Plant and Pollution

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0301-268. Agrawal Madhoolika, Singh Deepak S (Eco Res Lab, Dept Bot, Banaras Hindu Univ, Varanasi 221005). **Physiological and biochemical responses of two cultivars of wheat to elevated levels of CO_2 and SO_2, singly and in combination**. *Environ Polln*, **121**(2)(2003), 189-197 [36 Ref].

Study was aimed at investigating the long-term influence of elevated concentrations of CO_2 and SO_2, singly and in combination on the physiological and biochemical characteristics of two cultivars of wheat (*Triticum aestivm* L. cv Malviya 234 and HP 1209). Stimulation of photosynthesis rate and reduction in stomatal conductance and transpiration rate were observed under CO_2 treatment. Concentrations of total soluble sugars, starch and total phenolics increased in response to CO_2 and CO_2+SO_2 treatments.

0301-269. Ahmad A, Inam A, Ahmad Iqbal, Hayat S, Azam ZM, Samiullah (Dept Bot, Aligarh Muslim Univ, Aligarh 202002). **Response of sugarcane to treated wastewater of oil refinery**. *J Environ Bio*, **24**(2)(2003), 141-146 [14 Ref].

The crop of sugarcane (*Saccharum officinarum*) was grown at the agricultural farm of the Mathura Oil Refinery in a simple randomized block design. The plants gave better response to the treated wastewater (TW) than the groundwater. The soil receiving wastewater did not show any significant change in its physico-chemical characteristics. The soil accumulated all the heavy metals but the plant samples receiving TW only exhibited the present of Ni, Pb and Zn whose values are far below the premissible limits.

0301-270. Ajungla T, Sharma GD, Dkhar MS (Dept Bot, Nagaland Univ, Hqrs. Lumani, PB 12, Mokokchung, Nagaland). **Heavy metals toxicity on phosphatase activity of mycorphizospheric soil of *Pinus kesiya* seedlings**. *Polln Res*, **21**(4)(2002) 421-424 [11 Ref].

The accumulation of pollutants on the plant surface is a contributing factor to the forest decline. Phosphatase is thought to be directly related to the level of organic phosphorous in the soil. Phosphatases are also produced by ectomycorrhizal fungi. Root surface phosphatase activity has its relationship with mycorrhizal association and p-uptake. Investigation was carried out to study the toxicity of heavy metals on phosphatase activity of mycorhizospheric pine seedlings.

0301-271. Azad Shamim A, Siddiqui Bahar A, Khan Samiullah (Bot Dept, Amar Singh Coll, Srinagar, Kashmir). **Genotoxic effect of smoke as a pollutant on *Cestrum diurnum* Linn**. *Adv Plant Sci*, **15**(2)(2002), 573-577 [13 Ref].

The abnormal growth of trees and failure of growing crops in the vicinity of thermal power house Kasimpur is indicative of the genotoxic effect of air pollution on plants. Miotic studies were carried out on *Cestrum diurnum* Linn. brought from the Kasimpur power station area. Chromosomal abnormalities like stickiness, bridges, laggards, precocious spearation and cytoplasmic bridges were observed in considerable frequency.

0301-272. Barman Roy Samadrita, Bera AK (Dept Plant Physio, Bidhan Chandra Krishi Vishwavidyalaya, Mohanpur 741252). **Individual and combined effect of mercury and managenese on phenol and proline content in leaf and stem of mungben seedlings**. *J Environ Bio,* **23**(4)(2002), 433-435 [13 Ref].

Mungbean (*Vigna radiata* L. Witczek) cv. Pusa Baisakhi seedlings were raised in individual (0, 1, 10, 100 and 1000 ppm) and combined solutions (1: 1, 10 : 1, 1 : 10 ppm Hg : Mn) of mercury and manganese for 6 days. Phenol and proline were found to accumulate in leaves in response to treatment with heavy metals. The magnitude of accumulation correlated with concentration of metals. However, a reverse trend was noticed in stem for phenol. Accumulation of phenol in response to heavy metal treatment was organ specific and occurred at higher rate in plant part, which faced the stress mostly.

0301-273. Barman Roy Samadrita, Bera AK (Dept Plant Physio, Bidhan Chandra Krishi Vishwavidyalaya, Mohanpur, West Bengal 741252). **Amelioration of mercurial toxicity by manganese I. A case study in mung bean seedling**. *J Environ Bio*, **23**(3)(2002), 321-323 [8 Ref].

