



## Making cabbage production safe and competitive

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The project contributed to combating poverty in rural areas and halting the rural exodus through greater subregional market access and increased productivity in the cabbage sector, while reducing the negative impact on the environment and improving product quality for consumer health reasons.

A session "[SPS Assistance for Development: the case for French - Speaking Africa](#)" organized jointly by the Permanent Missions of Canada and France, and the STDF looked at lessons learned from this project.

A result story on the project is available [here](#).

### STDF/PG/302

#### Status

Completed

#### Start Date

01/02/2012

#### End Date

31/07/2014

#### Project Value (US\$)

\$636,175

#### STDF Contribution (US\$)

\$577,142

#### Beneficiaries

Senegal

#### Implementing Entities

Association of Horticultural Unions of the Niayes Region (AUMN), Senegal

#### Partners

Institut de technologie alimentaire (ITA) Sénégal

Ministry of Agriculture and Rural Equipment, Senegal

Ministry of Water and Sanitation, Senegal

Regional Center for Ecotoxicology Studies and Environment Security (CERES-Locustox), Senegal

#### Background

In Senegal, cabbage is consumed on a daily basis and is one of the main ingredients of the national dish. The cabbage sector is one of the most important sectors for Senegalese agriculture in general and for horticulture in particular, and Senegal continues to be the leading supplier of cabbage for the subregional market. At the time of the project's launch, cabbage was the

country's fourth most important horticultural crop and accounted for 8% of the volume of national horticultural production. Despite this performance, the Senegalese cabbage sector, unlike the onion and tomato sectors, remained very disorganized and small scale growers suffered from a lack of information on the SPS aspects of the product.

This lack of information often resulted in severe infestations of pests such as the diamondback moth (*Plutella xylostella*) and cabbage webworm (*Hellula undalis*) or in the excessive use of phytosanitary products that are harmful to consumer health, which often led to Senegalese cabbages being turned back at borders due to high toxic residue levels. In this context, national production suffered crop losses of 60% to 80%, and only 50% of production was of exportable quality. There were also devastating environmental effects and large price fluctuations resulting from a synchronized production cycle that flooded markets with cabbages during exactly the same period.

The project aiming to support sustainable and competitive cabbage production sought to revitalize cabbage farming through the following activities:

- (i) production: support for farmers in growing quality cabbage (in accordance with Codex standards) and dissemination of good agricultural practices in the Niayes area;
- (ii) research and development: monitoring of the diamondback moth and cabbage webworm populations, and training for farmers on draft laws concerning unapproved phytosanitary products;
- (iii) marketing: cooperation with traders to improve sanitary standards in respect of transport, storage and presentation, and dissemination of information to consumers.

## **Results**

### ***Increase in farmer productivity and improvement in cabbage quality***

The project significantly improved cabbage plot yields, which had risen from an average of 15 tonnes per hectare to an average of 30 tonnes per hectare by the end of the fourth production season. This was possible thanks to the high quality inputs (seeds, fertilizers and pesticides) supplied to producers, the use of good agricultural practices, the training and technical support efforts made during the production seasons, the improved control of soil fertility and nematode infestation levels, and better knowledge of the dynamics of key pest populations (diamondback moths and cabbage webworm).

By improving phytosanitary treatment, the project also contributed to improving the quality of the cabbages produced by the beneficiaries, which served as an example for all cabbage producers in the area. In this respect, the project helped not only to rationalize phytosanitary treatment (by encouraging a wiser choice of product and the reduction of the quantities of pesticide used), but to ensure that samples were analysed at the end of each season in order to determine the pesticide residue levels in harvested crops. All the analyses carried out showed residue levels lower than Codex Alimentarius MRLs, thus enabling beneficiaries to reassure their clients as to the non toxic nature of the product.

### ***New cabbage varieties and innovative production techniques; monitoring of principal pest populations; effective management of the production***

The new cabbage varieties Santa, Tropica Cross and Tropicana were approved by producers thanks to: (i) their good resistance to heat and high humidity levels (Tropicana Cross); (ii) their high yields (Tropicana); and (iii) quality preservation during transport (Santa).

The use of seed cells for plant production was also tested, and was well received by producers thanks to the robust nature of the plants produced and their ability to take root easily when replanted. New techniques to protect cabbages from diamondback moths, using exclusively biological products and agryl fabric, were also tested in the farming environment and approved by farmers on account of their good results and affordability.

Other important research was carried out as part of the project, including the monitoring of pest populations through trapping, which made it possible to identify the period when outbreaks were most frequent and the most damage was caused (first two weeks of February), and a study of production costs. A traceability sheet was prepared to facilitate the gathering of information in real time and a producer typology was established with a view to determining the cost of producing quality cabbage for each of the types identified. This information was made available to producers and has become indispensable for the effective management of their activities.

