NUMERICAL DATA

Removal of particulate matter and trace elements from ambient air by urban greenery in the winter season (2018)

Total amount and division into categories (sPM and wPM) of large (10–100 μm), coarse (2.5–10 μm) and fine (0.2– 2.5 μm) PM accumulated on foliage of examined plant species. Data are means ± SD, n = 4

Species	**PM (μg cm^{-2}) Size fraction (μm)**			**10–100 μm (μg cm^{-2}) PM category (surface/in waxes)**		**2.5–10 μm (μg cm^{-2}) PM category (surface/in waxes)**		**0.2–2.5 μm (μg cm^{-2}) PM category (surface/in waxes)**	
	10-100	2.5–10	0.2–2.5	sPM	wPM	sPM	wPM	sPM	wPM
Pinus nigra	114.6 ± 15.7	8.99 ± 2.59	4.13 ± 0.74	70.2 ± 17.0	44.3 ± 4.74	3.63 ± 3.15	5.36 ± 1.03	1.84 ± 0.71	2.30 ± 1.41
	A1(a)	B(a)	B(a)	A(a)	B(a)	A(a)	A(a)	A(a)	A(a)
Taxus baccata	48.4 ± 3.26	3.77 ± 0.58	1.45 ± 0.53	25.9 ± 3.91	22.5 ± 5.10	1.47 ± 0.45	2.67 ± 0.98	0.81 ± 0.23	0.64 ± 0.33
	A (b)	B(b)	B(b)	A(b)	A(b)	A(a)	A(b)	A(b)	A(a)
Carpinus betulus	3.97 ± 0.54	2.79 ± 0.20	1.33 ± 0.70	2.34 ± 0.69	1.62 ± 0.58	1.66 ± 0.73	1.13 ± 0.59	0.82 ± 0.23	0.50 ± 0.62
	A (c)	B(b)	C(b)	A(c)	A(c)	A(a)	A(b)	A(b)	A(a)

1. Comparisons between different PM size fraction (10–100, 2.5–10, 0.2–2.5 μm) or category (sPM and wPM) within the same plant species (capital letters)
2. Comparisons between different plant species within the same PM size fraction (10–100, 2.5–10, 0.2–2.5 μm) or category (sPM and wPM) (lowercase letters)

The black pine plants accumulated significantly the greatest mass of PM in all size fractions. On all species, the largest size fraction (10–100 μm) made up significantly the greatest proportion of accumulated PM mass and the fine fraction made up the smallest proportion. Expressed as percentage, the large PM fraction amounted to 90% in P. nigra and T. baccata, and 49% in C. betulus, while fine PM accounted for only 3% in P. nigra and T. baccata or 16% in C. betulus. Regardless of the species, the amount of large PM was higher on the foliage surface (SPM) than in waxes (WPM).

Removal of particulate matter and trace elements from ambient air by urban greenery in the winter season (2018)

Leaf and PM concentrations (mg kg^{-1} DW) of selected trace elements. Data are means ± SD, n = 4 (plant material) or n = 2 (PM)