Mercury, a non essential element renders inhibitory effect on many physiological activities of plants even at a low concentration. Plants absorb Hg from soil through root system. Manganese, an essential element has been found to counter the inhibitory effect of mercury mostly by preventing its uptake from soil. Mung bean grown in individual solution of Hg and Mn showed varied uptake of these heavy metals. However, in combined solutions mercury uptake was mostly prevented in presence of 10 ppm Mn, indicating its ameliorating effect.

0301-274. Bhati M, Singh G (Div Forest Eco Desert Dev, Arid Forest Res Inst, New Pali Rd, Jodhpur 342005). **Growth and mineral accumulation in *Eucalyptus camaldulensis* seedlings irrigated with mixed industrial effluents**. *Bioresource Techno*, **88**(3)(2003), 221-223 [26 Ref].

Effect of mixed industrial effluents on growth, dry matter accumulation and mineral nutrient in *Eucalyptus camaldulensis* seedlings were studied. Paper evaluates the

adaptability of *E. camaldulensis* to effluent, tolerance to excess/deficiency of mineral elements and ultimately to determine suitable combinations of industrial/municipal effluent for their use in biomass production in dry areas. Mixing of effluents is useful in tree irrigation to increase biomass productivity and reduction of toxic concentration of metal ions in effluents may be helpful for a long-term field application.

0301-275. Bhatnagar Mridula, Gupta Suruchi (Dept Chem, Govt Dungar Coll, Bikaner 334001). **Impact of dairy effluents on physico-chemical characteristies of soil**. *Asian J Chem*, **14**(1)(2002), 300-304 [15 Ref].

The nature and quality of soil impaired by dairy effluents was assessed to ascertain the feasibility of use of the effluents for establishment and growth of trees and forage crops suited to the desert region. The impact of the effluents on soils was studied by examining the physico-chemical characteristics of soil (treated and virgin soil) in comparison to due standards use for irrigation of soils.

0301-276. Chandra Saurabh, Gupta SK (Cell Bio Div, Indl Toxico Res Cent, Lucknow 226001). **Genotoxicity of leachates of tannery solid waste in root meristem cells of *Allium cepa.*** *J Ecophysio Occupl Hlth*, **2**(3&4)(2002), 225-234 [24 Ref].

Root meristem cells of *Allium cepa* have been used as a test model to evaluate the genotoxicity of leachates of tannery solid waste through aqueous and soil medium. Root tips, sampled after 48 h revealed higher frequency of aberrations in aqueous medium in comparison of leachate-contaminated soil. Both the methods displayed similar type of mitotic and chromosomal aberrations and inhibited MI significantly.

0301-277. Chaurasia Bharti, Mahajan Surabhi, Chauhan SVS (Dept Bot, Sch Life Sci, Khandari Campus, Dr. BR Ambedkar Univ, Agra 282002). **Impact of automobile pollution on phenology and reproductive biology of *Cassia siamea* Lam.** *Indian J Environ Sci*, **6**(1) (2002), 85-90 [21 Ref].

Reproductive biology of *Cassia siamea* plants growing at eight different sites on various important roads of Agra city was studied. The plants of this species growing at various sites showed significant variations in their floral morphology and reproductive biology which were found to be closely associated with the extent of air pollution caused by increasing number of automobiles.

0301-278. Dhankhar R, Khatri S, Dahiya JS, Sushma (Dept Biosci, MD Univ, Rohtak 124001). **Inhibition of nitrate reductase activity in some crop plants raised with sewage wastewater.** *J Ecophysio Occupl Hlth*, **2**(3&4) (2002), 235-242 [16 Ref].

Investigation was done on the inhibition of nitrate reductase activity in pot culture experiments of different crop plant species under different concentration of sewage wastewater collected from Rohtak city of Haryana. It has been revealed that all the

crop plant species inhibited the nitrate reductase activity at both 50% and 100% sewage concentrations which could be due to high level of nitrogen or high salinity level in sewage wastewater. Nitrate reductase activity has been observed maximum in *Triticum aestivum* at 9% sewage concentration whereas minimum concentration in *Brassica campestris* at 100% sewage concentration.

0301-279. Dhingra HR (Dept Bot Plant Physio, CCS Haryana Agricl Univ, Hisar 125004, Haryana). **Agricultural production in soils polluted with heavy metals.** *(The) Botanica*, **52** (2002), 112-125 [112 Ref].

