QUESTIONS – ANSWERS

What has been the experience with Tomato Brown Rugose Fruit Virus ?

As a diagnostic and research lab we prepared well for this emergent threat. Our NPPO included this pathogen in its control plan and has been surveying in Belgium for some time now. Many of those samples were analysed in our lab. We are currently also preparing to start an extensive survey in a project, funded by the FPS Health. (Prof. Kris De Jonghe)

Vaccine which mechanism in plants?

Vaccination in plants exists, also in practice. A good example of this in Belgium is the cross-protection which is common practice in the management of Pepino mosaic virus in our tomato greenhouses. Actually, the principle is that a host, in this case tomato, is infected by a closely related strain of the virulent virus. Mostly this is a mild strain inducing only very little of even no symptoms on the host and by its presence it prevents an infection of a more severe strain of the virus that would result in serious economic losses. In case of Pepino mosaic virus, the formulation containing the mild strain can be simply sprayed over the crop. (Prof. Kris De Jonghe)

We often use phenology etc. to determine invasiveness/impact. Could we use the genomic profiles of viruses to highlight possible areas that could contribute to a more invasive/virulent virus ahead of looking for symptoms? I.e. predicting if a newly found virus could be detrimental before seeing if it impacts plants?

The genome of the viruses could predict the transmission mode and the potential host range which are two key information for risk analysis. The symptom prediction (and their severity) is particularly difficult to model with the existing knowledge today. Indeed, the symptom severity is also related to the plant genotype, not only the virus isolate. Ex post, it is possible to use the genome to predict the symptom severity caused by a virus based on previous observation (bioassay or field observation). Sometimes, a single mutation confers the aggressiveness to a virus. Ex ante, the observation of symptoms on the plant from which the virus has been discovered is one important information to take into account as well as its association with symptomatic plants at the initial location (and the evaluation of symptom severity): if the virus is always present with symptomatic plants and absent in healthy plants, it raised the risk for this virus (and such biological information can be combined with genome modeling to fine tune the risk prediction). (Prof. Kris De Jonghe)

Is there a link between viruses in plant health and food safety?

Not to my knowledge, we are eating numerous plant virus particles when consuming plants but there is no evidence of an impact on our health or on the food safety so far. So, for plant viruses, there is no risk at all.

There is one remark, plants can play a role in the transmission of animal or human viruses. However, the transmission of zoonotic pathogens via food is common for many bacterial pathogens, eg. Salmonella or Campylobacter spp., yet is quite uncommon for viruses, with a few exceptions (eg. infectous Hepatitis). (Prof. Kris De Jonghe)

What would be a good way to monitor a stink bug inside of a greenhouse?

Promising results for monitoring are reported with the aggregation pheromone of Halymorpha halys (Acebes-Dorian et al., 2018. Insects 9:82), which can be applied on a glued surface or trap. A lot of research is focusing on the optimal trap design but no clear differentiation of monitoring results right now. Other options are less selective but since a greenhouse is a closed environment, probably worth trying: 1/ a light trap and 2/ beans as a sentinel plant. (Prof. Dany Bylemans)

How can research be done on Q-status organism? Is there an EU- document how to take action when Q-organism is found equal for all EU-members ?

Several approaches for research on Q-organisms can be envisaged, in specialized laboratories or, if needed, in confined research accommodation:
Development and validation of diagnostics Development and validation of survey strategies, trapping techniques, sampling protocols or modelling Research on the epidemiology under local conditions Determining the status (absence / presence) of an organism in the country, by performing an extensive survey. This is one of the main elements for an organism to qualify as an Q pest after pest risk analysis (criteria article 3 of the **EU Plant Health regulation** (link is external)). An important side aspect of actively looking for pests is to educate and to raise also awareness by researchers, growers, ... If the pest is shown to be absent from the territory, transnational cooperation with regions where a pest is already present is an option. Examples of research activities in this field can be find in the **project portfolio** of the Contractual Research unit.

The new **EU Plant Health regulation** (link is external) (EU) 2016/2031 sets the framework for the steps to be taken when a Q organism is detected. There is compulsory notification (art 11-15-16) at different levels and the member state has to take all phytosanitary measures to eradicate the organism (art 18) conform the principles mentioned in annex II of 2016/2031. Demarcated areas have to be established and a yearly report on these areas and measures taken has to been send yearly to the COM and Member states. For certain Q organisms, these measures are harmonized in specific legislation (cf. art 28 of **regulation 2016/2031** (link is external)). For the EU priority organisms, contingency plans have to be prepared.

For information, eligibility criteria for contractual research :

General	Eligible	Not eligible
Plant Health		
Research into organisms that are harmful to cultivated and / or wild plants, including quarantine organisms, organisms that are new, unknown or whose dissemination is limited and for which more information is required in the context of future regulation or policy	determination of the occurrence, distribution (pest status) and settlement potential study of biology epidemiological research exploring the impact of possible control measures developing new risk assessment aspects or methods development of new methods for sampling and / or diagnosis, identification or quantification risk assessments providing scientific elements for Pest Risk Assessments (PRA)	research into quality organisms research into invasive species under Regulation 1143/2014 plant breeding research, except when the breeding concerns greater (phytosanitary) disease resistance research into sustainable agriculture, except when it is in the field of phytosanitary policy environmental research, except when it is in the field of phytosanitary policy biodiversity research, except when it is in the field of phytosanitary policy routine checks on compliance with existing standards