Species	mg kg^{-1} DW In plant	In accumulated PM					
	Zn	Total PM	10–100 µm	2.5–10 µm	0.2–2.5 µm	Total sPM	Total wPM
Pinus nigra	29.0± 5.55 B	36.5± 17.3	37.1 ± 19.6	22.5± 4.11	54.2± 8.63	42.0± 28.5	25.2± 2.27
Taxus baccata	52.9± 5.71 A	19.4± 5.15	19.7 ± 5.25	18.8± 3.42	8.93± 4.13	24.3± 2.73	14.1± 7.07
Carpinus betulus	56.5± 12.5 A	26.0± 1.79	23.5 ± 0.93	18.5± 7.43	51.6± 12.9	29.4± 1.70	21.2± 1.59
Average	46.1± 4.30	24.1± 3.06	26.8 ± 5.00	19.9± 1.86	38.2± 9.74	31.9± 6.20	20.2± 2.48
	Mg						
Pinus nigra	923.0 ± 318.1 B	268.5± 13.5	286.0 ± 12.5	103.0± 2.61	142.6± 22.9	256.3± 36.0	274.1± 81.2
Taxus baccata	985.4 ± 243.2 AB	107.3± 0.25	110.9 ± 1.98	86.2± 0.32	51.0± 41.7	118.2± 8.84	94.9± 10.6
Carpinus betulus	1632.8 ± 466.1 A	145.6± 2.35	116.3 ± 17.9	115.9± 4.03	296.5± 43.6	126.4± 3.74	173.7± 13.0
Average	1180.4 ± 134.0	173.8± 30.9	171.1 ± 36.6	101.7± 5.52	163.4± 46.8	166.9± 29.1	180.8± 36.1
	Ni						
Pinus nigra	0.98± 0.28 B	3.67± 0.00	3.63 ± 0.00	3.17± 0.18	5.79± 0.27	3.67± 0.00	3.66± 0.01
Taxus baccata	1.01± 0.49 B	3.24± 0.23	3.33 ± 0.21	2.42± 0.13	2.55± 0.60	3.06± 0.14	3.46± 0.64
Carpinus betulus	2.24± 0.58 A	3.76± 0.40	3.49 ± 0.40	3.05± 0.01	6.31± 1.82	3.73± 0.38	3.81± 0.42
Average	1.41± 0.21	3.55± 0.13	3. 48 ± 0.10	2.88± 0.15	4.88± 0.82	3.48± 0.15	3.64± 0.15
	Pb						
Pinus nigra	1.31± 0.59 B	425.7± 20.5	390.8 ± 21.0	544.2± 32.7	1121.1± 103.2	406.8± 30.6	456.8± 4.47
Taxus baccata	1.64± 0.55 B	499.2± 8.30	519.0 ± 6.48	363.1± 35.8	211.1± 0.74	538.4± 36.7	459.9± 51.5
Carpinus betulus	3.60± 2.35 A	598.2± 72.6	439.7 ± 24.1	528.2± 12.3	1310.5± 556.2	638.3± 129.2	542.7± 5.53
Average	2.18± 0.48	507.7± 34.5	449.8 ± 24.3	478.5± 37.7	880.9± 238.2	527.8± 49.3	486.5± 20.2
	Cr						
Pinus nigra	19.3± 4.09 A	12.5± 1.20	13.1 ± 1.41	5.67± 0.56	9.88± 0.85	11.18± 2.08	14.2± 0.55
Taxus baccata	16.6 ± 2.47 A	6.29± 0.01	6.54 ± 0.05	4.22± 0.21	3.97± 0.12	6.32± 0.11	6.27± 0.14
Carpinus betulus	22.5± 11.4 A	6.37± 0.20	5.32 ± 0.69	5.98± 0.67	11.1± 3.28	6.67± 0.08	5.93± 0.62
Average	19.5± 2.00	8.38± 1.31	8.32 ± 1.55	5.2± 0.38	8.32± 1.52	8.06± 1.06	8.80± 1.71
	Cd						
Pinus nigra	0.06± 0.02 B	80.6± 0.40	74.7 ± 0.36	98.3± 7.62	205.7± 14.4	76.4± 1.30	86.5± 0.77
Taxus baccata	0.04± 0.01 B	91.6± 1.76	95.8 ± 1.32	63.0± 6.52	28.9± 1.45	96.0± 3.47	87.2± 6.80
Carpinus betulus	0.11 ± 0.01 A	108.9± 6.04	79.0 ± 8.43	100.0± 7.96	234.5± 83.7	110.2± 13.01	107.3± 3.93
Average	0.07± 0.01	93.7± 5.32	83.1 ± 4.36	87.1± 7.97	156.4± 43.5	94.2± 6.67	93.7± 4.55
	Sb						
Pinus nigra	0.34± 0.15 A	6.37± 0.56	6.95 ± 0.59	1.53± 0.92	0.72± 0.21	6.42± 0.69	6.26± 0.34
Taxus baccata	0.15± 0.06 A	0.87± 0.02	0.94 ± 0.04	0.27± 0.09	0.37± 0.05	0.73± 0.04	1.03± 0.02
Carpinus betulus	0.15± 0.05 A	0.64± 0.16	0.77 ± 0.30	0.48± 0.10	0.54± 0.18	0.78± 0.06	0.43± 0.31
Average	0.21± 0.04	2.63± 1.19	2.89 ± 1.29	0.76± 0.30	0.54± 0.08	2.64± 1.20	2.57± 1.17

Source: https://doi.org/10.1007/s11356-018-3628-0

Impact of particulate matter on basmati rice varieties grown in 1 Indo-Gangetic Plains of India: Growth, biochemical, physiological 2 and yield attributes (2018)

Variation in PM deposition, PM flux, leaf temperature, biochemical parameters and air pollution tolerance index (APTI) of rice varieties at three different growth stages and under three PM treatments.

