

## Cricket Bat Willow Guidance Note

### Introduction

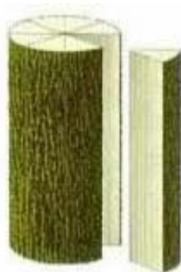


*Salix alba*

The Cricket Bat Willow (*Salix alba* 'Ceraulea' or *S. x caerulea*) is a naturally occurring variant of the native White Willow. The original tree is said to be found in Norfolk in about 1700. It is considered to be the best willow for cricket bats and has traditionally been grown predominately in eastern England. 50% of all willow is grown in Essex, 25% in Norfolk and Suffolk and the remaining 25% across the rest of the UK. The rapid growth of the tree, produces a straight, even grained, white wood is highly sought after and makes the finest cricket bats used by all professional cricketers around the world.

### Economic Viability

The rapid growth (harvestable 15 to 20 years after planting depending on site conditions) combined with the high value of the timber (average standing sale value of c. £375 per stem, with exceptional stems reaching up to £500 each) can make Cricket Bat Willow growing very profitable. If grown as a commercial forestry concern it is tax free and so are often planted for future pension income.



The size and quality of the stem determines the number of bats (cleft) that can be produced and this directly affects stem prices. There are four main grades of bat (Grades 1 to 4) with Grade 1 having best prime wood and being of the highest quality. The differences in grade are due to varying degrees of brown wood and/or butterfly stain plus the number of blemishes or knots on the bat. These are dependent on a combination of where and how the tree was grown – Choosing the right site and managing the trees well throughout their rotation is vital to maximise their value.

Over time and with successive plantings, it is possible to reach the stage where a proportion of willows could be harvested on annual basis, providing a useful source of annual income. The planting of 15 to 20 sets at any one time is the minimum number required to provide an attractive return.



## **Suitable Growing Conditions**

Bat willows grow best next to running water (e.g. river plains, water meadows by streams and rivers) but it is not essential. A site where the water table is about 1m below the surface which does not dry out will help them grow just as well. Very wet and boggy land that has standing water most of the year is not suited. Soil type is not critical but they do grow more vigorously on heavier soils. Lighter soils are suitable if the water table stays constant and does not dry out in the summer. Wet field corners are excellent prospects although bat willows do like field drains so care must be taken. As with most trees, planting areas where overhead telephone/electric cables exist should be avoided. Avoid areas near to older native broadleaves, particularly oaks due to significantly heightened risk of honey fungus.

## **Planting Stock & Planting Techniques**

*Salix alba 'caerulea'* are all female and so have to be propagated. Dormant willow sets (unrooted standards) for planting should be planted December to end of February. The sets are unrooted with at least 12 foot of clean stem and 1 inch to 2 inches in diameter.

Planting is done using a crow bar or post hole borer to make a hole. The set is pushed 2ft 6ins into the bottom of the hole, the ground is then firmed up around the stem using the heel of your boot. If it is done properly there is no need to stake the tree but individual guard protection against rabbit and deer is essential. Livestock grazing amongst the trees is possible although robust and complete protection from livestock damage must be in place and maintained.

Guards should be perforated / holed type to prevent water retention thus alleviating aerial root growth on stem and they should be pushed about 1 inch into the ground to prevent voles and mice causing damage. Guards should also be as smooth as possible to deter deer fraying activities.

## **Planting Designs**

Trees should be planted at a minimum 10m spacing, producing a planting density of 100 trees/ha. Bat willow do not compete well with other tall vegetation and so willow, poplar and all other tall vegetation must be kept cleared. Similarly, bat willow benefit from mowing operations immediately around the stems as this allows constant air movement which prevents eel worm which causes fleck in the wood, potentially devaluing the clefts by 50%.



**Planting design showing optimum spacing, mowing and vegetation levels.**

This wide planting spacing allows for the establishment of permanent lower shrub vegetation such as hazel and dogwood for improved wildlife and game habitat creation, or for game cover crops to be planted for maximum shoot facilitation.

