Salix burjatica

INTRODUCTION

This is a vigorous variety from Germany. Apart from yielding thick rods in 4-5 years it also has velvety stems.

Photo: www.wondertree.co.uk

GENERAL INFORMATION

Scientific name: *S. burjatica*
Family: *Salicacae*

DESCRIPTION

Photo: www.mammothwillow.co.uk

Foliage

Leaf arrangement: alternate, simple,
Leaf shape: oval, smaller compared with the viminalis hybrids.

Flower

The flowers are catkins, produced in early spring before the leaves and pollinated by insects.
Flower characteristics: 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;

Fruit, Seed

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

USE AND MANAGEMENT

Fast growing screening and windbreaks.
It is good for short rotation coppice and shelterbelts
Used to in the reclamation of wasteland because of its ability to cope with contamination
Its large catkins are ideal for honey production.
Good for fuel production as short crop rotation.

USE IN PHYTOREMEDIATION

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

Contaminants of concern	Cr, Ni, Cu, Zn, Cd, Pb.
Plant species	*S. burjatica* (clone Germany)
Interaction of plant and contaminants: Tolerant plant (enhancement of microbial community) / phytoremediation	Phytoremediation

Mechanism involved: Phytostabilisation/rhizodegradation/phytoaccumulation/phytodegradation/phytovolatilization/ evapotraspiration	Phytoaccumulation
Types of microorganisms associated with the plant	Not reported in the publication.
Laboratory/field experiment	Laboratory experiment (hydroponics)
Initial contaminant concentration	The metalamended solutions contained a metal cocktail of 200mMZn and 10 mMCd,Cu,Ni, Pb and Cr.
Length of Experiment	6 weeks
Post-experiment contaminant content	After six weeks there were large increases in the concentrations of Cu, Pb and Cr in the leaf tissue of clone Q83, but not in the clone Germany, treated with the metal cocktail in 1/16 strength Hoaglands solution. The total amount of Ni taken up was considerably less than for other metals. Heavy metal oncentrations were generally greater in the other clone investigated (Q83) than in 'Germany', but the biomass suffered as a result of this. Nevertheless total weight of metal taken up for this treatment was much greater in clone 'Germany' than 'Q83', as biomass of 'Germany' samples continued to rise throughout the six weeks of the experiment, whereas those of 'Q83' plateaued after two to four weeks.
Post-experiment plant condition	Shoot length and leaf and root biomass of clone 'Germany' samples continued to rise throughout the six weeks of the experiment in the 1/4CM treatment, whereas those of other clone (Q83) plateaued after two to four weeks.
Solution characteristics	Trees were grown hydroponically in a flowing culture system and exposed to one of four solutions: control (1/4 strength Hoaglands solution (Hoagland and Arnon, 1941)) or a metal cocktail in one of three different strengths of background solution (1/4, 1/8 or 1/16 strength Hoaglands solution). All solutions were adjusted to pH 5.5.
Age of plant at 1st exposure (seed, post-germination, mature)	1 week

Requirements for phytoremediation (specific nutrients, addition of oxygen)	No requirements.
Contaminant storage sites in the plant (root, shoot, leaves, no storage)	An increase in the ratio of metals in leaves:roots was observed; it may indicate a breakdown in the root sequestration mechanism for these metals. The ratio of metals taken up into the leaves compared with the roots was highest for Zn and Cd, which are easily translocatable metals, and lowest for the poorly translocatable Pb, Cr and Cu.
Reference	C. Watson, I.D. Pulford, D. Riddell-Black, 1999. Heavy metal toxicity responses of twowillow (*salix*) varieties grown hydroponically: development of a tolerance screening test. *Environmental Geochemistry and Health* 21: 359–364.