Variety	Vegetative			Reproductive			Maturity		
	LPM	APM	EPM	LPM	APM	EPM	LPM	APM	EPM
	PM deposition (µgcm $^{-2}$)								
PB-1509	392.4 ± 51.0	702.2 ± 95.6	905.7 ± 7.4	239.4 ± 40.4	780.2 ± 48.7	903.3 ± 9.0	551.5 ±4.9	829.6 ± 129.6	992.3 ± 3.3
PS-5	632.2 ± 195.7	906.6 ± 52.4	1126.8 ± 3.2	575.2 ± 134.8	07.6 ±170.7	1153.2 ± 6.0	612.9 ± 156.2	1171.8 ± 81.3	1271.9 ± 7.6
	PM Flux (µgcm $^{-2}$d^{-1})								
PB-1509	6.1± 2.1	7.4 ± 2.6	10.1± 2.6	10.8± 3.3	1 3.8± 8.3	15.8± 8.4	16.3± 3.7	24.2± 6.4	29.8± 4 .6
PS-5	8.9± 3.2	12.4± 5.9	12.9± 5.9	16.8± 7.5	18. 0± 4.9	20.9± 4.9	17.2± 4.0	25.0± 8.9	36.2± 6.3
	Leaf temperature (°C)								
PB-1509	36.2± 0.03	36.3± 0.30	36.7± 0.06	31.9± 0.31	32.7± 0.23	34.1± 0.29	27.8± 0.01	29.2± 0.01	30.2 ± 0.11
PS-5	36.2± 0.01	36.4 ± 0.01	36 .9± 0.01	32.0± 0.3 8	33.0± 0.15	34.9±0 .74	27.8± 0.01	29.2±0.01	30.4± 0.38
	Chlorophyll content (mg/g FW)								
PB-1509	0.23±0.02	0.19± 0 .01	0.15± 0.02	0.245 ± 0.02	0.22 ± 0.05	0.20 ± 0.02	0.077 ± 0.002	0.051± 0.003	0.046 ± 0.003
PS-5	0.22±0.05	0.18± 0.01	0.14± 0.01	0.24± 0.0 2	0.23± 0.06	0.22± 0.01	0.076 ± 0.001	0.046 ± 0.0 01	0.040 ± 0.002
	Relative leaf water content (%)								
PB-1509	86.7± 4.7	75.9± 5.4	71.7± 2.3	86.1± 3.2	83.2 ± 7.1	80.9± 4.2	57.3± 2.3	47.1± 6.4	42.9± 5.2
PS-5	78.7± 8.3	78.8± 5.1	66.5 ± 4.8	72.8± 4.9	75 .8 ± 5.3	53.9 ± 5.6	63.9± 4.1	44.1± 3.1	33.8± 7. 8
	pH								
PB-1509	7.9± 0.005	7.7± 0.03	7.6 ± 0.02	7.8 ± 0.0 1	7.7 ± 0.02	7.7 ± 0.01	7.6 ± 0.02	7.5 ± 0.04	7.6 ±0.05
PS-5	7.7± 0.002	7.7±0.002	7.7 ± 0.00	7.6 ± 0.07	7.5 ± 0.06	7.6 ± 0.03	7.6 ± 0.01	7.4 ± 0.01	7.5 ±0.03
	Ascorbic acid content (mg/FW)								
PB-1509	1.44±0.02	1.70±0.02	2.32± 0.6	3.67± 0 .3	4.68± 0.3	5.24± 0.3	2.34± 0.01	2.43± 0.01	3. 24 ± 0.05
PS-5	1.57± 0.07	2.4 ± 0.02	3.03 ± 0.5	3.73± 0.4	4 .83 ±0.3	5.28 ± 0.4	2.93 ± 0.01	3.05± 0.03	3.27± 0.03
	APTI								
PB-1509	9.8± 0.47	8.9 ± 0.54	9.0 ± 0.23	11.6 ± 0.3 2	12.0± 0.48	12.2 ± 0.39	7.5 ± 0.29	6.5 ± 0.34	6.8 ± 0.47
PS-5	9.1± 0.83	9.8 ± 0.51	9.0 ± 0.48	10.2± 0.05	1 1.3± 0.61	9.5 ± 0.51	8.6 ± 0.37	6.7 ± 0.40	5.8 ± 0 .52

Data represent mean value ± standard deviation (n=6)

LPM = Low PM deposition; APM = Ambient PM deposition; EPM = Elevated PM deposition

Source: DOI: 10.1016/j.atmosenv.2018.06.015

Impact of particulate matter on basmati rice varieties grown in 1 Indo-Gangetic Plains of India: Growth, biochemical, physiological 2 and yield attributes (2018)

Effect of PM deposition on gas exchange of rice varieties.

