

TAKEAWAYS



Saving Energy in Cotton Gins

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- Researchers conducted energy audits and monitoring studies in more than 30 commercial cotton gins across the U.S. Cotton Belt. They looked at two types of energy use: electricity and fuel.
- Electricity represents 13% of the total cost of postharvest processing. Electrical energy costs have increased more than 400% since the early 1960s, but electricity consumption per bale has decreased because of improved efficiency.
 - Materials handling requires the most electricity (59%). Ways of making systems more efficient include plugging leaks, upgrading fans, simplifying ductwork, reducing turbulence, using high-efficiency motors, and using mechanical conveying.
 - An industrywide focus on reducing electrical energy consumption has resulted in increased efficiency and improved sustainability and environmental stewardship.
- Fuel consumption represents 6.5–8.5% of ginning costs. Fuel is the most variable cost and thus the biggest threat to profitability.
 - Researchers quantified fuel consumption and drying and estimated how much energy is used for drying. They defined fuel use efficiency as the ratio of drying energy to fuel energy.
 - To determine how to improve fuel use efficiency, researchers looked at operating strategies, equipment selections, and facility designs.
 - Researchers recommend turning off the second-stage burner when drying isn't needed.
 - Researchers also recommend installing a burner control to save fuel when cotton is dry and following ASABE Standard 530.1 for sensor locations.
- Other recommendations that can be implemented without incurring costs are to harvest cotton when it's dry and to store cotton so it doesn't get wet.
- Ginners should conduct careful analyses of their operations before making major modifications.