Euphresco

Success story

March 2019

VirusCollect II: building an international network of collections for reference of regulated and other important plant viruses and viroids

Reliable collections are vital for the identification of pest species and the development of detection methods; strengthening the infrastructure of plant virus collections is required also because diagnostic tests on regulated organisms have to be accredited under the new plant health rules of the European Union that apply from December 14th 2019. The ability of laboratories of National Plant Protection Organizations (NPPOs) to fulfil this requirement will depend on public access to well-characterised virus isolates.

The aim of the VirusCollect I and II projects was to establish and extend an international network of collections of plant viruses and viroids (hereafter referred to as viruses), thereby making virus isolates available for reference at diagnostic and research laboratories working in plant health. At present, access to isolates of regulated viruses is limited and only the plant virus collection at the 'Deutsche Sammlung von Mikroorganismen und Zellkulturen' (DSMZ) is officially accredited as reference producer.

Two successive VirusCollect projects have clearly concluded that plant virus collections are not on the priority list of policy makers and researchers. Only those partners that benefited from allocated budgets were able to contribute substantially, characterising the isolates and making them publicly accessible and available (through Q-bank). In addition, the implementation of the Nagoya protocol appeared to increase the administrative obligations of both curators and users of collection materials. Therefore, governments need to allocate specific budgets for the characterisation and maintenance of virus collections to enable NPPO laboratories to perform their official tasks.

Within VirusCollect II, more than 150 isolates of regulated and (related) non-regulated viruses have been made available. However, since identification of many isolates was based on one test only, and/or genomic sequence data were lacking or limited, not all of them qualify as reference

material yet. Whether these isolates will be included in Q-bank (recently transferred to the infrastructure of the European and Mediterranean Plant Protection Organization, EPPO) depends on the criteria imposed on completeness of data and certainty of identification. The transfer of Q-bank to EPPO ensures the continuity of a platform for sharing data on availability and location of virus isolates for diagnostics and research.

Close collaboration was established between VirusCollect II scientists and those involved in another Euphresco project: The application of Next-Generation Sequencing technology for the detection and diagnosis of non-culturable organisms: viruses and viroids (2015-F-172 NGS-detect). The collaboration, especially the joint meetings, offered a fruitful platform for sharing expertise and exchanging information on practices on the characterisation and safeguarding of virus isolates for reference. Discussions on High-Throughput Sequencing (HTS) analytical methodology and on quality criteria for reference materials contributed to a common understanding of procedures, as well as identifying future needs and functions of plant virus collections.
The report of the VirusCollect II project, including recommendations to policy makers, will be published by the end of April 2019.

Project ID: 2015-F-132 VirusCollect II: building an international network of reference collections for regulated and other important plant viruses and viroids (VIRUSCOLLECT II).

References:

- Roenhorst JW, Boonham N, Winter S, Menzel W and Van der Vlugt RAA (2013). The plant viruses and viroids database and collections of Q-bank. EPPO Bulletin 43, 238–243.
- Roenhorst JW, Lacomme C, Nisbet C, Leichtfried T, Menzel W, Winter S and van der Vlugt J (2017). Euphresco project VirusCollect – fulfilling the need for a common collection of plant viruses and viroids for reference. EPPO Bulletin 47(1): 41-47.
- Scientific report of the Euphresco project 'Fulfilling the need for a common reference collection of plant viruses and viroids (VirusCollect I).