NUMERICAL DATA

TABLE 1: Plant species selected for pot experiment

S.N.	Botanical name	Vernacular name	Family
1	*Cyamopsis tetragonoloba L.*	Guar	Fabaceae
2	*Sesamum indicum L.*	Sesame	Pedaliaceae

TABLE 2: The properties of experimental soil

Parameter	Value
pH	$6.89^{b} \pm 0.04$
E.C. (µS cm^{-1})	$1662^{a} \pm 11$
Organic carbon, %	$2.20^{b} \pm 0.04$
Organic matter, %	$3.79^{b} \pm 0.02$
Pb (total), mg kg^{-1}	ND

TABLE 3: Lead treatment levels given in the experiment

Heavy metal	Salt used	Treatments (mg kg^{-1} soil)					
		T1	T2	T3	T4	T5	T6
Lead (Pb)	$Pb(NO_3)_2$	**100**	**200**	**400**	**600**	**800**	**1000**

TABLE 4: Measurement conditions of AAS for lead (Pb) determination

Parameters	Values
Wave length (nm)	217.0
Hollow cathode lamp current (mA)	5.0
Flame type	Air-C_2H_2
Background correction	On
Slit width (nm)	1.0
Flame condition	Oxidizing
Expansion factor	1

TABLE 5: Phytotoxicity of Pb on germination and growth parameters of *Cyamopsis tetragonoloba L.* and *Sesamum indicum L.*

Plant species	Pb applied	Germination	Root length	Shoot length	Root fresh weight	Shoot fresh weight	Root dry weight	Shoot dry weight
	mg kg^{-1}	%	cm		g plant^{-1}			
C. tetragonoloba	0	88.57^{a} ± 2.86	17.85^{a} ± 0.34	134.30^{a} ± 1.70	14.29^{a} ± 0.18	53.74^{a} ± 5.32	8.93^{a} ± 0.12	20.33^{a} ± 2.08
	100	81.90^{ab} ± 1.65	16.83^{ab} ± 0.85	129.20^{b} ± 1.70	12.58^{b} ± 1.04	41.19^{b} ± 9.22	7.87^{b} ± 0.65	18.30^{ab} ± 1.47
	200	80.00^{ab} ± 17.84	16.49^{ab} ± 0.17	122.57^{c} ± 3.23	11.36^{c} ± 0.42	35.03^{bc} ± 6.16	7.10^{c} ± 0.26	17.30^{b} ± 1.47
	400	80.00^{ab} ± 7.56	15.13^{bc} ± 0.17	119.00^{c} ± 2.74	10.84^{c} ± 0.37	31.54^{bc} ± 0.75	6.77^{c} ± 0.24	15.67^{bc} ± 0.57
	600	76.19^{ab} ± 14.09	14.62^{c} ± 0.17	102.00^{d} ± 2.47	9.55^{d} ± 0.81	30.08^{cd} ± 2.93	5.97^{d} ± 0.50	14.33^{cd} ± 1.52
	800	69.52^{ab} ± 10.82	13.60^{c} ± 1.70	100.98^{d} ± 3.40	8.48^{e} ± 0.48	26.86^{cd} ± 1.17	5.30^{e} ± 0.30	12.67^{de} ± 1.20
	1000	64.76^{b} ± 10.82	13.60^{c} ± 1.70	100.47^{d} ± 1.53	8.15^{e} ± 0.28	21.13^{d} ± 6.66	5.09^{e} ± 0.18	10.90^{e} ± 1.40
S. indicum	0	94.44^{a} ± 5.85	13.76^{a} ± 0.48	119.04^{a} ± 1.60	12.27^{a} ± 0.33	41.33^{a} ± 1.01	8.33^{a} ± 0.12	18.33^{a} ± 1.20
	100	90.00^{ab} ± 5.00	12.64^{ab} ± 0.32	116.48^{a} ± 1.60	10.24^{ab} ± 1.95	34.42^{b} ± 6.12	7.33^{ab} ± 0.42	16.27^{b} ± 1.10
	200	88.33^{ab} ± 4.41	12.16^{bc} ± 1.60	116.00^{a} ± 1.60	8.66^{bc} ± 2.19	36.92^{ab} ± 3.31	6.24^{b} ± 0.90	14.03^{c} ± 1.00
	400	87.22^{ab} ± 6.31	11.31^{bcd} ± 0.72	108.16^{b} ± 1.60	7.84^{bcd} ± 1.31	31.29^{bc} ± 1.49	4.90^{c} ± 0.82	11.56^{d} ± 0.51
	600	85.56^{ab} ± 8.22	11.04^{cd} ± 0.32	107.84^{b} ± 1.60	7.51^{cd} ± 0.63	25.88^{c} ± 3.59	4.70^{c} ± 0.40	9.67^{e} ± 1.15
	800	83.89^{ab} ± 2.55	10.72^{d} ± 0.16	103.04^{b} ± 1.60	7.30^{cd} ± 1.48	17.42^{d} ± 1.49	4.53^{c} ± 0.92	7.59^{f} ± 0.72
	1000	80.00^{b} ± 10.93	10.67^{d} ± 0.56	85.33^{c} ± 9.92	5.92^{d} ± 0.97	9.15^{e} ± 1.18	3.70^{c} ± 0.61	5.87^{g} ± 0.81

