

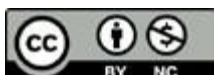
Assessing the Impact of Strengthening the Phytosanitary Capacity of the Floriculture Sector in Uganda

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Cover photo: Training newly hired inspectors to scout for false codling moth. Photo Tony Muwonge, Department of Crop Inspection and Certification, MAAIF.

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Acronyms and Abbreviations

CABI	The Centre for Agriculture and Bioscience International
CBA	Collective Bargaining Agreement
COPE	Centre of Phytosanitary Excellence
DCIC	Department of Crop Inspection and Certification
DCP	Department of Crop Protection
EU	European Union
EUROPHYT	European Union Notification System for Plant Health Interceptions
FCM	False codling moth
FGDs	Focus group discussions
GAP	Good agricultural practice
GDP	Gross domestic product
HO	Harmful organism
ILO	International Labour Organization
IPM	Integrated pest management
ISPMs	International Standards for Phytosanitary Measures
KEPHIS	Kenya Plant Health Inspectorate Service
KIIs	Key informant interviews
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MoU	Memorandum of understanding
NPPO	National Plant Protection Organization
NTAEs	Non-traditional agricultural exports
PC	Phytosanitary certificate
PPP	Public–private partnership
PRA	Pest risk analysis
QMS	Quality management system
SOPs	Standard operating procedures
SPS	Sanitary and Phytosanitary
STDF	Standards and Trade Development Facility
TTT	Technical task team
UFEA	Uganda Flower Exporters Association

Abstract

Uganda was funded by the Standards and Trade Development Facility (STDF) to run a project from October 2012 to March 2015 to strengthen its phytosanitary capacity in order to meet requirements of the European Union (EU) market and reduce interception of its rose exports due to the presence of harmful organisms, in particular *Spodoptera littoralis*. The project was led by the Department of Crop Protection (DCP), which was then playing the role of National Plant Protection Organization (NPPO) in the Ministry of Agriculture Animal Industry and Fisheries (MAAIF), in partnership with the Uganda Flower Exporters Association (UFEA). An end-of-project evaluation determined that the project had enhanced the capacity of the DCP and had put systems for public–private sector collaboration to a level that enabled the implementation of phytosanitary inspections and certification of flower consignments in line with requirements of the EU market.

This post-project qualitative study was conducted to help: (i) find out whether the project outcomes had resulted in a sustained reduction of interceptions after the project; (ii) draw lessons from how the project contributed to enabling compliance to EU export requirements; and (iii) derive recommendations on how project benefits could be further maintained and/or enhanced in the future.

The study found that the number of interceptions due to *S. littoralis* on rose flower exports had drastically reduced during and after the project and this was directly attributed to the continued outcomes from the project's interventions. Knowledge imparted to staff in the flower farms on how to manage and eliminate the pest in production sites continued to be applied, leading to a near total elimination of the pest. Collaboration and funding mechanisms agreed upon between the farms and the NPPO are now fostered through the UFEA resulting in prompt action on pest notifications from the EU. Disincentives for non-compliance to agreed pest management measures have been very effective in encouraging adherence among the farm owners. Despite *S. littoralis* being well managed, Uganda's flower and horticultural exports to the EU are under threat because of rising interceptions due to the presence of *Thaumatotibia leucotreta*, commonly known as the false codling moth (FCM), which was declared a regulated pest in the EU in 2018.

The study concluded therefore, that Uganda has sustained measures instituted by the project with regard to *S. littoralis* and hence the pest is no longer a key concern. However, increasing interceptions due to FCM points to the need for the country to institute a robust integrated systems approach to pest management, inspection and certification so that the country is ready to tackle existing and any other emerging pests in future. Such efforts are already being actively considered through a multisectoral approach supported by a presidential initiative that is addressing both the horticulture and the floriculture sectors. As a result of the success with the floriculture project, Uganda applied for and succeeded in securing a new project funded by the STDF and the Netherlands government to support the horticulture sector, particularly the fresh fruits and vegetable export sector to address interceptions due to a number of pests, key among them FCM.

Introduction

Uganda implemented the project on Strengthening the Phytosanitary Capacity of the Floriculture Sector in the country between October 2012 and March 2015, with funding from the Standards and Trade Development Facility (STDF). The project objective was to improve Uganda's compliance with sanitary and phytosanitary (SPS) requirements for exporting flowers to the European Union (EU). The EU had notified Uganda of an impending loss of access to the EU market, due to non-compliance with International Standards for Phytosanitary Measures (ISPMs). This non-compliance had resulted in high numbers of interception of Uganda's flowers destined for the EU. The interceptions showed the presence of pests regulated in the EU, predominately *Spodoptera littoralis* (African cotton leafworm). Other reasons for interceptions included absence of, or non-conforming, phytosanitary certificates (PCs). The goal of the project was therefore to maintain Uganda's access to the EU's flower markets by putting in measures to remove *S. littoralis* from flower exports and ensure PCs conformed with export requirements. The project was implemented by various stakeholders led by the Ministry of Agriculture Animal Industry and Fisheries (MAAIF)'s Department of Crop Protection (DCP),¹ in liaison with the Uganda Flower Exporters Association (UFEA). The Centre for Agriculture and Bioscience International (CABI) managed the project.

Uganda's Agricultural Sector Strategic Plan (MAAIF, 2016) indicates that agriculture contributes 25% to the gross domestic product (GDP) and 73% of earnings are from agricultural export. Commercial floriculture emerged as a global industry in 1993 through government economic policy reforms of diversification into non-traditional agricultural exports (NTAEs). The floriculture industry in Uganda has 14 flower growers on 170 ha with a total investment estimated at US\$500 million. On average the Uganda flower industry realizes an export value of about US\$30 million per year and aims to increase export earning to US\$50 million by 2021 (Rikken 2017). Besides being a leading export earner for Uganda, the sector supports the livelihoods of over 40,000 individuals (Rikken 2017).

The flower industry is labour intensive and hence has great potential to generate employment. It is among the largest export earners in Uganda and is growing at a rate higher than that of the overall economy. Since 1995, the export volumes have increased from 1150 metric tonnes to 7500 metric tonnes in 2015 and the revenue has grown steadily. Export sales for 2014 were at US\$38.7 million, up from a figure of US\$21 million for 2002. Directly, the industry employs about 8700 people (2018), most (70%) of whom are vulnerable women aged between 20 and 40 years of age. The sector therefore has a huge potential to contribute to the country's national economy, generate employment, stimulate infrastructural growth and improve livelihoods. For example, UFEA is aiming to have an area greater than 400 ha under production by 2021 which means it would have to double the area of production in a year's time to achieve its target.

