

## Abstracts of Articles in English

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### **The Utility of Hydrogels in Medical Sciences—A Review**

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**Abstract**—Some of the major applications of hydrogels in medical sciences are described. Hydrogels because of their inherent tendency to imbibe large amount of water, are being used in almost all the fields of medical sciences. For example, in ophthalmology, contact lenses, cardiovascular devices, dental fillings, burn dressings, etc. In addition, they are also finding applications in veterinary sciences, pharmaceuticals, agriculture and food industry. These applications are also described briefly.

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### **Cyanobacterial Toxins: Toxicity and Ecological Effects — A Study**

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**Abstract**—Cyanobacteria (blue-green algae) are basically known for the critical insight they have provided into the origin of life, oxygenic photosynthesis, biological nitrogen fixation, etc. The fact that a number of strains of these organisms produce 'biotoxins' which pose serious health threat to human and wildlife is little studied. This communication reports the chemistry and possible threat to the ecosystem due to 'cyanotoxins'.

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## Ethylene and Flower Senescence—A Review

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**Abstract**—The price of high quality flowers depends on their colour, attractiveness and longevity. Post-harvest studies have been conducted for increasing the vase life and attractiveness of the flowers. On the basis of these research findings, evidences regarding the cause of flower senescence, its control and the role of ethylene have been established. With respect to the role of ethylene in senescence, flowers are divided into two groups, viz. (i) climacteric, and (ii) non-climacteric. It has been hypothesized that like other hormones, ethylene binds to a receptor molecule so as to form an activated complex which in turn triggers a primary reaction. This reaction thereby initiates a chain of reactions including a wide variety of physiological processes and modification of gene expression. In the present paper all these aspects have been discussed in detail.

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## Orchid Cultivation in Himachal Pradesh—Problems and Possibilities

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**Abstract**—Orchids are perhaps the world's most beautiful flowers because of large variations in shapes and sizes. Except for Antarctica, these are found everywhere in all types of climates. These have been described as medicinal and ornamental plants in Indian literature. Orchids worth millions of dollars are being exported from countries like Malaysia, Singapore, Thailand, Phillipines, Sri Lanka and Indonesia. Orchid seeds are microscopic and generally lack endosperm and, therefore, require a specific mycorrhiza for their germination and development. Normally, only 0.2-0.3% of the seeds germinate in nature. Tissue culture techniques are being effectively used for increased germination and through green food culture, the life cycle also gets reduced considerably. A large number of orchid species are found in almost all parts of India and taking advantage of congenial agro-climatic conditions, orchid growing and export can become a major foreign exchanger earner. Himachal Pradesh also has its own ecological niches most suitable for exotic orchids and its proximity to the major markets can prove highly beneficial.

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## **Interlocking Concrete Block Pavement (ICBP)—A New Technology for Special Applications**

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**Abstract**—Interlocking Concrete Block Pavement (ICBP) is an environment-friendly technology which is being used widely in many countries of the world. Study of long-term performance under in-service conditions has proved that the new system is versatile and can be used for paving at a number of locations which have light, medium or heavy traffic and for varying subgrade soil and climatic conditions. The article describes the ICBP technology in a nutshell, indicates the special features which distinguish it from conventional pavement construction methods, and lists the special paving locations where application of the technique is suitable, brings out its environment-friendly aspects and lists out the advantages and limitations of the technique.

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## **Studies on Methane Emission from Bhalswa Landfill, Delhi, and Anaerobic Digestion of Landfill Wastes (MSW) for Biogas Production**

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**Abstract**—Landfill, the garbage / Municipal Solid Waste (MSW) disposal site, is one of the important sources of greenhouse gases (GHGs) to the atmosphere which cause global warming. Methane, one of the most important GHGs, is of particular significance for air environment and accounts for about 15 per cent of global warming. However, with respect to methane flux from landfill site, there is a wide variability. The studies on the quantitative measurements of methane flux from Bhalswa Landfill, Delhi, reveal that the methane flux are maximum during June ( $37.14 \text{ gm}^{-2}\text{d}^{-1}$ ) at heap temperature  $36^\circ\text{C}$  and minimum ( $8.62 \text{ gm}^{-2}\text{d}^{-1}$ ) at  $23^\circ\text{C}$  heap temperature during the month of December. The average annual emission has been found as  $23.18 \text{ gm}^{-2}\text{d}^{-1}$ , resulting in the total annual emission of 2370 tonne methane to the atmosphere from Bhalswa Landfill alone. In laboratory studies on biogas production from biodegradable portion of MSW, it has been observed that MSW can yield 90.60 L biogas/kg dry matter (DM) only as compared to 155.24 L biogas/kg DM from control cowdung. The biogas yield from MSW and cowdung (CD) mixture has been found as 140.16 (1:3), 124.62 (1:1) and 112.98 L/kg DM(3:1), during digestion period of 9 weeks. The decomposition of total solids (TS) and volatile solids (VS) has been found to range between 4.0 to 24 per cent and 21.47 to 44.34 per cent, respectively in different treatments. The concentrations of nutrient elements (mainly NPK) in residual slurry have been conserved with narrowing down of C:N ratio, making it a good manure. The biogas spent slurry obtained after digestion is excellent manure and a depleted source of methane.