# SPITFIRE - Screening of *Pisum sativum* accessions for PNYDV resistance

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Pea (*Pisum sativum*) is a leguminous crop that is generally used for livestock feed and human consumption. It is also commonly used to improve soil fertility through intercropping and crop rotation in agricultural practices. This high value vegetable has a steady gradual growth of demand in Europe, and it is one of the major vegetables in Germany, produced on 5,656 hectares in 2021 (BLE, 2022). However, the pea production in both Germany and Austria suffers from the infection of a nanovirus, pea necrotic yellow dwarf virus (PNYDV). PNYDV is a multipartite, single-stranded, circular DNA virus and transmitted by aphids in a circulative, persistent manner (Gaafar and Ziebell, 2020). The first identification of PNYDV in pea was in 2009 from a field in Saxony-Anhalt, Germany (Grigoras *et al.*, 2010); then subsequently detected in Austria (Grigoras *et al.*, 2014; Gaafar *et al.*, 2016), the Netherlands (Gaafar *et al.*, 2017) and Denmark (Gaafar *et al.*, 2018). Infected peas show symptoms of leaf rolling, chlorosis, stunted growth, shorter nodes, poorly developed pods and necrosis; sometimes also complete plant death can occur thus leading to severe yield losses as also observed for other legumes (Saucke *et al.*, 2019). Currently, the control of virus vectors using pesticides is often expensive and not efficient, especially with the concerns for sustainability and environmental issues. Moreover, development of pesticide resistance was also reported for some insect vectors. Therefore, virus-resistant plant varieties are needed for sustainable production of pea crops. As to date no commercial PNYDV-resistant pea lines are known, the SPITFIRE project aims to identify genetic resources of peas that may confer resistance or at least tolerance to PNYDV infection. In collaboration with the Genebank for Plant Genetic Resources (IPK Gatersleben, Germany) and pea breeders, the Julius Kühn-Institut (JKI) and the Austrian Agency for Health and Food Safety (AGES) are screening pea varieties, land races, heritage cultivars and wild *Pisum* species for potential PNYDV resistance.