labour, it was mentioned by 39% of respondents. Its rarity is explained by the fact that its demand is very high during periods of cotton maintenance and harvest. Producers with more financial means travel to certain localities in the Atacora department, a border area in Burkina, to look for them. Others even use Burkinabé. The least well-off producers are sometimes obliged to guarantee harvest products (cereals) in order to take out loans from individuals. Faced with this constraint, only the best equipped producers (motorized and harnessed) are those who carry out the harvests and maintenance work on time. Note that with the prerogative of herbicides of all kinds, weeding is no longer a labour constraint. Even sowing requires significant labour to be carried out efficiently. The results of this study also indicate that sowing constraints are linked to labour. Producers who do not have a large number of workers are experiencing delays in sowing schedules. Thus, harvesting becomes difficult and expensive due to the

scarcity of labour.

High dependence of cotton on inputs

Cotton cultivation has the particularity of being highly dependent on inputs. Since its adoption, not all regimes have been able to promote technical routes that require little input. The direct consequence is that producers are forced to limit their surface area to the quantity of fertilizer they have managed to obtain.

Poor quality of inputs

The other constraint strongly mentioned (24%) is the poor quality of inputs. Indeed, for some producers, the number of insecticide treatments increases from year to year due to the poor quality of inputs. Phytosanitary treatment products are no longer able to destroy cotton insect pests using prescribed doses. It is therefore necessary to go beyond the prescribed doses to be satisfied. The same goes for herbicides. The most effective herbicides are those purchased on the black market. However, protecting the cotton plant against insect pests is a prerequisite for obtaining good yields. The producers surveyed expressed reservations about the biological effectiveness of the insecticides delivered to them. Insecticides would not control cotton insect pests. After or during insecticide treatments, rain may occur. These leaching rains represent a constraint for producers. An insecticide treatment is lost when it rains (less than 3 hours after treatment) and must be restarted. In addition, some producers receive insecticides late.

Apart from the debates on the ineffectiveness of inputs which force them to go beyond the recommended dose, producers recognize that they run risks linked to the use of phytosanitary products. These include intoxication in all its forms due to the use of herbicides (kalach, callifor G) and phytosanitary products (profenofos, cutter, emastar, emasuper, shower, etc.). There are also risks linked to personal protection, environmental protection and processing equipment.

Plant protection products have been shown to cause nausea, vomiting, skin irritation, paraesthesia, headache, dizziness, epigastric pain, muscle twitching, fainting, paralysis, impaired vision; And even death if swallowed or excessively exposed.

Difficulties in accessing trucks for the primary marketing of cotton

Producer organizations are responsible for organizing primary marketing and transporting seed cotton to ginning factories. To manage this task, peasant leaders in landlocked localities have difficulty accessing trucks. In fact, carriers favour requests from accessible locations to avoid the risk of accidents and prolonged stays on the slopes. This complicates the task for managers of producer organizations who make long trips before finding trucks that will transport cotton from the village self-managed market to the ginning factories.

Delay in payment of cotton fees

Among other constraints on cotton production, the delay in the payment of cotton fees is cited. In the scheme, cooperatives should be paid within 21 to 28 days. Unfortunately, things don't always work out this way and producers go months without being paid. The causes of this situation are numerous and varied depending on the locality: non-compliance with commitments by certain ginners (non-payment of deposits, debts), and non-compliance with commitments by certain GVs and/or producers (the parallel circuit of marketing). This constraint was mentioned by 23% of the producers surveyed. The latter complained of the delay in the reimbursement of their seed cotton sums. Complaints are even louder among farmers who wait in vain for their paychecks for health care, children's schooling or other social and economic needs.

Non-remunerative selling price

For 21% of producers, cotton production is not profitable. They are kept there because of the ease of access to inputs offered by the sector. For them, the fact that the purchase price of cotton is not profitable pushes some into a vicious credit cycle; which leads people to abandon cotton production in favour of cereal cultivation which has taken an important place in the town in recent years.

Other constraints of cotton production

Other constraints concern the impact of cotton production on soil fertility and water pollution. To correct this chronic drop in yields, farmers are forced to add mineral fertilizers in increasingly high doses. From group interviews, it emerged that cotton kills the soil. The soils previously used for cotton are eroded and have more or less deep ravines. Some are washed out and have concretions in places. Others are piled up and have become compact and hard to plough.

The decline in fertility leads to a reduction in the yields of several plant crops. In addition, it causes the influx of producers towards classified forests and the distancing of fields from places of residence in search of new fertile lands due to the impoverishment of old lands. This causes destruction of fauna and flora.

The other concern is that in the input credit system, the

distributor of agricultural inputs must necessarily recoup his funds. If a farmer finds himself in the case of poor sales, his credit is mercilessly taken from the cotton receipts of another member of his group on the basis of the joint guarantee, without the opinion of this member. This situation forces certain farmers to return empty-handed, dissatisfied, seeing their efforts over an entire cotton campaign unrewarded.

DISCUSSION OF RESULTS

The objective pursued throughout this research is to analyse the motivations of cotton producers in the commune of N' Dali in North Benin. This results agree with those of several researchers including Moumouni (2013) which revealed constraints linked to financing. He believes that producers are not today motivated to finance supervision, because they have small agricultural operations such as growing corn, millet, sorghum, etc. and produce mainly for self-subsistence. Their income is therefore uncertain and would not be sufficient to finance agricultural services.

The same researchers showed that producers are motivated for the most part by controlling the risks and uncertainties of cotton on the market, by the very remunerative price, the ease of access to inputs, by the level of adoption of technical agricultural innovations, through the mastery of the production route, ease of access to credit and the level of organization of the sector. For Basset (2002), the success of cotton is based on local innovations. Local innovations reduce periods of work overload, control family labour and increase income. In this sense, socio-cultural changes such as flexibility in the days of rest prescribed by custom, the adoption of new forms of labour recruitment and the granting of a more important place to the work of women in the family fields are as many local innovations which contribute to the success of cotton. For Engel et al., (2017), cotton production is very demanding in chemical inputs and cotton is the only crop benefiting from a systematic addition of fertilizers and phyto-sanitary products. This cultivation often carried out extensively and in some cases practiced as a monoculture, requires the use of a large quantity of inputs. However, food markets remain very rudimentary and local. For Assogba (2014), the prices of food products are very uncertain, depending on the supply, proximity to the market, storage capacities, etc. Food income is therefore unstable. It is precisely for this reason that producers, finding a certain security and stability in cotton, turned to cotton cultivation.

CONCLUSION

Despite the difficulties that producers encounter in the cotton sector, they have certain motivations to continue this crop. The constraints that farmers face are linked to a lack of inputs (18.75%), the payment period of the decade (10%), the selling price considered low by producers (8.75%) and constraints such as transport problems, ploughing, labour shortages, poor quality of inputs, etc. (51.25%). In the light of the analyses carried out, the results obtained show that overall, the reform introduced had very appreciable effects compared to the parameters of the study. It is considered that the strategy implemented in the cotton sectors has allowed, until now, a rapid and nevertheless relatively balanced development of production, especially if comparing the results to those of other crops in Parakou (rainfed rice, yam, corn, cashew). It has notably contributed to maintaining the nuisance attributable to phytosanitary protection at an economically and ecologically sustainable level and has contributed to significantly slowing down or even stopping the phenomena of soil degradation. The measures taken on cotton cultivation are necessary; however, they are not sufficient to guarantee the sustainability of production systems in production areas. Public authorities and development organizations should endeavour to implement programs aimed at perpetuating the benefits of research. Finally, inspect and train village cooperatives of cotton producers for proper functioning.

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