Reducing aflatoxin contamination in maize in Burkina Faso

The aim of this project was to reduce the level of aflatoxin contamination in maize and maize by-products in Burkina Faso, in order to improve market access. The project involved the adoption and dissemination of an integrated approach (combining a biological control method and good practices) to improve the safety and commercial value of the product. The project also focused on national capacity building and coordination between stakeholders in the maize sector. All these efforts sought to contribute to increasing the income of producers and improving food security and consumer health.

STDF/PG/566

Status
Completed

Start Date
01/05/2019

End Date
30/09/2022

Project Value (US$)
$845,862

STDF Contribution (US$)
$544,402

Beneficiaries
Burkina Faso

Implementing Entities
Unité nationale de mise en œuvre du Cadre intégré renforcé, Burkina Faso

Partners
Le Ministère en charge de l'Agriculture et des Aménagements Hydrauliques
Le Ministère en charge du Commerce
La Confédération Paysanne du Faso (CPF)
Le Laboratoire National de Santé Publique (LNSP)
L'Agence Burkinabè de Normalisation, de la Métrologie et de la Qualité (ABNORM)
Le Programme Alimentaire Mondial (PAM)

Background

Burkina Faso is by and large an agricultural country, with around 86% of the population deriving its income from the agricultural sector. Maize production is one of the country's main crop-growing activities. Unfortunately, locally produced maize was frequently contaminated by aflatoxins (particularly aflatoxin B1). This contamination was linked to a lack of capacity regarding good practices related to production, harvesting and post-harvesting, which led to the growth of certain types of mould that

produce aflatoxins. Urgent action was required to control and manage this contamination issue, as it could also have resulted in a public health hazard and a loss of income for the population.

Trade in maize is rapidly increasing to meet local consumption, agri-food processing and animal feed needs. Maize is also exported to some of Burkina Faso's neighbouring countries by exporters of cereals and other sector stakeholders. Institutions active in the field of food security, such as the World Food Programme (WFP), obtain their supplies of maize from producers in Burkina Faso. There have been instances where the WFP has refused large quantities of maize from Burkina Faso due to heavy contamination by aflatoxins.

The project sought to apply an innovative, holistic and integrated approach for the control and reduction of aflatoxin contamination, by indexing the adaptation and management capacities of the main stakeholders in the value chain, including agricultural producers, their umbrella organization and local public and private support services. It provided an opportunity for government services, agricultural producer organizations, and technical and financial partners to coordinate their actions as part of a consensus approach to address this threat, which was one of alarming proportions.

The idea behind this project was developed on the basis of local research and consultations conducted between 2017 and 2018, and the project document was drafted thanks to a donation from the Standards and Trade Development Facility (STDF)

Results

Dissemination of good practices as part of a "technological package", dissemination of existing standards, and information and awareness raising for stakeholders

The project sought to raise stakeholder awareness of both the issue of aflatoxins and the integrated approach (a combination of biological control and good practices). Thanks to information and awareness raising activities, extension officers, endogenous facilitators, inspectors and laboratory technicians are now more familiar with existing standards and the solutions envisaged to combat aflatoxin contamination. The aforementioned actors help to disseminate this information and knowledge to other stakeholders in the maize sector (both public and private) and participate in raising awareness of Aflasafe BF01, a biological control product adapted for use in Burkina Faso and approved in 2017 by the Sahelian Pesticide Committee.

These ongoing stakeholder initiatives, which are set to be pursued in the long term since they benefit from the support of umbrella organizations and the State, seek to raise increasing collective and general awareness of the dangers of aflatoxin for health and trade.

Evaluation and adaptation of good agricultural production, drying, ginning and storage practices

The project's activities covered the main maize-producing areas in the country. Stakeholders' views regarding production, drying and storage systems were examined through surveys for, and visits to, producers, collectors, wholesalers, traders and competent local authorities.

The project provided demonstrations from the field stage through to the storage and marketing stages. These demonstrations consisted of tests on maize crops in the field using Aflasafe BF01. There were also demonstrations of grain-drying and storage methods to avoid contamination at these critical stages of the value chain.

Preparation of an inventory of local plants, and isolation of microorganisms to be used in food decontamination tests

These activities showed that it was possible not only to ensure the availability of large quantities of good-quality maize that meets recommended standards, but also to obtain essential oils from selected local plants with antibiotic and fungicidal properties.

Training and awareness raising activities for stakeholders on a quality-based approach and good harvesting (production), drying, ginning and storage practices for maize as part of a "technology package"

Guides were prepared on good production, drying, ginning and storage practices for maize. Armed with these guides, stakeholders that had received training on the integrated method or technology package became involved in organizing village-based awareness raising sessions, including guided visits, for producers and other stakeholders (collectors and processors).

Increased capacity of Burkina Faso to meet the local, regional and international market demand for maize

Aflatoxin analysis has been facilitated by building the capacity of analytical laboratories through the purchase of equipment and the development of harmonized sampling and standardized analysis procedures for aflatoxins B1, B2, G1 and G2, as well as

through training on proper usage.

Testing and the interpretation of results in respect of samples taken during investigations carried out during the implementation of the project have confirmed the reduction of aflatoxin levels in fields treated with Aflasafe BF01 as opposed to in non-treated fields. An increase in maize exports has been recorded, with such exports rising from 4,238 tonnes in 2018 to 40,065 tonnes in 2021.

The project's activities are expected to contribute to a significant reduction in aflatoxin levels, as required by international standards, thus enabling producers to meet market demands, in particular those of NGOs and other stakeholders involved in humanitarian assistance and food security. This will lead to a rise in the income of stakeholders in the maize sector, including women engaged in the collection, storage and marketing of maize and regional trade. An increase in the income of producers has also been recorded, with the average income having risen from CFAF 334,133 to CFAF 1,550,250 as a result of the project.

Recommendations

Successful collaboration between public structures and professional stakeholder organizations (private sector)

The project was initiated by the private sector, most notably the Farmers' Confederation of Faso (CPF), and subsequently became a national project in accordance with the wishes of all project stakeholders, thus demonstrating how the development of a private-public partnership can help to better address certain private sector concerns.

The extensive involvement of research institutions in project implementation can lead to appropriate and long-lasting solutions that address project concerns

Under the project, the Applied Science and Technology Research Institute (IRSAT) was involved in conducting certain activities that made it possible to obtain around 100 ml of essential oils from selected local plants with antibiotic and fungicidal properties.

A suitable mechanism is needed to monitor all beneficiary producers so as to ensure proper production traceability and, in turn, measure the project's real contribution in terms of the quantity of standards-compliant maize placed on the market

One shortfall was highlighted in the context of the project: the failure to introduce a suitable mechanism for monitoring all beneficiary producers. This has made it difficult to trace production with a view to measuring the project's real contribution in terms of the quantity of standards-compliant maize placed on the market.

The pooling of efforts by stakeholders in different areas within a harmonized framework allows for substantial results in terms of reducing aflatoxin levels in maize and accessing the international market

The implementation of the project has shown that the challenges of combating and preventing aflatoxin contamination in maize and maize by-products are, in essence, multisectoral, in the sense that they concern the different parts of the value chain (production, storage, marketing, processing, research and promotion).