Plant and Pollution

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0303-285. Abubacker MN, Ramanathan R, Varadraj N (PG Res Dept Bot, Natl Coll, Tiruchirapalli 620001, TN). **Physico-chemical and microbiological studies of sago effluent polluted soil**. *J Indl Polln Contl*, **18**(2)(2002), 125-131 [7 Ref].

Physico-chemical and micro-biological studies of sago effluent polluted soil in Attur, Salem District, Tamil Nadu indicated that the concentration of nitrogen, phosphorus, potassium, calcium, zinc, copper, iron and manganese are higher due to the heavy load of pollution. The presence of such pollutants have strong impact in fungal metabolism which result in the colonization of specific indicator fungi. These fungus isolates can be exploited to develop a bioremediation process to reduce soil pollution.

0303-286. Ahmad Aftab, Ahmad Sakil (Dept Bot, Coll Comm, Patna 800020). **Study of sulphur accumulation in plant foliage due to coal smoke pollution**. *Geobios*, *30*(4)(2003), 284-285 [8 Ref].

The effects of coal smoke from Muzaffarpur Thermal Power Station (M.T.P.S.) on some economically important tree species show a significant higher amount of inorganic sulphur in their foliage in all the seasons in SO_2 enriched atmosphere. The sulphur accumulation in leaves can be used as an index to the level of SO_2 pollution.

0303-287. Ameta Suresh C, Punjabi Pinki Bala*, Kothari Shilpa, Sancheti Anjali (*113, Vidhya Nagar, Hiran Magri, Sec 4, Udaipur 313002, Rajasthan). **Effect of untreated and photocatalytically treated dyeing industry effluent on growth and biochemical parameters of *Allium cepa* (onion)**. *Polln Res*, **22**(3)(2003), 389-392 [20 Ref].

It was observed that there was a prominent growth and increased sugar and protein percentage and chlorophyll content in onion grown in photocatalytically treated effluent. Based on the above results, photocatalytic treatment of wastewater can be considered as an effective method, which will help in reusing the effluent from dye industry for irrigation purposes.

0303-288. Banerjee Saikat, Singh AK, Banerjee SK (Eco Rehabilitation Div, Trop Forest Res Inst, Jabalpur, MP). **Impact of flyash on foliar chemical and biochemical composition of naturally occurring ground flora and its possible utilization for growing tree crops.** *Indian Forester*, **129**(8)(2003), 964-977 [37 Ref].

Paper studies the impact of flyash generated from Shaktinagar (UP) Thermal Power Plant on foliar chemical and biochemical parameters of *Ipomea cornes, Cassia tora* and *Acacia nilotica* naturally growing on flyash dyke. It is apparent that flyash severely affects the plants by changing the chemical and biochemical compositions. Protein, carbohydrates, chlorophyll and ascorbic acid decrease significantly with a significant increase of phenols of the plant species grown on flyash.

0303-289. Bhargava AK, Gupta Richa, Bhargava Sonali, Paridhi (Bot Dept, MS Coll, Saharanpur, UP). **Effect of automobile exhausts on total N, P and total heavy metal of road side sugarcane at district Saharanpur, U.P**. *Adv Plant Sci*, **16**(2)(2003), 557-560 [22 Ref].

High soil contents of toxic or total heavy metals have been observed in the proximity of road side grown sugarcane as compared to plant grown at 100 mt. distance away from road side. Like wise, level of total nitrogen and phosphorous also showed variations in different plant samples depending upon the extent of automobile exhaust released along road side.

0303-290. Bhattacharya Badal, Sarkar Santosh Kumar, Mukherjee Nilanjana (Dept Metallurgical Engng, Jadavpur Univ, Calcutta 700032). **Organochlorine pesticide residues in sediments of a tropical mangrove estuary, India: implications for monitoring**. *Env Int*, **29**(5)(2003), 587-592 [42 Ref].

Paper examines the concentration of isomers of hexachlorocyclohexane (HCHs), dichlorodiphenyl trichloroethane and its metabolites (DDTs), a-endosulfan and endosulfan sulfate in surface sediment samples collected from the mouth of Hugli estuary in the vicinity of Sundarban mangrove environment, eastern parts of India. An overall pattern of accumulation of these pesticides was in the order of SHCH> endosulfan sulfate>SDDT>a-endosulfan. The study is compared to other estuarine environment in India and abroad.