Contamination of seeds with the heavy metals affect welfare of human beings and animals through their entry into the food chain. Recent investigations point to the effect of heavy metals of quantitative and qualitative male and female reproductive structures and sexual units, resulting in diminished crop yield.

0301-280. Ghouse Basha M, Vivekanandan M (Dept Bot Microbio, Jamal Mohammed Coll, Trichi 620020). **Response of *Vigna mungo* and *Vigna unguiculata* to inoculation of rhizobial strains from extreme environments on CO_2 fixation and morphometric parameters.** *J Ecophysio Occupl Hlth*, **2**(1&2) (2002), 13-19 [13 Ref].

Rhizobial strains isolated and characterized from extreme environments such as virgin soil, polluted soil and saline soil with garden soil as control were employed as bio-inoculants. The rhizobial strains were isolated through root nodule-trap method and applied through seed-pelleting method to *Vigna mungo* and *Vigna unguiculata*. After 50 days of growth, the CO_2 fixation and morphometric parameters were analysed. Application of saline soil and virgin soil rhizobia augment the morphometric parameters.

0301-281. Hayat S. Ahmad Iqbal, Azam ZM, Ahmad A, Inam A, Samiullah (Dept Bot, Aligarh Muslim Univ, Aligarh 202002). **Longterm effect of oil refinery wastewater on crops yield, heavy metal accumulation in soil and crop produce.** *Polln Res*, **21**(3) (2002), 293-303 [18 Ref].

Study was conducted on physico-chemical properties and heavy metal content of wastewater (TW), groundwater (GW) and the field soil that was irrigated with TW or GW. Moreover, the impact of TW on crop productivity, heavy metal status in the seed/grains, at harvest was also studied. Results indicate that the level of nitrate, phosphate, potassium, calcium, magnesium and sulphate in wastewater is comparatively more than of the ground water. The seed yield in mustard and wheat, irrigated with TW, was more than that with GW.

0301-282. Joshi OP, Sikka J (Dept Bot, PMB Gujarati Sci Coll, Indore 452001). **Floral response of some tree species to air pollution.** *Polln Res*, **21**(4) (2002), 417-419 [12 Ref].

Flower of *Cassia fistula, Delonix regia* and *Peltophorum inerme* collected from polluted areas (textile mills, industrial area and roadsides) and the reference area (Agriculture College Campus) were studied for fresh and dry weights and per cent pollen germination. Maximum reduction in flower weights (fresh and dry) was noted in textile mill area and minimum at roadsides. Flower of *P. inerme* appeared to be more sensitive to air pollution than others. Maximum reduction in per cent pollen germination was recorded in the industrial area in *D. regia* being the most sensitive.

0301-283. Jothimani P, Bhaskaran A (Dept Environ Sci, Tamil Nadu Agricl Univ, Coimbatore 641003, Tamil Nadu). **Effects of dilution and dynamics of physical factors during factory effluent irrigation**. *J Ecotoxico Environ Monit*, **12**(4)(2002), 255-261 [8 Ref].

A pot culture experiment was carried out to elucidate an appropriate dilution of dyeing factory effluent for irrigating agricultural crops such as cotton (MCU-5) and sorghum (Co-26) and to assess the changes in soil pH, electrical conductivity and organic carbon during dyeing factory irrigation. Results showed that the effluent could be safely used for irrigation at proper dilutions (25 and 50%) in combination with NPK.

0301-284. Misra Virendra, Pandey Shri Dhar (Ecotoxico Sec, Indl Toxico Res Cent, PB No. 80, MG Marg, Lucknow 226001). **Effect of distillery effluent and leachates of industrial sludge on the germination of black gram (*Cicer arietinum*)**. *Polln Res*, **21**(4)(2002), 461-467 [22 Ref].

Germination studies were conducted in the laboratory to investigate the effect of distillery effluent and leachate on the growth of *Cicer arietinum*. Seeds of *Cicer arietinum* exposed to the concentration of effluent (10 to 50%) and concentration of leachate of flash light factory sludge (5%) of 20% was found to be beneficial for the growth of root and shoot as compared to control. However, the concentration of effluent/leachate 100% was found to be inhibitory.

0301-285. Naidu KC (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 primary objective of this investigation was to determine the lethal dose of experimental crude oil spills on *Oryza sativa* (paddy), *Phaseolus aureus* (greengram) and *Arachis hypogea* (groundnut) and to find out the associated changes in the physical properties of cultivable soil, oil mobility and growth of seedlings during germination period. 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.

