efficient it can be in rice cultivation. The dry-wet cycle and biochar alone can reduce waterlog conditions and thus minimize water-borne pathogens, root-knot nematodes and other harmful microbes in the soil (**4, 5**). To suppress these disease-causing microbes furthermore, biochar amendment in the field at 1% (w/w) is highly efficient as proved by the rice plant stress-responsive enzyme assessments. Further metagenomics and high throughput sequencing showed the prominent difference in the microbial diversity where the disease-causing microbial community and root-knot nematode have been substantially minimized in the biochar-amended dry-wet fields with greater nutrients to promote plant health and tolerance. **1.** Majumdar, A, et al, 2023. Chemosphere, 312, 37117. **2.** de Medeiros, E.V, et al, 2021. Phytoparasitica, 49, 713-726. **3.** Mondal, S, et al, 2021. Journal of Plant Diseases and Protection, 128, 819-829. **4.** Majumdar, A, et al, 2021. Journal of Hazardous Materials, 409, 124443. **5.** Poveda, J, et al, 2021. Phytopathology, 111, 1490-1499.

P3.4-026

IMPACT OF DIFFERENT TILLAGE SYSTEMS ON NET CARBON EXCHANGE RATES (NCER) AND WINTER WHEAT INFECTION A LONG-TERM STUDY

SAWINSKA Zuzanna. (1), BLECHARCZYK Andrzej. (1), RADZIKOWSKA-KUJAWSKA Dominika. (1), ?WITEK Stanis?aw. (1)

(1) Poznan University of Life Sciences, Poznan (Poznan-Jezyce), POLAND

Text

The research was conducted during the years 2021–2023, on the base of a long-term study established in 1998, at the Experimental Station Brody (52°26′ N; 16°18′ E), belon ging to the Pozna? University of Life Sciences. The purpose was to evaluate the impact of different tillage systems on net carbon exchange rates (NCER) and severity of plant infection by pathogenic fungi in whinter wheat. A randomized complete block design was set up with four replicates per treatment (conventional, strip till and no-tillage systems). The results demonstrated higher net carbon exchange rates (NCER), in flag leaf phase and no-tillage systems. Fusarium spp. and Gaeumannomyces graminis occurring on stem base s and roots were the main pathogens found in winter wheat. The incidence of stem base and roots was shown to increase under no-tillage in comparison with phloughing tillage system. Puccinia recondita and Septoria nodorum predominant on leaves. The conven-tional tillage increased the incidence of leaf diseases of winter wheat as related to theploughless tillage systems.

P3.4-027

IMPACT OF SOIL MANAGEMENT ON DISEASE SUPPRESSION OF SOIL BORNE PATHOGENS IN ARABLE FIELDS

POSTMA Joeke. (1), SCHILDER Mirjam. (1), VAN DE VOORDE Tess. (1)

(1) Wageningen University and Research, Wageningen, NETHERLANDS

Text

Enhanced soil suppressiveness against plant pathogens is a promising strategy to control diseases and crop losses. Improved management practices are developed, however, the

effect of soil management treatments on the level of suppressiveness is mostly unknown. To acquire this knowledge, samples from several field experiments comparing different soil treatments have been evaluated for soil suppressiveness.
Field soils were tested in pot experiments with garden cress and sugar beet by scoring the disease rate after artificial infection of the soils with respectively *Pythium ultimum* and *Rhizoctonia solani* AG2-2IIIB. These two pathogens are known to react differently on the biotic and abiotic factors in soil, being more or less conducive to general and specific suppressiveness. Pythium suppressiveness was in general enhanced by reduced tillage and the addition of several organic products. Rhizoctonia suppressiveness was not consistently influenced by tillage. And although chitin- and keratin-rich products stimulated Rhizoctonia suppressiveness in pot experiments, this effect could not be attained in field trials up to now. Nevertheless, Rhizoctonia suppressive soils did occur among arable fields of farmers, but how to create such suppressiveness is unclear. One of the factors involved could be the presence of the pathogen itself in the field being a precondition to evoke disease suppression, since Rhizoctonia decline is a well-documented phenomenon for several crops.

P3.4-028

CHITIN-FORTIFIED BLACK SOLDIER FLY COMPOSTED ORGANIC FERTILIZER AS AN EFFECTIVE TOOL FOR MANAGING POTATO CYST NEMATODES AND IMPROVING POTATO YIELDS

ANEDO Emmanuel Onyekwelu. (1), BENSON Mochoge. (1), NICHOLAS Korir. (1), BEESIGAMUKAMA Dennis. (1), HAUKELAND Solveig. (1), TANGA Chrysantus. (1)

(1) International Centre of Insect Physiology and Ecology, P.O. Box 30772-00100 Nairobi, Kenya, Nairobi, KENYA

Text

Soil degradation and nematode infestation are major challenges to potato production. Synthetic fertilizers and nematicides are costly, less effective, and harmful to the environment. This study explored the potential for use of chitin-fortified black soldier fly composted organic fertilizer (BSFCOF) as a multipurpose organic fertilizer for improved potato yield, and suppression of potato cyst nematodes under greenhouse conditions. The BSFCOF was applied at a rate equivalent to 150 kg N ha-1 and fortified with chitin from black soldier fly pupa exuviae at inclusion rates of 0, 0.5, 1, 2, 3, 4, and 5%. Potato growth, yield, cyst population, number of eggs/J2 g soil-1, and potato cyt nematode (PCN) reproduction rate were monitored. Results revealed that soil amendment with chitin-fortified BSFCOF significantly increased potato growth and yield compared to the control. The number of marketable tuber yields achieved using chitin-fortified BSFCOF was 63 – 169% higher than the control. Chitin-fortified BSFCOF caused a significant reduction in the cyst nematode population (37 – 87%) and the number of cyst eggs/J2 g soil-1 (50 – 96%) compared to the control. Potato yield and PCN suppression increased with an increase in chitin inclusion. Our findings demonstrate that chitin-fortified BSFCOF is a high-quality and multipurpose soil booster for improved soil health and PCN management.
Keywords: Potato cyst nematodes, Chitin, Insect frass fertilizer, Soil health, Potato yield

P3.4-029