Despite its notable contribution to the economy, the industry is still considered to be in its infancy after 25 years. Factors that contribute to this situation include few investors venturing into the industry due to heavy capital investment (minimum of US\$2 million for 10 ha) required, and the long time it takes to recoup the investment of between 15 and 25 years. Volatility of market prices, global financial ups and downs, changing consumer trends, inadequate cold storage facilities at the airport (compared

¹ Inspection and certification functions that were carried out by the DCP during the project period are now conducted by a new Department of Crop Inspection and Certification (DCIC).

to competitors in the region), the ever-changing market access requirements and regulations in the international export markets have implications on the cost of production at farm level. Maintaining and constantly improving the quality of the flowers requires substantial reinvestments in integrated pest management (IPM) techniques. Continuous maintenance and upgrading of existing greenhouse structures and irrigation systems, aligning production to current trends in demand for new flower varieties and market certification requirements and replanting of about 30% of the crops annually, all shore up the huge recurrent expenditure, whereby up to an estimated 30–35% of earnings are ploughed back into the farms.

Further interceptions and subsequent losses reduced the income of the flower farms, slowing down expansion of the industry and opportunities for employment and generating revenue for the country. At the time of project conception, Uganda had inadequate capacity in the public sector to implement pest management and controls to meet phytosanitary measures. The DCP's export certification system focused mainly on phytosanitary inspections at the exit point (airport) whereas a comprehensive system was needed to encompass the whole flower production chain including places of production, packing and transport to exit point.

The key interventions of the project were to:

- develop the capacity of DCP to implement phytosanitary inspections and certification of flower export consignments in line with international standards and requirements of the EU market;
- streamline the inspection and export certification system by building mechanisms for cooperation between DCP and the flower sector;
- institute an operational phytosanitary survey and monitoring system by building the capacity of the NPPO to undertake specific surveys to collect data and generate information on pests of concern such as *S. littoralis*; and
- improve awareness among national decision makers and stakeholders of the importance of a well-functioning plant health system including inspection and certification systems.

Rationale for the assessment

By the time the project ended in 2015, interception of Uganda's cut-flower consignments to the EU had begun to reduce which was attributed to project-intense interventions. A final project evaluation observed that: (i) the capacity of DCP staff was strong, enabling them to implement phytosanitary inspections and certification of flower consignments in line with international standards and requirements of the EU market; (ii) there was enhanced cooperation between the DCP and the flower industry through joint training and dialogue meetings, which led to these stakeholders entering into a partnership agreement; and (iii) the cut-flower farmers had instituted and were implementing a traceability system and a self-regulating process, that included disincentives for non-compliance. During the project's final meeting in March 2015, stakeholders made recommendations on how project achievements would be sustained and improved henceforth. They called upon the government to facilitate a similar capacity-building undertaking for the horticulture sector in order to streamline its export structure and gain benefits by reducing interceptions of fresh fruits and vegetables. Such an initiative would benefit from and build on experiences and lessons learned from the floriculture project.

Four years after this STDF project concluded (i.e. 2019), CABI, as part of its project management practice, decided to carry out a short study to investigate: (i) whether outcomes gained by the

floriculture sector as a result of the project had been sustained; and (ii) whether these gains could be demonstrated through trends in interceptions. It is important to note that the study was not meant to be a rigorous post-project evaluation that would assess outcomes against each of its objectives and result areas described in its logframe. Rather, CABI funded the study as part of its responsibility to draw lessons from projects it has managed as part of internal learning as well as to generate knowledge for the common good.

Study objectives

- Assess whether project outcomes had resulted in sustained compliance with international phytosanitary standards by cut-flower producers and exporters in Uganda post-project – hence reducing interceptions.
- Draw lessons on how the STDF project contributed to strengthening systems and partnerships that were enabling compliance.
- Draw recommendations for enhancing or maintaining benefits achieved from the project. Such insights would benefit design and implementation of further similar projects, such as the one proposed for the horticultural sector, as well as current and future projects managed by CABI and partners.

Methodology

This was a qualitative assessment that utilized key informant interviews (KIIs), focus group discussions (FGDs) with the floriculture sub-sector players, and observations at various sites of production, packing and handling of floriculture products in Uganda. Those interviewed included executives of UFEA (the umbrella organization of flower-farm owners and exporters), flower farms, and DCIC (formerly DCP) staff (Table 1). Additional data on production, trade volumes and interceptions were obtained from publications, reports and the European Union Notification System for Plant Health Interceptions (EUROPHYT) database, which is an online web-based rapid alert system for interceptions in the EU. Field data collection took place in July 2019.

Table 1. Key informants and focus group discussion participants.

Respondents/institutions	Approach	Number
UFEA (executive)	KIIs	2
Flower-farm scouts (trained by the project)	KIIs and FGDs	6
Flower farms (managers/owners)	KIIs	2
DCIC (past executive and inspectors trained by the project)	KIIs and FGDs	15
Total		25

DCIC, Department of Crop Inspection and Certification; FGDs, focus group discussions; KIIs, key informant interviews; UFEA, Uganda Flower Exporters Association.

Data and information gathered was structured along five key areas:

1. What was the growth of the floriculture sector and its contribution to Uganda’s economy prior to and after the project period?
2. Did Uganda manage to comply with SPS requirements for flower exports to the EU after the project ended?
3. What factors were seen to cause the trends in interceptions; and which of these were as a result of the project?
4. What sustainability practices and systems are in place to ensure continued compliance?
5. Lessons learned; challenges and opportunities for the floriculture sector.

Findings and discussion

Growth of the floriculture sector and contribution to the economy

The main flowers produced for export from Uganda are roses (*Rosa* spp.) and plants for planting (cuttings). The area under cultivation has expanded marginally from 215 ha in 2012 to 266 ha in 2018, a growth of about 24%, export volume has increased by 23% and export value by 50% (Figure 1). The farms in the sub-sector have made massive investments in infrastructure for production, handling of produce, packing and people. The flower sector is the second leading non-traditional export and the seventh largest export earner in Uganda.