0301-286. Neogy Mala, Datta Jayanta, Roy Amit Kumar, Mukherji Subhendu (Plant Physio Lab, Dept Bot, Univ Calcutta, Kolkata 700019). **Studies on phytotoxic effect of aluminium on growth and some morphological parameters of *Vigna radiata* L. Wilczek**. *J Environ Bio* **23**(4)(2002), 411-416 [18 Ref].

Study deals with effect of aluminium toxicity on growth of mungbean (*Vigna radiata L. Wilczek*) seedlings. Seed germination (in %) declined with increased content of $Al_2(SO_4)_3$, while promotive effect was observed at very low dosage. Different concentrations of $Al_2(SO_4)_3$ was observed through scanning electron microscope.

0301-287. Pandey GC, Neraliya S (Dept Environ Sci, Dr. RML Avadh Univ, Faizabad 224001). **Distillery effluent induced alterations on the seed germination, seedling growth, chlorophyll and protein contents of bengal gram, *Cicer arietinum* Linn**. *Himalayan J Env Zoo*, **16**(1)(2002), 77-81 [15 Ref].

Studies were made to assess the impact of distillery effluent on seed germination, and seedling growth (root and plumule length), of bengal gram, *Cicer arietinum* Linn. at various concentrations for different days, respectively. There was increment in above parameters at lower concentrations (10%, 20% & 40%) while a decrement was observed at higher concentrations (60%, 80%, and 100%) after exposure. It is concluded that chlorophyll and protein content are very sensitive to pollutants and thus can be used as bio-indicators of water pollution.

0301-288. Pathak Vishal, Singh Ritu, Singh SK, Pathak Prabhat (Dept Chem, Narain (PG) Coll, Shikohabad 205135). **Study of synergistic effects of heavy toxic metals on aquatic plants**. *Asian J Chem*, **14**(3)(2002), 1094-1096 [5 Ref].

Effects of heavy metals on biological systems have created interest following the increase in global use of these elements. Synergistic effects of these heavy toxic metals have been studied and concluded that a number of factors like species, strain, concentration and time period of exposure affect the interaction between metals. The possibility of complex formation of any two metals cannot be ignored.

0301-289. Patra HK, Sayed S, Sahoo BN (Environ Physio Lab, Dept Bot, Utkal Univ, Bhubaneswar, Orissa 751004). **Toxicological aspects of chromium (VI) induced catalase, peroxidase and nitrate reductase activities in wheat seedlings under different nitrogen nutritional environment**. *Polln Res*, **21**(3)(2002), 277-287 [14 Ref].

Seedling of wheat (*Triticum aestivam* L. cv Sonalika) were treated with different concentrations of hexavalent chromium ($K_2Cr_2O_7$). The plants were subjected to different nitrogen nutritional conditions. Various parameters for chromium toxicity of wheat seedlings were noted. NO_3 and the combination of NO_3-NH_4+ was found to be protective in increasing the activities during early days of treatment. Lower concentration of chromium (0.001mM) increased the peroxidase activity of plants.

Plants grown without nitrogen but treated with chromium, showed highest nitrate reductase activity.

0301-290. Prakash Govind, Gupta Vinay, Poonia Shefali, Sangita, Sharma Sujata (Dept Bot, CCS Univ, Meerut 250005). **Effect of sulphur dioxide exposure on the chlorophyll contents in *Raphanus sativus* L and *Brassica rapa* L**. *Plant Arch*, **2**(2)(2002), 165-170 [8 Ref].

Three different concentrations of sulphur dioxide (320, 667 & 1334 ìg m^{-3}) were used to fumigate the two different varieties, each of *Raphanus sativus* and *Brassica rapa*. Both chorophyll a and b content decreased with increasing concentration, maximum decrease being at the highest concentration i.e. 1334 ìg m^{-3}. Chlorophyll a showed more reduction than chlorophyll b.

0301-291. Radha S, Raju CV, Panigrahi AK (Lab Environ Toxico, Berhampur Univ, Berhampur 760007, Orissa). **Toxic effect of solid waste from chlor alkali factory on pigments and photosynthetic rate, respiration rate in rice seedlings**. *Polln Res*, **21**(3)(2002), 315-318 [10 Ref].