0303-291. Chaudhary Meenakshi, Praksh G, Rana Pranav (SVBP Univ Agricl Techno, Modipuram, Meerut 250110). **Effect of sulphur dioxide pollution on ornamental species of cacti**. *Progressive Agricl*, **2**(1)(2002), 41-43 [4 Ref].

The group of plants were exposed to different concentration of sulphur dioxide which at 1306 mgm^{-3}, 2612mgm^{-3} and 5224 mgm^{-3} concentration reduced the growth rate of cacti. The maximum reduction recorded in shoot length was 12.65 cm at 5224 mgm^{-3} SO_2 concentration. Significant reduction in fresh and dry weight of roots and shoot-root ratio was also observed.

0303-292. Chaudhuri D, Tripathy S, Veeresh H, Powell MA, Hart BR (Dept Geo Geophys, Indian Inst Techno, Kharagpur 721302, West Bengal). **Mobility and bioavailability of selected heavy metals in coal ash- and sewage sludge-amended acid soil**. *Environ Geo*, **44**(4)(2003), 419-432 [52 Ref].

A sequential extraction procedure has been used to study the changes in the distribution and mobility of Cd, Cr, Cu, Ni, Pb and Zn in an acid lateritic soil amended with alkaline coal ash and neutral sludge individually and with their mixture of equal proportions at 25, 50 and 75 Mg/ha application rates and grown in a crop with peanuts. The vegetative plant parts showed maximum accumulation of metals indicating a physiological barrier in the transfer of metals from the root to the kernel. Linear relationships of total concentrations of heavy metals in soil with that in the crop were observed.

0303-293. Devpura Shikha, Khan TI (Indira Gandhi Cent HEEPS, Univ Rajasthan, Jaipur 302004, Rajasthan). **Effect of simulated acid rain on germination and seedlings of *Phaseolus aureus* Var, RMG-62**. *Nature Env Polln Techno*, **2**(3)(2003), 337-339[15 Ref].

Acid rain showed an adverse effect on the seedlings of *Phaseolus aureus* var. RMG-62. The seedlings tolerated exposure to acid rain down to pH 3.1. Below this pH level seedlings succumbed. With the decrease in pH level, different growth parameters and chlorophyll content showed a decreasing trend.

0303-294. Dube BK, Pandey VN, Sinha Pratima, Chatterjee C (Bot Dept, Lucknow Univ, Lucknow 226007, UP). **Cadmium phytotoxicity and disturbances in cow pea physiology**. *Polln Res*, **22**(2)(2003), 251-257 [33 Ref].

Cowpea (*Vigna uniculata L.*) cv. Pusa Komal, plants were grown in refined sand at varibable levels of excess Cd applied as cadmium suphate. In addition to growth depression at 0.5 and 0.4 mM Cd (10 days after initially supplying Cd), the visible effects of excess Cd were observed as yellowing of old leaves marginal chlorisis of young and middle leaves, reduction in size and number of leaves, infloresences, dwarfism and bushy appearance, early defoliation, wiltin and necrosis of affected leaves.

0303-295. Gopal Rajeev, Dube BK, Chatterjee C (Dept Bot, Lucknow Univ, Lucknow 226007). **Phyto-availability and toxicity of cobalt in *Citrullus***. *Polln Res*, **22**(2)(2003), 259-264 [29 Ref].

To observe the ill effect of excess cobalt and the tolerance limit of Co by *Citrullus vulgaris cv.* Lundhiana, plants were grown in refined sand at variable levels of excess

Co as cobalt sulphate. At excess (0.5mM) Co, in addition to growth depression of citrullus, the young leaves developed interveinal chlorosis (4 days after metal supply), initiating from apex, gradually spreading downward covering the entire lamina.

0303-296. Khan TI, Marwari Richa, Singh N (Indira Gandhi Cent Human Eco, Environ Population Std, Univ Rajasthan, Jaipur 302004). **Impact of textile wastewater on *Solanum melongena* var-FI- Hybrid Kanhaiya in pot experiment with special emphasis on analysis of heavy metals**. *Dimensions Polln*, **2**(2003), 108-116 [19 Ref].

Solanum melongena plant material harvested in a laboratory experiment using five different levels of textile waste water. After the crop harvesting the soil was found to contain 1.417 mg/g of Zn, 1.003 mg/g of Cu, 0.378 mg/g of Ni, 0.378 mg/g of Cd, 0.773 mg/g of Cr, 1.139 mg/g of Pb and 0.427 mg/g of Co in the soil of pots treated with highest ratio of distilled water and waste water.

