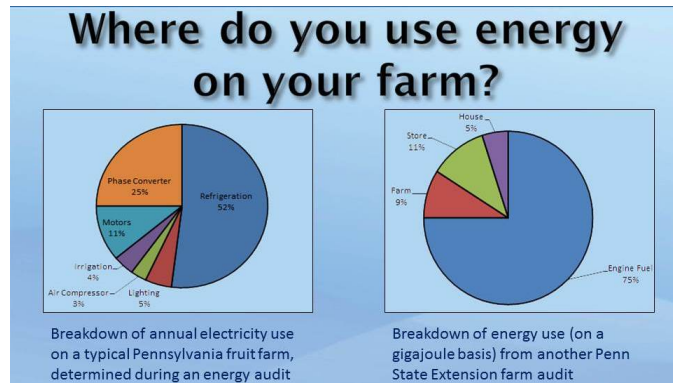


# Top 10 Ways to Save Energy in Tree Fruit Production

In tree fruit production, refrigeration is the dominate use of electricity, while engine fuel accounts for the majority of all energy consumed.



Farm energy audits are useful in determining where to improve energy efficiency.

## Typical Farm Energy Use

On a typical family-size fruit farm, refrigeration is the dominate use of electricity, accounting for over half of all electricity used. Irrigation and lighting account for a small portion of electricity used on the farm, but are easily upgraded with quick and easy money-saving solutions. Engine fuel accounts for the majority of all energy consumed; therefore fleet operations have a great potential for energy savings by focusing on conservation and efficiency

### 1. Consider a Fruiting Wall/High Density Orchard Training System

- A high density orchard yields more fruit per acre and requires smaller equipment with higher fuel economies.

### 2. Improve Field Tasks by Reducing Fuel Use for Fleet Operations

- Regular tune ups and maintenance ensure that equipment is running at its maximum efficiency.
- Smaller equipment has better fuel economy; therefore don't take out the big tractor if the small one will do the job.

- Determine optimum field layout—fields with long rows do not require as many turn-arounds compared to orchard blocks with short rows. The more times you are required to turn around, the more distance you have to travel, resulting in a higher fuel use.
- Properly ballast tractors to control slip. Make sure tires are properly inflated.
- Consider color and placement of storage tank. A white colored storage tank in a shady spot will evaporate less fuel compared to a dark colored storage tank in a sunny spot.

### 3: Upgrade Lighting

- Replace 8-foot strip light fixtures that use T12 fluorescents with high efficiency versions.
- Replace incandescent bulbs with compact fluorescent bulbs (CFL). CFL bulbs last longer and require less energy per time to light.

### 4: Tune up Refrigeration Systems

- Install EC motors with a variable frequency drive controller to reduce evaporator fan running time.
- Clean fan blades to reduce the amount of work it takes to circulate cold air into and out of the refrigeration system.

### 5: Improve Cold Room Insulation

- Doubling insulation reduces heat loss by 50%.
- The condensation is a sure sign that the floor is not sufficiently insulated.
- Plan on at least R25 insulation.
- Make sure there are no gaps in the insulation.
- Cover insulation from wear and tear.

### 6: Upgrade Refrigeration Systems

- Upgrade or select compressor/condenser units with energy efficient models.
- Upgrade evaporator fan motors with energy efficient models.



## 7: Install High Efficiency Emitters for Drip Irrigation Systems

- Drip irrigation systems use a fraction of the amount of water compared to sprinkler and surface irrigation systems.
- Energy efficient emitters require smaller pumps.
- It is important that irrigation water is adequately filtered to avoid clogging.

## 8: Minimize Kinks and Elbows for Irrigation Piping Systems

- Simplify your system by reducing the number of elbows, tees, valves and any other unnecessary obstructions.
- A gentle bend creates less friction than a 90 degree turn!

## 9: Eliminate Leaks in the Irrigation System

- Leaks reduce pressure at the emitter which lowers the amount of water supplied to the field.

## 10: Reduce the Pressure of the Irrigation Pumps

- Drip irrigation requires operating pressures between 20 to 25 psi at the pump and 10 to 12 psi at the drip tape. These pressures can be easily monitored by using pressure gauges.

## Contact Information

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