Toxic effect of solid waste from chlor-alkali factory on the pigment and Net Primary Productivity, respiration rate (NPP, R.R) in the rice seedlings were tested. After exposure to the solid waste an initial rise followed by a decline in pigments and NPP, R.R. were observed. The variation of different parameters were attributed to the dichotomous behaviour of the heavy metal mercury which was present in solid waste and the control set remained physiologically healthy through out the experimental period.

0301-292. Rai UN, Gupta DK, Akhtar M, Pal Amit (Ecotoxico Bioremediation Lab, Natl Botl Res Inst, Lucknow 226001). **Performance of seed germination and growth of *Vicia faba* L. in fly ash amended soil**. *J Environ Bio*, **24**(1)(2003), 9-15 [28 Ref].

The performance of *Vicia faba* L. in soil amended by different concentrations of fly ash has been studied. Results revealed that while fly-ash amendment to the soil improved the growth performance at initial stages with application of lower concentrations, it was inhibitory at higher exposure concentrations. Fly ash delayed the nodulation as lesser number of nodules was recorded at higher amendments.

0301-293. Salgare SA, Palathingal Trisa (Dept Bot, Inst Sci, Mumbai 400032). **Effect of industrial pollution at Sewri-Mumbai on the rate of pollen germination of successive flower of *Nerium odorum*-II**. *Plant Arch*, **2**(2)(2002), 193-195 [5 Ref].

Potentiality of pollen germinability in *Nerium odorum* was noted in F and F-24 series. Pollen of F series collected from unpolluted area of Colaba and polluted area of Sewri-Mumbai showed their first sign of germination after one hour of sowing. However, the pollen of F-24 series collected from either sites required two hours to

germinate. Industrial pollution inhibited the rate of pollen germination of successive flowers of *N. odorum*. It also inhibited the germination of pollen of either series.

0301-294. Salgare SA, Palathingal Trisa (Dept Bot, Inst Sci, Mumbai 400032). **Alteration in resting period of pollen of F-series of *Peltophorum ferrugineum* by industrial pollution at Sewri-Mumbai-II**. *Himalayan J Env Zoo,* **16**(1)(2002), 129-132 [20 Ref].

Potentiality of pollen germinability in *Peltophorum ferrugineum* was noted in F series. Pollen of F series collected from unpolluted area of Colaba showed their first signs of germination after one hours of sowing. However, the pollen collected from the polluted side of Sewri-Mumbai required 6 hours to germinate. Industrial pollution inhibited the rate of pollen germination.

0301-295. Shrivastava Neerja, Joshi Sulekha (PG Dept Bot, Govt Coll, Kota 342001). **Effect of automobile air pollution on the growth of some plants at Kota**. *Geobios,* **29**(4)(2002), 281-282 [3 Ref].

For healthy environment although more emphasis is now being given to check air pollution, certain plant species resistant to pollutants are being identified, so that such plant can be grown in polluted areas. To find out resistant species some morphological parameters of plants, growing in polluted and non-polluted areas are compared.

0301-296. Singh Anoop, Agrawal SB, Rai JPN, Singh Pratibha (Dept Bot, Allahabad Agricl Inst, Allahabad 211007). **Assessment of the pulp and paper mill effluent on growth, yield and nutrient quality of wheat (*Triticum aestivum* L.)**. *J Environ Bio,* **28**(3)(2002), 283-288 [24 Ref].

Assessment of agropotentiality of the effluent coming out from Century pulp and paper mill, Ghanshyamdham, Lalkua (Uttaranchal) has been made on wheat (*Triticum aestivum var* UP-2329) crop grown in two soils differing in texture with different effluent concentrations. Diluted effluent increased the chlorophyll content, plant height, shoot and root biomass, grain yield, protein, carbohydrate and lipid contents in wheat grains, while undiluted effluent caused inhibition in plant growth resulting in a sharp decline of yield.

0301-297. Singh Lamabam P, Siddiqui Zaki A (Dept Bot, Aligarh Muslim Univ, Aligarh 202002). **Effects of fly ash and *Helminthosporium oryzae* on growth and yield of three cultivars of rice**. *Bioresource Techno,* **86**(1)(2003), 73-78 [11 Ref].

A 120 day greenhouse experiment was conducted to study the effects of various fly ash concentrations (0%, 20%, 40%, 60%, 80% and 100% vol/vol) with normal field soil and *Helminthosporium oryzae* on the growth and yield of three cultivars of rice, *Oryza sativa* L. Application of 20% and 40% fly ash with soil caused a significant increase in plant growth and yield of all the three cultivars. Forty percent fly ash

caused a higher increase in growth and yield than did 20%. Sixty percent, 80% and 100% fly ash had an adverse effect on growth and yield of all the three cultivars, the maximum being with 100% fly ash.