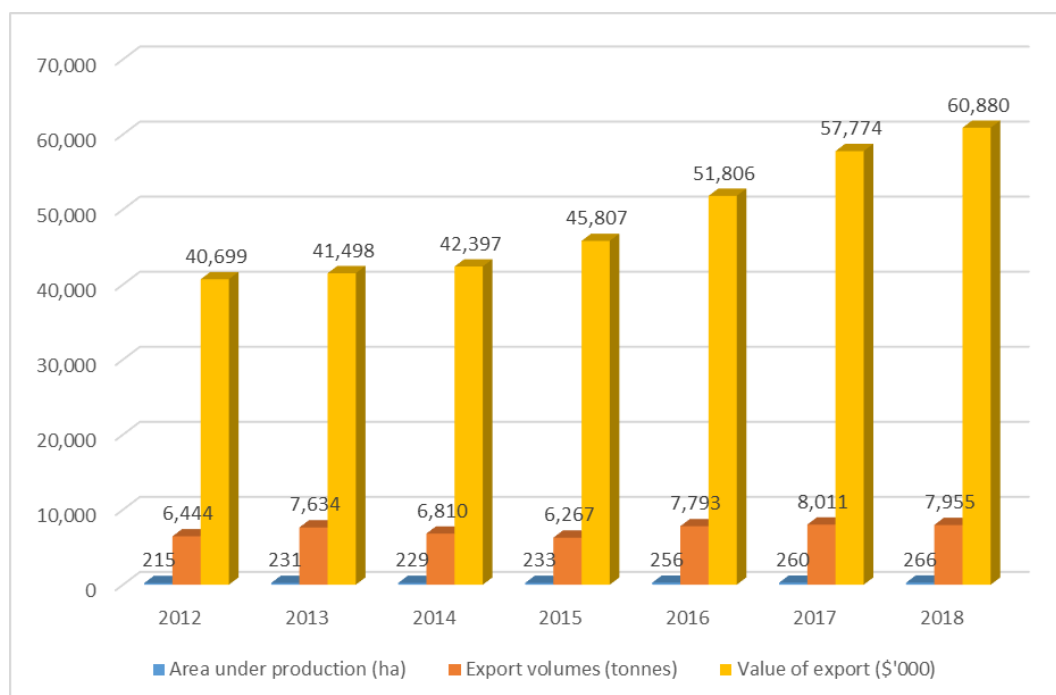


Figure 1. Trends in area under production, volume and value of exports of flowers. Data collected by UFEA staff during annual visits to the farms and from Fresh Handling Limited; and COMTRADE Statistics

The emergence of NTAEs has created both seasonal and long-term employment in the farms and packhouses, because the industry is both labour and capital intensive. This provides a boost to the economic and livelihood conditions of the workers in the sub-sector. Human labour is required in constructing the greenhouses, packhouses, cold rooms and irrigation systems, and for planting, pruning, weeding, pest scouting and applying pesticides, cutting (harvesting), packaging and transporting to the airport. Consequently, employment in the floriculture sub-sector has experienced an expansion of about 36% between 2012 and 2018, from 6400 to 8700 workers (Figure 2).

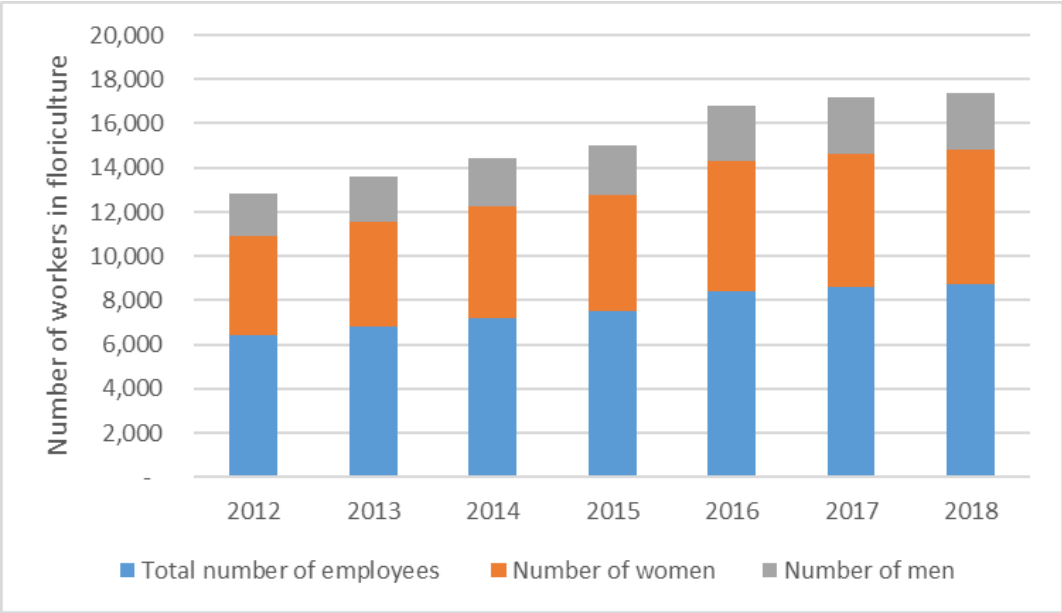


Figure 2. Number of workers in the floriculture sub-sector in Uganda. Data collected by UFEA staff during annual visits to the farms.

More than 70% of the workers in the flower farms are women. The women are mainly engaged in repetitive tasks such as cutting, sorting and packing, and providing administration services. The farms indicated they preferred women workers because they follow instructions easily, are diligent, and pay attention to detail: attributes which ensure that the farms adhere to the strict standards for product quality and uniformity. Generally, women’s employment opportunities are reduced due to lower education levels because of early school dropout, forcing them to migrate in search of employment to provide for their families, and pushing them to take lower wages. Their work is generally perceived as low-skilled, hence it is not paid as well by comparison with men’s tasks (Dolan and Sorby, 2003).

However, in the floriculture industry in Uganda, the minimum wage for workers on long-term engagement is set by the industry through a collective bargaining agreement (CBA) of the workers’ union, negotiated annually with employers. This guarantees equal pay for both men and women workers, in line with the International Labour Organization (ILO) conventions on equal pay, collective bargaining, etc., and other codes of conduct, globally. In this industry women are also given opportunity to be supervisors, with up to 65% of supervisors currently being women. Workers on seasonal contracts are represented by workers’ committees. Companies strive to adhere to the global codes of conduct, to avoid the risk of adverse publicity to the dominant buyer, or supermarkets, in the case of fresh fruit, vegetables and flowers (Barrientos *et al.*, 2003). On the farms, there is strict

enforcement of safety measures for workers and appropriate personal protective clothing is provided when handling chemicals, accessing all sites of production, grading and packaging. These measures contribute to the global development objective of gender equality, and provide means for furthering poverty reduction and economic growth (World Bank, 2003).

Interception trends on cut flowers between October 2009 and May 2019

Flower consignments from Uganda have been undergoing 100% inspections upon entry into EU markets since 2012 due to the high numbers of interceptions. For the rate of inspection to be revised downwards, the country needs to demonstrate that adequate systems are in place to enable the sector to fully comply with EU export requirements; or in the event there is reduced number of overall interceptions from the country. Figure 3 presents the number of interceptions and trends of cut flowers (*Rosa spp.*) from Uganda to the EU and Switzerland, due to harmful organisms (HOs) for the period 2009 to June 2019. During this period, interceptions started to increase from 2009 and rose sharply in 2012 peaking in 2013, followed by a notable decline from 2014. The declining trend was interrupted in 2018, with a rise up to June 2019. The recent increase is as a result of *Thaumatotibia leucotreta*, false codling moth (FCM) which was declared a regulated pest in the EU in 2018 mainly to protect citrus produced in the EU from invasion by the pest.

