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RHIZOMANIA INTRA- AND INTER-FIELD DIVERSITY IN FRANCE – IMPLICATIONS FOR THE DISEASE MANAGEMENT

Rhizomanie : diversité intra- et inter-champs en France – implications pour la gestion de la maladie / Rizomania-Befallsdiversität innerhalb und zwischen Standorten in Frankreich – Bedeutung für das Krankheitsmanagement

ABSTRACT

From 2008 to 2012, the French Pithiviers area was surveyed for detecting the presence of BNYVV and other soil-borne viruses like BSBV, BVQ, BBSV and BSBMV. More than 835 out of the 1054 samples were found positive and allowed a comparison with the previous study of Schirmer *et al.* (2005). The results emphasize the evolution of the disease, the real complex and unique situation in this area with the concomitant presence of three different BNYVV types (A, B and P) as well as an increasing frequency of mixt infections.

For a long-term follow-up of the disease, field trials have then been set up in 2009, 2010, 2011 and 2012 with varieties resistant to BNYVV. Each of the experimental fields was analyzed for the virus and vector *Polymyxa* infectious potential prior establishment of sugar beet crop. At the beginning and the end of the growing season, samples were collected. The P25 and P26 genes were amplified by RT-PCR and sequenced. The level of virus presence was evaluated also by ELISA as well as quantitative real time RT-PCR. Soil analysis, presence of nematodes as well as data on root impact were also gathered.

The results emphasize a real intra-field diversity, a divergent evolution according to the sugar beet varieties resistance and the type of BNYVV. Such analysis is confirmed also by next generation 454 deep sequencing data for BNYVV P14, P15, P25, P26 genes. The comparison between the disease situation in May and September as well as implications of the results for the disease management will be discussed.