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NEMATODE PESTS

that cripple local soya bean production

The adverse impact of plant-parasitic nematodes, root-knot (*Meloidogyne* spp.) in particular, on local soya bean crops has been continuously experienced by producers. Parasitism of soya bean, by *Meloidogyne incognita* and *M. javanica* in particular, is posing problems for producers and related industries.

Producers should inspect growing soya bean plants by removing them from the soil and looking for knots/galls on their root systems. Small areas in fields with plants showing non-optimal growth, which may be represented by either stunted plants and/or those with yellow leaves, should be identified and investigated for the presence of root-knot nematodes.

Annual yield losses

The estimated annual yield losses in local soya bean crops, as a result of parasitism by root-knot nematode pests, is reported to range between 25% and an ultimate 100%. In South Africa, *M. incognita* and *M. javanica* are regarded as economically the most important and predominant nematode pests, occurring in monospecific as well as mixed populations in soya bean production areas.

Although this scenario also applies to

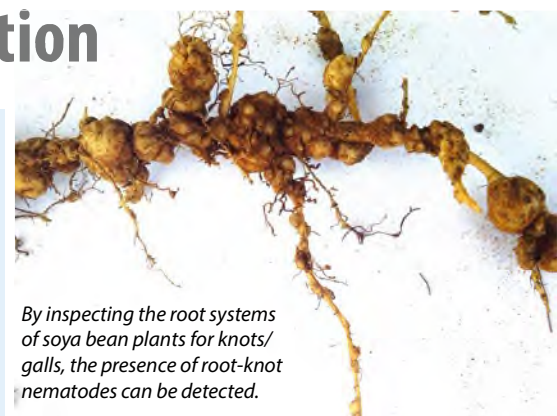
areas where maize was traditionally grown and into which soya bean is progressively being planted, *M. arenaria* was also recently identified (using molecular techniques) in maize roots received for diagnostic analyses from the Bothaville and Kroonstad districts.

Threat to rotation crops

These root-knot nematode species therefore pose a threat to the production of soya bean and other rotation crops. According to information gathered and knowledge generated from research efforts over the past two decades in particular, root-knot nematodes are most probably one of the major constraints resulting in substantial yield losses in soya bean crops.

The use of chemically-derived nematicides is generally not regarded as an economically viable strategy to control root-knot nematodes on soya bean globally, with no nematicide being registered locally for the crop. However, the use of genetic host plant resistance is the most popular and cost-effective tool used worldwide to protect soya bean crops against nematode pests.

Although this strategy represents an environmentally-friendly tool to protect



By inspecting the root systems of soya bean plants for knots/galls, the presence of root-knot nematodes can be detected.

soya bean crops against economically significant root-knot nematode species, only two known and tested commercial cultivars with resistance to root-knot nematode pests are presently available. These are the conventional cultivar Egret and genetically modified/Roundup® Ready cultivar DM6 2iR.

Increased infestations

Due to the increasing root-knot nematode infestations being recorded from local soya bean fields, it has become imperative to evaluate exotic cultivars for their host status to local root-knot nematode populations.

During 2015, nine exotic cultivars as well as a susceptible (LS6248 R) and resistant cultivars (LS5995 and Egret) were evaluated for their host status to *M. incognita* and *M. javanica* in separate greenhouse experiments. Reproduction factor (Rf) values obtained from greenhouse screenings of <1, indicating resistance to *M. incognita*, were recorded for the resistant standard cultivars LS5995 and Egret and seven of the exotic cultivars.

With regard to *M. javanica*, Rf values <1 were only recorded for the resistant standard LS5995 and three of the exotic cultivars. Should such poor-host exotic cultivars be adapted to environmental conditions in South African soya bean production areas, they could contribute substantially to alleviate root-knot nematode problems experienced by producers. 🌱



Soya bean fields showing non-optimal growth can lead to annual yield losses.