

## Factsheet midterm findings Applied Research Fund Call 3



### Improved Resilience Through Sustainable Production Of Grafted Tomatoes In Uganda (IRESO) Project

#### Summary

The IRESO project aims at improving income (wealth), nutrition, and resilience through the sustainable production of grafted tomatoes. The objectives of the project are; a) Mobilize stakeholders, carrying out situational analysis and assessment of the socio-economic impact as well as mapping of the prevalence of bacterial wilt in selected tomato growing areas in Uganda; b) Screen identified tomato root stocks for bacterial wilt tolerance and or resistance; c) Commercialize grafted tomato seedlings production through the (young plant raisers) youths businesses; d) Improve the capacity of tomato growers for commercial production of grafted tomatoes and e) Create awareness about the potential of grafted tomato technology through knowledge development and dissemination.

The IRESO Project has a proven business case of successful production of market desirable tomato varieties that are susceptible to bacterial wilt (*Ralstonia solanacearum*) in Uganda. The grafting technique is used to join the growing part (scion) of the market-desirable but bacterial wilt prone tomato plant with the root stock of a resistant tomato variety. These joined parts of the tomato plant will continue to grow together surviving the bacterial wilt infestation.

Tomato production is a source of income for producers especially in peri-urban and rural areas of Uganda. The project has restored hope amongst tomato farmers that have previously experienced losses attributed to the bacterial wilt disease.

#### Interim research findings

The preliminary results of the bacterial wilt disease development, incidence and severity performance trials show positive resistance to bacterial wilt by four selected promising root stocks. So far, 94 DNA samples have been extracted for identification of which races are prevalent in which project areas at Makerere University Kampala. The molecular sequencing is being supported by the Enza Zaden Laboratories in the Netherlands. The baseline study revealed that bacterial wilt on average is partly responsible for as high as 364 kg of tomatoes lost per acre each season amongst sampled farmers in the project area. This amounts equalizes a per capita loss of about USD 54 per person per year and about 7.7% of the annual per capita income for Uganda (USD 699). These results justify a business case for grafted tomato production in Uganda, because farmers are willing to cost effectively pay for grafted tomato seedlings resistant to bacterial wilt.

#### Interim outcomes achieved

The targeted tomato farmers are willing to embrace planting of grafted seedlings with the assurance that this will be a permanent solution to the previously frustrating bacterial wilt disease. The farmers' testimonies of willingness to buy these seedlings is a boost for the young plant raisers (youths' seedlings) businesses. However, the project beneficiaries requested for the training of community change agents to provide peer to peer agricultural extension as well as be the focal persons to link them to the young plant raiser (youths' seedlings) businesses. The farmers themselves will need to have improved access to knowledge on tomato production and estimation of tomato seedlings needed by each farmer pre-season. Access to knowledge by both household head and the spouse given by a dedicated community change agent is a

driver for gender balance and improved adoption rates of the grafted tomato technology and related good agricultural practices by both men and women.

The DNA molecular sequencing is used to map out which tomato races are prevalent in the project areas for further research work on tolerance/resistance levels of tomato plants and possible modelling of appropriate management practices specific for identified sites within the project areas.

#### Project messages to

##### A) Actors from private sector:

- Awareness sessions on management of bacterial wilt through planting of grafted tomato seedlings have been conducted by the IRESO consortium for Kiwa Commodities, the Bukasa women tomato sellers, and the Uganda fruit and vegetable market vendors association, with assurance on consistent supply of tomato for sale throughout the year.
- Young plant raisers can be useful actors in the agricultural value chain and they can transition to full-fledged farm owners and agri-business entrepreneurs.

##### B) Civil society and practitioners organizations:

- Civil society and practitioners organizations should support the youth to become agricultural value chain actors via the young plant raiser models.
- Safe fruit and vegetables production is possible as evidenced by the lessons of the grafted tomato project.

##### C) Policy makers:

- The policy makers interested in safe fruit and vegetables in Uganda for the domestic, regional and international markets. The grafted tomato project enables production of safe tomatoes with low pesticide use and improved agronomic practices. Similar innovative collaborative research and knowledge co-creation ought to be supported by policy makers and development partners.

#### Knowledge products

An appropriate solution to the most pressing challenge of bacterial wilt faced by tomato growers in Uganda was reached by Academia, Farmers, Researchers, Students and Program Managers through collaborative, [Co-creation and Research uptake: The best way to go](#). F&BKP article, April 2018.

#### Knowledge networks

Solidaridad is a member of the Sustainable horticulture platform with AgriProFocus as the convener. This platform will be expanded to include initiatives of Uganda Ministry of Trade, Industry and Cooperatives related to promotion of horticulture trade at the local, regional and international market levels. Solidaridad and her consortium partners will play a complementary role in promoting safe fruit and vegetables via the initiative of the Uganda Ministry of Agriculture, Animal Industry and Fisheries and the the project initiatives of 'Enhancing the capacity of the fruit and vegetable sector' to comply with phyto sanitary requirement to export to global markets [STDF Project PG - 543](#). The grafted tomato project has lessons on using resistant root stocks which reduces the need for heavy pesticide loads while trying to manage the bacterial wilt.

#### Knowledge co-creation

The IRESO has emphasised the participatory approach where all project board members as well as the targeted beneficiaries have a say in shaping the research agenda and strategic direction of the project. There is no 'the boss is always right' scenario and thus, amidst emerging challenges, solutions have been proposed to ensure the core focus of the project is continued. Furthermore, master students in Pathology and Agricultural Economics are participating in the project.

#### Consortium Partners

- [Solidaridad Eastern and Central Africa Expertise Centre \(SECAEC\)](#)
- [National Crops Resources Research Institute \(NaCRRI\)](#)
- [National Agricultural Research Organisation \(NARO\)](#)
- [Enza Zaden Beheer B.V.](#)
- [House of Seeds Ltd](#)
- [Makerere University](#)
- [AgriProFocus](#)

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#### Project website

[F&BKP Research Project page](#)