PROJECT PROGRESS REPORT

Third Reporting Period: January – April 2026



REDUCTION OF ANTIBIOTICS USE IN FARMING PRACTICES IN EAST AFRICA WITH A TECHNOLOGY TRANSFER AND PILOT PROJECT IN KENYA

UNIVERSITY OF NAIROBI

JAFRAL
passion for biosolutions

JTI
Business Development

ICPE

REPUBLIC OF SLOVENIA
MINISTRY OF FOREIGN AND EUROPEAN AFFAIRS

SLOVENIA
AID & PARTNERSHIPS

THIRD REPORTING PERIOD: JANUARY–APRIL 2026

1 IMPLEMENTATION PROGRESS

Overall Status

The project continued to progress during the third reporting period, with activities focused on joint environmental sampling in Kenya, laboratory identification of bacterial isolates, bacteriophage isolation and initial *in vitro* testing. During this period, the University of Nairobi, JAFRAL and JT Business Development carried out a joint sampling exercise in Kenya, during which more than 70 environmental samples were collected for further laboratory analysis. Subsequent processing of the samples resulted in the identification of bacterial isolates, including the potential tomato pathogens *Xanthomonas* spp. and *Pseudomonas syringae*. The presence of *Ralstonia solanacearum* was not confirmed in the analysed samples.

During the reporting period, activities related to bacteriophage isolation and testing progressed further. Bacteriophages active against *Xanthomonas* spp. and *Pseudomonas syringae* were isolated, purified and propagated on a small scale. Initial *in vitro* testing confirmed their activity against the available bacterial isolates. Following host-range testing, four phages were selected for further work: two targeting *Xanthomonas* spp. and two targeting *Pseudomonas syringae*.

Based on these results, further work on the bacteriophage formulation was initiated. The final bacteriophage cocktail had not yet been prepared by the end of the reporting period. JAFRAL plans to produce larger quantities of the selected phages and concentrate them to facilitate shipment to the University of Nairobi in the next reporting period. Effectiveness testing of the final bacteriophage mixture is foreseen in the next phase of project implementation.

2 KEY ACTIVITIES IMPLEMENTED

Environmental Sampling and Isolation of Bacterial Strains

On 13 January 2026, a joint demonstration and field sampling exercise was conducted in Kenya, involving members of the University of Nairobi team, representatives of JAFRAL and JT Business Development, and participating local experts. During the reporting period, the University of Nairobi continued the isolation of target bacteria, including efforts to obtain isolates of *Ralstonia solanacearum*.

From 7 to 11 April 2026, the University of Nairobi carried out additional environmental sampling in Kajiado, Taita Taveta, Makueni and Kiambu counties. The sampling was undertaken during the wet season in order to increase the likelihood of obtaining relevant target bacterial strains. Samples of soil, water and tomato plant tissue were collected. Local farmers and county agricultural officers also participated in the field activities.

Laboratory preparation of the April samples took place from 20 to 30 April 2026. Isolation and characterisation of target bacteria from the genera *Ralstonia*, *Xanthomonas* and *Pseudomonas* are continuing into the next reporting period.

Application of Bacteriophage Screening Protocols

The project partners continue to apply the bacteriophage screening protocols provided during the previous reporting period. The partners agreed that phage screening would continue in parallel at JAFRAL and the University of Nairobi, particularly in relation to *Ralstonia solanacearum*. At the same time, development work continues on the basis of the available phages targeting *Xanthomonas* spp. and *Pseudomonas syringae*.

Shipment of Samples to Slovenia

JAFRAL received part of the environmental samples collected during the joint sampling exercise in January for further laboratory analysis in Slovenia. Receipt of additional bacterial isolates was confirmed on 3 March 2026. Environmental samples collected in April were prepared for shipment to Slovenia, with dispatch taking place after the end of the reporting period.

Bacterial Identification and Bacteriophage Isolation at JAFRAL

JAFRAL carried out laboratory analysis of the environmental samples received. Promising bacterial isolates were submitted for MALDI-TOF analysis, which identified two potential tomato pathogens, namely *Xanthomonas* spp. and *Pseudomonas syringae*. The presence of *Ralstonia solanacearum* was not confirmed in the analysed isolates.

Three phages active against *Xanthomonas* spp. and two phages active against *Pseudomonas syringae* were isolated. The phages were purified, propagated on a small scale and tested for host range. As two of the three phages targeting *Xanthomonas* spp. displayed identical or very similar activity profiles, two phages from this group were selected for further work.

