Salix dasyclados

INTRODUCTION

Large shrub or small tree; vigorous, yellow-green new growth

Photo: www.bluestem.ca

GENERAL INFORMATION

Scientific name: *S. dasyclados*
Family: *Salicacae*
Parental species: *S. caprea x cinerea x viminalis*
Habitat description: streamsides, riverbanks, lakeshores.

DESCRIPTION

Height: ; 3-6 m
Growth rate: fast

Foliage

Leaf arrangement: alternate, simple,
Leaf shape: lanceolate
Leaf color: dark green

Flower

The flowers are catkins, produced in early spring before the leaves and pollinated by insects. Dioecious, with male and female catkins on separate trees.
The male catkins are yellow and oval-shaped; the female catkins are longer and more cylindrical.
Flower characteristics: showy large catkins on bare stems.
Flowering precocious

Fruit, Seed

The fruits are capsules that split open in early summer to release the numerous minute seeds.

CULTURE

Light requirement: full sun to part shade.
Soil tolerance: thrives in moist fertile soil; can tolerate drier poor soil.

USE AND MANAGEMENT

Grown more for utility than beauty, *Salix dasyclados* produces high quality 2 m long rods when coppiced each season. The hallmark of a good basket willow is one that is flexible, durable, light-weight and grows with minimal branching. Also recommended for furniture making.

USE IN PHYTOREMEDIATION

----------Experiment 1----------

Contaminants of concern	Zn, As, Cd, Pb
Plant species	*S. dasyclados*

Interaction of plant and contaminants: Tolerant plant (enhancement of microbial community) / phytoremediation	Phytoremediation
Mechanism involved in phytoremediation: Phytostabilisation/rhizodegradation/phytoaccumulation/phytodegradation/phytovolatilization/ evapotraspiration	Phytoaccumulation
Types of microorganisms associated with the plant	Not reported in the publication.
Laboratory/field experiment	Laboratory experiment (pots placed outdoors).
Initial contaminant concentration	The soil contained 28 mg/kg As, 5.46 mg/kg Cd, 956 mg/kg Pb, and 279 mg/kg Zn.
Length of Experiment	Two year
Post-experiment contaminant content	Comparing among the fast growing trees investigated in the same study, willows accumulated usually more Cd and Zn than poplars. On the other hand, poplar trees took up more Pb compared to willows. The table below (from the reported publication) shows the average content of elements in aboveground biomass (mg/kg, n = 10) of plants investigated in the same study.

Species	As	Zn	Cd	Pb
	x	*x*	*x*	*x*
A. halleri	6.07^{a}	2746^{a}	82.3^{a}	21.9^{a}
T. caerulescens	5.30^{a}	1500^{b}	271^{b}	57.6^{b}
S. smithiana	1.25^{b}	432^{c}	23.6^{c}	6.84^{a}
S. dasyclados	0.964^{b}	591^{c}	41.1^{ac}	10.9^{a}
S. caprea	1.08^{b}	475^{c}	32.8^{ac}	8.14^{a}
P. trichocarpa	0.825^{b}	337^{c}	20.4^{c}	17.3^{a}
P. nigra	0.918^{b}	344^{c}	17.3^{c}	16.7^{a}

	Trees compensated lower metal content in shoots with higher biomass production compared to hyperaccumulators (*A. helleri and T. caerulescens).*
Post-experiment plant condition	All the plant species tested in the experiment were grown on medium contaminated soil showing no visible symptoms of toxicity.
Soil characteristics	Anthropic contaminated Cambisol from the Pribram area (Central Bohemia, Czech Republic)

Age of plant at 1st exposure (seed, post-germination, mature)	Not reported in the publication.
Requirements for phytoremediation (specific nutrients, addition of oxygen)	The plants were fertilized with 0.5 g N, 0.16 g P, and 0.4 g K added in five kilograms of dry homogenized topsoil applied to each pot. In addition, plants were once or twice fertilized during the vegetative period with a complex of macro- and micronutrients.
Contaminant storage sites in the plant (root, shoot, leaves, no storage)	Not reported in the publication
Reference	Z. Fischerova, P. Tlustos, J. Szakova, K. Sichorova, 2006. A comparison of phytoremediation capability of selected plant species for given trace elements Env. Poll. 144; 93-100.