

Nematode damage reduced by more than \$40 million annually

PARASITIC SOIL WORMS ARE CAUSING SIGNIFICANT YIELD AND ECONOMIC LOSS FOR GRAIN FARMERS ACROSS AUSTRALIA'S NORTHERN REGION.

Pratylenchus thornei is a root lesion nematode that feeds on plant roots and is estimated to be present in about two-thirds of fields in the northern grain region.

In 2016, crop nematologists from USQ's Centre for Crop Health finalised a five-year research project on this destructive pest, which provided a number of key insights into how the distribution and longevity of this soil pathogen can significantly decrease the yield of susceptible crops.

Pratylenchus thornei can survive in soil for several years following a harvest. The higher the initial population, the longer it takes for levels to fall below the damage threshold. Although the use of tolerant crop varieties or early planting are both effective strategies to avoid yield loss, they can lead to increased nematode populations and reduction of soil quality.

USQ researchers developed a life-cycle population model that combined existing data on how climate and temperature influences the rate of population growth with findings on how nematodes interact with different crops.

A key outcome from the study is that the life-cycle population model is able to provide farmers with an accurate prediction of population decline, if the initial population is measured after harvest.

USQ researchers are now working with grower groups to disseminate the findings and encourage the adoption of the life-cycle population model into current farming systems as a benchmark tool for agricultural modelling.

The yield gap from nematode damage is approximately 159,000 tonnes of wheat. Adoption of the model across the northern grains industry would return an estimated \$41.5 million in economic gains based on a conservative price at \$275 for Australian Premium Hard wheat.

