



Darwin Initiative/D+ Project Half Year Report (due 31st October 2019)

Project reference	25-032
Project title	Biodiversity and agriculture: addressing scale insect threats in Kenya
Country(ies)/territory(ies)	Kenya
Lead organisation	Natural History Museum
Partner(s)	National Museums of Kenya; University of Nairobi; Kenya Agricultural and Livestock Research Organisation; Kenya Forestry Research Institute; Kenya Plant Health Inspectorate Service; CABI
Project leader	Dr David Ouvrard
Report date and number (e.g. HYR3)	HYR2
Project website/blog/social media etc.	https://www.cabi.org/projects/addressing-scale-insect-threats-in-kenya/

1. Outline progress over the last 6 months (April – Sept) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up to end September).

This report covers the period 1 April to 30 September 2019.

Output 1: Increased informed perception by smallholder farmers/foresters and extension providers of the scale insect threats to agricultural production, and on the means to manage the pests without disturbing agro-ecosystems, leading to increased crop yield for affected farms.

242 small-scale farmers were interviewed in three coastal Counties (Mombasa, Kwale and Kilifi) using the socio-economic questionnaire on farm production, knowledge on scale insects and mealybugs, and their management, developed by KEFRI and KALRO (with input from CABI especially on information needs of stakeholders, preferred communication channels and reasons for preference of channels). In Mombasa a total of 48 farmers were interviewed from four sub-counties (Jomvu, Changamwe, Kisauni and Likoni). In Kilifi, 92 farmers were interviewed from five subcounties (Kilifi North, Kilifi South, Malindi, Kaloleni and Ganze). In Kwale, 102 farmers were interviewed from three sub-counties (Matuga, Msambweni and Lunglunga). Unfortunately, during the data upload (using *ODK Collect*, an open source Android app used in survey-based data gathering), answers from 4 sources got lost, so only 238 farmers' data was captured.

The majority of the farmers claimed to have seen scale insects, especially the two species of invasive mealybugs, on some of their crops or in the neighbourhood. However, they claimed that, so far, they have not received any information on scale insects from anyone and had no idea on how to manage the pests. The farmers said that they would be glad if someone offered them training on controlling these two pests.

Farmers informed us that they had lost some of their crops, especially papaya and cassava, due to scale pests. In most cases, women carried out the actual farming activities in addition to taking care of the children, although decisions regarding farm management were taken up by

the men (heads of the households).

KEFRI and KALRO scientists and biometricians are currently writing the socio-economic survey technical report.

Ouput 2: A publicly-available scale insect and natural enemies inventory for Kenya developed, with distribution maps for species recorded from the study area in three coastal counties of Kenya.

Due to delays in initiating insect surveys in the coastal areas, intensive taxonomic research has been undertaken on the Natural History Museum (U.K.) collection and 39 recent samples from various regions of Kenya. So far we have found two new continental records for Africa, and new Kenya records for one family and 47 species, eight of which are new to science (never described before).

The first samples from the three target counties on the coast were collected during the socio-economic survey (June 2019) and the extension service training session (July 2019), and are currently under study.

Around 450 slides of Kenyan scale insects have been made from fresh material so far, which will be incorporated in partner collections when identified to species. These local reference collections will facilitate future identifications.

In the meantime, more work has been done on the De Lotto collection (over 3,500 slides at KALRO in Nairobi, untouched since the 1970s) in July 2019: the entire collection was removed from its drawers; each name label updated to the current name; and sorted into alphabetical order of genera and species within each family, accounting for synonymies as necessary. The number of slides of each taxon was checked and the database updated. As a result of these activities, the De Lotto collection at the KALRO National Agricultural Laboratory is now up-to-date nomenclaturally and the slides are stored in the same order as the names in the collection database. The updated database has been made available to workers at NMK, U of Nairobi and the collection curator (Joseph Mulwa) at KALRO.

Ouput 3: Taxonomic researchers, parataxonomists and extension officers trained, and pest management decision chain implemented through identification capacity building among all stakeholders.

1-5 July 2019: 15 taxonomic researchers and technicians have been trained by Dr Gillian Watson on scale insect slide mounting and identification at NMK.

9-10 July 2019: 8 parataxonomists (including one Masters student) and 25 coastal county extension officers (including senior staff) have been trained on basic scale biology, field collection, sorting, preservation and basic identification, on natural enemy recognition and on sustainable agricultural practices. Eight draft handouts have been distributed on the following major topics: scale infestation symptoms, soft scales, armored scales, mealybugs, look-alike and natural enemies. Two oral presentations and a printed document covered sustainable practices for control of scale insects and mealybugs. Appropriate additional training and information materials were discussed during the session, especially between CABI and the extension services.

An extensive identification manual of 294 pages has been drafted and covers now 23 families, 81 genera and 207 species.

Ouput 4: Best practices for improving management of scale insect pests developed, disseminated to raise key stakeholder awareness and capacity, and adopted by them.

As a first step towards wide communication of project results, tools and processes, a project web page has been developed: <https://www.cabi.org/projects/addressing-scale-insect-threats-in-kenya/>, as well as two blog pages on taxonomy training and extension-service capacity building respectively:

<https://www.cabi.org/news-article/fighting-the-scourge-of-scale-insects-affecting-livelihoods-and-food-security-in-kenya/>

<https://blog.invasive-species.org/2019/07/17/collaborative-effort-in-kenya-to-manage-the-impact-of-scale-insect-in-coastal-region/>

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

Several activities due in Year 1 were severely delayed due to the absence of signed sub-agreement contracts, but we have been catching up on most of them in the last 6 months. This includes:

- the perception and baseline survey (activity 1.1): data are being currently analysed by socio-economists and statisticians at KEFRI and KALRO
- the extension service capacity building (activity 3.2): now complete

The following activities are still impacted:

- the insect survey (activities 1.3 and 2.2): initial sampling occurred at the same time as the socio-economic survey (June 2019) and during the extension service training (July 2019), but more intensive sampling must occur soon. The socio-economic survey has allowed the selection of target farms.
- Media campaigns (activity 4.3): one webpage and two blog posts have been published as first steps towards a wide communication of project results, but delays in Year 1 did not allow us to use other channels yet.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS: Yes/No

Formal change request submitted: Yes/No

Received confirmation of change acceptance Yes/No

3a. Do you currently expect to have any significant (e.g., more than £5,000) underspend in your budget for this year?

Yes No Estimated underspend: £

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.

4. Are there any other issues you wish to raise relating to the project or to Darwin's

management, monitoring, or financial procedures?

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R25 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also** be raised with LTS International through a Change Request. **Please DO NOT send these in the same email.**

Please send your **completed report by email** to Darwin-Projects@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 25-035 Darwin Half Year Report**