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**Biological Implications of Soil Solarization** by D. K. Arora, *Centre of Advanced Study in Botany, Banaras Hindu University, Varanasi 221 005, India.*

Soil solarization is a method of hydrothermal disinfestation accomplished by covering moist soil with transparent polyethylene films during summer. Effective solarization process depends on climatic factors (solar radiation and air-temperature; humidity and velocity), soil characteristics and polyethylene properties (e.g. transmissivity to short and long-wave atmospheric infrared radiation). By appropriate knowledge gained in the changes in microbial ecology of solarized soil and technology of application, "solarization" is the most suitable technique to control soilborne plant diseases, weeds, mites and insects.

Direct thermal effects are probably the major phenomenon implicated in the death of soilborne pathogens during the process of solarization. Besides pest control, soil solarization may cause: (a) shift in non-thermophillic microbial population, (b) physico-chemical properties of soil, and (c) increase in the activity of various resistant saprophytes and antagonistic microorganisms. In a solarized soil partial nullification of fungistasis and reduced viability of heat sensitive fungal propagules may occur. Such propagules may also consequently become more sensitive for parasitism and lysis by antagonistic microorganisms.

In a solarized soil, sub-lethal temperature (35–45° C) causes delay in germination of fungal spores, depending on the temperature and the duration of exposure. In general, less viable "heat stressed" propagules possess lower inoculum potential and shorter longevity. Solarized "heat stressed" microorganisms revealed some changes like inactivation of enzymes, phase changes in fatty acids and membrane components and slow turnover of heat sensitive protein.

The process of increased plant growth response (IGR) in solarized soil denotes the improvement in plant growth. The mechanisms for explaining IGR are either chemical (release of nutrients or growth factors; nullification of toxins) or biological (elimination of minor or unknown pathogens; stimulation of beneficial microorganisms).

"Solarization" technique may widely be used to eradicate several important soilborne diseases in summer in most of the eastern-central parts of India. Successful application of this technique will not only depend on effectiveness, but also on a competitive cost with conventional pesticides, and this technique has no long-term side effects. Further investigations are, therefore, needed to develop a cost-effective programme to use this novel technology for Indian farmers.

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## ANNOUNCEMENT

### SEVENTH INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY (IUPAC) CONFERENCE ON ORGANIC SYNTHESIS

The seventh IUPAC Conference on Organic Synthesis will be held in Nancy during July 4 to 7, 1988. The meeting will consist of about eighteen lectures and poster sessions. About eighty of the posters will be selected for short oral presentations.

The following topics will be covered: 1. New reagents for organic synthesis, 2. Single electron transfer and radical chemistry in synthesis, 3. Asymmetric synthesis, 4. Automation and computer in synthesis.

Further particulars may be had from: Prof. P. Caubere, Chairman, IUPAC, Universite de Nancy I, Faculte des Sciences, B.P. 239, 54506 Vandoeuvre Les Nancy Cedex, France.