### **Maintenance and aftercare**

The overall objective is to produce a high quality, straight, clean stem producing on average 5 bat lengths of 28” each (12’ or 3.6m), but up to 8 bat lengths is achievable. Allowing side branches to develop resulting in knots forming in the timber will vastly reduce the stem value and must be avoided. With *Salix alba* ‘caerulea’, every year the apical tip dies out and so it is essential that pruning takes place to ensure a straight grown pole is achieved.

It is essential that in the first year after planting that the soil is firmed periodically (first in March) around the base of the set to prevent excess movement, especially after high winds. All shoots up to a high to at least 12’ (3.6m) must be rubbed off whilst still young and soft – this is carried out twice a year, in June and September for the full life of tree, although after about 7 years from planting, the bark tends to harden and the occurrence of shoots declines markedly. It is not advisable to prune higher than 14ft (4.2m) as the tree then suffers from wind damage.

If shoots have started to become woody, then they should be cut off flush with the stem using an upward movement, **never** pulled off or cut downwards. The crown above the planned bat lengths can be left to develop. Individual tree protection should be maintained in good order and maintaining a weed free area around the base of the tree is desirable.

It is important that in the establishment years, the tree protection and weed control is maintained. Do **not** use hormone-based weed sprays as these will kill willows.



If the site is prone to drying out, it is advisable to spray around the trees. The time of spraying is critical and it has to be done in early spring before the trees start to produce side shoots. After this time the chemical is easily absorbed into the bark and damage the tree. They can then be sprayed again in the autumn when they begin to shed their leaves.

Fraying and browsing mammals can cause significant damage to bat willow stems and squirrels can cause crown damage which can stunt tree growth, both of which have significant timber quality implications.

## **Felling**

Due to the species and growing methods of bat willow the wood is knot free and so felling is difficult and traditional felling methods using hinges is not effective, often resulting in barber chair splitting which devalues the timber enormously. Therefore, a 'cut from both sides' method is used which is a unique felling skill, and best done by well experienced bat willow tree fallers. Bat willows are felled all year round and the tops are cut off immediately, as if not they draw the moisture from the stem. Periodically, bat lengths can be taken from the branch wood if it is of the correct diameter and quality but most of it is currently burnt on site. Due to current strong wood fiber prices, it is reasonable that this material could be sold to the biomass market if the volume available and logistics of the location allow. Linear plantings along watercourse or ditches for example might fall into hedge felling regulations which will determine the time of year for felling.



**Felling of a Bat Willow**

## Diseases

There are two main diseases affecting Cricket Bat Willows, Watermark Disease (*Erwinia salicis*) and Honey Fungus (*Armillaria mellea*). In both cases any tree becoming infected should be felled and removed immediately to prevent the disease spreading. Watermark Disease is a bacterial disease and the infection occurs via leaves and leaf scars resulting in leaves appearing shrivelled and scorched, and the timber to have a black watery stain rendering it worthless. Honey Fungus attacks the root system and quickly can kill the tree, turning the wood into a grey mass with no value. Presence of mature native broadleaf species in a location, particularly oaks are thought to significantly increase the chances of Armillaria infection.



**Bat clefts in kiln. Clefts in store afterwards and finished product.**

## Environmental Agency

The Environmental Agency (EA) need to be informed of any tree planting along and adjacent to river courses/banks to ensure that there is not going to conflict with any ongoing or planned maintenance, management or capital scheme works that they may have. This relates particularly to plantings 9m from the top of the river bank of an undefended main river or 9m from the landward side of existing defenses. The consent applications are considered on a case by case basis by the EA with reference to the land, drainage and sea defense laws. Gaining consent approvals for plantings near existing river defenses more difficult to obtain.



## **Finances**

There is no minimum area or number of trees for good sites. There is the potential for 40 bats/clefts out of 1 tree, average income to landowner per cleft is £9.

Trees take between 15 – 20 years to maturity, on average it is 18 years.

### **Establishment Costs**

Cost of set, guard, and planting – c.£25

### **Pruning costs**

2 x pruning visits per tree / year @ £1 = £2/year

Cost of pruning over 18 years - £36

### **Income**

Income average of c.£400 per tree for good trees properly managed as above.

Profit per tree - £339

100 trees / ha - £33,900 / ha over an average rotation or £1,883 per year.