0303-297. Kumar A, Singhal V, Joshi BD, Rai JPN (Dept Environ Sci, GBP Univ Agricl Techno, Patnagar 263145, Uttaranchal). **Impact of pulp and paper mill effluent on lysimetric soil and vegetation used for land treatment**. *J Scient Indl Res*, **62**(9)(2003), 883-891 [32 Ref].

Paper reports on *N*-mineralization, microbial biomass C and N and microbial respiration of the pulp and paper mill effluent lysimetric soils. The experiment showed that the minimum microbial characteristics were recorded in normal soil at 25 per cent effluent concentration, while their maximum values were recorded in soil mixed clay at 100 per cent effluent concentration. Based on the above findings, application of normal soil for land treatment of pulp and paper mill effluent at 25 per cent concentration is recommended.

0303-298. Lal Nanda, Mishra Richa (Fac Life Sci,, CSJM Univ, Kanpur 208024). **Effect of synthetic detergent on germination parameters, seedling growth and photosynthetic pigments in Mungbean (*Vigna radiata*) seedlings**. *Polln Res*, **22**(3)(2003), 335-337 [4 Ref].

The study was undertaken to investigate the effects of synthetic detergents (Surf Excel) on germination parameters, seedling growth and photosynthetic pigments in Mungbean (*Vigna radiata*). Mungbean seeds failed to germinate at detergent levels beyond 0.1%. The presence of detergent did not affect germination % and emergence % upto 0.5% but showed marked decrease in emergence rate and vigour index.

0303-299. Lal Nand, Mishra Richa (Fac Life Sci, CSJM Univ, Kanpur 208024, UP). **Synthetic detergent induced changes in the seed imbibition pattern and dehydrogenese activity in mungbean (*Vigna radiata*)**. *Eco Env Conserv*, **9**(3)(2003), 379-383 [5 Ref].

Mungbean (*Vigna radiata*) seeds failed to germinate above 0.1% (w/v) detergent (Surf Excel) level. The water imbibition in seeds was accelerated by 0.025% detergent over control whereas other detergent concentrations retarded it. The dehydrogenase activity showed reduction with increase in detergent concentration and was significantly lower at 0.15% and above levels leading to failure of germination.

0303-300. Mariappan V, Rajan MR (Dept Bio, Gandhigram Rural Inst, Deemed Univ, Gandhigram 624302, Tamil Nadu). **Effect of tannery effluent on seed germination and seedling growth of *Parkinsonia aculeata* and *Caesalpinia coriaria***. *J Ecobio*, **14**(4)(2002), 241-246 [24 Ref].

A gradual decrease in the germination of seeds was observed and the minimum percentage germination was 71.2 in *Parkinsonia aculeata* and *76.9* in *Caesaipinia coriaria*. Maximum seedling growth was observed in 10% effluent. It was observed that even at 10% concentration of effluent, plants showed inhibition of growth. Hence more dilution is required for the utilization of effluent in a beneficial way.

0303-301. Meriga Balaji, Krishna Reddy B, Jogeswar G, Reddy LA, Kavi Kishore PB (Dept Genetics, Osmania Univ, Hyderabad 500007). **Alleviating effect of citrate on aluminium toxicity of rice (*Oryza sativa* L.) seedlings**. *Curr Sci*, **85**(3)(2003), 383-386 [23 Ref].

Seedlings of two Indian rice cultivars (Suraksha and Vikas) differing in aluminium sensitivity were grown in Yoshida's culture solution containing 80 mmol aluminium. High callose accumulation seems to be a good marker for screening the cultivars of rice for aluminium sensitivity. Citrate at a concentration of 200 mM alleviated the toxic effects of aluminium in both cultivars of rice, mostly by chelating with the metal.

0303-302. Naidu K Chandrasekharan (Dept Water Affairs, P Bag 002, Maun, Botswana). **Influence of experimental crude oil spills on germination and primary growth features in certain commercial plants**. *J Ecotoxico Environ Monit*, **12**(4)(2002), 241-253 [36 Ref].

The Lc_{50} values at the 7^{th} day of germination were determined as 0.039, 1.63 and 2.56 $lit.m^{-2}$ for paddy, greengram and groundnut respectively. The oil mobility was found to be more in well drained soils of greengram and groundnut than in water submerged soil of paddy. Although some oil components showed immediate mobility into the

soil column, most of the oil remained in the top 2 cm soil. Rice seedlings were the most susceptible to crude oil followed by green gram and groundnut.

