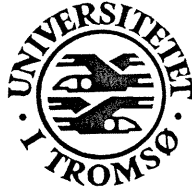


EKSAMENSOPPGAVE

Eksamen i : Bio-3133 Soil Ecology
Dato : Monday 6.December 2004
Tid : Kl. 09.00 – 13.00
Sted : Samvirkegården 4 etg.
Tillatte hjelpemidler : Ingen

Oppgavesettet er på 2 sider inklusiv forside

Kontaktperson: Mona H. Eilertsen, tlf. 44543



FINAL EXAM BIO 3133 SOIL ECOLOGY

Monday 6.December 2004, 09:00-13:00

1. Habitat and microorganisms

- a) Define soil and include a brief description of its constituents.
- b) What are aggregates? Why are they important to soil community composition?
- c) Why does the analysis of community DNA probably give a better estimate of microbial diversity than cultivation methods alone?
- d) What are plasmids? What do you suppose might be the ecological significance of plasmids in soil bacteria?
- e) Contrast the types of energy metabolism exhibited by the following groups of bacteria: obligate aerobes, obligate anaerobes, facultative anaerobes and aerotolerant anaerobes? What types of microenvironment does each group inhabit in soils?

2. Cycles in soil

- a) What are the major organic constituents of crop residues and how do they differ in ease of decomposition by the soil microbial community?
- b) Differentiate between the concepts nitrification, nitrogen fixation, nitrogen mineralization, nitrogen immobilization, and denitrification.
- c) Describe two different groups of organisms capable of "fixing nitrogen".
- d) Why is a soil pH of approximately 6.5 important for plant and microbial growth?
- e) What is the difference between methane production and methane flux? Under what conditions would you use one term or the other?

DEPARTMENT OF BIOLOGY

Administration

University of Tromsø, N-9037 Tromsø, Phone +47 77 64 43 94, Fax +47 77 64 63 33