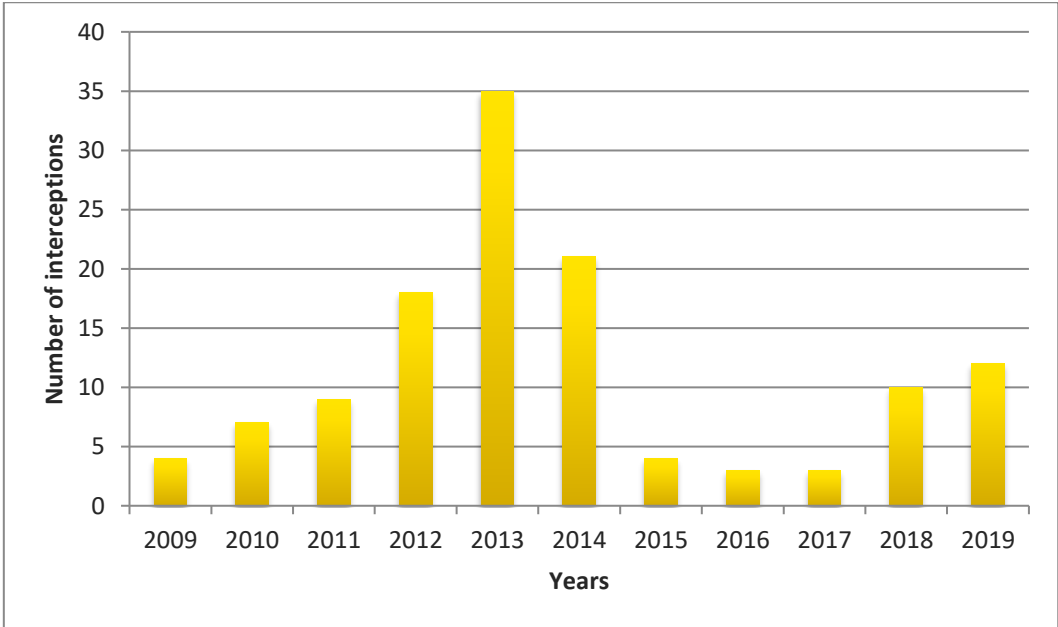


Figure 3. Interceptions in cut flowers due to harmful organisms from Uganda to the EU 2009–2019. Source: Europhyt (2018).

Statistics from the Uganda floriculture sub-sector show that more interceptions were experienced due to *S. littoralis* than any other HO in the period 2009 and June 2019. The highest numbers were reported in 2012–2014, with a peak in 2013 (Figure 4). Thereafter, incidences of intercepted flower consignments due to *S. littoralis* significantly reduced with 2018 registering zero interceptions. Very

low interceptions were recorded due to Tortricidae spp., Thripidae spp., *Bemisia tabaci*, Aleyrodidae spp. and *Helicoverpa armigera*.

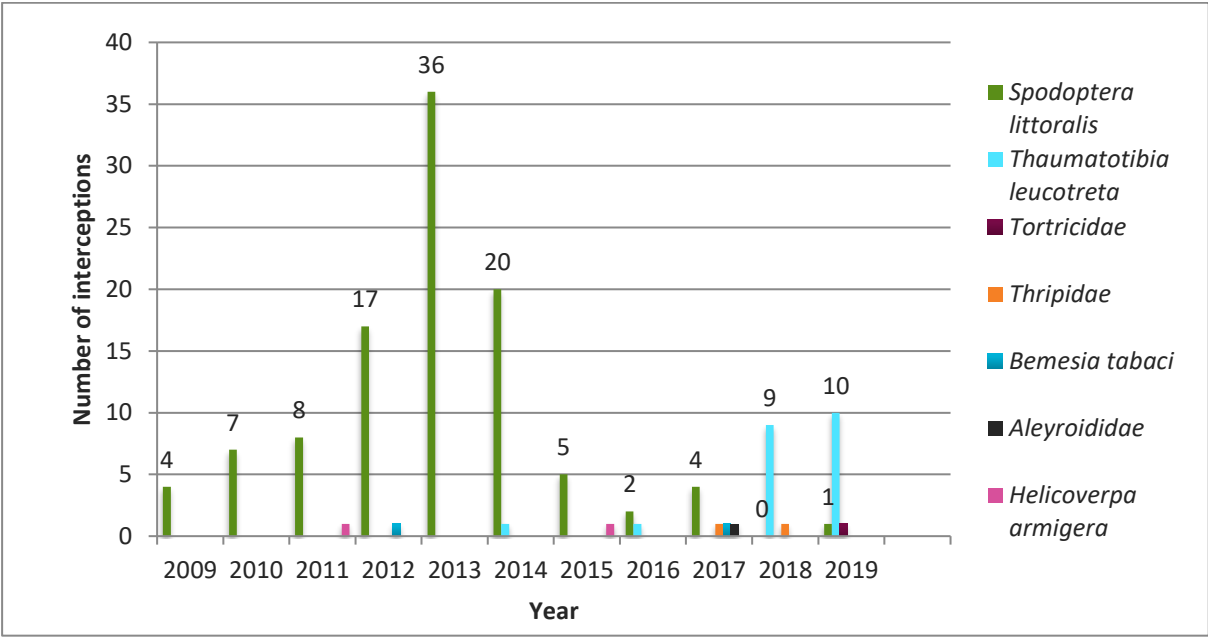


Figure 4. Interception trends due to *Spodoptera littoralis* compared to other harmful organisms for the period 2009–June 2019. Source: Europhyt (2018).

Table 2 presents information on interceptions during and after the project period due to *S. littoralis* on cut flowers. It is noted that more interceptions due to *S. littoralis* were experienced during the project period compared to very few or none during the post-project years. Overall, interceptions due to *S. littoralis* declined since 2013. Between 2012 and 2015 (the project period), a total of 78 interceptions due to *S. littoralis* were experienced on cut flowers, whereas the number of interceptions due to this pest declined to six between 2016 and 2018.

Table 2. Interceptions due to *Spodoptera littoralis* on cut flowers during and after the project (October 2012 and June 2019). Source: Europhyt (2018).

Project period	During the project				Post-project			
	2012	2013	2014	2015	2016	2017	2018	2019
Number of interceptions due to <i>S. littoralis</i> on cut flowers	17	36	20	5	2	4	0	1

Apart from HOs, interceptions can also result from non-conformity, caused by inadequate information on the phytosanitary certificates (PCs), missing PCs, incorrect additional declarations, forged PCs and inconsistent information on PCs. During the period 2009–June 2019, there were a total of 170 interceptions due to non-conformity with documentation requirements in the EU (EUROPHYT, various

reports). Most of these interceptions were experienced in 2012 and 2013, followed by 2017 and 2018, respectively (Figure 5).

