



Genetic resistance found against potato wart disease

PhD student Charlotte Prodhomme found several resistance genes against this fungus.

Potato wart disease can be recognized by the warty bulges on potatoes tubers and is caused by the parasitic fungus *Synchytrium endobioticum*. Wart disease is the main quarantine disease for potatoes in the Netherlands because there are no effective fungicides and most potatoes are not resistant.

Prodhomme looked for resistance genes against the fungus. She focused on the resistance to four different pathotypes of potato wart disease that occur in Europe, namely pathotypes 1, 2, 6 and 18. A resistance gene had already been identified for pathotype 1, but not for the other types. The French PhD student scanned the breeding material of several potato

Multiple genes involved in resistance against potato wart disease

breeding companies and found five important resistance genes. She also located

these resistance genes on the potato genome, so that breeders can use molecular markers to check whether these genes are present in the descendants in breeding trials.

Prodhomme also discovered that resistance against potato wart disease is complex, with multiple genes involved. As an example, she could only create full resistance against pathotype 18 by combining one dominant gene with a couple of minor genes. 'Each minor gene is not very important on its own, but together they provide full resistance.'

The strength of her research, says Prodhomme, was that she had input from both the Plant Breeding group (with expertise in potatoes) and the Bio-interactions & Plant Health group (with expertise on pathogens). She also collaborated with Dutch, German and Danish breeding companies. Her research was funded by the Dutch Horticulture top sector and her supervisor was Richard Visser, professor of Plant Breeding. She will defend her thesis on 22 October. AS