Notes: Similar letters in same column are statistically non-significant according to Duncan's Multiple Range Test ($p < 0.05$), Data are means ($n = 3 \pm SD$), ain superscript represent significantly highest followed by later alphabets for lower means.(2018)

TABLE 6: Effect of Pb stress on the growth tolerance indices (TIs) of *Cyamopsis tetragonoloba L.* and *Sesamum indicum L.*

Plant species	Pb applied	Tolerance indices					
		Root length	Shoot length	Root fresh weight	Shoot fresh weight	Root dry weight	Shoot dry weight
	mg kg^{-1}	%					
C. tetragonoloba	100	$94.25^{a} \pm 2.97$	$96.20^{a} \pm 0.05$	$88.01^{a} \pm 6.32$	$76.97^{a} \pm 18.18$	$88.01^{a} \pm 6.32$	$91.19^{a} \pm 17.30$
	200	$92.39^{ab} \pm 0.81$	$91.26^{b} \pm 1.25$	$79.48^{b} \pm 2.78$	$64.89^{ab} \pm 6.02$	$79.48^{b} \pm 2.78$	$85.40^{a} \pm 7.06$
	400	$84.79^{bc} \pm 2.57$	$88.60^{b} \pm 0.93$	$75.85^{b} \pm 1.80$	$59.13^{ab} \pm 6.87$	$75.85^{b} \pm 1.80$	$77.43^{ab} \pm 5.40$
	600	$81.94^{c} \pm 2.51$	$75.97^{c} \pm 2.80$	$66.84^{c} \pm 6.47$	$56.22^{bc} \pm 6.54$	$66.84^{c} \pm 6.47$	$71.54^{abc} \pm 15.45$
	800	$76.09^{c} \pm 8.08$	$75.22^{c} \pm 3.48$	$59.36^{cd} \pm 4.06$	$50.18^{bc} \pm 3.18$	$59.36^{cd} \pm 4.06$	$62.64^{bc} \pm 7.01$
	1000	$76.09^{c} \pm 8.08$	$74.81^{c} \pm 0.19$	$57.01^{d} \pm 1.74$	$39.24^{c} \pm 11.58$	$57.01^{d} \pm 1.74$	$53.63^{c} \pm 4.13$
S. indicum	100	$91.99^{a} \pm 5.54$	$97.85^{a} \pm 0.029$	$83.34^{a} \pm 14.76$	$83.13^{a} \pm 13.52$	$88.06^{a} \pm 6.23$	$89.23^{a} \pm 11.27$
	200	$88.71^{a} \pm 14.73$	$97.45^{a} \pm 0.03$	$70.5^{ab} \pm 17.63$	$89.37^{a} \pm 8.75$	$74.83^{a} \pm 9.89$	$76.92^{a} \pm 9.40$
	400	$82.36^{a} \pm 8.10$	$90.88^{ab} \pm 2.57$	$63.86^{ab} \pm 10.19$	$75.72^{ab} \pm 3.14$	$58.72^{b} \pm 9.12$	$63.20^{b} \pm 3.68$
	600	$80.35^{a} \pm 5.13$	$90.59^{ab} \pm 0.13$	$61.20^{ab} \pm 3.59$	$62.78^{b} \pm 10.24$	$56.33^{b} \pm 4.09$	$52.94^{bc} \pm 7.72$
	800	$77.99^{a} \pm 3.89$	$86.56^{b} \pm 0.18$	$59.22^{b} \pm 12.60$	$42.22^{c} \pm 4.52$	$54.36^{b} \pm 10.68$	$41.38^{cd} \pm 2.78$
	1000	$77.49^{a} \pm 1.42$	$71.73^{c} \pm 8.94$	$48.18^{b} \pm 7.09$	$22.13^{d} \pm 2.69$	$44.34^{b} \pm 6.74$	$32.28^{d} \pm 6.39$

