

## RENEWABLES

Water-hungry energy crops such as willow could become more common on arable enterprises if Britain is to experience the wetter summers which experts have predicted. **Olivia Midgley** went to meet a willow grower to find out more.

# Willow crop works out on arable farm

**D**eluged fields surround John Hepworth's farm in Rolston, near Hornsea. Months of rain have left swathes of arable crops under inches of water, with flat land in areas such as Beverley and Hull being badly hit.

But Mr Hepworth believes the fields at Braemar Farm have escaped almost unscathed because of his thirsty willow crop.

"For anyone who has a problem with water, they should try willow," says Mr Hepworth, who joined the green revolution five years ago.

"When we started growing it we realised wherever we had a natural spring on the farm, the crop grew four times as much.

"Last year, with the rain being as bad as it was, the willow loved

## Willow

■ Willow is a native tree species which enjoys wet conditions and can be grown from a single branch, cut from another willow tree

■ It has traditionally been used to make charcoal, cricket bats and even aspirin, but is now being turned into clean, renewable energy

■ In the UK, willow grows best when it is coppiced

■ At this point the wood can

be harvested and turned into chips or pellets. These chips and pellets can then be used in a biomass boiler to create heat for homes or farms

■ The Renewable Heat Incentive offers energy crop users the chance to claim a fixed income for each kilowatt hour of heat they produce

Source: The National Non-Food Crops Centre

it. The field was flooded for six months and it still grew."

### Flood prevention

Mr Hepworth, who used to run a dairy herd and 120 Saddleback

breeding sows on the site, says the energy crop's water needs have prevented the other arable crops from being flooded.

"We grow 24 hectares of barley, which has not been flooded



John Hepworth believes his thirsty willow has prevented Braemar Farm's fields from flooding.

where my neighbours' fields have been," says Mr Hepworth.

"You need 10 to 12 times as much water to grow willow as you do for growing corn, which is a good job because we've had 38 inches of rain in the last nine months."

The crop was cut in March after reaching 11m (35ft) high in some areas.

"It grows four inches in diameter every year," he says. "It has grown 10ft since March."

Contractors from ReGro spend about two-and-a-half days harvesting the willow, which is then chopped into 15cm (6in) long billets and pelleted before being burnt.

Mr Hepworth says it costs £5,000 to harvest and stack the

crop. It is then delivered to the Drax Power Station near Goole.

The former Harper Adams student received a £10,000 Defra grant to plant the crop in 2007 and says his farm has reaped the benefits ever since.

"It is an absolute haven for wildlife," adds Mr Hepworth, who farms in the Higher Level Stewardship Scheme.

### Bonus

"It is great for the biodiversity and the bonus is you can grow it just about anywhere, plus it is very low maintenance.

"We planted the seed in 2007 and rolled it and sprayed it with glyphosate and it got to 7ft high in its first year."

A keen environmentalist, Mr Hepworth has picked up a string of awards for his work on the public footpath, bridleway and woodlands surrounding the farm and in 2009 he was presented with the Royal Forestry Society Excellence in Forestry Farm Woodlands award.

He began planting woodlands in 1989 with the help



Contractors harvest the willow which is then chopped into pellets and billets before being burnt. PICTURES: Marcello Garbagnoli

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JOHN HEPWORTH

of a Woodland Grant Scheme.

The woodland now covers more than half the farm and contains flowering shrubs and a mix of trees including eucalyptus, conifer, ash, oak and hornbeam which has been designed to attract birds.

Mr Hepworth says: "I think woodland is very important, especially as we are trying to get all these young people into the industry. What are they going to



**John Hepworth demonstrating how flexible the willow is. This means tractors are able to go through it without it being damaged.**

do if there are no trees to plant, look after and chop down?

"People are putting log burners in their homes, but they don't have a continual supply. As more people do the same, it is going to

be a problem unless we do more on the woodland side.

"As renewable energy becomes more popular, especially biomass, we are going to need a bigger supply."

## The view from an expert

**KEVIN Lindegaard is a director at Crops for Energy:** Growing short rotation coppice (SRC) and selling dried chip or billets to Drax is one option for farmers looking for a diversification option.

However, the best way to make money from biomass is to grow it for your own use. The Renewable Heat Incentive (RHI) provides index linked payments of up to 8.3p per kilowatt hour for farm businesses and district heating schemes using biomass.

A farmer should be able to produce SRC chip for under 1.5p/kWh when the costs are spread over 20 years (even when you take account lost income from food production).

This provides a double whammy as most farms will be replacing oil at 60p/litre (5.7p/kWh) or bottled liquified petroleum gas at 45p/litre (6.8p/kWh) so there are immediate savings compared to fossil fuel, plus the RHI subsidy on top.

A moderate-sized farm currently using 10,000 litres of fuel a year might need a 50kW woodchip or log boiler. This might cost £45,000 fully installed.

You would need 3ha (7 acres) of SRC producing moderate



**Growing biomass for your own use is the best way to make money, according to Kevin Lindegaard from Crops for Energy.**

yields - about six oven-dried tonnes/ha/year (2.5 odt/acre/year) to be fully self-sufficient. Savings on oil should be about £4,000/year and the RHI rebate could amount to £5,800/year, giving a payback of 4.6 years.

## Better off

Based on current prices this would mean the farm would be £151,000 better off over the 20 years of the scheme.

Also, by growing your own you will be insulating yourselves against future price rises. So the profit is likely to be even greater. All this means is if you can grow and use your own fuel, your

gross margin will be more than £2,000/ha/year (£810/acre/year).

By contrast, your margin will be about £200/ha/year (81/acre/year) when selling to Drax or £380/ha/year (£153/acre/year) when selling to a local heat user such as a school.

It is a good idea to act quickly though - the Energy Crops Scheme, which provides 50 per cent establishment grants, ends in September 2013, while Phase 2 of the RHI (which will be launched in July 2013) is set to become a bit more bureaucratic, with additional sustainability criteria and emissions controls.