Supplementary Information for

Fallow priority areas for spatial trade-offs between cost and efficiency in China

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16 Supplementary Table 9 Adsorption characteristics of hyperaccumulator plants and their costs for remediation of soil heavy metal pollution

Pollutant item	Hyperaccumulator plants	Genera	Experimental conditions	Heavy metal content in plants ($mg \cdot kg^{-1}$)	Cost of production materials (USD hm^{-2})				Labor cost (USD per day hm^{-2})	Total - Min (USD hm^{-2})	Total - Max (USD hm^{-2})
					Seeds or seedlings	Compound fertilizers	Urea	Pesticides			
Cr	Leersia hexandra Swartz [27]	*Poaceae*	Artificial wetland survey measurements	2000	3409.09	318.18	45.45	75.76	113.6-181.8	4530.30	4939.39
	Cyperus alternifolius [28]	*Cyperaceae*	Determination of complex contaminated soils – Cr (VI) and Ni 5 $mg \cdot L^{-1}$	1167.38	3221.59	212.12	45.45	75.76	113.6-181.8	4236.74	4645.83
	Thalia dealbata [29]	*Marantaceae*	Determination of complex contaminated soils – Cr (VI) and Ni 5 $mg \cdot L^{-1}$	592.2	4090.91	212.12	45.45	75.76	113.6-181.8	5106.06	5515.15
	Typha orientalis Presl. [29]	*Typhaceae*	Determination of complex contaminated soils – Cr (VI) and Ni 5 $mg \cdot L^{-1}$	673.76	2352.27	378.79	45.45	75.76	113.6-181.8	3534.09	3943.18
	Juncus effusus L. [29]	*Juncaceae*	Determination of complex contaminated soils – Cr (VI) and Ni 5 $mg \cdot L^{-1}$	797.87	1636.36	318.18	45.45	75.76	113.6-181.8	2757.58	3166.67
Cu	Commelina communis [30-32]	*Commelinaceae Mirb.*	Field survey measurements	1034	73.30	378.79	45.45	75.76	113.6-181.8	1255.11	1664.20
			Hydroponic experiments - Cu 200 $mg \cdot L^{-1}$	7789							
	Elsholtzia splendens [33]	*Lamiaceae Martinov*	Hydroponic experiments - Cu 200 $\mu mol \cdot L^{-1}$	7626	70.91	681.82	75.76	75.76	113.6-181.8	1586.06	1995.15
	Rumexacetosa Linn [34]	*Polygonaceae*	Field survey measurements	1749	6477.27	318.18	45.45	75.76	113.6-181.8	7598.48	8007.58
	Petridium revolutum [35]	*Pteridiaceae*	Field survey measurements	567	61.36	318.18	45.45	75.76	113.6-181.8	1182.58	1591.67
			Sand culture experiment - Cu 140 $mg \cdot L^{-1}$	2432							
	Brassica juncea L [36]	*Brassicaceae Burnett*	Soil culture under greenhouse trial - Cu 100 $mg \cdot L^{-1}$	13696	8522.73	318.18	45.45	75.76	113.6-181.8	9643.94	10053.03
Cd	Phytolacca acinosa Roxb [37]	*Phytolacca acinosa*	Soil culture under greenhouse trial - Cd 50 $mg \cdot L^{-1}$	403.41	17.05	136.36	75.76	75.76	113.6-181.8	986.74	1395.83
	Sedum alfredii [38]	*Crassulaceae*	Field survey measurements	149.6	9090.91	318.18	45.45	75.76	113.6-181.8	10212.12	10621.21
	Solanum nigrm [39]	*Solanaceae*	Soil culture under	228.4	11744.32	378.79	75.76	75.76	113.6-181.8	12956.44	13365.53

