determination of high soil resistance, ability to withstand sharp fluctuations of water, air and temperature regimes, soil solution composition, ability to absorb and to retain toxic elements and compounds.

Evaluation of soil humus status and preservation of optimal humus composition call for a selection of parameters for systematic control in time and space. It would be meaningful to utilize not separate parameters but their complexes, among which the following should be listed: humus content and stock, its richness in nitrogen, degree of humification, type of humus, content of movable and stable fractions, etc. The spatial variability of humus content and its composition also plays a substantial role in the evaluation of soil humus status and stability of agrocenoses.

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Study by size fractionation of the organic matter in a cultivated tropical soil fertilized by labelled crop residues (^{14}C ^{15}N) and urea (^{15}N)

C. FELLER[1], G. GUIRAUD[2] AND J.M. HETIER[3]

1. ORSTOM Antenne ORSTOM, DB/SRA, CEN Cadarache BP no 1, 13115 St. Paul Lez Durance, France; 2. CEA Service de Radioagronomie, CEN Cadarache BP no 1, 13115 St. Paul Lez Durance, France; 3. CNRS Centre de Pedologie Biologique, 54500 Vandoeuvre les Nancy, France

Millet was cultivated in Senegal on a sandy soil fertilized by labelled maize straw (^{14}C ^{15}N) (1 cm fragments) and urea (^{15}N). After cultivation the top soil was first dry-sieved at 2000μ then passed through, with water, 200 and 50μ sieves. Five fractions were separated: three soil fractions with plant fragments larger than 50μ (F 2000, F 200, F 50), one organomineral fraction 0–50μ (FOM) and the water-soluble one (W).

^{15}N utilization coefficients were both about 25 per cent. ^{15}N losses from straw and urea were respectively 0 and 50 per cent. ^{15}N labelled straw residues were mainly represented in the upper size and organomineral fractions. Most part of urea-derived ^{15}N was in water soluble and organomineral fractions. Mineralization of ^{14}C was about 60 per cent. The main part of soil remaining ^{14}C was encountered in more than 50μ fractions.

Size fractionation of labelled soil organic matter allowed to study the carbon and nitrogen plant residues transformations and the part of each fraction in the humification processes.

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