Notes: Similar letters in same column are statistically non-significant according to Duncan's Multiple Range Test ($p < 0.05$), Data are means ($n = 3 \pm SD$), ain superscript represent significantly highest followed by later alphabets for lower means. (2018)

TABLE 7: Pb concentration, bioconcentration factor (BCF), bioaccumulation coefficient (BAC), and translocation factor (TF) of *Cyamopsis tetragonoloba L.* and *Sesamum indicum L.*

Plant species	Pb applied	Pb concentration				BCF	BAC	TF
		Root	Stem	Leaf	Pod			
	mg kg^{-1}	mg kg^{-1}						
C. tetragonoloba	100	108.67^{d} ± 3.22	54.67^{d} ± 1.53	39.00^{e} ± 3.61	1.70^{c} ± 1.15	1.10^{ab} ± 0.03	0.95^{a} ± 0.05	0.88^{a} ± 0.07
	200	244.33^{c} ± 41.19	66.33^{d} ± 1.20	50.00^{d} ± 4.00	2.70^{bc} ± 1.13	1.22^{a} ± 0.21	0.60^{b} ± 0.02	0.50^{c} ± 0.09
	400	433.00^{b} ± 19.93	128.67^{c} ± 16.30	59.67^{cd} ± 5.51	4.43^{b} ± 1.46	1.10^{ab} ± 0.10	0.48^{c} ± 0.05	0.45^{c} ± 0.06
	600	601.00^{a} ± 7.94	202.33^{b} ± 7.51	69.33^{bc} ± 6.03	5.10^{b} ± 0.90	1.00^{b} ± 0.01	0.46^{c} ± 0.02	0.50^{c} ± 0.03
	800	603.67^{a} ± 16.20	280.33^{a} ± 13.32	78.67^{b} ± 6.11	8.03^{a} ± 0.95	0.75^{b} ± 0.02	0.46^{c} ± 0.03	0.61^{b} ± 0.03
	1000	626.67^{a} ± 5.51	299.67^{a} ± 20.50	89.33^{a} ± 8.02	10.40^{a} ± 2.03	0.63^{c} ± 0.01	0.40^{d} ± 0.01	0.64^{b} ± 0.02
S. indicum	100	102.00^{d} ± 3.00	17.17^{e} ± 1.11	20.33^{f} ± 2.31	0.91^{f} ± 0.20	1.02^{a} ± 0.03	0.38^{a} ± 0.03	0.40^{a} ± 0.04
	200	209.00^{c} ± ± 11.30	31.13^{d} ± 1.79	34.33^{e} ± 0.58	2.00^{e} ± 0.10	1.05^{a} ± 0.05	0.34^{b} ± 0.01	0.32^{b} ± 0.02
	400	411.33^{b} ± 9.50	41.67^{c} ± 2.89	43.67^{d} ± 1.53	3.20^{d} ± 0.95	1.03^{a} ± 0.02	0.22^{c} ± 0.01	0.22^{d} ± 0.02
	600	443.00^{b} ± 38.11	56.07^{b} ± 5.66	61.33^{c} ± 1.53	4.17^{c} ± 0.06	0.74^{b} ± 0.06	0.20^{c} ± 0.01	0.27^{c} ± 0.02
	800	500.67^{a} ± 17.62	59.97^{ab} ± 4.95	72.67^{b} ± 1.16	7.24^{b} ± 0.16	0.63^{c} ± 0.02	0.17^{d} ± 0.01	0.28^{c} ± 0.02
	1000	525.67^{a} ± 6.43	64.89^{a} ± 3.37	75.33^{a} ± 0.58	8.13^{a} ± 0.06	0.53^{d} ± 0.01	0.15^{e} ± 0.00	0.28^{c} ± 0.01

Notes: Similar letters in same column are statistically non-significant according to Duncan's ple Range Test ($p < 0.05$), Data are means (n = 3 ±SD), ain superscript represent significantly highest followed by later alphabets for lower means.(2018)

Source:https://www.tandfonline.com/doi/pdf/10.1080/24749508.2018.1452464?needAccess=true

TABLE 1: Effect of Pb stress on the growth tolerance indices (TIs) of *Cyamopsis tetragonoloba L.* and *Sesamum indicum L.*

