



Fruitfly eggs

FRUIT FLY INITIATIVE: ONE OF ITS KIND IN TERMS OF SCIENCE IN PRACTISE

By: B Nyhodo¹ and S Ntombela²

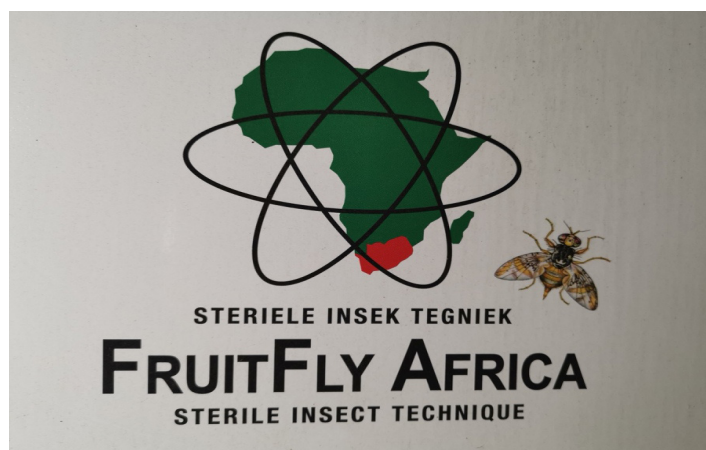
Introduction

To some of us who could not associate the study of biology (and later zoology – entomology) with any meaningful contributions to human life the Fruit Fly Initiative (Fruit Fly South Africa) is the place to visit. The institution is such an eye opener in terms of the economic value add of such an intervention to the fruit industry. Foresight and systems thinking is a prerequisite for a viable (i.e. competitive and comparative) agricultural sector and more so when done through a public-private partnership. Hortgro leadership (Mr Anton Rabe and Mr Louis van Zyl) insisted that the NAMC colleagues visit the facility and we did hence this short opinion note. Mr. B Nyhodo and Dr. S Ntombela visited the facility on the 20 February 2019.

Let us make an admission that it is mind boggling to get into a facility that produces millions of fruit flies does not even have the house flies moving around the facility. Considering what ordinary (house flies) like, we had a self-made image of a place that is dirty and full of flies all over and we encounter the opposite. A clean well looked after and not smelly place- except the smell of yeast which feeds fruit flies produced in the facility.

Background information

The South African fruit fly facility (Fruit Fly South Africa) is situated within one of the Institutes of the Agricultural Research Council (Infrutec-ARC). The organisation is a not for profit organisation (NPO) whose website is <http://www.fruitfly.co.za/>. The website has all the scientific reasons on why, how and on what basis are they doing what they do. This piece does not aim to re-write that but to put to the public domain our take on the institution. In so doing, we may repeat some of the information that is already written. Fruit Fly South Africa is funded by a number of fresh and dried fruit commodity organisations. The initiative also receives support and funding from the ARC and the Department of Agriculture, Forestry and Fisheries (DAFF). The primary benefit to commodity organisations is to ensure that any fruit kind produced and exported from South Africa is insert free – thus gaining access to markets and maintaining the country's competitive position of being a producer and exporter of a quality and safe fruits.



¹ Is a Senior Manager responsible for Agricultural Industry Trusts.

² Is a chief economist responsible for Trade Research and Economic Modelling That is at Stellenbosch.

Why does Fruit Fly South Africa exist?

The rationale behind the existence of the institution is to keep the population of quarantine flies low and where possible non-existent. The associated challenges of the existence of these quarantine insects within fruit producing areas is the matter of international market access (with trade agreements very explicit on these matters). The existence and associated costs of fruit fly colony on pome, table grape and stone fruits is estimated at R80 million per annum on average. This cost is higher when including other export fruits such as exotic and citrus.

Unchecked population may get out of control

It is scary to look at what 10% population growth means to the world of fruit flies. Within few months a couple or pair can multiply to thousands of insects within months. Therefore, the negative effects of only two insects can present a catastrophe to the entire industry (market access matters).

What are the benefits of Fruit Fly South Africa?

International market access that for the producers amounting to billions of rands (producers, exporters and logistics companies benefit). This can be translated into jobs depending on the labour multiplier effects, meaning government benefit in creating social stability and tax revenue. An initiative of this nature is of paramount value to the academic fraternity to continue doing research that will further the understanding.

Fruit Fly South Africa's approach

The approach to achieving this is the production and distribution of the sterile male flies. Then the distributed males compete with the wild males for female attention. In successful cases where the sterile male's mate with wild females the offspring eggs are infertile (reducing the prospects of rapid population increases).

The sterilisation of flies is done through a radiation process of the flies at a certain stage of their metamorphosis. It is important to emphasize that the sterilisation process does not alter the genome and physiology of the fly – thus producing flies that are almost similar to their wild counterparts. However, we were made to understand that one drawback of the radiation process is that the sterilised males are can be weaker than the wild fertile one. This weakness is normally compensated for by the release of many of these flies in relations to the wild population.

Who is proud of this initiative?

The representative body of producers of deciduous fruit known as Hortgro is very proud of the initiative. We need to say that Hortgro represent stone and pome fruit producers. Hortgro talks with great pride about the economic benefits of the investment (since its formation in 1996 there about). A cost benefit analysis was done regarding the investment and it came out that the

investment is far more important than initially anticipated. Let us repeat that it can be said that science, in this case entomology combined with technology innovations were applied to the business environment to the direct benefit of businesses, the public and the academia. DAFF is playing its part in this project and the ARC is doing its best to assist the industry maximise on it lucrative markets.

How is the working environment looking like?

Two observations can be made on attitudes of the workers in the company (very live and joyous). Two they see themselves as catalyst to the work of the fruit industry.

The NAMC was invited by Hortgro (Mr Anton Rabe and Mr Louis van Zyl) to visit the fruit fly facility that is an important part of the industry. Pursuant to the motivation of Hortgro it became clear that a visit to the facility will be important to the NAMC. Mr. B Nyhodo and Dr. S Ntombela visited the facility on the 20 February 2019.

Summary impression

Great initiatives exist where government and private sector are holding hands. The future of any food production systems is dependent on science – applied not done for academic accolades. The future of institutions like Fruit Fly South Africa must be guarded with pride. Science is a catalyst to profitable, socially accepted productive systems internationally agricultural and food businesses.A