0301-298. Singh Lamabam P, Siddiqui Zaki A (Plant Patho Nemato Sec, Dept Bot, Aligarh Muslim Univ, Aligarh 202002). **Effect of *Alternaria triticina* and foliar fly ash deposition on growth, yield, photosynthetic pigments, protein and lysine contents of three cultivars of wheat.** *Bioresource Techno,* **86**(2) (2003), 189-192 [14 Ref].

A greenhouse experiment was conducted to study the effect of *Alternaria triticina* with and without foliar dusting of fly ash on the growth, yield, photosynthetic pigments, protein and lysine contents of three cultivars of wheat, *Triticum aesticum*. Dusting of 2.5 and 5.0 g fly ash caused a significant increase in growth, yield, phtosynthetic pigments, protein and lysine contents of all the three cultivars. Dusting, of 5.0 g fly ash caused a higher increase in the parameters than the 2.5 g dusting. However, dusting of 7.5 g fly ash had an adverse effect on growth, yield, photosynthetic pigments, protein and lysine contents.

0301-299. Singh PK, Tiwari RK (Soil Sci Div, Natl Botl Res Inst, Lucknow 226001). **Cadmium toxicity induced changes in plant water relations and oxidative metabolism of *Brassica juncea* L plants**. *J Environ Bio,* **24**(1)(2003), 107-112 [30 Ref].

Excess of cadmium (Cd) induced changes in oxidative scenario and water status of plants *Brassica juncea* grown in soil pot culture. Although lower and marginal levels of excess cadmium (100 and 250 ppm) improved growth but higher levels (500 ppm) caused significant suppression. Significant accumulation of proline, an indicator of water stress, occurred at higher level of Cd. The excess levels of Cd also decreased the concentrations of soluble protein and chlorophylls and increased the ratio of chorophyll a/b.

0301-300. Singh VK, Behal KK (Fac Adv Std Life Sci, Chatrapati Sahu Ji Maharaj Univ, Kanpur 208024). **Effect of fly ash amended soil on growth of mulberry plant (*Morus alba*)**. *J Ecophysio Occupl Hlth,* **2**(3&4)(2002), 243-254 [34 Ref].

Study deals to assess the suitability of fly ash application with agricultural soil for plant growth and development. Result indicates that best growth performance was obtained at 25% fly ash application. After harvesting of plants, soil analysis results indicate that the soil pH decreased which showed the fly ash pH was slightly acidic in nature. The data indicate that fly ash has a great potential to be utilized as a source of macro and micronutrients for plant growth.

0301-301. Sinha Suchita, Mukherji S, Dutta Jayanta (Crop Physio Lab, Inst Agricl, Visvavarathi, P.O. Santiniketan 731236). **Effect of manganese toxicity on pigment**

content, Hill activity and photosynthetic rate of *Vigna radiata* L. Wilczek seedlings. *J Environ Bio*, **23**(3)(2002), 253-257 [18 Ref].

Effect of different concentrations, of manganese sulphate ($MnSO_4$, $7H_2O$) on chlorophyll, carotenoid pigment content and photosynthesis of mungbean seedlings was examined. Progressive increase in manganese sulphate concentration upto $5x10^{-3}$ M brought about a progressive decrease in total chlorophyll and chl a content. Chl b changed very little by excess manganese treatment. Hill activity of chloroplasts isolated from leaves of mungbean seedling and rate of photosynthesis in terms of CO_2 uptake showed progressive reduction alongwith the increase in concentration of the manganese.

0301-302. Solomon Deepika M, Khan TI (Indira Gandhi Cent HEEPS, Univ Rajasthan, Jaipur 302004). **Effect of simulated acid rain on physiological and bio-chemical parameters of *Pisum sativum* L. Sens ampl. var. Azad P-1**. *Indian J Environ Sci*, **6**(1)(2002), 81-83 [15 Ref].

The seedlings of *Pisum sativum* L. tolerated simulated acid rain exposure down to pH 2.2. Below this the seedling growth was reduced and the seeds succumbed at pH level 1.2 and pH 0.5. A reduction of about 48.7% in root length and 67.3% in shoot length was observed between pH 6.8 (control) and pH 2.2. The shoot dry weight showed a reduction of 48.5% while root dry weight decreased about 56.4%.