### ***Upgraded packaging, storage and transport practices***

As part of the project, producers were able to test various forms of packaging. They finally settled on bags of two, ten and fifteen kilogrammes, which have been well received by end consumers (e.g. restaurant and hotel owners in Dakar). The acquisition and use of crates have made it easier to maintain cabbage quality during transportation, and three refrigeration tests showed that cabbage could be kept for one to three months in cold storage, without a reduction in quality. The project did, however, show that the cost effectiveness of refrigeration depends largely on the stock release period and market prices.

#### ***Increased access to regional markets through strengthened cabbage value chain***

This type of innovation was possible thanks to improved cooperation between the sector's various stakeholders, following dialogue promotion and collectivization activities. The firm responsible for conducting market research began by identifying all cabbage sector stakeholders and their position in the value chain. Next, a SWOT analysis based on the areas of interest of the various stakeholders enabled the auditing firm to outline a national strategy for the sector. The project then organized a meeting of all the stakeholders, which resulted in the presentation of a draft national strategy. Lastly, the project enabled Senegalese cabbage producers to increase their market share in the subregion. Market research showed that between 2008 and 2013, exports to Mauritania alone increased annually by 9% (rising from 1,914 tonnes to 3,000 tonnes). This was possible thanks to an improvement in cabbage quality, an increase in traders' awareness of the availability of quality cabbages, and the strengthening of traders' capacity as regards sanitary aspects, marketing and cabbage presentation.

#### **Recommendations**

##### ***Consolidate the project results and extend the beneficiaries through a common fund***

While producers did not contribute to the financing of the project, a share of the profits they made from selling their produce could be requested at the end of the project as a contribution to a common fund. This fund would serve as the basis for a revolving fund, through which the project's gains could be distributed and shared out more effectively. Furthermore, it would enable project activities to continue, with a view to the consolidation and correction of certain weaknesses revealed during the project's implementation. The revolving fund would thus perpetuate stakeholders' actions, with a view to ensuring improved market access at both national and international level while taking SPS measures into account.

##### ***Extend the project's scope by including other stakeholders and promoting a sense of ownership among beneficiaries***

By making quality the focus of all sector stakeholders, the project's achievements could be shared more extensively. This, together with increased recognition of the autonomy of sector stakeholders and their ability to self organize, would enhance the sustainability of the results. In addition, the beneficiaries' sense of ownership could be further improved by inciting sector stakeholders to participate in the organization of training events and regional workshops. This would help to enhance the culture of cooperation within the sector, so as to reflect the cooperation between AUMN and the DPV in this project and others.

##### ***Follow up activities to disseminate project results and research findings***

A knowledge management mechanism, for instance, could be set up to encourage the more effective implementation of recommendations arising from the project. The dissemination and publication of studies and analyses conducted under the project, field trip experiences, and the lessons learnt from these, are vital for maximizing the project's achievements. Such activities could be envisaged as an integral part of the project's life cycle, coming into play only when the project's official activities have been completed.

##### ***Effective management methods to be considered for projects involving crop systems***

The project suffered numerous delays unrelated to good project management. Such delays are inherent to the complex nature of SPS activities, given that crop cycles can sometimes be restrictive. Extending the duration of the project made it possible to finalize its implementation. It is suggested, in retrospect, that projects of this nature be scheduled to cover longer periods, so that the various activities can be carried out more effectively.

##### ***Other capacity building areas to increase cabbage exports***

The wider dissemination and sharing of results to cover a maximum number of producers and all the sector's stakeholders could help to increase the project's impact on exports. However, while improving the quality and the sanitary and phytosanitary safety of the product is essential, it is not in itself enough to considerably increase exports. Marketing, logistical and regulatory aspects are also necessary, including the marketing of cabbage under a label, the contractualization of cabbage production and the signing of a trade agreement with cabbage importing partners, improved DPV deployment for control at exit points, and a strong cabbage trade association. Improving trade operators' knowledge of subregional agricultural trade policies could help with decision making in respect of cabbage production and marketing. Lastly, trade facilitation negotiations with neighbouring

countries could lead to the formalization of the cabbage trade and the reduction of abusive cross border practices.

***Further engagement of national structures and institutional stakeholders in future projects***

In addition to an improved command of STDF partnership procedures, the project also gave AUMN the opportunity not only to strengthen its own capacity to develop and implement relatively complex projects, but to enhance its project management skills in a relatively short period of time, to coordinate the actions of various partners, and to broaden its experience of quality assurance through a sectoral approach. AUMN also developed its operational and financial management capacities, widened its network of partners and improved its negotiating and mediation skills.

The project has deepened AUMN's partnership with the DPV. The two bodies are now linked by a framework agreement that defines joint areas of activity. The participation of the DPV and the Enhanced Integrated Framework Implementation Unit (UMO CIR) in the project steering committee and AUMN's participation at the various meetings organized by these bodies have opened up a new area of cooperation for enhancing product quality and increasing export volumes. In this respect, AUMN, the DPV and UMO CIR have worked together on developing a project for the mango sector in Senegal that will properly take into account the needs of small scale producers with a view to strengthening the sector.