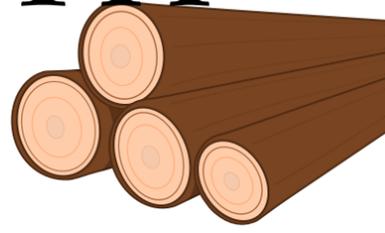




Benefits of Fire

HEATING WITH WOOD

A Study



Study: Barto, D., Cziraky, J., Geerts, S., Hack, J., Langford, S., Nesbitt, R., Park, S., Willie, N., Xu, J., and Grogan, P. (2009). An integrated analysis of the use of woodstoves to supplement fossil fuel-fired domestic heating. *Journal of Natural Resources and Life Sciences Education*, 38(1), 87-92.

Introduction

Increases in environmental, as well as economic impacts from climate change have influenced homeowners in North America and Europe to consider alternatives to natural gas home heating. Modern wood-stoves are able to trap small particles and smoke that are released during combustion, which reduces the amount of pollution compared to fireplaces or traditional wood-stoves. This study explores the potential benefits of supplementing natural gas heating in Ontario homes with a wood burning stove, by looking at economic, environmental and lifestyle factors.

The researchers compared how the fuel consumption, cost, and CO₂ emissions of a house in Kingston, Ontario changed from before and after the installation of a wood-stove.

Findings

It was found that the wood-stove reduced fuel consumption for home heating by 60%, over the two-year period after its installation, compared to the previous two-year period. Acknowledging that the price of natural gas may fluctuate substantially and is likely to increase overall since supply is finite, it is assumed with the data, that a single-family home could make a small saving of about \$50 per year by supplementing with a wood burning stove. They also found that using wood presents no change in terms of the release of CO₂ from the actual heat source. The burning of the wood releases CO₂, but this CO₂ would still be naturally released during decomposition on the forest floor. Therefore, CO₂ emissions from the burning of wood are neutral. Other sources of CO₂ emissions from home heating include transportation, harvesting/extraction, and they found a 60% decrease in these net annual CO₂ emissions when using a wood-stove instead natural gas heating.

Examining:

- ✓ Fuel Consumption
- ✓ Cost
- ✓ CO₂ Emissions

Found:

- ✓ 60% Less fuel consumption over a two-year period
- ✓ Saving \$50 a year
- ✓ 60% Less net annual CO₂ emissions

Why is this Important?

The strategy of burning wood to supplement other home heating approaches is particularly important to consider given the large number of trees that are being cut down to restrict the spread of invasive species that are currently affecting forests. For example, trees damaged by Emerald Ash Borer, Dutch Elm disease, and Mountain Pine Beetle can be harvested and used for wood-stoves. Furthermore, this presents as a more sustainable and cost-effective method to home-heating.

To Extend your Thinking:

How can wood-stoves be a more sustainable option for home heating?

Research: Compare the benefits and drawbacks of using different methods to heat homes, including propane, natural gas furnaces, electric baseboards, and wood-stoves.

Research: What are the differences between using renewable and non-renewable sources, in terms of efficiency and cost effectiveness?