			greenhouse trial - Cd 25 mg·L^{-1}								
	Bidens pilosa L. [40]	*Asteraceae*	Soil culture under greenhouse trial - Cd 100 mg·L^{-1}	192.3	26.59	318.18	45.45	75.76	113.6-181.8	1147.80	1556.89
	PicrisdivaricataV. [41]	*Asteraceae*	Hydroponic experiments - Cd 10 μmol·L^{-1}	270	57.27	318.18	45.45	75.76	113.6-181.8	1178.48	1587.58
	Amarnthushy pochondriacus L. [42]	*Amaranthaceae Juss.*	Soil culture under greenhouse trial - Cd 16 mg·L^{-1}	120.63	85.23	681.82	75.76	75.76	113.6-181.8	1600.38	2009.47
	Sedum plumbizincicola [43]	*Crassulaceae*	Soil culture experiment	501	9090.91	318.18	45.45	75.76	113.6-181.8	10212.12	10621.21
	Beta vulgaris var. [44]	*Amaranthaceae Juss.*	Soil culture under greenhouse trial - Cd 20 mg·g^{-1}	159.79	98.18	212.12	45.45	75.76	113.6-181.8	1113.33	1522.42
	Viola baoshanensis [45,46]	*Violaceae Batsch*	Field survey measurements - 50 mg·L^{-1}	378	37.50	318.18	45.45	75.76	113.6-181.8	1158.71	1567.80
			Hydroponic experiments - Cd 50 mg·L^{-1}	4865							
	Lonicera japonica [47]	*Caprifoliaceae*	Hydroponic experiments - Cd 25 mg·L^{-1}	300	5965.91	378.79	75.76	75.76	113.6-181.8	7178.03	7587.12
			Soil culture experiment - Cd 50 mg·L^{-1}	100							
	Thlaspicai caerulescen [48,49]	*Brassicaceae Burnett*	Field survey measurements	1800 2130	109.09	318.18	45.45	75.76	113.6-181.8	1230.30	1639.39
	Arabidopsis haller [50]	*Brassicaceae Burnett*	Hydroponic experiments - Cd 400 μmol·L^{-1}	6643	132.95	318.18	45.45	75.76	113.6-181.8	1254.17	1663.26
	Brassica juncea L [51]	*Brassicaceae Burnett*	Soil culture under greenhouse trial - Cd 200 mg·L^{-1}	102.67	8522.73	318.18	45.45	75.76	113.6-181.8	9643.94	10053.03
Pb	Vetiveria zizanioides [52]	*Poaceae*	Experiments in plant tissue culture	2458-4069	41.28	212.12	45.45	75.76	113.6-181.8	1056.44	1465.53
	Bidens maximovicziana [53]	*Asteraceae*	Soil culture under greenhouse trial - Pb 1000 mg·L^{-1}	2164	44.18	378.79	45.45	75.76	113.6-181.8	1226.00	1635.09
	Pogonatherum crinitum [54]	*Poaceae*	Hydroponic experiments - Pb 750 mg·L^{-1}	4639.4	64.09	681.82	75.76	75.76	113.6-181.8	1579.24	1988.33
	Isachne globosa [54]	*Poaceae*	Hydroponic experiments - Pb 1000 mg·L^{-1}	6848.4	94.09	318.18	45.45	75.76	113.6-181.8	1215.30	1624.39
	Arabis Paniculata [55]	*Brassicaceae Burnett*	Field survey measurements - Pb 160	168 - 11470	88.30	318.18	45.45	75.76	113.6-181.8	1209.51	1618.60

			mg·L^{-1}								
			Hydroponic experiments - Pb 160 mg·L^{-1}	14769							
	Minuaritia verna [56]	*Caryophyllaceae Juss.*	Field survey measurements	11400	61.36	318.18	45.45	75.76	113.6-181.8	1182.58	1591.67
	Artemisia sacrorumvar [57]	*Asteraceae*	Soil culture under greenhouse trial	2857.86	81.14	318.18	45.45	75.76	113.6-181.8	1202.35	1611.44
	Carex gentiles [58]	*Cyperaceae*	Field survey measurements	1834.17	85.23	318.18	45.45	75.76	113.6-181.8	1206.44	1615.53
	Typha orientalis [59]	*Typhaceae*	Field survey measurements - Pb 100 mg·L^{-1}	7819	235.23	378.79	45.45	75.76	113.6-181.8	1417.05	1826.14
			Hydroponic experiments - Pb 100 mg·L^{-1}	7819							
Zn	Potentilla griffithii var.velutina [60-62]	*Rosaceae*	Field survey measurements - Zn 17 mg·L^{-1}	17062	528.41	318.18	45.45	75.76	113.6-181.8	1649.62	2058.71
			Hydroponic experiments - Zn 17 mg·L^{-1}	26700							
	Thlaspi caerulescens [63]	*Brassicaceae Burnett*	Field survey measurements	39600	109.09	318.18	45.45	75.76	113.6-181.8	1230.30	1639.39
	Sedum plumbizincicola [43]	*Crassulaceae*	Soil culture experiment	19881	9090.91	318.18	45.45	75.76	113.6-181.8	10212.12	10621.21
	Thlaspi brachypetalum [64]	*Brassicaceae Burnett*	Field survey measurements	15300	98.86	378.79	45.45	75.76	113.6-181.8	1280.68	1689.77
	Dichapetalum gelonioides [65]	*Copper genus*	Field survey measurements	30000	22.50	318.18	45.45	75.76	113.6-181.8	1143.71	1552.80
	Ricinus communis L. [66]	*Euphorbiaceae*	Soil culture under greenhouse trial - Zn 2000 mg·L^{-1}	2042.5	36.44	681.82	45.45	75.76	113.6-181.8	1521.29	1930.38
	Sedum alfredii [67]	*Crassulaceae*	Field survey measurements	4515	9090.91	318.18	45.45	75.76	113.6-181.8	10212.12	10621.21
			Soil culture under greenhouse trial - Zn 80 mg·L^{-1}	19674							

Notes: 100 USD = 660 CNY. Labor cost is from the Compilation of the National Agricultural Costs and Returns [68] calculated based on the economic differences between the north and south of China. We estimate 6 days needed for the cultivation of hyperaccumulator plants, including land levelling, sowing, transplanting, seeding, fertilization, pesticides application, weed management, and straw removal.

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