



NC 3/68

INTERNATIONAL BIOLOGICAL PROGRAMME

SECTION PCT

Decomposer Cycle Working Group, PT

Meeting held in Microbiology Seminar Room, Plant Industry, CSIRO, Canberra, 15 November 1967.

Present: Dr. R.J. Swaby (Convener)
Dr. K. Lee (Zoologist)
Dr. J. Warcup (Mycologist)
Dr. Y. Tchan (Bacteriologist)
Dr. J.N. Ladd (Biochemist)

Resolutions dealt with plans for participating in both Australian and International Biological Programmes.

Australian Programme - In New Guinea

1. To initiate study of the changes in soil microflora and fauna, their effect on decomposition of organic matter and turnover of plant nutrients within (a), tropical rain forest, after clearing and development of (b), native gardens, then after evolving (c), permanent agricultural rotations utilising artificial fertilisers, weedicides and pesticides. This work is related to the need for more food for native people in New Guinea consequent upon improvement of health and life span by Medical Science. Being a new project it needs to be linked with other IBP activities, such as Human Adaptability, possessing laboratories in New Guinea, such as Nitrogen Transformations, investigating nitrogen methodology, also of great interest to those concerned with carbon, phosphorus and sulphur turnover. It should be associated with work already existing in New Guinea Administration, and by the University of New Guinea. At Townsville, CSIRO has facilities for pilot work on such a project. Finance would be necessary for salaries of scientists, technical assistants, and typists, for equipment, for annual maintenance and for travelling. A case will be prepared for consideration by IBP Australian National Committee and transmission to the Australian Academy of Science for presentation to the Minister of Education and Science.

On Mainland

2. To foster co-operative studies on ecology of soil organisms and their turnover of organic matter and nutrients in arid zone grazing areas under (a) native vegetation (b) introduced pasture species for both winter and summer rainfall conditions. The facilities offered by the "Range Lands Research Programme of Australia" is welcomed by both CSIRO and University participants in the Decomposer Programme. Particular attention will be paid to mechanisms of burial of organic materials such as plant residues and animal dung, their decomposition and re-cycling of nutrients.
3. To foster co-operative studies on decomposition of needle litter, and mineralisation of nutrients in forests of Pinus radiata, by encouraging exchange of ideas and experimental findings at specialist conferences.
4. To foster co-operative research on detoxication of soils, particularly in cases of decline of crop productivity due to accumulation of toxic products of (a) microbial origin during periods of monoculture and (b) spray residues from herbicides, fungicides and pesticides. It was hoped that information would be exchanged freely at a conference to be organised.

International Programme

1. To urge the formation of a "bank" of humic and fulvic acids extracted from a number of the Major Soil Groups of the world. These materials to be made available or sold to research workers interested in testing analytical methods on standard humates, since one only is available commercially.
2. To urge the formation of a "bank" of plant materials completely labelled with N^{15} and C^{14} also plant constituents, such as lignin, cellulose, pectin, proteins, nucleic acids and lipids, similarly labelled. Such materials would be particularly valuable in the study of C and N cycles in soil already containing un-labelled organic matter.
3. Suggestions have been made for including three simple techniques in the proposed Handbook of Methods in Soil Ecology being considered in Paris this month, viz. (a) carbon dioxide production in soil under aerobic and waterlogged conditions, (b) availability of N, P, S from biomass killed on air drying soil and released on re-moistening, (c) comparison of the relative importance of meso-fauna and microflora in leaf litter decomposition using nylon net technique.

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