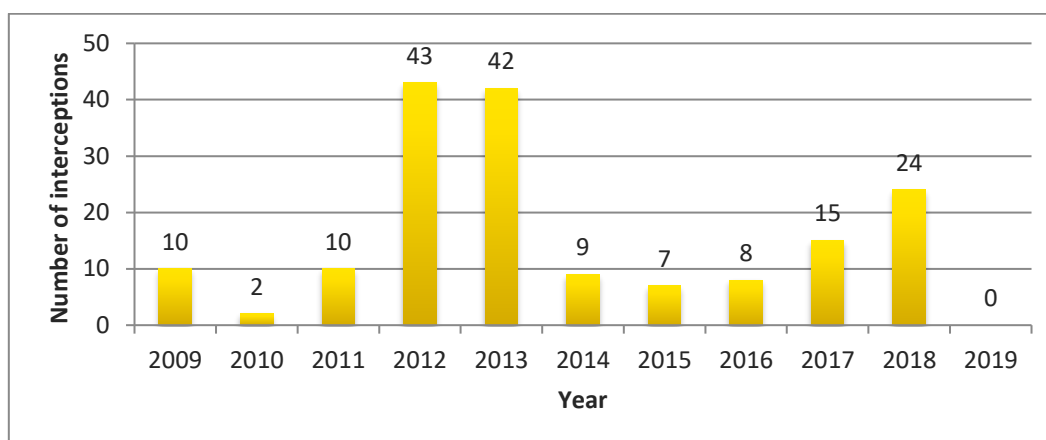


Figure 5. Interceptions due to non-compliance and documentation in Uganda floriculture sub-sector 2009–June 2019. Source: Europhyt (2018).

Factors attributed to reduced interceptions

The high incidences of interceptions on cut flowers during 2012 and 2013, reduced sharply between 2014 and 2017. This implies that the improved phytosanitary control measures by both public and private sector instituted by the floriculture project contributed to the declining trend of interceptions. It also implies sustained compliance to SPS measures by the sub-sector and effective certification procedures by the NPPO in the country.

This is supported by respondents in this study who attributed the reduction of interceptions to three key areas:

1. Pest management capacity at farm level, including inspections and certification
2. Self-regulation measures introduced in the private sector
3. Effective partnerships between the private and public sectors.

1. Capacity built along the production and export chain

Capacity of DCP inspectors

The MAAIF inspectors responsible for inspection and certification were trained through hands-on practical approaches on the implementation of SPS measures with specific focus on the management of *S. littoralis*, which included a study tour to Kenya. Following this training, additional inspectors were deployed to the packhouses and exit points to enhance efficiency in inspections and certification at the main exit points. Due to exposure in Kenya, the inspectors were able to identify specific areas where further capacity enhancement was required. They drew up lists of priority standard operating procedures (SOPs), equipment and software needed for laboratories, documentation templates for

inspectors, and databases to be developed. They appreciated that success in Kenya was to a great extent attributed to good collaboration between the NPPO and the private sector. They resolved to foster the same in Uganda which was demonstrated in part by the realignment of inspections to focus on the whole value chain as opposed to the previous practice of conducting inspections only at the exit points.

During the study, inspectors confirmed that the training they had received from the project was still relevant and was still enabling them to make accurate inspections ensuring that exports did not have *S. littoralis*. They explained that the training had given them insights that linked the 'science' to the job (i.e. the implications of pest life cycles in the management of pests). The EU directives on export requirements now 'make sense', because the inspectors understood the importance of those directives, and could explain the directives to exporters and why they were important. Inspectors and scouts are still able to identify pests to the specific species and are not just categorizing them as 'caterpillars' as was initially the case before the project. They understood the pests' behaviour, the appropriate control practices and effective spray regimes, following IPM approaches.

However, training to address new pests such as FCM had not been adequately undertaken and they had not yet developed relevant SOPs for this pest. This was because the best management practices for FCM were not yet well understood. Inspectors identified the need to have a sustainable system within the ministry to provide training as new problems arise and as new inspectors are employed, especially given their high attrition rate.

Development and provision of reference manuals

Following their exposure in the study tour held in Kenya, DCP staff identified and then drafted, with facilitation from the project, 12 SOPs that they required to guide their inspection and certification activities. The SOPs were compiled into an operational manual which is still used by inspectors for reference, and guides the current inspection process. During the project, DCP developed a quality management system (QMS) manual that outlined how it would conduct its business including administration and delivery of its mandate in line with Uganda's Plant Protection and Health Act 2015. After the project, trained staff wrote an SOP on transportation of export produce. However, they noted the need to revise existing SOPs as well as write new ones on emerging pests.

Capacity of farm scouts

Pest scouting is a critical part of control and management of pests on the farm, as farms are the location of potential causes of interceptions. Those that were responsible for pest scouting on the farms underwent similar training as the inspectors, with more emphasis on pest scouting, monitoring, and identifying the pest to the species level. Identification charts were issued that showed symptoms that the pests manifest at different development stages. Scouts were also trained on how to collect and document data from pest-monitoring exercises. It was reported during the study that after they underwent the training, the farm scouts proceeded to train their colleagues in the cadres of crop attendants, quality controllers and team leaders. One scout from one of the more advanced farms was reported to have trained over 700 of her colleagues, post-project, including her supervisors, on pest control measures to be undertaken in and around the greenhouses. She reported that using the knowledge from the project she later advised the management on SPS requirements to be instituted

at the farm, which contributed to a redesign and refinement of the farm's hygiene protocols. The employer rewarded her with a promotion from being a pest scout to become a supervisor. This continued post-project training, by those who received training through the project, is expanding the pool of workers with the skills and knowledge on pest surveillance, monitoring, reporting and control, helping to sustain long-term results from the project.



One of the scouts trained by the project and interviewed during the study continues to scout for pests on roses. Photo: Florence Chege.

One of the farm supervisors noted, 'the trainings have made work easier for everyone; the production managers are not alone anymore in bearing the responsibility to train their teams, other trained staff can do that now'. As one of the KII noted, 'the scouts have become champions in training for the industry on pest surveillance, monitoring and management'. The interviewee further mentioned that 'the pest monitoring reports are submitted to MAAIF weekly which meets one of the actions agreed upon between the industry players and the NPPO as part of their collaboration on pest surveillance'. DCIC inspectors and scouts still exchange knowledge and skills during scheduled farm visits and farm audits which are still funded through the implementation of a memorandum of understanding (MoU) that was put in place by the project. The MoU, which was also referred to as 'a partnership fund', documented what and how the NPPO and the private sector would collaborate post-project (see point 3 below). The scouts' training also contributed to changes on how greenhouses on the farms are constructed. Previously, the majority of the greenhouses used wood for pillars, but now most have been replaced with steel pillars. They learnt that wood harbours pests and provides a good breeding ground, hence contributing to infestations in the greenhouses.

