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Research Article

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[Potential of Pleurotus sajor-caju compost for controlling Meloidogyne incognita and improve nutritional status of tomato plants](#)

The potential of spent compost of oyster mushroom, *Pleurotus sajor-caju* cultivated on rice (MCR) or wheat straws (MCW) was evaluated against the root-knot nematode, *Meloidogyne incognita* on tomato plants under field conditions during two successive seasons (2016 and 2017). The field trial was carried out in a clay loam soil naturally infested with *M. incognita* at a private farm, Kafr El-Sheikh governorate, Egypt. Results revealed that all the tested treatments greatly suppressed final populations (Pf), numbers of galls and egg masses of *M. incognita* during both seasons as compared to the untreated treatment. The highest percentages of Pf reductions (81.1 - 87%) and (80.2 - 86.2%) were achieved with the chemical nematicide, Vydate® 10 G and treatments of (MCR and MCW) at application rate of 1200 g/m<sup>2</sup> in the 1st and 2nd seasons, respectively. Moreover, the fruit yield during both seasons was increased significantly with all the applied treatments, especially treatment of MCW at application rate of 1200 g/m<sup>2</sup>. Additionally, chemical fruit properties were markedly improved with MCR and MCW treatments. Also, treatments of MCR and MCW achieved the highest percentages of nitrogen and phosphorus contents. Generally, the results indicated that spent compost obtained after cultivation of *P. sajor-caju* has a nematicidal potential against *M. incognita*, also improved nutritional status and increased tomato yield.

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Research Article

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[Nematicidal effect of abamectin, boron, chitosan, hydrogen peroxide and Bacillus thuringiensis against citrus nematode on Valencia orang](#)

The nematicidal efficacy of abamectin, boron, chitosan, hydrogen peroxide, *Bacillus thuringiensis* and oxamyl 24% SL against citrus nematode, *Tylenchulus semipenetrans* were examined on Valencia orange trees under field condition for two successive seasons (2017 and 2018). The experiment was conducted in a Valencia orange orchard infested with citrus nematode at Nubaria, El-Behera governorate, Egypt. The obtained results showed that all the tested treatments reduced nematode final population ((Pf) and reproduction factor (Rf) compared with that obtained from the untreated trees. The highest percentages of Pf reductions (74.5-83.4 %) and (70%-82%) were recorded with oxamyl, boron, abamectin, chitosan and H<sub>2</sub>O<sub>2</sub> in the 1st and the 2nd tested seasons, respectively. Whereas, *B. thuringiensis* had the least nematode Pf reduction with 60.7 and 55.8% in the 1st and 2nd seasons, respectively. Additionally, all treatments significantly improved orange yield (30.9-83.2% increase), physical fruit parameters and orange juice properties. The highest orange yield increase (83.2%) was recorded with boron treatment followed by oxamyl (70.3%). Also, boron increased total soluble solids (TSS) by 13.6%, volume of orange juice (36.4%) and vitamin C (19.7%) and decreased juice acidity (A) by (16.7%). It is concluded that abamectin, boron and the other tested compounds have potential as non-chemical control strategy tools in managing the citrus nematode. These bioagents reduced the amount of traditional chemical nematicides and are considered to be environmentally safe.

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Research Article

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[Renal function effects of FDS, a saponin isolated from Filicium decipiens seeds: Biochemical and Histopathological studies](#)

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Physicochemical and pharmacological studies indicated that *Filicium decipiens* seeds contained various specialized metabolites, including saponins. The aim of this work is to reveal the nephrotoxicity of FDS, a saponin isolated from *Filicium decipiens* seeds on male Wistar rats histopathological and biochemical parameters. Rats were submitted to oral ingestion of FDS (6.0 mg/kg) and crude extract (120.0 mg/kg) and were observed high levels of urea and creatinine in blood analyses of all animals followed by an acute renal failure by glomerular retraction. In the present study, FDS and crude extract when administered in Wistar rats induced an increase of serum levels of Urea and Creatinine, biochemical markers of kidney function. Table 1 shows Urea concentration at Test group with FDS ( $54.3 \pm 1.80$  mg/ml) and Test group with crude extract ( $49.7 \pm 2.00$  mg/ml), were 47% and 34.7% higher, respectively, when compared to control group ( $36.9 \pm 2.00$  mg/ml), and Creatinine at the test group with FDS ( $2.1 \pm 0.03$  mg/ml) and test group with crude extract ( $1.6 \pm 0.09$  mg/ml) presented a value 3.5 and 2.8 times higher, respectively, than control ( $0.6 \pm 0.08$  mg/ml). Based on these results, our data demonstrate a significant effect in renal function of rats treated with *F. decipiens* saponin.