0303-303. Pandey AK, Pandey GC (Dept Environ Sci, Dr. RML Avadh Univ, Faizabad 224001). **Impact of coal washery effluent on seed germination, seedling growth and chlorophyll content of *Oryza sativum***. *J Indl Polln Contl*, **18**(2)(2002), 175-181 [15 Ref].

The impact of coal-washery effluents (CWE) have been studied on seed germination, shoot length, root length, chlorophyll contents and percent phytoxicity at different, concentrations and time intervals on *Oryza sativum*. At higher concentrations of CWE (10 and 100%) a marked decrease in seed germination (3 - 29%), shoot length (9-51%), root length (8-32%) chlorophyll contents (12-31%) for 7, 14, 21, 28 and 35 days respectively was recorded.

0303-304. Pandit BR, Prajapati Sailesh (Dept Life Sci, Bhavnagar Univ, Bhavnagar 364002). **Accumulation of some trace elements in different species of Acacia in reserved forests near Bhavnagar, Gujarat, India**. *Eco Env Conserv*, **9**(3)(2003), 371-373 [8 Ref].

The content of some trace elements like Fe, Cu, Zn and Mn were analysed seasonally in three species of Acacia like *A. nilotica*, *A. leucophloea* and *A. senegal* in the reserved forest near Bhavnagar. The study recorded higher accumulation of Fe then other elements. Fe (8.02 to 83.42 mg/ml) was followed by Cu (1.17 to 6.70 mg/ml) and Zn (0.98 to 32.68 mg/ml).

0303-305. Raj Sonia, Devpura Shikha, Solomon Deepika M, Khan TI (Indira Gandhi Cent Human Eco, Environ Population Stud, Univ Rajasthan, Jaipur 302004). **Simulated acid rain exposure on *Triticum aestivum* var Raj. 3077 and its impact on growth and physiological parameters**. *Dimensions Polln*, **2**(2003), 87-94 [23 Ref].

The plants of *Triticum aestivum* var. Raj. 3077 tolerated the simulated acid rain exposure down to pH 1. Below this pH level plants succumbed at pH 0.5. Root and shoot lengths and dry weights were reduced due to lowering in pH level. Chlorophyll content, carbohydrate, protein and nitrogen content were also significantly affected.

0303-306. Ramakrishnaiah H, Somasekhar RK* (*Dept Environ Sci, Bangalore Univ, Bangalore 560056). **Higher plants as biomonitors of automobile pollution**. *Eco Env Conserv*, **9**(3)(2003), 337-343 [34 Ref].

Paper describes air pollution tolerance among roadside plants exposed to varying degrees of traffic pollution. The observed significant reduction in total chlorophyll, ascorbic acid and relative water content showed inverse relationship with traffic density. Similarly, the pH followed an exponential decrease with increase in traffic pollution and drifted towards the acidic range. The utility of Air Pollution Tolerance Index bio analysis is discussed.

0303-307. Shrivastava VS, Patil BH (Cent PG Res Chem, GTP Coll, Nandurbar 425412). **Metallic and some physico-chemical studies of soil and aquatic sediments**. *Eco Env Conserv*, **9**(1)(2003), 75-77 [9 Ref].

The soil samples were collected from surface of the soil from different agriculture fields in the Khandesh region where wheat, jawar, cotton, sugar cane and groundnut crops were cultivated. Tapi River sediment samples were also collected from five different stations which were 7-8 km away from each other. The concentration of heavy metals have been determined by ICP-AES and physico-chemical characteristics have been detected by following standard methods.

0303-308. Vijaywargiya Anjali, Pandey GP (Sch Life Sci, Devi Ahilya Vishwavidhyalaya, Vigyan Bhawan, Khandwa Rd, Indore 452017). **Effect of cement dust on soybean, *Glycine max* (L.) merr. and maize, *Zea mays* Linn. : in fluorescence studies**. *Geobios*, **30**(4)(2003), 209-212 [9 Ref].

Due to cumulative encrustation of cement dust on the leaves of soybean and maize, a quantitative reduction in the absorption of light by these plants was observed, which affected fluorescence yield. The values of fluorescence were lower in dusted as compared to control and this difference gradually increased as the crop advanced in age.