



Pathology and Pests Section Meeting 7th – 11th August 2016, Dundee Scotland

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THE COLONISATION OF DIPLOID AND TETRAPLOID POTATO PLANTS BY *DICKEYA SOLANI* OBTAINED FROM INFECTED TUBERS

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The bacterium *Dickeya solani* causes two diseases of potato: blackleg of plants and soft rot of tubers. Extreme resistance to pectinolytic bacteria has not been found. The study revealed that diploid interspecific hybrids of potato performed significantly better than tetraploid potato cultivars after inoculation of tubers and stems with a highly aggressive strain of *D. solani*, in conditions favoring disease development. Means for weight of rotten tissue of tubers ranging from 0.01 to 2.0 g for diploids, in comparison to standard potato cultivars Irys and Glada, with 12.9 g and 4.7 g of rotten tissue, respectively. When the bases of plant stems were inoculated, the number of symptomless plants was significantly higher for diploids, ranging from 73 to 100% for highly tolerant plants, while means for standard cultivars, Irys and Glada, were 21.0% and 45% respectively. The objective of the study was to investigate whether the most tolerant diploid clones from the screening remained tolerant after vacuum infiltration of seed tubers. In 2015, a small trial was conducted. Two susceptible cultivars were used, Irys and Kondor. *D. solani* was detected by real time PCR in stems of plants grown for two weeks after inoculation of sprouted seed tubers by vacuum infiltration with the inocula adjusted to 10^8 and 10^7 CFU/ml, in contrast to roots and tubers from plants of the two most tolerant diploid clones inoculated by stem infection 12 weeks earlier. In 2016, one susceptible potato cultivar Irys, and two highly tolerant diploid clones in stem inoculation assays, were screened for colonisation by *D. solani* from infected mother tubers. Inoculated tubers were planted in pots and kept in a climatic chamber at 24 °C for one week, then placed at 22 °C. The high humidity and temperature resulted in a high level of non-emergence due to rotting. After infection with an inoculum of 10^8 CFU/ml all 20 tubers of cultivar Irys rotted before emergence. For diploid clones, DG 06-28 and DG 00-519, 10/20 and 15/20 plants emerged, respectively, but two plants of DG 00-519 showed blackleg symptoms. In four tested plants of each clone bacteria were not detected in stems (lower, medium and upper part) after 30 dpi. On 60 dpi bacteria were found in two plants in DG 06-28 and one plant in DG 00-519, but on CVP medium bacteria were isolated from three tested plants. After infection with the inoculum 10^6 CFU/ml one tested plant of cultivar Irys showed a high level of bacteria 30 dpi in contrast to a very low level of bacteria detected in one plant of the DG 06-28, and in three more plants 60 dpi. After 85 dpi plants of the diploid clone DG 06-28 did not show any symptoms of infection, while DG 00-519 showed necrosis of leaves and stems. The study continues and we hypothesise that these two diploid clones might differ from each other in tolerance/resistance to *Dickeya solani*, and DG 06-28 might be a valuable source of resistance for further studies and potato breeding.