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## Review Article

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### [Three modern serological methods to detect plant viruses](#)

The use of enzyme linked immunosorbent assay (ELISA) for the detection of plant viruses is well documented. It proved to be a very valuable detection tools for the plant viruses. The efficiency of the ELISA technique was for practical purpose independent of the ratio of antibodies to antigen. This avoids the necessity of making specific enzyme conjugates for each antigen to be tested and eliminates the extreme specificity, thus allowing for quantitative evaluation of strain relationships. The advantages of indirect ELISA are sample. It needs only to be macerated and added to the plate. The crude antiserum could be used, although it should be cross absorbed before to prevent spurious host reaction. Single commercially available second antibody conjugate is utilized, thus eliminating the problems of preparing and storing many different conjugated antisera. Blotting technique has become widely used for specific identification of nucleic acid and proteins. This dot assay was modified to detect protein by spotting the antigen on a nitrocellulose membrane and incubating the membrane in test antibody followed by incubation in peroxidase-conjugated second antibody to the first antibody, and by development in 4-chloro-1-naphthol. The above procedure termed dot blot immunobinding assay (DBIA). The technique of tissue blotting on nitrocellulose membrane was described for detection of plant viruses in infected plants. Tissue blots were made by pressing with a firm and gentle force, the freshly cut tissue surface on nitrocellulose membranes. The possibility of using both sides of the nitrocellulose membrane (NCM) by tissue blot immuno assay (TBIA) for the detection plant viruses. In an effort to reduce the cost of virus assays, different types of regular paper were evaluated as possible replacements for the commonly used nitrocellulose membrane (NCM) as the solid phase in the tissue-blot immunoassay (TBIA) were used. Comparisons between different serological methods were demonstrated by many investigators Dot immunobinding was eight times more sensitive for detection of PVX and four times more sensitive for detection of PVS and PVY than DAS-ELISA.

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## Research Article

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### [Comprehensive phenotypic characterization and genetic distinction of distinct goosegrass \(\*Eleusine indica\* L. Gaertn.\) ecotypes](#)

Goosegrass (*Eleusine indica* L. Gaertn.) is a troublesome weed in turfgrass systems throughout the world. The development of herbicide resistant ecotypes has occurred to multiple modes of action. Goosegrass is a prolific seed producer (~50,000 per plant), fast growing and diverse weed. Such growing attributes make it essential to have a better understanding of the genetic diversity of various ecotypes. The objectives of this study were to determine if morphologically distinct goosegrass ecotypes collected in Florida were phenotypically distinct and genetically different. Phenotypically, the goosegrass ecotypes can be classified as follows; dwarf, intermediate 1 (int\_I), intermediate 2 (int\_II) and wild. The dwarf had the least seedheads followed by the wild ecotype; 5 and 17 respectively, while int\_I and int\_II had highest number of seedheads; 22 and 34 respectively. The dwarf ecotype had lowest height of 6 cm and the wild ecotype had highest height of 36 cm. Dwarf and int\_II ecotypes had shortest internode length of 0.2 cm and 1 cm, respectively, while the wild ecotype had longest internode length of 7 cm. The dwarf ecotype had lowest number of racemes per plant of 1, while the wild ecotype had highest number of racemes per plant of 7. Total biomass was lowest for the dwarf and int\_II ecotype; 0.7 g and 1.5 g, respectively, and total biomass was highest for the wild ecotype at 5 g. Gene sequencing of two rice (*Oryza*) gene sequences (accession AP014964 (gene A) and AP014965 (gene B)) and subsequent phylogenetic analysis suggest the ecotypes are genetically different. Three single nucleotide polymorphisms (SNP) of interest were discovered indicating allelic differences between ecotypes.

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## Research Article

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Cowpea plants naturally infected with cowpea mosaic comovirus (CPMV) showed different mosaic, mottle, dwarfing, and vein clearing symptoms. Diseased plants were collected from certain locations of Alexandria and El-Beheira governorates during the growing seasons from 2011 to 2012. CPMV was detected in infected sap at 8 to 24 days after inoculation by DBIA, indirect ELISA and tissue blot immunoassay (TBIA). Chlorotic local lesions were observed on *Chenopodium amaranticolor* in infectivity test. By using indirect ELISA and DBIA, CPMV were detected in infected plant sap of serial dilutions up to 1: 400. The incidence of CPMV in 21 day old cowpea seedlings grown from infected seeds was determined by ELISA and positive detection of virus antigen reached 65%. Nitrocellulose membrane and canson paper could be used as solid carriers in TBIA and DBIA for detection of CPMV in infected plant tissues. Results revealed that both faces of nitrocellulose membrane and canson paper could be used as solid carriers in TBIA for detection of CPMV in infected plant tissues. According to reverse transcription polymerase chain reaction (RT-PCR) assay of CPMV infected plant; the amplified product was approximately 800bp of partial coat protein gene. The nucleotide sequences accession number were LN606585 and LN606586. The phylogenetic tree was generated using sequences of CPMV isolates with the other CPMV records from GenBank.

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**Review Article**

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[Avermectins: The promising solution to control plant parasitic nematodes](#)

Abamectin and emamectin are members of avermectin family which categorized as very effective but in the same time are toxic naturally. Most of products in this family are utilized as pharmaceuticals in both humans & animals and for crop protection. Despite avermectins are having complex chemical structures, but they are produced via synthesis in large scales for commercial use. Plant parasitic nematodes (PPNs) cause severe damages in all parts of their host plants, in addition to yield losses. The available strategies to control PPN include use of insecticides/nematicides but these have proved detrimental to environment and human health. Therefore, this scenario gave an opportunity for the utilization of avermectins (abamectin and emamectin) to control plant parasitic nematodes because of their chemical and biological properties, as well as relative safety. Avermectins have short half-lives and their residues can be eliminated easily through different food processing methods. Both abamectin and emamectin were very effective nematicides which proved capability of reducing PPNs significantly in various crops.

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