

CAN LEGUME CHOICE INFLUENCE NEMATODE POPULATIONS?

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LEGUME ROTATIONS ARE a key tool to reduce cane specific pathogens in the sugarcane farming system. Growers in the Coastal Burnett region wanted to know the impact of legume choice (either soybean or peanuts) or of legume varieties on nematode populations.

To address this issue three pot trials were established, one for each nematode; *Meloidogyne incognita* (a root-knot nematode), *Meloidogyne javanica* (the most common root-knot nematode in the coastal Burnett) and *Pratylenchus zaeae* (lesion nematode). In each of these trials, peanuts (varieties Holt and Kairi); soybean (varieties A6785, Bunya, Fernside and Hayman) along with promising lines in the soybean breeding program (T183-3 and T015-3); tomato (in root-knot trials) and sweet corn (in lesion trial) were assessed.

The crops were sown into pots of pasteurised sand and grown for two weeks to establish a healthy root system. For the two root-knot nematode (RKN) trials 10 000 eggs were added to each pot and the crop was grown for 14 000°C-hours.

The tops were then removed, roots washed free of sand and nematode eggs extracted from the roots by soaking in a 1% NaOCl solution. The nematodes were caught on a 38 µm sieve and eggs counted. For *Meloidogyne incognita*, there were significant differences in nematode egg numbers for soybean T183-3^c ≥ Bunya^c ≥ Hayman^c > Fernside^b ≥ T103-5^{ab} ≥ A6785^a ≥ and peanut Kairi^a ≥ Holt^a.

There were similarities in response to the major RKN species *Meloidogyne javanica*; where the difference in the number of eggs recovered was Bunya^c ≥ Hayman^c ≥ T015-3^c ≥ T183-3^c ≥ Fernside^c > A6785^b > Holt^a ≥ Kairi^a. However, legumes are a far better rotation crop choice than crops like tomatoes that are known hosts of RKN. For lesion nematodes (*Pratylenchus zaeae*), the crops were sown in a similar fashion to the RKN trial but grown for 10 weeks.

The nematodes were extracted from the roots by slicing the roots finely and placing in a misting chamber for 7 days. The resulting solution was sieved over a 38 µm sieve and nematodes counted. Lesion nematode numbers recovered differed by crops and choice of variety.

The highest number of lesion nematodes recovered was on soybean variety T183-3^c ≥ Bunya^c ≥ Hayman^c ≥ T013-5^{bc} ≥ Fernside^b ≥ A6785^b > peanut Holt^a ≥ Kairi^a. However, legumes were a relatively poor host in comparison to other rotation choices like sweet corn and tomatoes.

These pot trials demonstrated that while legumes are a good tool for reducing some nematode species, the development of a legume decision support tree would be advantageous to allow growers and advisors to select the best crop and/or variety to manage the specific nematode problems on a paddock by paddock basis.