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# Reducing the establishment costs of short rotation willow coppice (SRC) – A trial of a novel layflat planting system at an upland site in mid-Wales

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## ABSTRACT

Two mechanical planting systems, the traditional Turton Step planter and a prototype layflat planter, were compared for the planting and establishment of short rotation willow coppice (SRC) at an upland site in Mid-Wales. Planted during March 2000, both plots were monitored for three seasons and after this establishment phase monitoring continued for the layflat planted plot until year three of a second rotation. Establishment parameters of stem density, survival rates and estimated biomass yields of a range of willow varieties during the first three years growth were greater for the layflat planted willows than step planted. At the first harvest (4 growing seasons), layflat planted willows achieved mean yields of 6.22 odt ha<sup>-1</sup> yr<sup>-1</sup>, three years into the second rotation estimated yields ranged from 1.99 odt ha<sup>-1</sup> yr<sup>-1</sup> to 12.34 odt ha<sup>-1</sup> yr<sup>-1</sup> (mean of 8.14 odt ha<sup>-1</sup> yr<sup>-1</sup>). Since layflat planting has been shown to reduce planting costs by up to 48%, and yields achieved were equivalent to traditionally planted SRC, it is clear that this method of planting could provide an economic alternative to the traditional step planter. It is recommended that further trials take place using new varieties available, particularly to investigate stem density/thinning effects and harvesting time, and also to test recent modifications to the planter which allow adjustable planting depth for planting under drier soil conditions.

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## 1. Introduction

In 2007, the UK Biomass Strategy [1] highlighted the importance of biomass, and in particular energy crops, in addressing climate change issues. To achieve the renewable energy targets set by the Kyoto protocol, the UK Energy White paper [2] and the 2020 EU target of 20% of energy (heat and electric) from renewable energy sources [3], increased development of the biomass industry is essential. This, in combination with the Renewables Obligation (for electricity supply) to increase co-firing with energy crops (15.4% by 2015/16) [1], has resulted

in a substantial increase in interest in energy crop cultivation, mostly short rotation willow coppice (SRC) and Miscanthus, in the UK. The UK Biomass Strategy outlines plans to increase the area of perennial energy crops in the UK by a further 350 000 ha with the result that 17% of the total UK arable land could be under energy crop production by 2020 [1].

The Welsh Assembly Government is also committed to meeting UK and EU renewable energy targets in addition to their own domestic goals [3]. The Renewable Energy Route Map for Wales [3] identified biomass and energy crops as having a role to play in meeting renewable energy targets and

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