Rice cultivars	Pb (ppm)	HS					MS				
		Chl a	Chl b	Chl a+b	Carotenoids	Chl a/b	Chl a	Chl b	Chl a+b	Carotenoids	Chl a/b
		mg g^{-1} FW					mg g^{-1} FW				
Meixiangzhan-2	0	3.22 ± 0.32a	2.12 ± 0.46a	5.34 ± 0.74a	1.27 ± 0.21a	1.65 ± 0.33a	2.80 ± 0.46a	1.87 ± 0.23a	4.67 ± 0.58a	1.01 ± 0.07a	1.52 ± 0.23a
	400	1.60 ± 0.19b	1.03 ± 0.12b	2.63 ± 0.31b	1.15 ± 0.16a	1.55 ± 0.01a	2.21 ± 0.36ab	1.20 ± 0.17b	3.40 ± 0.36b	0.70 ± 0.12ab	1.96 ± 0.53a
	800	1.46 ± 0.02b	0.96 ± 0.01b	2.42 ± 0.03b	1.04 ± 0.34a	1.51 ± 0.02a	1.35 ± 0.11bc	1.13 ± 0.18b	2.48 ± 0.11*bc*	0.66 ± 0.15b	1.30 ± 0.35a
	1,200	1.15 ± 0.29b	0.56 ± 0.08b	1.72 ± 0.27b	0.59 ± 0.12a	2.18 ± 0.74a	1.12 ± 0.07c	0.57 ± 0.18b	1.69 ± 0.13c	0.55 ± 0.02b	2.63 ± 1.09a
Means		1.86	1.17	3.03	1.01	1.72	1.87	1.19	3.06	0.73	1.85
LSD 0.05		0.78	0.79	1.38	0.73	1.32	0.98	0.63	1.15	0.33	2.09
Xiangyaxianzhan	0	2.21 ± 0.42a	1.52 ± 0.73a	3.73 ± 0.06a	1.83 ± 0.10a	1.61 ± 0.17a	2.02 ± 0.08a	1.45 ± 0.21a	3.47 ± 0.28a	0.96 ± 0.11a	1.43 ± 0.14a
	400	1.19 ± 0.02b	0.79 ± 0.02a	1.97 ± 0.18b	1.37 ± 0.34ab	1.47 ± 0.01a	1.11 ± 0.21b	0.76 ± 0.17b	1.87 ± 0.10b	0.65 ± 0.17ab	1.76 ± 0.72a
	800	0 ±	0.66	1.62	1 ±	1.5	0.9 ±	0. ±	1. ±	0 ±	1.63 ±

		.97	0.11b	± 0.07a	± 0.03b	.02	0.26b	1 ± 0.01a	6	0.14bc	59	0.05bc	55	0.19b	.39	0.03b	0.13a
	1,200	0.65	± 0.06b	0.40 ± 0.02a	1.05 ± 0.83b	0.75	± 0.04b	2.31 ± 1.20a	0.59	± 0.05c	0.28	± 0.07c	0.87	± 0.10c	0.38	± 0.09b	2.24 ± 0.41a
Means			1.26	0.84	2.09		1.24	1.73		1.17		0.77		1.94		0.60	1.77
LSD 0.05			0.71	1.19	1.39		0.72	1.98		0.44		0.46		0.60		0.37	1.39
Basmati-385	0	4.47	± 0.16a	2.85 ± 0.12a	7.32 ± 0.24a	1.82	± 0.13a	1.57 ± 0.06a	3.86	± 0.05a	2.40	± 0.11a	6.27	± 0.06a	1.46	± 0.29a	1.61 ± 0.09a
	400	3.62	± 0.08b	2.57 ± 0.15a	6.19 ± 0.21b	1.39	± 0.21ab	1.41 ± 0.06a	3.33	± 0.35a	2.31	± 0.34a	5.64	± 0.51a	1.26	± 0.20ab	1.51 ± 0.30a
	800	2.87	± 0.27bc	1.80 ± 0.28b	4.67 ± 0.06c	1.20	± 0.08b	1.75 ± 0.49a	2.25	± 0.15b	1.19	± 0.09b	3.44	± 0.16b	1.15	± 0.12ab	1.91 ± 0.20a
	1,200	2.12	± 0.34c	1.18 ± 0.07c	3.30 ± 0.35d	0.97	± 0.18b	1.81 ± 0.30a	2.06	± 0.06b	1.10	± 0.04b	3.16	± 0.06a	0.82	± 0.09b	1.89 ± 0.11a
Means			3.27	2.10	5.37		1.35	1.64		2.88		1.75		4.63		1.17	1.73
LSD 0.05			0.76	0.56	0.78		0.52	0.96		0.63		0.61		0.89		0.61	0.63

Values are the means of three independent determinations ± SE. Values with different lower case letters differ significantly at P < 0.05 according to least significant difference test. HS, Heading stage; MS, Maturity stage.(2017)

TABLE 2: Effect of different Pb concentrations on oxidative stress indicators, protein and osmolyte accumulation of three scented rice cultivars at heading and maturity stages.

