ABSTRACT

Laundry detergents play a very large role in daily life. Commercial laundry detergent, however, contains many irritating, and potentially toxic ingredients.

The objective of this study is to determine the effects of solution of different powdered laundry detergent (PLD) which is sold by the commercial market, on soil biochemical properties and seed germination rate under greenhouse conditions. Ccon applications increased soil bacteria and fungi populations in with increasing incubation days in different textured soils. The lowest soil bacteria populations were observed at 90 days incubation period in D3 detergent solution in light textured soils. The highest bacteria population value was observed at 30 days incubation period in D3 detergent solution in light texture soil. The lowest fungi population value was observed at 90 days incubation period in D3 detergent solution in heavy textured soil (Fig. 2). The highest fungi population were observed at 90 days incubation period in D3 detergent solution in light and heavy textured soil (Fig. 3).

Microbial populations in light texture soils showed high value than heavy texture soils in all incubation days and Ccon applications.

RESULTS and DISCUSSION

The effects of laundry detergent residues on some biochemical properties of farming soil and seeds germination rates

Figure 1. Effect of different detergent solutions, different incubation days in different textured soils on soil reactions.

Figure 2. Effect of different detergent solutions, different incubation days in different textured soils on soil bacteria population.

Figure 3. Effect of different detergent solutions, different incubation days in different textured soils on soil fungi population.

Figure 4. Effect of different detergent solutions, different incubation days in different textured soils on soil respiration.

Figure 5. Effect of different detergent solutions, different incubation days in different textured soils on seed germination.

Figure 6. Effect of different detergent solutions in different textured soils on seed germination.

CONCLUSION

In this study, we examined the effects of different laundry detergent solutions on average soil pH, bacteria and fungi population, soil respiration, and seed germination rate in soils.

Ccon detergent solutions have been contributing to increase basic compounds in soil with increasing incubation days. The impact of laundry detergent ingredients on the environment depends largely on how wisely chosen and used detergent. Higher concentration of detergent led to higher pH of soils because of accumulation of more salts in soils.

Detergent species could be regarded as pollution tolerant organisms and are used as biological indicators for water pollution. Some of the detergents were highly toxic to living organisms also, the high doses of all detergents solutions were lethal to living organisms in soils. Especially, surface-active agents and phosphates, presented in detergent used during the current study, are the most toxic for on living organism population (numbers and composition).

Concentrated detergent solutions to soils induced a remarkable decrease in seed germination rates by depending on high concentrations of detergent concentration and inhibitory or toxic effects.

The negative effects of diluted detergent solutions have not been observed on seed germination. Diluted detergent wastes to be used in soil as irrigation water have been reduced the damages of agricultural land.

Diluted laundry greywater has good potential for irrigation in farmlands if the selected plant is able to remove pollutants (Na and metals) from greywater irrigated soils without adversely affected by surfactant residues and other pollutants.

However, further research is needed to determine if hyper accumulation of these nutrients in corn and bean plant has any adverse effect on human nutrition that may limit widespread use of laundry greywater in various soils and plants.

REFERENCES


