



## SS06

### Integrating different tools for assessing soil health status

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Over the last 30 years, several methods have been developed for assessing ecotoxicological risks of chemicals in soils. This started with the development of standard toxicity tests with different (single species of) soil invertebrates and plants and tests on different measures of soil microbial activity (e.g. soil respiration and nitrification). Later, more advanced test methods, including model ecosystems and field tests as well as tests focusing on different endpoints like avoidance behaviour of arthropods were developed. These tests were mainly developed and applied within the framework of the registration of new chemicals and the risk assessment and establishment of thresholds (risk limits) for new and existing chemicals.

Soon, these methods also were adopted for assessing the quality or risk of contaminated soils. For that purpose, also new methods became into focus, like biomarker assays to determine responses at the biochemical level and to act as early-warning tools of pollutant effects. To determine effects on the microbial community, concepts like PICT were introduced and the use of Biolog plates enabled assessing effects on a wider array of biological processes (physiological profile of microbial activities). Recently, the toolbox has been extended with molecular tools, including methods like DGGE to assess (changes in) the composition of the microbial community, and microarrays and Q-PCR to determine effects at the level of gene expression.

All these methods may teach us aspects relevant for the health status of organisms living in soil or exposed to it. In addition, each method may have (technical) advantages and disadvantages, and may teach us different things. It may therefore depend on the question raised whether a method may be useful or not. In many cases a combination of methods will be needed for an adequate assessment of soil health status.

The aim of this session is first to determine what level of knowledge is needed for a proper assessment of the health status of a (contaminated) soil to allow for a well-balanced decision regarding management measure to be taken. This may also require a discussion on what exactly is meant with terms like 'soil quality' or 'soil health status'. Second, the session aims at reviewing different tools available, ranging from single species toxicity tests to new gene expression techniques. The possibility of integration of the information from different tools and confirmation of added value in case studies is desirable. To that end, it will include presentations of different tools with a critical appraisal of their advantages and disadvantages and of their possible contribution to knowledge on the soil health status.