Rice cultivars	Pb	HS H$_2$O$_2$	HS MDA	HS Leachates	MS H$_2$O$_2$	MS MDA	MS Leachates	HS Protein	HS Proline	HS Soluble Sugars	MS Protein	MS Proline	MS Soluble Sugars
	(ppm)	(µmol g^{-1} FW)	(µmol g^{-1} FW)	(%)	(µmol g^{-1} FW)	(µmol g^{-1} FW)	(%)	(µg g^{-1} FW)	(µg g^{-1} FW)	(mg g^{-1} FW)	(µg g^{-1} FW)	(µg g^{-1} FW)	(mg g^{-1} FW)
Meixiangzhan-2	0	48.83 ± 3.80b	8.92 ± 0.07c	38.11 ± 0.41d	91.38 ± 3.46c	5.96 ± 0.24b	39.00 ± 0.22d	84.25 ± 4.04a	19.62 ± 2.84b	9.38 ± 0.60a	23.51 ± 3.17b	20.60 ± 3.84c	9.86 ± 0.59a
	400	63.86 ± 2.61b	11.98 ± 0.42b	74.54 ± 0.52c	107.65 ± 2.05bc	6.07 ± 0.22ab	63.56 ± 0.28c	88.01 ± 6.54a	16.30 ± 0.52b	9.84 ± 0.58a	39.74 ± 0.23a	24.12 ± 2.22bc	9.10 ± 0.53a
	800	90.66 ± 1.82a	10.44 ± 0.38bc	79.65 ± 0.46b	121.25 ± 5.70b	6.75 ± 0.22ab	79.54 ± 0.15b	109.94 ± 8.52a	21.77 ± 1.47b	10.13 ± 0.59a	39.27 ± 1.88a	39.35 ± 1.22a	9.56 ± 0.56a
	1,200	110.6 ± 7.61a	22.95 ± 1.16a	82.42 ± 0.26a	163.99 ± 7.36a	8.71 ± 1.59a	90.91 ± 1.04a	101.54 ± 12.07a	42.87 ± 2.06a	10.57 ± 0.55a	22.77 ± 7.70b	29.39 ± 0.68b	10.30 ± 0.5

		6																					5a
Means		78.50		13.57		68.68		121.07		6.87		68.25	95.94		25.14	9.98		31.32		28.37		9.71	
LSD 0.05		26.22		2.10		1.39		16.54		2.68		1.81	27.17		6.26	1.97		13.92		7.58		2.09	
Xiangyaxianzhan	0	39.55	±4.90c	10.21	±0.24b	40.29	±1.54d	103.08	±3.21c	9.10	±0.85c	40.76 ± 1.23c	41.50	±2.00ab	12.98 ± 1.76b	9.46	±0.57a	39.00	±2.82a	21.97	±1.28b	9.19	±0.60a
	400	78.76	±1.18b	11.49	±1.26b	64.95	±0.08c	137.85	±6.42b	14.01	±0.66b	72.21 ± 0.17b	45.01	±0.31ab	31.54 ± 3.14a	9.92	±0.58a	36.76	±4.49ab	23.33	±1.98b	9.64	±0.55a
	800	80.20	±1.14b	11.51	±0.84b	70.68	±0.75b	168.83	±5.56a	16.94	±1.00ab	77.06 ± 5.75b	48.39	±2.10a	35.44 ± 4.18a	9.85	±0.60a	34.47	±2.05ab	24.51	±0.70b	10.17	±0.58a
	1,200	101.25	±0.26a	25.67	±2.44a	85.61	±0.14a	173.21	±5.37a	18.64	±1.30a	93.84 ± 0.86a	39.87	±3.67b	37.45 ± 5.62a	10.44	±0.55a	25.13	±6.02b	33.69	±0.52a	9.58	±0.60a
Means		74.94		14.72		65.38		145.74		14.67		70.97	43.69		29.35	9.92		33.84		25.88		9.65	
LSD 0.05		8.44		4.70		2.81		17.20		3.19		9.70	7.65		12.84	1.96		13.50		4.10		2.09	
B	0	9	±	6.	±	4	±	96.6	±	6	±	42.47	36.	±	14.1	9.	±	27.	±	1	±	9	±

