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Food versus fuel

By CALU/ADAS consultant Catherine Heywood

Where is Wales in the food-v-fuel debate? Renewable-energy consultant Catherine Heywood reports.

With the Bluestone Holiday Village near completion, and the first crops of miscanthus soon to be harvested these are exciting times for Pembrokeshire Bioenergy (PBE).

The group has successfully grown 100ha of miscanthus as a fuel which will be used to meet the heat demands for the holiday village. Acting as an Energy Supply Company (ESCO), Pembrokeshire Bioenergy will burn the miscanthus themselves and sell heat direct to the development.

The Bluestone story should be an inspiration to farmers, although it hasn't been without its problems. More energy crops are needed to supply Bluestone and other smaller projects, but finding farmers willing to grow the crops has been challenging to say the least and is becoming increasingly difficult.

From a climate change perspective and a desire to reduce CO^2 emissions, perennial energy crops should win hands down. They are low-input crops, which remove the need for annual soil cultivation and decrease our dependence on fossil fuels. Why then haven't there been more success stories?

To start with, energy crops such as miscanthus and short rotation willow coppice (SRC) are costly to establish, with a longer payback period than for traditional crops. In addition some Welsh farmers feel the situation may not have been helped by lack of a planting grant in Wales, putting Welsh growers at a disadvantage.

In reality the situation isn't as clear cut. While high input cereal crops are considered less beneficial from a CO^2 emissions perspective, there is no escaping the fact that such crops are feeding the world as well as starting to play a role as fuels, for example biodiesel from oilseed rape and ethanol from wheat.

Agricultural prices have risen rapidly as demand for cereals and oilseeds have increased. This has provided a welcome boost to arable farmers, though livestock enterprises have been hit by increased cost of animal feed.

The world population is increasing by around 120 mouths a minute, increasing the demand for cereals. In addition rising affluence particularly in eastern Asia is driving an increased demand for cooking oil, meat, milk and fuels. While, eastern Asia may seem far from Welsh shores the influence it exerts cannot be ignored. Grain mountains are likely to remain consigned to history, world stocks have been diminishing for a number of years and as a result prices are rising. Against this backdrop of increased demand for food and fuels we are faced with a finite land resource, levelling crop yields and an increasingly unpredictable climate. The conversion of forest and old permanent grassland habitats to crop land can have enormous impacts on biodiversity and carbon emissions.

How does Wales contribute to food and fuel production while reducing agriculture's contribution to global warming? One global option is to increase the amount of land available to cropping. This option however, is not as accessible to Wales as it may be in other countries. Much of Wales is simply not suitable for the production of crops.

Is increased productivity the answer? Ensuring that crops are grown to maximise yield/unit area is an efficient and less wasteful solution. If the final consequence of low yields is that valuable habitats are destroyed, it could be argued that low yields are unsustainable and possibly even unethical. High productivity can reduce the need for land conversion, keep food affordable, allow a mix of crops and thus land for energy production.

However, to ensure that we continue to mitigate climate change, increased productivity needs to be achieved without significantly increasing our use of inorganic fertilisers such as nitrogen which is a key contributor to greenhouse gas emissions. Increased productivity would need to be achieved through technology, agronomy and breeding.

Energy crops such as miscanthus and SRC make good use of the land they occupy, they are productive, high yielding, efficient, low-input perennial crops with little or no N fertiliser requirement and as such they should be included and supported in future sustainable cropping plans for Wales.

Catherine Heywood is a renewable energy consultant for Agricultural Development and Advisory Service (ADAS) and the Centre for Alternative Land Use (CALU)