0301-303. Thangarasu S, Gopalkrishnan V, Sebastian Rajasekaran C (PG Res Dept Environ Sci, Bishop Heber Coll, Tiruchirapalli 620017). **Evaluation of certain plants for their tolerance to cement kiln-dust emitted from Ariyalur cement factory**. *Geobios*, **29**(2&3)(2002), 105-108 [17 Ref].

The high resistant and sensitive plant species were identified in the vicinity of a cement factory in Ariyalur, through the determination of air pollution tolerance index (APTI) using four leaf parameters. The result indicated that out of fifteen woody plant species only eight were found to be resistant to cement kiln dust pollution.

0301-304. Thangavel P, Balagurunathan R (Dept Environ Sci, Tamil Nadu Agricl Univ, Coimbatore 641003). **Effect of tannery effluent on germination and growth of certain crop plants.** *Bull Pure Appl Sci*, **21B**(1)(2002), 21-25 [10 Ref].

Dilution of Tan Yard effluent at 75 times showed the highest germination percentage in all the crops tried, but 50 times diluted TYE showed the maximum shoot and root lengths. The inhibition and promotion in both germination and growth is due to high and low salt concentrations at lower and higher dilution respectively and the increased length of root and shoot might be due to the nutrients contained by the effluent. In this study, salinity dominated the toxic constituents like chromium in deciding the crop growth, because of this reason, TYE showed better performance.

0301-305. Tomer BS, Tomer SK, Singh Yogendra (Triveni Engng Ind Ltd, Khatauli 251201). **Studies on the impact of distillery waste on seed germination of sunflower in Western U.P**. *J Nature Conservator*, **14**(2)(2002), 233-236 [9 Ref].

Paper discusses the physico-chemical characteristic of distillery effluents and the effect of its various concentrations on the seed germination of *Helianthus annus* Cv Ec 68413 in Western Uttar Pradesh. High temperature, acidic pH, excessive quantities of inorganic salts, organic matter and total solids in the spent wash caused soil salinity and high osmotic pressure of the soil solution after irrigation and decreased the seed germination drastically.

0301-306. Trivedi GK, Shukla Om Prakash (Birbal Sahni Inst Palaebotany, 53-Univ Rd, Lucknow 226007). **Role of microflora in environment monitoring and pollution control**. *(The) Botanica*, **52**(2002), 83-87 [18 Ref].

Microflora usally comprises of unicellular and multicelluar microscopic organisms, widely distributed in air, water, soil, dead matter and within the living organisms. Microbes have industrial applications which involve oxidation, reduction, isomerisation, hydrolysis and condensation. They play an important role in human welfare activities and environmental application such as in waste water treatment, sewage treatment, reduction of pollution load in water bodies and environmental biotechnology.

0301-307. Veliappan A, Melchias G, Kasinathan P (Dept Bot, AVVM Sri Pushpam Coll, Poondi, Thanjavur 613503). **Effect of heavy metal toxicity on the nodulation pattern of legume cultivars**. *J Ecotoxico Environ Monit*, **12**(1)(2002), 17-20 [9 Ref].

Tests were performed in pots with five legume cultivars viz. *Vigna unguiculata, Vigna mungo, Vigna radiata*. *Macrotyloma uniflorum* and *Lablab purpureaus* to study the effects of heavy metal toxicity on nodulation and growth. Heavy metals used were aluminium and mercury. Among these two heavy metals which were tested at the same molar concentration of 100mM, mercury was found to be more toxic than aluminium. Tests were also performed to study the reversal of the inhibitions and disorders caused by heavy metal toxicity. Calcium supplementation proved to show positive results in this process.

0301-308. Wagela DK, Pawar K, Dube B, Joshi OP (MP Polln Contl Bd, Indore 452010). **Lead monitoring in air, soil and foliar deposits at Indore city with special reference to automobile pollution**. *J Environ Bio*, **23**(4)(2002), 417-421 [22 Ref].

Ambient lead levels in air, soil and dust deposits on selected plant species at ten distinctly located sampling stations of Indore city are presented. The maximum lead level in air was recorded at Palasia, where the traffic density was found to be the highest. Out of the plant species studied, the maximum lead was recorded on

Dalbergia sissoo leaves. A possible relationship between leaf morphology and dust accumulation tendency is also discussed.