

## Energy crops and Anaerobic Digestion (AD): A CLA briefing

### 1. Land use

Farmland has always provided the stuff of life, including food, fuel and fibre. Modern farming has reduced the land required for providing fuel (woodfuel for heating and hay and oats for horsepower) by replacing it with fossil fuels. However, farms still produce far more than food from the land they manage. Many of the break crops in arable rotations (linseed, oilseed rape, sugar beet) find markets other than food. Moreover, Government has properly provided incentives for converting farmland to woodland (for both timber and energy) for many years.

Break crops in rotation help secure better yields from the food crops that follow, by restoring soil fertility, reducing disease and pest pressure, and thereby reducing the need for expensive crop protection products. Break crops also reduce monoculture and contribute to biodiversity.

Land use is best based around sustainable rotations.

### 2. Concerns

#### 2.1 Monoculture

The intensive production of a single crop can cause environmental problems. This is the case whatever its final destination. The Codes of Good Agricultural Practice for the protection of Soil, Air and Water, combined with cross compliance under the Single Payment Scheme of the CAP is designed to avoid adverse environmental effects from farming.

#### 2.2 Food v fuel

Using crops in farm scale AD is not just about a change from producing food crops for food uses to non-food uses. It relates to land use change more generally and the overall capacity to produce food whilst capturing the environmental and sustainable aims and constructive use of farm co-products and waste. It is about using available land to the best advantage that combines all these aims sympathetically and in tune with the market orientation of farming, recognizing that farmland has always been multifunctional - delivering food fuel and fibre.

### 3. The use of crops in AD

Manure alone does not provide sufficient gas to make AD viable, moreover, few livestock farms keep cattle indoors all year, leading to lack of feedstock to keep the digester going over summer. Thus supplementary feedstocks with good gas yields are necessary. In most cases across the EU, crops are the last option for feedstock as they involve a significant growing cost. Only in Germany, where a specific incentive payment is made for the use of crops in AD, do farmers build crop-only AD plants. In other countries (as in the examples in the UK) lower cost feedstocks are preferred. However, the availability of alternative feedstocks cannot always be guaranteed, and the digestive process benefits from stable composition of feedstocks, so in many countries a percentage of feedstock will be derived from crops. In these cases the crop will be competing for land use within the farm budget, and higher value food crops such as wheat will always take precedence in the rotation. However, crops for AD can compete with other break crops and thus displace what are often non food products.

When replacing oilseed rape grown for biodiesel, additional benefits arise. Silage crops can be more efficiently converted into energy using anaerobic digestion than through the use of a similar area of land to produce biodiesel or bioethanol directly, and can save as much GHG per hectare as “second generation” woody biomass technology.

#### **4. What impact on land use might a wide take up of farm AD involve?**

Current UK farms with AD are making use of a crop area of around 200Ha/MW of electricity installed capacity, with half the energy (but more than half the tonnage) provided from other feedstocks. DECC suggests in its consultation on the emergency review of the Feed In Tariff that a total of 65MW of small scale AD is expected by 2020, implying a land requirement of around 13,000Ha. Industry aspirations of up to 1000 farm based AD plants by 2020 (at an average 250kW output) would lead to only 50,000Ha of crop requirement.

#### **5. How far does this land use affect food production?**

There are 4,700,000 croppable hectares in England. In 2008 47,000Ha of land was devoted to High Erucic Oilseed Rape (designed for energy use, not fit for human consumption). This area has grown since then. The total (food and non food) OSR land use in 2010 was 644,000Ha. There is no impact on food output if farms switch from OSR grown for biodiesel to silage grown for AD (but there is a quadrupling of energy yield and carbon savings). At the same time, the National livestock headcount has declined sharply over the last few years (cattle numbers declined by 27% between 1990 and 2007), releasing spare grassland. In Dorset an AD plant makes use of silage from the second cut of grass, reserving the better nutritional value of the first cut for the dairy herd.

#### **6. Conclusions**

Broadly, the impact of 1000 small scale farm based AD plants on food supply would be so small as to be unmeasurable, provided that Government avoids following the German model of a direct incentive for crop use. At the same time, a review of the regulations on clean farm feedstocks used for AD that currently are classed as waste would enable more non food feedstocks into farm scale plants, further reducing the need for crops.

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