

FH WETLAND SYSTEMS Ltd.

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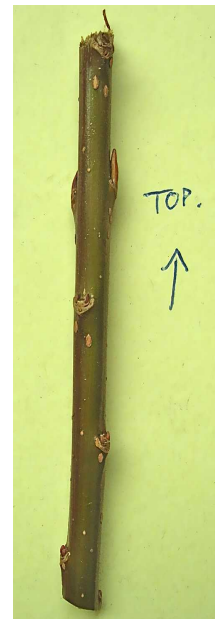
FARM SCALE WILLOW FILTER BEDS PLANTING AND MAINTENANCE

Farm scale willow filter beds are for uncontaminated yard runoff only. They slow the flow, reduce downstream flooding and droughts, reduce pollution load, provide valuable habitat and sequester atmospheric carbon.

Willow filter beds are typically laid out as a 4m to 6m wide basin x 30-100m length. Plant willows in 6 rows, with 80cm between rows and 50cm between cuttings within each row.

When you get your willow cuttings:

1. Remove from packaging on arrival. Note any labelling on the willows which may relate to planting layout.
2. Soak in a bucket of cold water so that 50% of the stem is immersed. Make sure that the willows are the right way up! See photo:
3. If you are storing them, a few days in cold water in a cool dark place is usually ok. They will last a week in winter or early spring, but only a day or two in May, at most.



System preparation:

1. The willow bed should be prepared in advance. The bed should be dug over so that the soil is loose; weed free and free of glyphosate residue (which kills willows very easily).
2. The system should contain loose moist soil, and not be flooded. Ideally the 10cm outlet pipe should be located 5cm below the soil surface to allow for some drainage of water below the soil. If not, then make a gap in the outlet embankment to allow water to drain out until such time as willows are well established. Even established willows don't like being flooded for more than a couple of weeks, so the system should allow for slow drawdown between storm events.

Planting:

1. To aid planting, set out lines or ropes to mark the space. Thus for a 4m wide basin, plant the first row of willows tight to the north or west side of the basin and plant all

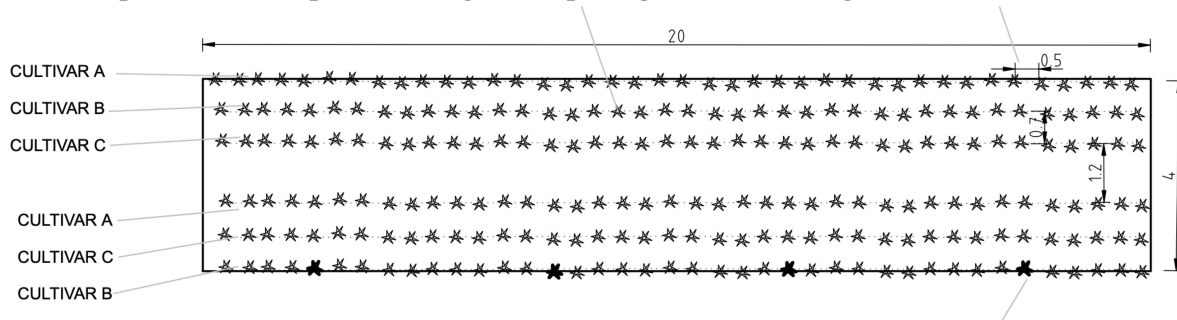
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rows at 80cm spacing between rows. For 5m or 6m wide basins allow 10cm spacing at the sides and the extra space can be left in the centre, between two blocks of three rows.

2. Willows are to be planted at 50cm spacing within rows. Note; a flexible measuring tape can be a helpful tool to get the spacing within rows right.



3. If the bundles are labelled with cultivar names or numbers, start at the north or west side, depending on your system orientation, and select which cultivars go where.
4. Take a bucket of willows and walk down along the rope or tape, placing willows 70% into the soil in the desired locations.
5. Plant in rows so that each row has a different number or cultivar name. Note that this is not particularly important, but may be useful later to compare which willow cultivars do well on your farm.
6. The willow cuttings should not be under water for more than an hour of flooding, so the system should drain out relatively freely in the first spring.

Aftercare:

1. In the first spring, willows need to be kept weed free; free from herbicide either direct application or drift; and free of flooding in all but occasional downpours.
2. By early July of year 1 raise the outlet pipe elbow to contain more flood volume in storm events. Drawdown should still take place within a few days of heavy rainfall events.
3. If the first summer is dry, add water to the willow basin to keep cuttings moist. Excessively dry soil can readily kill the new cuttings.
4. Willows can flood to a depth of 30cm for up to a week in the first winter while stems are tall; but once any coppicing has been carried out the flood depth should not exceed 50% of the remaining coppice stool height.

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Harvesting:

1. In the first February after planting the willows should be cut back to encourage more stem development. Cut back all stems to 10cm above the top of the old cutting height. Remove cut material.
2. If you have access to one side of the willow basin only, and you wish to use a tractor mounted disc cutter (not a mulcher), then allow willows to regrow for three seasons and then in February cut back to 10cm above the previous cut. Continue this method by cutting all stems back to 10cm above the previous cut ever three years.
3. Note that if you have access to both sides of the willow basin (or you wish to use a brush cutter rather than a tractor mounted disc) you may cut the three rows on one side of the basin in a given coppice year; and the three rows on the other side in a different coppice year; with one year of no cutting to allow for a 3-yr rotation. In this way you can spread the work.
4. Remove all cut material from the willow area to ensure that accumulated nutrients are removed from the water. Cuttings may be chipped for landscaping; chipped as a soil amendment (very effective for increasing the fungal community within healthy fields, even at very very low application rates); used as a firewood crop for the thicker stems; or used as a wildlife pile at a location away from a waterway (making a very valuable wildlife habitat for hibernation and insect shelter).

If you have any questions email reeds@wetlandsystems.ie for more information.

Enjoy the birdsong!

Féidhlim Harty