asmati-385		5.50	5.69*a*b	44	0.95b	0.09	0.49c	1	6.67b	.37	1.27a	± 3.39b	02	0.53b	5 ± 1.79b	53	0.56a	91	7.30a	3.50	2.69b	.26	0.54a
	400	92.88	± 4.74b	11.39	± 1.20a	66.57	± 1.75b	103.99	± 2.44ab	7.12	± 1.35a	83.87 ± 0.32a	38.78	± 2.20b	18.45 ± 1.86b	10.14	± 0.60a	33.32	± 2.20a	13.37	± 1.60b	9.87	± 0.57a
	800	111.18	± 1.90a	11.40	± 0.61a	69.18	± 0.32ab	107.39	± 3.14ab	7.20	± 0.47a	86.76 ± 5.14a	45.01	± 9.79b	20.01 ± 1.79b	10.13	± 0.60a	40.69	± 1.71a	15.33	± 0.59b	9.86	± 0.58a
	1,200	109.09	± 6.60ab	13.43	± 0.85a	71.84	± 1.67a	115.97	± 4.31a	7.98	± 0.13a	85.16 ± 2.26a	76.06	± 2.42a	31.15 ± 2.89a	10.45	± 0.59a	39.40	± 1.76a	29.00	± 2.58a	10.17	± 0.5a
Means		102.16		10.67		61.92		105.99		7.17		74.57	48.97		20.94	10.06		35.33		17.82		9.79	
LSD 0.05		16.48		3.03		4.07		14.48		3.12		10.70	16.85		6.96	1.92		13.06		6.68		2.09	

Values are the means of three independent determinations ± SE. Values with different lower case letters differ significantly at $P < 0.05$ according to least significant difference test. HS, Heading stage; MS, Maturity stage.(2017)

Source: https://www.frontiersin.org/articles/10.3389/fpls.2017.00259/full

Lead concentration (mg kg-1 DW), accumulation (mg m-2), translocation factor, redistribution ratio (%), and biomass (kg m-2) of 35 rice cultivars

Cultivar group	Root Conc. [2]	R-S [3]	Conc.	Shoot Bio.	Accu.	S-G [4]	Conc.	Grain Bio.	Accu.
IR36 (I) [1)]	21.272	0.048	0.867	1.163	1.008	0.068	0.160	0.754	0.122
IR64 (I)	19.224	0.063	0.956	1.811	1.732	0.049	0.166	0.675	0.109
IR7 (I)	14.030	0.076	1.443	1.299	1.874	0.027	0.149	0.522	0.080
IR8 (I)	13.500	0.076	1.880	1.392	2.618	0.031	0.134	0.406	0.055
Lunhui422 (I)	15.368	0.079	1.460	0.744	1.087	0.035	0.095	0.345	0.032
SMR (I)	23.278	0.065	1.260	1.727	2.176	0.024	0.080	0.511	0.040
Balila (TJ)	21.875	0.092	1.847	0.893	1.650	0.017	0.142	0.420	0.060
Chucheong (TJ)	16.920	0.122	0.860	1.301	1.118	0.044	0.081	0.661	0.049
Hwajin (TJ)	12.759	0.097	1.336	0.688	0.919	0.046	0.070	0.643	0.046
Jongnam (TJ)	17.854	0.058	0.780	1.788	1.395	0.044	0.055	0.587	0.033
Juan (TJ)	14.412	0.055	1.260	1.168	1.471	0.035	0.074	0.597	0.045
Kunjing4 (TJ)	16.309	0.084	1.154	0.944	1.089	0.014	0.099	0.710	0.071
Namil (TJ)	14.394	0.076	1.076	0.703	0.756	0.037	0.089	0.755	0.068
Nampyeong (TJ)	13.989	0.067	1.027	1.153	1.183	0.028	0.084	0.860	0.071
SNU-SG1 (TJ)	16.546	0.053	1.041	1.027	1.069	0.100	0.081	0.813	0.064
Suwon468 (TJ)	15.637	0.108	1.692	1.081	1.830	0.017	0.049	0.321	0.015
Suwon476 (TJ)	16.488	0.091	1.289	1.122	1.447	0.086	0.102	0.478	0.065
Suwon490 (TJ)	17.032	0.089	1.780	0.834	1.484	0.087	0.119	0.368	0.044
Yangjo (TJ)	16.021	0.074	1.039	0.904	0.939	0.056	0.078	0.533	0.041
Zheng5-2 (TJ)	14.530	0.071	1.006	0.990	0.996	0.057	0.093	0.534	0.049
Anda (TI)	13.128	0.087	1.852	1.479	2.740	0.058	0.116	0.554	0.058
Dasan (TI)	15.909	0.144	1.296	1.438	1.865	0.038	0.066	0.749	0.049

