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The dairy industry generates waste that, without due mitigation, has the potential to generate environmental impacts. The disposal of organic waste to the soil has as purpose a form of disposal of material, aiming at reducing environmental contamination. This practice can consider the waste as a raw material potencial, which, if well managed, benefits the properties of the soil. The objective of the present work is to evaluate the alteration in pH of the soil after application of increasing doses of sludge from the dairy industry. The biological sludge of the dairy industry had the following characteristics: Neutralizing capacity 16,4%; Organic C 380 g kg^{-1}; N 66,3 g kg^{-1}; P 34 g kg^{-1}; K 2,2 g kg^{-1}; Ca 35,9 g kg^{-1} and Mg 2,9 g kg^{-1}. The soil used in this study, classified as Albaqualf soil (Planosol), presented: pH in water 4,0; Organic matter 2,62%; Clay 21%; S 38,2 mg dm^{-3}; P (Mehlich) 11,5 mg dm^{-3}; K 21 mg dm^{-3}; Al 3,7 cmol dm^{-3}; H + Al 17,3 $cmol_c$ dm^{-3}; $CTC_{affective}$ 5,5 $cmol_c$ dm^{-3} and SMP 4,8. The experiment was conducted in the Laboratory of Soil Microbiology of the Federal University of Pelotas, arranged in a completely randomized design, with three replications. An experimental unit was used 500g of soil disposed in a polyethylene bag. The recommended dose of 36 Mg ha^{-1} of sludge from the dairy industry was defined by the need for N, as recommended by the Commission on Soil Chemistry and Fertility - RS/SC (2016) for maize. From this dose different percentages were established that determined the following treatments: 1- 0 Mg ha^{-1}; 2- 18 Mg ha^{-1}; 3- 36 Mg ha^{-1}; 4- 42 Mg ha^{-1}; 5- 108 Mg ha^{-1}; 6- 144 Mg ha^{-1}. The samples were collected at 16, 22, 29, 39 and 51 days of incubation. Data were submitted to analysis of variance at 5%, and regression analysis was performed. There was a quadratic behavior at all doses throughout collection times. All treatments that received sludge from the dairy industry showed a corrective effect on soil acidity, the treatment 6 had a higher effect, raising pH to 4,82 at 16 and 22 days of incubation. From the 39 days of incubation, the pH value decay was observed in all treatments, demonstrating the loss of the corrective potential of the sludge from the dairy industry. It can be concluded that the sludge from the dairy industry does not have sufficient neutralization potential to raise the pH to an ideal value for the development of plants, requiring limestone complementation.

Keywords: sludge; dairy; pH
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(6651 - 2079) Cover crops diversity improves soil microbilogy on crop rotations systems

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Diversification of plant species, whether cultivated or under cover crops, in a production system affect soil properties, especially soil microbiology. The objective of this study was to evaluate the effect of different crop rotation systems on soil microbial activity. The experiment was carried in the field in Presidente Bernardes-SP, Brazil, in a completely block randomized design, with five replications. The treatments consisted of single or intercropping of cover crops cultivated in the 2017 winter: 1) black oats (*Avena strigosa*) and lupine (*Lupinus albus*); 2) black oats, lupine (*Lupinus albus*), Mombaça (*Panicum maximum jacq.*) and stylosanthes (*Stylosanthes macrocephala*; 3) Mombaça (*Panicum maximum jacq.*); 4) Mombaça (*Panicum maximum jacq.*) and stylosanthes and 5) fallow. The soil for the microbiological analysis was sampled at of 0-10 cm depth, on 10/10/2017 (120 days after cover crops sowing), and the evaluated characteristics were: activity of the enzyme dehydrogenase, soil respiration, microbial biomass nitrogen, microbial biomass carbon, remaining shoot dry matter and root dry matter weight (0-20 cm). The means of the treatments were compared by the Tukey's test (P<0.05). The dry matter weight of the remaining straw was higher in the Mombaça and stylosanthes treatments (4.4 Mg ha^{-1}); (4.2 Mg ha^{-1}) and in the consortium oats, lupine, Mombaça and stylosanthes (3.9 Mg ha^{-1}) compared to the fallow (1.6 Mg ha^{-1}). The root dry matter mass was higher in the treatments with cover crops (1.7 Mg ha^{-1}), compared to the fallow (0.8 Mg ha^{-1}). The enzyme dehydrogenase showed higher activity in the oat and lupine consortium (3.9 ug TTF g^{-1} soil) compared to the fallow (1.8 ug TTF g^{-1} soil). On the other hand, soil respiration was higher in the fallow and Mombaça (4.9 and 3.8 mg CO_2 kg^{-1} of soil day^{-1}, respectively), compared to the oat and lupine consortium (2.4 mg CO_2 kg^{-1} of day^{-1} soil). Nitrogen and carbon from microbial biomass were higher in the soil cultivated with oats, lupine, Mombaça and stylosanthes (20.8 and 422 mg kg^{-1}) compared to fallow (6.9 and 141 mg kg^{-1}). In conclusion, increasing the diversity of cover species in the rotational systems improves the biological activity of the soil.

Keywords: straw, microorganisms, crop rotation.
Financial support:

(9680 - 1361) Dark septate fungi inoculation and fertilization with organic nitrogen source benefit the growth of tomato plants

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Dark septate endophytic (DSE) fungi can be used as plant growth promoter. However, several ecological functions of DSE fungi need further clarification. The present study investigated the effects of DSE fungi inoculation on nutrient accumulation and growth of tomato plants fertilized with organic and inorganic N sources. Experiment was carried out under greenhouse conditions in a randomized blocks design, with five replicates of tomato seedlings. Tomato seedlings (cv. Santa Clara I-5300) inoculated with DSE fungi (isolates A101and A105) and without DSE fungi (control) were transplanted to pots filled with 12 kg of soil which had previously received finely ground plant material (Canavalia ensiformis [L.]) or ammonium sulfate. Growth indicators and nutrient content in the plants were quantified 50 days after transplanting. The treatment inoculated with DSE fungi and supplied with an organic N source showed significantly higher N, P, K, Ca, and Mg content, plant height, and shoot dry matter increased. In contrast, no positive effects were observed in the presence of an inorganic N source. Inoculation with A101and A105 promoted the growth of tomato using organic N source.

Keywords: Solanum lycopersicum (L.) nitrogen DSE fungi phosphorus
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(7281 - 1951) Density and diversity of edaphic mites de in an integrated crop-livestock system after 15 years under different grazing intensities

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