



Aphid monitoring on Cedara

Archana Nunkumar

Aphids are among the most widespread pests affecting agriculture worldwide. In particular, aphids are efficient transmitters of plant viruses that threaten the quality of seed potatoes. The South African Seed Potato Certification Scheme (Amendment No. R 313 of 2013) has strict requirements in place regarding the quality of seed potatoes and tubers. Two of the viruses transmitted by aphids that are of global economic importance to the potato industry are potato virus Y (PVY) and potato leafroll virus (PLRV) (Kruger *et al.*, 2014). The aphids feed on the sap of infected potato plants, after which they move on and transmit the viruses acquired to healthy, uninfected plants. Aphids feeding on infected plant material can retain the virus for several hours in the case of PVY or for their lifetime in the case of PLRV. It is important to note that not every individual of a vector species carries plant viruses (Kruger *et al.*, 2014).

Virus incidence is related to aphid flight patterns, species, species abundance, virus transmission efficiency and potato cultivar susceptibility. Reliable estimates of aphid numbers can be used to predict the risk of virus transmission. Therefore, the monitoring of aphids using suction traps is key to an effective management programme.

The national aphid monitoring suction trap network consists of thirteen 12.2 meter high Rothamsted type suction traps (Figure 1), which are situated in the major seed potato growing regions of South Africa. Each trap is representative of aphid numbers in an area within an 80 km radius of the trap (Kruger *et al.*, 2014).

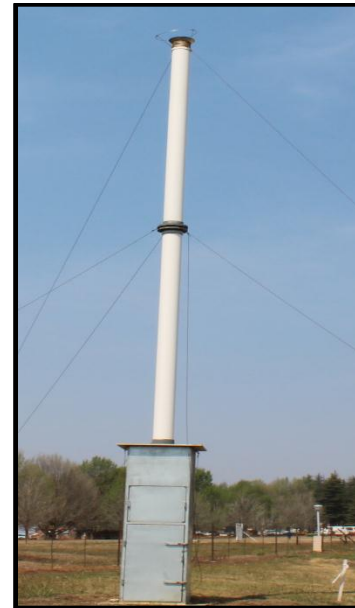


FIGURE 1: The Rothamsted aphid trap on Cedara

The aphid monitoring programme is a joint initiative of Potato South Africa, the University of Pretoria and the KwaZulu-Natal Department of Agriculture and Rural Development.

The aim of the trap is to provide seed potato growers with regular estimates of aphid abundance at a regional level so that they are able to assess virus risk. The monitoring of aphid abundances assists growers in making management decisions regarding location and timing of aphid control measures.

The information obtained from the aphid monitoring programme is important to the potato industry with regards to the activity of specific species and the potential threat they pose in the specific potato growing areas.

Results from the University of Pretoria have identified the aphid species that can carry potato viruses as well as the transmission efficiency for South African aphid biotypes. To date 21 aphid species capable of transmitting PVY have been recorded in South Africa.

The different aphid vector species present on Cedara are shown in Figure 2. These vector species are now endemic to the region; however, their abundance varies annually. The most abundant aphid vector species present on Cedara for 2016/2017 was *Rhopalosiphum padi* (Figure 2). An increase in abundance of a particular aphid vector species could be due to more favourable conditions that enhance its flight or an increase in host plants in the area.

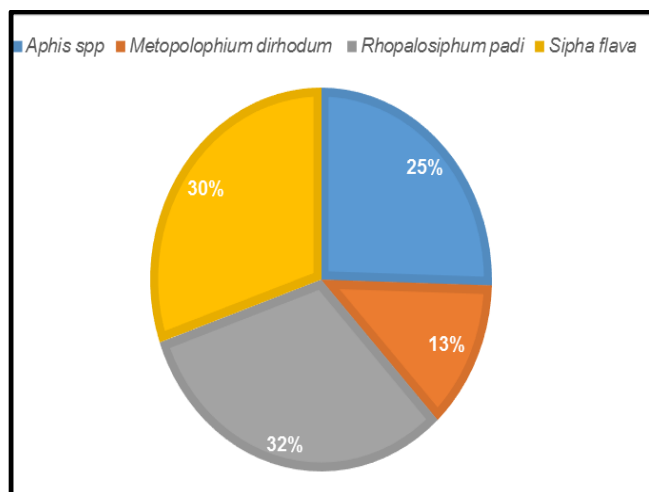


Figure 2: Showing the aphid vector distribution on Cedara for July 2016 to June 2017

The trend in the aphid flight patterns from July 2014 to June 2017 on Cedara is displayed in Figure 3. From November to December, the number of aphids decrease and are at a low, but numbers do increase from January onwards. The highest number of aphids are usually caught during October.

Potatoes on Cedara are grown under irrigation from August to September and under dry land conditions in October to November and January to February. Therefore, during September to November, it is

imperative for farmers to scout the land for insects continuously so corrective management decisions can be made.

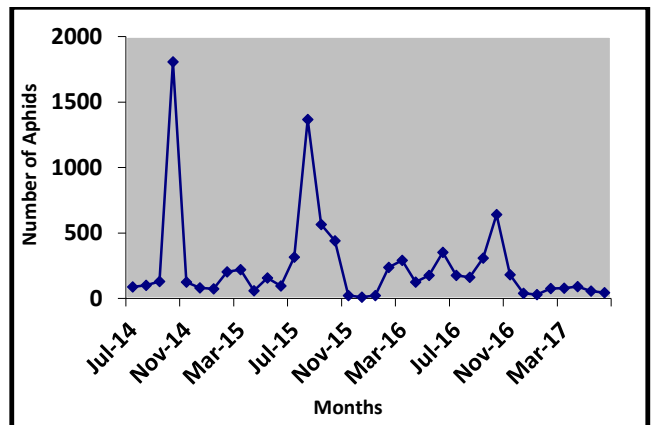


Figure 3: Showing the number of aphids on Cedara from July 2014 to June 2017 which gives an indication as to when to apply effective control measures

References

Kruger, K., Laubscher, K., Schröder, M.L., Miller, I. and Muller, L. 2014. **Aphid monitoring in the South African Potato Industry**. Potato SA Final Report.

Acknowledgments

Professor Kerstin Kruger: The Zoology and Entomology Department, University of Pretoria

Janine Snyman: The Zoology and Entomology Department, University of Pretoria

Contact

Archana Nunkumar

Professional Scientist: Plant Pathology

Tele: 033 343 8094

Archana.Nunkumar@kzndard.gov.za

KZN Department of Agriculture & Rural Development
 Directorate: Agricultural Crop Research Services
 Sub-directorate: Crop Scientific Research Services
 Division: Crop Protection Services, Cedara

Published March 2018