Hanaruem (TI)	18.210	0.131	0.914	1.570	1.435	0.045	0.064	0.675	0.044
Hangangchal (TI)	16.072	0.057	1.213	1.118	1.356	0.071	0.076	0.611	0.047
Milyang23 (TI)	15.910	0.064	0.804	1.206	0.969	0.047	0.070	0.680	0.049
Namcheon (TI)	16.778	0.083	0.873	1.713	1.496	0.018	0.062	0.462	0.033
IR31917 (RJ)	12.232	0.076	1.132	1.468	1.662	0.036	0.141	0.612	0.099
IR69860 (RJ)	9.617	0.076	0.952	1.074	1.022	0.064	0.175	0.614	0.105
IR71204 (RJ)	11.302	0.087	0.942	1.466	1.382	0.022	0.218	0.581	0.127
IR71451 (RJ)	15.984	0.085	1.192	1.177	1.403	0.058	0.190	0.525	0.104
IR71682 (RJ)	13.898	0.082	0.830	1.293	1.073	0.055	0.170	0.506	0.090
IR72225 (RJ)	15.724	0.072	1.366	0.872	1.191	0.052	0.145	0.517	0.078
IR73111 (RJ)	13.450	0.068	1.146	1.221	1.399	0.057	0.150	0.526	0.081
IR76911 (RJ)	23.357	0.071	1.615	1.109	1.791	0.046	0.140	0.437	0.061
OS4 (RJ)	30.548	0.077	1.168	1.407	1.643	0.055	0.084	0.426	0.035
AverageF-	16.387	0.080	1.210	1.210	1.436	0.046	0.111	0.571	0.063
value	0.89^{ns}	3.27**	6.17**	7.69**	5.16**	7.63**	9.95**	8.96**	6.51**

*, **, and ns: P< 0.05, 0.01, and no significance, respectively.

1): I, Indica; TI, Tongil-type; TJ, Temperate japonica; RJ, Tropical japonica.

2): Conc., Lead concentration; Bio. Biomass; Accu. Lead accumulation.

3): R-S, Root-shoot translocation factor. 4): S-G, Shoot-grain redistribution ratio

Source: Kyu-Jong Lee at al.(2016),Lead Accumulation and Distribution in Different Rice Cultivars, J. Crop Sci. Biotech

Biomass, Pb content in plant tissues and residual Pb content in soil after 6 weeks of Pb treatment

Pb in soil (mg kg1)	Biomass (g)		Pb content (mg kg1 DW)		Residual Pb content in soil (mg kg1DW)
	Root	**Shoot**	**Root**	**Shoot**	
0	0.191 ± 0.003a	0.363 ± 0.003a	5.26 ± 0.40a	2.91 ± 0.58a	4.49 ± 0.54a
500	0.210 ± 0.001bc	0.397 ± 0.005bc	827.7 ± 4.52b	201.7 ± 2.63b	354.6 ± 4.79b
900	0.216 ± 0.001c	0.416 ± 0.006c	1423.7 ± 6.19c	317.0 ± 3.81c	601.2 ± 6.31c
1800	0.228 ± 0.004d	0.466 ± 0.004d	2576.4 ± 8.58d	463.0 ± 5.68d	1076.4 ± 8.83d
2900	0.203 ± 0.002b	0.386 ± 0.003b	3684.3 ± 14.11e	862.8 ± 7.20e	1856.2 ± 11.05e

Data presented as mean±standard error. Different alphabets within a column represent significance at P 0.05 after applying post hoc Tukey's test.

Source: Gagan Preet Singh Sidhu at al.(2016), Effect of lead on oxidative status, antioxidative response and metal accumulation in Coronopus didymus

Concentration and accumulation of Pb and its root to shoot translocation factor in wheat.