Surveillance, scouting and data sharing

Following the survey and scouting capacity-building activities provided by the project, farms intensified their scouting activities by employing additional staff and procuring scouting equipment. In some farms, specific staff were assigned to scout solely for the presence of *S. littoralis* using the pest identification charts provided by the project. Scouting data, which used to be difficult to obtain, is now readily shared

with the DCIC. Exporters' measures for pest surveillance and scouting are still rigorous and entail concerted efforts by the various cadres of workers involved in the production chain (harvesters, scouts, sprayers, bed supervisors, etc.). Reports are prepared on the pest surveillance and monitoring on the farms; these are discussed on a daily basis, and decisions made on management measures to be instituted immediately. Any failure to send pest reports to DCIC results in an automatic denial of a PC to export. Scouting reports enable the inspectors to be aware of pests they should look for in the consignments they receive at points of exit (airport). Such measures help to reinforce adherence to regulations agreed upon by the industry players and the regulator.



Identification charts for *Spodoptera littoralis* and *Helicoverpa armigera* provided by the project are still displayed in greenhouses and used for scouting purposes. Photo: Florence Chege.

Capacity of institutions

The SOPs developed during the project have brought uniformity into how inspections are conducted and certifications issued. Previously inspections were inconsistent due to a lack of clear guidance on a uniform and standard way to conduct inspections. The SOPs provided the inspectors with the knowledge required to understand what equipment they required for their work. As the inspectors at MAAIF noted, 'The SOPs are excellent reference materials that are detailed, they follow the ISPM standards, aligned with import requirements, are informed by the academia, and are anchored in local regulations and laws.'

The knowledge that was acquired by UFEA is still passed on to producers enabling them to play their part in compliance at various steps of the value chain. Since the project ended, UFEA has been organizing annual training and refreshers for producers/exporters covering aspects of the ever-changing EU directives on export requirements. The working relationship between UFEA and DCP/DCIC staff has substantially improved over the years, maintaining an outcome from the project that continues to foster smooth working relationships between themselves and the flower growers.

In addition to strengthening the skills and knowledge capacity of the staff, the project provided equipment for inspection and electronic certification at the exit point at the airport – which is run by Fresh Handling Limited. Although computers and minor inspection equipment that were provided by the project are still in use, inspectors are in dire need of appropriate equipment and space to conduct

effective inspections. Inspectors use basic instruments for inspections (torch, magnifying glass, cello tape, white papers, scissors) which are not adequate. Inspections are done in the cold rooms where temperatures get as low as 3°C, without personal protective equipment (i.e. jackets and footwear), putting the health of inspectors at risk.

Further equipment that was purchased by the project for MAAIF's Namalere laboratories is not fully utilized due to lack of appropriate infrastructure for their installation, including lack of proper plumbing for consistent water supply and drainage, electric power and lighting to operate the equipment.

Traceability system

Before the project, some producers had put in place measures of assuring traceability of consignments, but most others had no measures in place. The project helped the producers to institute uniform traceability systems, particularly by facilitating farm owners to learn from their colleagues who had instituted these systems. In order to know which farm a pest had been found on, a new requirement was put in place whereby all farms had to register with DCP. The information provided to DCP included: (i) official business name; (ii) who owned the company; (iii) contacts; (iv) locations of the farms; (v) hectares under production; (vi) number of greenhouses; (vii) crops and varieties grown; (viii) sources and origin of planting material; (ix) staff capacity; and (x) chemicals/inputs used on the farm. Previously, DCP had not collected or collated these data, and they were not fully informed about the farms. It was difficult to identify owners of intercepted produce, making it impossible to institute follow-up by the NPPO. Going forward, it was agreed that each pallet (box and Kraft paper) with flowers harvested for export must bear information about the greenhouse where the harvest came from, the date and time of harvest, the harvester and payroll number, the supervisor, and time of bunching. This information made it possible to trace the producer in cases where consignments in one freight were 'pooled' from different farms (i.e. consolidated). Consolidation is a common practice because it enables farms to share charges for airfreighting flowers to the EU. The costs are highly prohibitive if a company has to pay for freight charges on its own, accounting for about 40% of revenues. This traceability system is still in operation and allows the DCIC to identify pest sources when found in a consolidated consignment.

2. Self-regulation measures in the private sector

Self-regulation of the private sector in collaboration with the DCP and UFEA

Respondents recounted how the project had helped institute a self-regulation system for the private sector which entailed checks and balances not only at the individual farm level, but also at multi-farm level working closely with UFEA and the DCP. Self-regulation is a process where producers and exporters take responsibility individually and collectively to ensure that phytosanitary measures required for a certain market are met. Before the project period there was no system that brought together the farms, UFEA and the DCP to work together towards a shared vision. Through the project, various elements needed for self-regulation to work effectively were instituted including: (i) pest management strategies with detailed identification protocols; (ii) pest surveillance, scouting and data sharing; (iii) traceability and record keeping; (iv) clarity of responsibility between farms, the DCP and UFEA along the value chain; and (v) communication and partnership strategies between the key players. These systems are still in place providing useful information for monitoring the pest situation at the

farms, enabling both the DCIC and UFEA to make necessary decisions to strengthen adherence by the farms to the agreed measures.

Prompt and joint action on notifications

As a result of the project, the farms and the DCIC have continued post-project to collaborate on addressing notifications of interceptions by the EU. Previously information on notifications was closely guarded by the farms, despite the fact that under the Plant Protection and Health Act 2015, section 9, sub-section 'a', a producer is under obligation to share any pest report, or interception notification with the NPPO regarding quarantine pests, failure to which is punishable under the law. This part of the law gives the NPPO the mandate to enforce compliance. Even though the same notifications were received by the NPPO, action by the NPPO was generally delayed for weeks. This meant that the exporter would delay remedial action, further exacerbating the situation. By sharing information in time, the two parties are now able to work together more effectively towards addressing issues causing interceptions.

Suspensions on consolidation

The traceability system introduced through the project has remained beneficial in upholding rules and regulations on consolidation of consignments and curbing interceptions. The project introduced guidelines for exporters whose consignment is intercepted twice, and is part of a consolidated consignment, such that that exporter is suspended from consolidating with others until they address the cause of interceptions. This means they have to individually transport their consignment, bearing all the airfreight charges, with associated cost implications. Such repercussions from other industry players continue to be a good incentive for each farm to promptly address pest issues to avoid interceptions.

