

Energy Efficiency Fact Sheet: Growers

Modern greenhouses vary greatly in both structure and design but are typically not designed for energy efficiency. Energy consumption can be reduced in all areas from growing & fertigation systems to pumping, heating & ventilation equipment to shed lighting & post-production refrigeration. Energy efficiency can reduce greenhouse energy consumption by up to 70%.

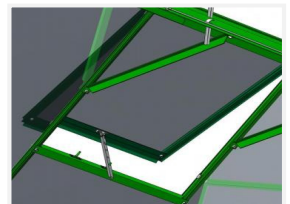
Quick and easy things to do

- 💡 **Use under-bench heating instead of overhead heating.** Up to 30% of heating energy can be saved by raising crops off the floor and heating plants from underneath.
- 💡 **Ensure greenhouse coverings are correctly installed & maintained.** Poorly installed or maintained coverings can lead to energy losses from air leaks, holes, excessive heat transfer and climate control system inefficiency. Choose coverings with an appropriate insulation rating (R-value).
- 💡 **Match the irrigation cycle to crop requirements.** Pumps and irrigation systems that run for longer than necessary waste both energy and water.
- 💡 **Use natural ventilation wherever possible.** Natural ventilation is the most energy efficient way to cool a greenhouse. Use electric vent or louvre controls only if necessary. Keep vents and insect screens clean and ensure they close and are sealed properly.
- 💡 **Position water heating systems appropriately.** Use a correctly-sized boiler or water storage heater, using smaller scale or location-specific heating units to reduce warm-up times. Position all units close to water delivery points, keeping pipes insulated and systems properly maintained. Use solar water heating wherever possible.
- 💡 **Build an energy efficient culture.** Set good energy efficiency policy then train staff, evaluate performance and reward good behaviour.

Energy Savers



Underbench heating



Natural ventilation



Solar hot water



Pipe insulation



Build an energy efficiency culture

Great ideas for longer term savings

- 💡 **Install a solar PV system.** The rooves of packing sheds, staff areas and equipment storage sheds are ideal locations for solar panels. A grid-connected system will provide the opportunity to feed unused solar electricity back to the grid, which will be offset against any grid supply costs. Consider the payback time on the net cost before installation.
- 💡 **Install an integrated irrigation, fertigation and climate control system.** Integrated systems allow for tighter control over key elements of plant production, which will increase overall efficiency and minimise energy, water and nutrient wastage.
- 💡 **Install multi-stage or variable speed pumps and fan motors.** Multi-stage and variable speed drives allow pumps and fans to operate at discrete points according to the task, which reduces energy wastage.
- 💡 **Replace incorrectly sized pipes and fittings.** Correctly sized pipes and fittings will increase pumping efficiency, reduce energy costs and extend the life of the equipment.
- 💡 **Upgrade to energy efficient lighting.** Use compact fluorescent, high-pressure sodium or LED lamps instead of incandescent, halogen and mercury vapour lamps. Install reflective fittings and keep fixtures clean to reduce light wastage. Ensure lights are positioned at the correct height to maximise heat and light benefit to crop production.
- 💡 **Install skylights or polycarbonate roof sheeting in sorting and packing areas.** Daylighting is the most energy efficient lighting method. If artificial lighting is needed, install occupancy or daylight sensors and timer switches to switch lights off when not in use.
- 💡 **Have an energy audit done.** An energy audit will determine how to use energy efficiency to increase profitability in your business. Register for a free energy audit at 3eproject.org.au.

Did you know?

- 💡 A closed or tightly-woven aluminium shade screen can reduce greenhouse heating costs in cold conditions by up to 70%.

For further information contact the 3E Project Team on 1800 242 845 or by email at info@3eproject.org.au

Energy Savers



Greenhouse solar PV



Integrated systems control



Variable-speed pump array



LED hi-bay light