Parameter	Growth Stage	Treatment	PB-1509	PS-5
Photosynthetic rate (µmol CO_2 m^{-2} s^{-1})	Vegetative	LPM	17.4± 2.1	14.9± 3.2
		APM	15.6± 0.1	13.7± 0.1
		EPM	13.2± 0.8	12.3± 0.5
	Reproductive	LPM	18.5± 0.4	17.8± 0.8
		APM	16.3± 0.4	15.2± 0.3
		EPM	11.2± 0.2	13.8± 0.5
	Maturity	LPM	9.8 ± 0.5	14.7 ± 0.9
		APM	4.3 ± 0.5	5.1 ± 0.9
		EPM	1.1 ± 0.07	3.3 ± 0.05
Stomatal conductance (mol H_2O m^{-2} s^{-1})	Vegetative	LPM	0.15± 0.009	0.18 ± 0.005
		APM	0.11± 0.005	0.16± 0.001
		EPM	0.10± 0.008	0.15± 0.006
	Reproductive	LPM	0.25± 0.4	0.19± 0.08
		APM	0.16± 0.04	0.17± 0.03
		EPM	0.16± 0.02	0.13± 0.3
	Maturity	LPM	0.09± 0.003	0.07 ± 0.05
		APM	0.05± 0.006	0.05± 0.004
		EPM	0.04± 0.009	0.03± 0.005

Source: DOI: 10.1016/j.atmosenv.2018.06.015

Particulate Matter pollution capture by leaves of seventeen living wall species with special reference to rail-traffic at a metropolitan station (2017)

Mean PM density (±SE) per 1 mm^2 of a leaf (data for adaxial and abaxial surfaces are combined) of different species of plants on the living wall at New Street Station, Birmingham, UK in 2016.

Species	PM1 ± SE x 10^3	Group	PM2.5 ± SE x 10^3	Group	PM10 ± SE x 10^3	Group
B. sempervirens	45.03± 3.3	a	16.46 ±0.9	a	3.04±0.2	ab
H. albicans	40.41±6.2	a	13.01 ±1.4	ab	2.77±0.2	abc
T. vulgaris	27.86±2.6	a	11.41 ±0.7	abc	4.04±0.2	a
H. salicifolia	14.76±2.4	b	8.32±1.1	bcd	1.87±0.2	cd
G. macrorrhizum	12.28±2.2	bc	2.79±0.3	efgh	0.90±0.1	efg
H. youngii	11.65±0.8	bc	7.26±0.5	cd	2.53±0.2	bc
H. helix	9.99 ±1.4	bcd	4.90±0.5	de	1.45±0.2	de
E. amygdaloides	9.88 ±1.5	bcd	4.23±0.6	ef	1.68±0.1	efg
A. maritima	9.24 ±1.1	bcd	3.51±0.3	efg	1.28±0.1	de
P. terminalis	8.37 ±1.0	bcd	2.51±0.2	fghi	0.83±0.1	efg
G. odoratum	6.87 ±1.3	cde	2.79±0.4	efgh	1.09±0.1	def
P. veris	6.58 ±0.8	cde	2.17±0.2	ghi	0.72±0.07	efg
H. officinalis	5.82 ±0.8	def	2.69±0.3	fgh	0.90±0.09	efg
H. sternii	4.35 ±0.7	efg	2.49±0.4	fghi	0.68±0.1	fg
B. spicant	3.08 ±0.3	efg	0.74±0.06	j	0.26±0.02	hi
P. scolopendrium	3.01 ±0.5	fg	1.47±0.1	ij	0.21±0.03	i
L. nivea	2.78 ±0.4	g	1.74±0.3	hi	0.54±0.09	gh

Species sharing the same letter/group for a specific PM size range are not significantly different using Tukey's HSD post hoc test with 95% confidence level, P>0.05

Source: http://dx.doi.org/doi:10.1016/j.ufug.2017.07.005