



Energy Conservation in Agriculture

Low-Cost Energy Conservation: Ventilation and Heating Systems

Scott Sanford

Depending on your farm operation, the following actions could reduce your on-farm energy consumption. Refer to the references at the end of the bulletin for more information.

Ventilation

1. Install thermostats to control fans so they are on when needed and shut off when not needed. Research has indicated that cows begin to show mild heat stress at 74°F and 75% relative humidity, so thermostats should be set between 70°F and 75°F.
2. Clean fan blades, guards, motors, thermostats and shutters monthly.
 - a. Dust build-up on motors increases operating temperatures and can lead to overheating.
 - b. Dust-covered thermostats do not sense temperatures accurately.
 - c. Dirty shutters can decrease fan efficiency by 25%.
3. Lubricate shutter hinges with graphite—not grease or oil—every 3 months.
4. Check belt condition, tension and alignment on fans with belts. Slippage of belts can cut belt life in half and reduce air flow rates by as much as 30% or more. Always replace guards after servicing.

5. Install efficient fans. For fan efficiency ratings refer to *Agricultural Ventilation Fans, Performance and Efficiencies* published by the National Food and Energy Council, Columbia, MO 65203. (573) 875-7155 or www.nfec.org.
6. Cover unused fans during the winter with plastic or insulated panels. Disconnect power to fans.
7. Clean air inlets (inside and outside) yearly to maintain free flow of air.
8. Clean air ducts of dust accumulation.
9. Trim weeds, tree branches and brush away from air inlets and fan outlets as needed.
10. Make sure ridge vents are properly sized in freestall buildings.

Heating systems

1. Clean air exchangers. Dust reduces the heat transfer rate of heat exchangers allowing more heat to go up the chimney.
2. Clean dust from thermostat; dust-covered thermostats do not sense temperatures accurately.
3. Cover hot weather fans with plastic or insulated panels during the heating season.
4. Install high efficiency heating units. These should have thermal efficiencies of 90% plus.

References

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