drax

Agriculture

Energy efficiency guide

Contents

Get smart, save energy

The agriculture sector is one of the simplest to define (see right) and one where simple changes in key areas can lead to energy costs falling.

The Carbon Trust, a not-for-profit company supporting the UK's move to a low carbon economy, states that heating accounts for 90% of the energy used in greenhouses. The Trust also says that ventilation and air circulation amount to 14% of energy bills within this sector.

Opening doors and windows – where it's safe – can deliver natural ventilation for nothing. However, it's important to ensure that unwanted heat loss doesn't offset the advantages of free ventilation. Ceiling circulation fans can redirect warm air as it rises – helping you reduce the overall temperature (and your heating costs).

Energy efficiency measures like these can also help drive a public relations (and sales) strategy in this sector – just as they can in other industries, too. Adopting environmentally friendly practices and being more sustainable can generate positive media coverage, may satisfy your customers' demand for "greener" products - and can even encourage sales.

In addition to focusing on specific areas of consumption, there are some general ways to cut back on your usage too.

What do we mean by agriculture?

When referring to this sector, we're including:

- Horticultural and livestock farms
- Garden centres and nurseries

5 steps to reducing your energy consumption

01 Commit to continuous improvement –involve staff, set goals and track progress

02 Analyse your start point performance, develop benchmarks and track improvements

03 Set realistic, measurable goals and target dates to see how you're doing

04 Choose the steps you'll take to achieve those goals and involve your employees

05 Implement and measure results, communicating all wins, no matter how small

How your agriculture business can save energy - and money

We've used the Carbon Trust's energy saving report for agriculture and horticulture as a key source of information for the following suggestions.

These tips highlight areas of consumption that, with improved efficiency, could deliver valuable savings; the amount you recoup depends upon your organisation and your investment.

To help with your budgeting and energy efficiency planning, the tips cover (where possible) three optons: no-cost, low-cost, and long-term savings.

No-cost changes

You can make these simple changes quickly – and it won't cost a thing.

Low-cost changes

For a minimal spend you can soon achieve worthwhile savings – and relatively easily too.

Long-term savings

Make a more substantial investment now – and you'll see the returns over time.

How your agriculture business can save even more money

If you're considering an investment in energy efficient equipment such as boilers, electric motors, air conditioning, and refrigeration systems, check the Government's Energy Technology Product List (ETPL, also known as ETL).

The energy-efficient plant and machinery on the list meets specific energy-saving or energy-efficient criteria and qualifies for full tax relief. The ETPL is part of the Enhanced Capital Allowance (ECA) tax scheme for businesses.

Department for Energy Security and Net Zero (DESNZ) reviews the products and technologies on the ETPL annually; the Carbon Trust manages the list on behalf of DESNZ.

Ventilation / air conditioning (VAC)

No-cost changes

- Make sure air ducts and inlets are clean – this simple measure can extend the lifetime of the fan motor and increase efficiency.
- Check that you don't leave extraction fans or ventilation devices running unnecessarily. Despite its small baseload, a single fan could reduce heat and lead to an increase in boiler fuel consumption of about 5%.

Low-cost changes

- Regular maintenance and performance reviews will ensure your VAC systems are operating at maximum efficiency.

Long-term savings

- Consider interlocked control with time switches and sensors to automatically turn off ventilation when specific equipment turns off.
- Energy efficient fans may have a significant upfront cost, but the longer term savings make them worthwhile.
- Variable speed drives (VSDs) allow you to reduce costs by matching the speed of your fans to your environment's changing needs over the course of the day.

Heating

No-cost changes

- An overnight temperature of 10°C is high enough for most sites, except those where people are still working. Temperatures (in °C) should vary in relation to the activity (see below).
- Minimise and/or control access in and out of heated buildings and areas (e.g. greenhouses) to reduce heat loss and prevent thermostats from kicking in when you don't really need extra heat.
- Review temperature controls seasonally, based on the weather and daylight-saving time changes, and match the heat to the requirements of the environment.
- Clean greenhouse glass regularly to optimise the light and heat transfer from the sun.

Area	°C
Stores	10-12
Areas for heavy or manual labour	11-14
Workshops and light works	16-19
Sedentary work	19-21

Low-cost changes

- Clean/replace heating filters as often as manufacturers recommend.
- The location of your thermostats could affect their performance, for example if they're too close to sources of heat or heat loss. In these instances, moving them - while requiring an upfront cost - could improve accuracy, avoid raising or lowering the temperature unnecessarily and save you money.
- Service your gas boiler once a year and the oil boiler twice a year to save 10% on your annual heating costs (source: Carbon Trust).

Long-term savings

- Insulate pipes, boilers and tanks to minimise heat loss.
- Upgrade your heating controls so they respond to the variations of the British climate. For example, compensators regulate the temperature of buildings based on the weather outside. An optimum start controller learns the best time to turn on the heating before people arrive. This means the building reaches the desired temperature by the time people are at work.
- Use radiant heating solutions to bounce back heat in spaces with high ceilings and high ventilation.
- Invest in thermal screens to reduce heat loss from greenhouses by up to 30%.

Lighting

No-cost changes

- Have a 'switch off policy' and use simple light switch stickers so everyone feels confident they're turning off the right lights.
- Keep windows, skylights and light fittings clean to let through as much natural light as possible. Without regular maintenance, light levels can drop up to 30% within three years.

Low-cost changes

- Use timers to match artificial lighting to working hours and/or occupancy.
- Replace conventional bulbs with LEDs.
- See the Energy Saving Trust report: The right light – selecting low energy lighting.

Long-term savings

- Occupancy sensors in equipment and product stores or other less-used areas can save you 30–50% on your lighting costs. Photocells (daylight sensors) turn artificial light off when there's enough daylight.

Refrigeration

No-cost changes

- Keep fridge and freezer doors closed whenever possible. If ice is building up, too many air changes are occurring – indicating that you're leaving the doors open for too long.
- Have a maintenance plan (check for scaling and damaged vent fins, clear drip pipes) and clean condensers to avoid a 20% increase in consumption.
- Defrost at least every two months and/or check manufacturer's advice on appliances.
- Use correct temperatures: 1°C too low ramps up energy use by 2–4%.

Low-cost changes

- Install self-closing doors or strip curtains to minimise the loss of cooled air and entrance of warmer air.
- When buying new equipment, go for higher efficiency overall rather than low cost upfront.

Building fabric (walls, floors and ceilings)

No-cost changes

- Regularly check buildings for damp, faulty gutters or downpipes, plus doors and windows for draughts. In a typical farm building, draught proofing and a regular housekeeping schedule can reduce energy consumption by more than 15%.

Low-cost changes

- Insulate walls, roof spaces, cavity walls and pipes.
- Consider sealing unused windows or improve glazing to reduce draughts.
- Reduce heat loss via delivery doors/bays by incorporating air locks, PVC curtains or warm air curtains and motorised doors.
- If you have a large amount of land available for non-agricultural use, becoming a renewable energy generator could reduce your bills longer-term. This could also add a viable source of income (by selling any surplus energy back to the grid).

What's next?

Smart meters are the first step towards energy efficiency, automating your readings and enabling insights into your energy use. But they can also support you on your journey to net zero, too.

Join the smart revolution by registering your interest in smart meters today. Call 01473 617213 or email smart@drax.com.

drax

/draxenergy

/company/drax-energy-solutions

energy.drax.com

LRQA CERTIFIED ISO 9001 UKAS

Certified by LRQA to ISO 9001:2015 – Quality Management System

DR2288.78