

Molecular markers associated with plant responses to Tobacco Rattle Virus (TRV) in potatoes

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TRV is spread by free-living nematodes: *Trichodorus* ssp & *Paratrichodorus* ssp., found in light, sandy soils in Europe, FSU, N.America, Japan, China.

TRV can have significant detrimental effect on plant growth, yield and tuber quality.

Breeding efforts have been restricted due to limited information of epidemiology and source and nature of resistance & susceptibility to the virus. SCRI has investigated the effects of this virus and have identified two heritable and different plant reactions using two progenies phenotyped using a common PRN virus strain. Progenies were analysed using bulk segregant analyses and AFLP markers.



Nadine

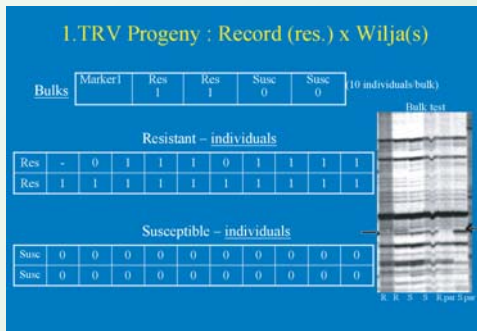
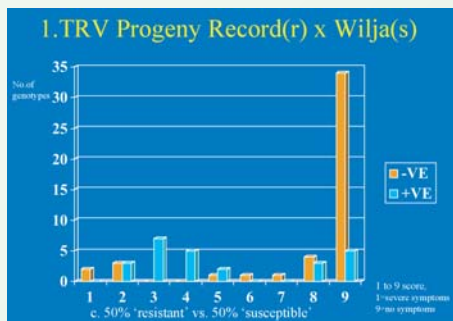


Romano



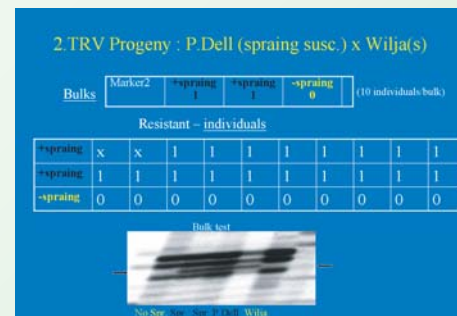
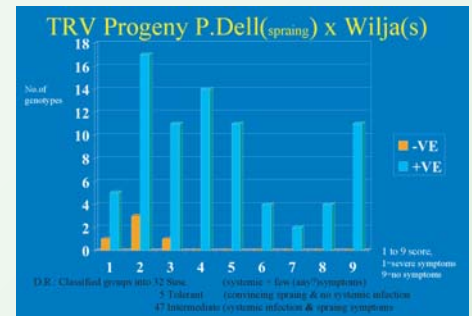
Resistance to TRV

True resistance has been identified in a progeny between Record (resistant) x Wilja (susceptible) which appears to be based on a simple dominant gene of major effect.



Spraing in tubers

Hypersensitive-type of resistance (causing spraing = spraing susceptible) has been identified in a progeny between Pentland Dell (spraing susceptible) x Wilja (susceptible) which appears to be based on a gene of major effect.



Conclusion

The identification of different AFLP markers associated with major heritable factors for true resistance to TRV and also for the production of spraing symptoms will allow

breeding programmes to progress towards truly resistant material. This will allow growers to reduce their current reliance on nematicides to control the vector nematodes.