	Pb concentration (mg/kg)	Pb accumulation (mg/pot)	Pb concentration (mg/kg)	Pb accumulation (mg/pot)	Pb concentration (mg/kg)	Pb accumulation (mg/pot)	
$Pb0S_0$	55 ± 5.57e	63 ± 5.51f	10.0 ± 0.50e	54 ± 3.53e	0.69 ± 0.63d	3.5 ± 3.1e	0.18 ± 0.01c
$Pb50S_0$	78 ±5.05bc	64 ± 5.77f	14.5 ± 0.50d	62 ± 8.20e	2.92 ± 1.10cd	14.1 ± 3.5de	0.19 ± 0.02c
$Pb100S_0$	105 ±2.93a	71 ± 4.90ef	33.2 ± 1.95 b	134 ± 17.40d	3.21 ± 0.94c	13.2 ± 4.8de	0.31 ± 0.01b
Pb0S150	65 ±4.50d	86 ± 7.20cd	23.8 ± 0.71c	149 ± 13.28cd	5.52 ± 1.46c	35.6 ± 10.9cd	0.37 ± 0.04b
Pb0S300	70 ±3.76cd	99 ± 5.72b	24.3 ± 0.36c	168 ± 16.08bc	6.10 ± 2.69c	48.5 ± 21.9c	0.35 ± 0.02b
Pb50S150	82 ±6.33b	95 ± 7.68bc	34.8 ± 3.01ab	196 ± 16.27ab	14.62 ± 2.10b	116 ± 18.1ab	0.42 ± 0.03a
Pb50S300	80 ±4.04b	81 ± 4.21de	35.4 ± 1.80ab	197 ± 22.47a	19.58 ± 3.10a	107 ± 10.9b	0.44 ± 0.02a
Pb100S150	82 ±1.70b	80 ± 2.64de	36.1 ± 2.39a	179 ± 24.17ab	21.02 ± 2.47a	112 ± 11.8	0.44 ± 0.04a
Pb100S300	112 ±7.83a	134 ± 9.61a	36.7 ± 1.50a	202 ± 19.11a	20.87 ± 2.49a	142 ± 32.4a	0.33 ± 0.05b
LSD	8.48	10.67	2.87	28.8	3.53	27.33	0.05

Values ± standard followed by different letters in a column are significantly different from each other at probability of 0.05. Values are means of three independent pot replicates. In treatment acronyms, subscript numerals indicate the rate of applied Pb and S in mg/kg and mmol/kg, respectively.Concentrations and accumulation are determined on the basis of dry weight of plant tissues.

Source: Saifulla at al. (2016), Effect of lead on oxidative status, antioxidative response and metal accumulation in Coronopus didymus, International Journal of Phytoremediation

Some Example of selective detoxification of lead biosorbents as plant meterial

Sawdust (Acacia arabica)	Pb(II), Hg (II), Cr (VI), Cu(II)	Pb >Cr>Cu and Hg	Meena et al. (2008)
Oriza sativa husk	Pb(II)	98%	Zulkali et al.(2006)
Agricultural by product Humulus lupulus	Pb(II)	75%	Gardea-Torresdey et al
Agro waste of black gram husk	Pb(II)	Up to 93%	Saeed et al. (2005)
Febrifuga bark	Pb(II)	100%	Bankar and Dara
Waste tea leaves	Pb(II)	92%	Ahluwalia and Goyal (2005)
Rice bran	Pb (II), Cd (II), Cu (II), Zn (II)	>80.0%	Montanher et al. (2005)
Saw dust of Pinus sylvestris	Pb (II), Cd (II)	96%, 98%	Taty-Costodes et al. (2003)
Maple saw dust	Pb (II), Cu (II)	80–90%	Yu et al. (2001
Water hyacinth	Pb (II), Cu (II), Co (II), Zn (II)	70–80%	Kamble and Patil (2001)
Low cost sorbents (bark, dead biomass, chitin, sea weed, algae, peat moss, leaf mold, moss)	Pb (II), Hg (II), Cd (II), Cr (VI)	Good results	Kamble and Patil (2001)
Rice straw, soybean hulls, sugarcane bagasse, peanut and walnut shells	Pb (II), Cu (II), Cd (II), Zn (II),Ni (II)	Pb >Cu> Cd>Zn> Ni	Johns et al.

Source: Brajesh Kumar et al. (2014). Plant mediated detoxification of mercury and lead, Arabian Journal of Chemistry