Peer support – joint farm visits and learning

As part of self-regulation and monitoring among the players in the sub-sector, the project partners instituted a component whereby the producers visit each other's farms to share experiences, share best practices, learn lessons, and encourage adherence to local and international regulations in trade of floriculture products. The farm visits, which by the time of the study were still ongoing, are organized by UFEA and farms contribute transport, with the host farm providing meals. Producers have an agreement that if one misses the meeting, a fine of US\$70 is imposed and skipping a meeting is treated as non-compliance at the country level. The farm visits provide a good avenue for building collective responsibility to address requirements and challenges in the industry. The visits play a pivotal role in creating a standard system of traceability of floriculture products among the industry through learning from each other. These visits help to reinforce unity among the exporters and promote a shared responsibility in dealing with the HOs at farm level. The visits have facilitated a better working environment with government, because as officers from MAAIF visit the farms, they can assess and appreciate the effort and level of investment that the producers have put in place to operate their businesses. With this knowledge, an understanding is created that the producers and DCIC inspectors are both playing their part to observe compliance with requirements at various steps of the value chain.

Self-audit with support from the DCP (DCIC), and disincentives for non-compliance

The traceability process instituted by the project help exporters know where the product was from, for which a notification had been issued. The notified farm is thereafter closely monitored by a technical task team (TTT) on compliance to agreed mitigation measures; and penalties are issued for non-compliance through UFEA. The TTT is mainly comprised of farm production managers and DCP inspectors. This team is still responsible for undertaking compliance audits jointly with UFEA staff. Their findings are reported at the monthly flower owners' meetings set up by UFEA to discuss compliance and agree upon the next actions. Joint audits at the farms and packhouses further enable inspectors to assess and predict which pests may be found in consignments. Flowers with pest problems are also denied delivery to the airport, thus reducing the inspection pressure at the point of exit. All these measures continue to be good incentives for farms to implement the agreed measures hence contributing to an effective self-regulation mechanism.

3. Public–private partnership

Partnership fund

Mechanisms for cooperation between the DCP and the flower industry were fostered throughout the project period and culminated with these stakeholders entering into an agreement, which is still in operation. The agreement stipulated: (i) how they would interact and communicate with each other; (ii) each party's roles and responsibilities; and (iii) the terms of reference for the TTT, and how funding for their joint activities would be generated and sustained (i.e. how they would run a 'partnership fund'). Motivation to build a strong public–private partnership (PPP) was ignited when they witnessed and learned from the successes of the Kenyan floriculture sector during a study tour supported by the project in 2013 which was coordinated by the Centre of Phytosanitary Excellence (COPE) which is run by Kenya Plant Health Inspectorate Service (KEPHIS). They had learned that in Kenya, the flower sector and the Kenyan NPPO (KEPHIS) worked closely together. KEPHIS took the role of facilitating (and not impeding) the flower export sector, while the Kenyan flower sector was responsible for self-regulation. At the time of the study the farms were still providing financial support for inspectors to visit their farms and packhouses for inspections and joint audits.

Improved relationship between flower producers, UFEA and the DCIC

The working relationship between producers and MAAIF inspectors has substantially improved over the years, fostered through the concerted efforts of stakeholders in the industry to ensure a smooth working relationship. The dialogue meetings and joint farm visits have contributed to improving relationships from a time when the industry felt the DCP was policing, to the current state of dialogue and cooperation with the new department, the DCIC. Before instituting the joint meetings, the relationship between MAAIF staff and the producers was rife with suspicion and mistrust, to the extent that the producers could refuse entry of inspectors into their farms. Currently, the producers can voluntarily call the inspectors to come and inspect the farms and packhouses. The project facilitated building trust among producers, and with the MAAIF team, to the extent that they encourage the inspectors to make farm visits, and interact freely with them. This has fostered growth of stronger and

supportive working relationships; inspections are a supportive function to export businesses and instead of a barrier, a desirable outcome of the project.

The sharing of data on pest monitoring from farms has greatly helped the DCIC staff in planning for inspection schedules on different farms. The pest monitoring reports include proposed measures to address identified pests and hence inform decisions on pest control practices. The DCIC team use the data to conduct targeted inspections at the farms and exit points, in instances where they have noted issues of pests, or non-compliance. With these reports, inspections have become more efficient because inspectors know what to specifically look for in a consignment.

Challenges and lessons learned

Challenges and opportunities

- Although the number of interceptions of HOs addressed by the project reduced, since 2017 interceptions are rising due to *T. leucotreta* (FCM) which indicates that the pest management system in the country needs to be more resilient.
- There are limited resources in most areas of the DCIC's mandate. For example, inspectors are required to carry out inspection visits for cutting farms at 3-week intervals, and for rose farms at a 4-week interval, following the EU Implementing Directive 2016/2030. Current inspections were funded by the partnership fund established by the MoU. The number of inspectors has been low with few opportunities for training and promotion, even though by the time of study the government was in the process of making new recruitments. There are inadequate laboratory facilities for the DCIC, especially to test for viruses and key diseases. A key reason given for this state of affairs at the NPPO is because it is a department within the mother ministry, MAAIF, as opposed to being a fully-fledged autonomous agency with independence and a responsive robust system to facilitate quick decision making, mobilize and allocate necessary resources to deliver on its mandate, just like KEPHIS.
- One current opportunity that may help the country to reduce interceptions in the future, is restructuring the sector so that the whole export industry is integrated in a way that ensures pest management is addressed across the horticulture and floriculture sectors. The process for integration was initiated by the time of publishing this report and is tackling the management of FCM which is hindering exports of flowers, fruits and vegetables. Initiatives such as the STDF 543 horticulture project funded by the STDF and Royal Netherlands Embassy in Kampala provide a good opportunity for supporting dialogue that facilitates such integration. This project will also provide complete inspection kits and working tables for inspectors as well as develop SOPs for the horticulture export sector that were non-existent.

Lessons

- A standard traceability system is important to facilitate smooth tracing back to the production site when there is an issue in the destination market.
- Registration of exporters in a database of the players and their roles in the industry enables close monitoring and enforcement of compliance measures.

- Having an umbrella organization that brings all players in the industry to one forum is critical for instituting, applying and monitoring self-regulation measures.
- Promoting facilitated dialogue between industry players to build trust, working relations and a joint vision is key to building a sustainable flower export industry.
- Respondents attributed the project's success to how it was designed, bringing together the public and private sector to make joint decisions.