Small research stocks of the isolated phages were also prepared and stored for further work.

Preparations for Larger-Scale Bacteriophage Production

Following the isolation, small-scale propagation and selection of the phages, JAFRAL began preparations for larger-scale production to support further testing and transfer to Kenya. Larger-scale production is planned for the next reporting period.

Preparation of the Bacteriophage Cocktail

The selected phages provide the basis for further formulation development, primarily targeting *Xanthomonas* spp. and *Pseudomonas syringae*. For the next phase, JAFRAL plans to prepare one litre of each individual phage preparation and concentrate it to 100 millilitres in order to facilitate shipment to the University of Nairobi.

The shipment is also expected to include the necessary buffer for phage dilution, provided either in tablet form or as pre-weighed powder, as well as bacterial isolates for positive controls.

Shipment of the material is planned for June 2026. In parallel, efforts continue to identify suitable *Ralstonia solanacearum* isolates and corresponding phages, as this pathogen remains an important target of the project.

Training Activities

Training activities during the reporting period focused on direct knowledge transfer through joint fieldwork and laboratory cooperation.
On 13 January 2026, a JAFRAL representative demonstrated environmental sampling procedures in the field. The partners also aligned their approach to target bacteria, sampling procedures and sample handling.
Further training of the University of Nairobi team in bacteriophage isolation and characterisation is planned as part of the continued capacity-building and knowledge-transfer activities.

3 PROGRESS INDICATORS AS OF 30 APRIL 2026

Isolation of bacterial strains: Isolates of *Xanthomonas* spp. and *Pseudomonas syringae* were identified. The presence of *Ralstonia solanacearum* was not confirmed in the analysed set of samples. Further isolation and characterisation of target bacteria remain ongoing.

Isolation of bacteriophages: Five phages were isolated. Four were selected for further work: two targeting *Xanthomonas* spp. and two targeting *Pseudomonas syringae*.

Preparation of bacteriophage mixtures: Phages for further formulation development were selected. The final bacteriophage cocktail has not yet been prepared.

Effectiveness testing: Initial *in vitro* testing confirmed the activity of the isolated phages against the available bacterial isolates. Testing of the final cocktail has not yet been carried out.

Transfer of the bacteriophage mixture to the University of Nairobi, *in vivo* testing under controlled conditions, and field testing on a tomato farm are foreseen in the continuation of the project.

Technology transfer: During the reporting period, knowledge-transfer activities continued through the application of previously provided protocols. The technology-transfer process, as defined by the project indicators, is still ongoing. The next steps include the transfer of bacteriophage isolation procedures and related technical know-how, protocols for *in vitro* and *in vivo* testing, and isolated bacteriophages for further use.

4 FINANCIAL IMPLEMENTATION OVERVIEW

Total approved project budget: EUR 320,000.

During the third reporting period, from 1 January to 30 April 2026, approximately **18.8% of the total project budget** was utilised.

Financial implementation during this period was linked to the delivery of field and laboratory activities, logistics related to biological samples, knowledge transfer, project coordination, public communication and engagement with local stakeholders.

The main areas of work underpinning expenditure during the reporting period included:

- **Field sampling in Kenya:** the joint sampling exercise in January and additional collection of soil, water and tomato plant tissue during the wet season in April, with the participation of local farmers and county agricultural officers.
- **Laboratory work:** preparation and processing of samples, isolation and identification of bacteria, isolation of bacteriophages, purification and small-scale propagation, host-range testing, and establishment of research phage stocks.
- **Handling and logistics of biological samples:** delivery of part of the January samples and additional bacterial isolates to Slovenia, together with preparation of the April samples for subsequent shipment.
- **Knowledge transfer and training:** demonstration of environmental sampling procedures, joint field and laboratory work, and coordination of sampling and sample-handling procedures.
- **Project coordination:** review of implementation progress and coordination of subsequent activities among the project partners, including the project partners' meeting on 18 March 2026 and the meeting of the University of Nairobi project team on 3 April 2026.
- **Public communication and engagement with local stakeholders:** preparation and publication of project-related content on LinkedIn and the official project webpage, together with presentation of the project and engagement with local farmers and agricultural officers regarding the acceptability of the proposed solutions.

Financial implementation during the third reporting period reflects the scope and nature of the project activities carried out. The remaining funds are expected to be utilised during the subsequent phases of project implementation.

Further expenditures are expected to relate primarily to the production of larger quantities of bacteriophages, their transfer to Kenya, and the implementation of planned laboratory and field testing, training activities and technology-transfer activities.