Conclusions and recommendations

Conclusions

This study aimed to find out whether interception of Ugandan flowers exported to the EU had reduced during and after the STDF floriculture project that ran from October 2012 to March 2015. It also sought to understand whether the DCP and the flower farms related trends in interceptions to the systems built through the project, and to draw lessons on what made the project a success, if at all, and what the future challenges and opportunities were. At the onset of the project, Uganda's floriculture produce was facing an imminent export ban due to the presence of *S. littoralis*, and non-conformity of documentation. The sub-sector succeeded in drastically reducing interceptions of *S. littoralis* from 2015 to 2019.

Respondents in this study clearly attributed the dramatic reduction of interceptions of *S. littoralis* to several factors that stem from systems put in place through the STDF floriculture project. The **capacity of the DCP** was built to a level that enabled it to conduct both inspections and certification of flower consignments to meet the requirements of international standards and the EU market. Players in the sub-sector had gained a better understanding of *S. littoralis* and were able to manage it more efficiently through knowledge and skills gained from training sessions, using the right equipment – light traps, pheromone traps, sticky traps – to manage the pest. However, the training on how to develop SOPs had not been used yet to write SOPs for the new pest, FCM, which the inspectors attributed to the fact that FCM behaviour was not yet well understood. Some equipment and tools were provided to enable the DCP to carry out first-line and detailed diagnostics at the exit point and at a national laboratory, respectively.

The **traceability system and a self-regulating process** instituted by the project for the flower farms that included disincentives for non-compliance are still operational. It ensures that intercepted produce is traced back to the individual farm even when a freight consignment was consolidated from different farms. Self-regulation still includes sharing of notifications from the EU, monthly meetings and farm visits by farm owners to agree on measures to address emerging issues, joint farm audits by a team comprised of DCIC inspectors and farm scouts, and penalties for getting notifications and/or not complying with what was agreed locally. At the farm level, scouts trained by the project continue to conduct scouting, collect data and share it with the DCIC. A number of them became trainers, which has ensured continuity in scaling up the knowledge gained.

Trust and cooperation between the DCP and the private sector were fostered by the project to the extent that the two entered into a **formal partnership agreement** that defined the agreed roles and responsibilities of each party, and how they would communicate and sustain collaboration. As a result of the project, the interactions within the industry are better organized and due to the new trust about

their intentions, the farms readily open their farms to the MAAIF inspectors. Through the self-regulation mechanisms developed through the project, which were also captured in the MoU, measures that incentivize action towards compliance with requirements, and sanctions against those that fail to conform, are still in place. Roles in the industry have become clear to the players; inspectors understand their role and mandate, and farms also play their part, thus drastically reducing the presence of *S. littoralis*. The MoU, however, needs to be revised and updated to take into account current sector requirements.

Despite the positive attribution placed on the STDF floriculture project in helping to drastically reduce interceptions of *S. littoralis*, the overall interception of Uganda's produce is rising steadily as a result of FCM on both flower and horticultural exports. The country is in the process of addressing this new menace, among others, by building upon the PPP model for collaboration that was employed in the floriculture project. In order to sustain achievements made in the past, Uganda needs to address the challenges and recommendations listed below as well as build on lessons learned. Further, despite the success of the project in reducing interceptions of *S. littoralis*, Uganda still needs to put in place measures to address systemic issues that continue to limit growth of the flower and horticulture export sectors. These issues are highlighted in two EU audits conducted in 2016 and 2019 which emphasized the need to strengthen systems of official controls and pest management measures at production sites.

The success of the floriculture project contributed to the DCIC securing funding for a similar project targeting the horticulture sub-sector in Uganda. The project, titled 'Enhancing the capacity of the Fruit and Vegetable Sector to comply with Phytosanitary requirements for export to EU, other high-end markets and regional markets', is funded by the STDF and the Netherlands government. Part of the reason why the floriculture project achieved its goals was attributed to the fact that flower owners were very keen to reduce interceptions given how heavily they had invested in the sector. However, for the horticulture sector a more concerted effort may be needed given that the majority of exporters are mainly brokers with little investment in the produce, despite the fact that the cost is very high for the country in terms of its export reputation. Lessons from the floriculture project on the importance of having one umbrella exporters' body are being used to help promote the formation of a similar body for the horticulture sector in order to manage compliance measures.

A number of **measures towards sustainability** of outcomes achieved through the project were noted during the study:

- The industry is organized around a single umbrella organization, UFEA. As an organization, the flower farms have a stronger bargaining and lobbying power. Even though the organization was already in place by the time of the project, the project helped institute self-regulatory measures among the flower farms which are monitored by UFEA.
- The self-regulation mechanisms to ensure that the industry complies with export requirements are still in place; and are monitored through ongoing farm visits.
- The industry and the DCIC are still working together through the partnership agreement whereby: (i) the farms still facilitate joint farm audits with DCIC inspectors; (ii) communication between the two entities is enabling the industry to actively monitor trends in the markets and keep up with new requirements, even though the capacity of both needs to be built on an ongoing basis; and (iii) the partnership fund is still in place ensuring funding for joint farm visits are possible.

- All flower exports are handled through Fresh Handling Limited which potentially makes it much easier for the DCIC to monitor and inspect all flowers being exported. All equipment provided to the DCP by the project to man this exit point is still in use, even though it is still inadequate.
- Some farm scouts who were trained by the project have continued to train others ensuring that skills are passed on.
- Data on pests recorded at the farms is still shared with the DCIC, and penalties for non-compliance are still applied.
- MAAIF was in the process of recruiting additional staff to man the exit points and conduct inspections at the packhouses.
- UFEA was providing support to other sub-sectors, such as the fresh fruits and vegetables on pest/disease control using some of the knowledge gained from the project.

Recommendations

- Support at the government level is required to put in place an infrastructure that enables the expansion of the flower sector, for example tax holidays.
- Regular consultative meetings and collaboration between all players in the flower and horticulture sector should be instituted and ensured, in order to address current and emerging pests such *T. leucotreta* which is prevalent in both sub-sectors. As one respondent observed, ‘If such meetings were being regularly held, the issue of *T. leucotreta* could have been tackled in good time.’
- Both private and public sector players need to review and strengthen the implementation of a communication strategy that was developed by the project, or integrate it into the ongoing discussions on restructuring the agriculture export sector. This will ensure that dialogue continues.
- The working relationship between the private sector and government should continue to be strengthened, by reviewing the partnership fund so that it reflects the current and evolving structures in the ministry.
- Regulatory controls of the DCIC should be strengthened to ensure conformity. The possibility of making it an entity that has the independence to make decisions and obtain resources to operate the infrastructure required for inspections and certification should be considered.
- The SOPs that were developed during the project need to be updated to reflect current sector restructuring as well as address new EU (2019) export requirements. Good agricultural practice (GAP) guidelines for the floriculture industry should be further developed to guide practices of production and pest management.
- Future projects should consider engaging policy makers with the intent of influencing policy to bring about change that can spur growth of the flower industry.

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