

COOPERATIVE EXTENSION SERVICE

Departments of
Human Environment and Design
Agricultural Engineering
Urban Planning and Landscape Architecture

MICHIGAN STATE UNIVERSITY

EXTENSION BULLETIN E-846

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KEEPING COOL

Are you wondering how you are going to keep cool this summer? Before you decide to use a mechanical air conditioner which uses energy, there are things you can do to keep cool.

Construction

Insulation in the walls and ceiling conserve heat in winter but this same insulation will keep heat out in the summer time so the house will stay cooler. If the shingles on the roof are black they will absorb heat so insulation in the roof will be very effective. For the same reason leaving storm windows on will reduce the heat coming through the glass.

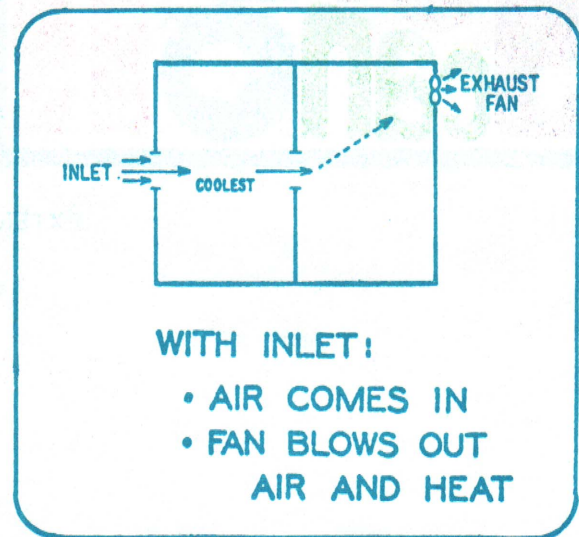
Managing the House

- Keep drapes closed during the day to insulate the windows.
- Open windows at night to take advantage of the cool night Michigan air.
- Keep windows and doors closed during the day until the temperature inside is higher than the temperature outside and then open the windows.
- Close off rooms that are inclined to be warm: the kitchen, laundry room, or utility room.
- Light bulbs, motors, TV sets and other appliances give off heat. Whenever you can, do not use them during the hottest part of the day.
- Use the kitchen exhaust fan when cooking, washing clothes, mopping, and a bathroom fan when bathing. These will remove both excessive heat and moisture.

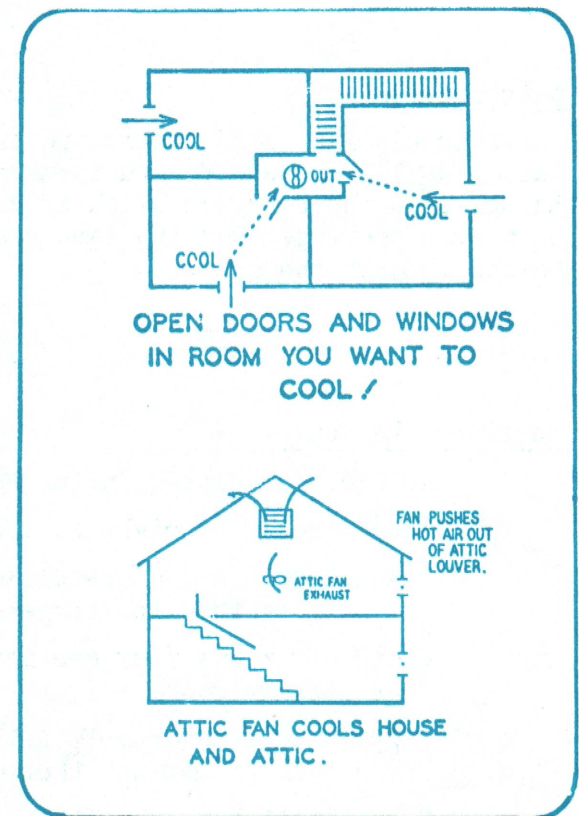
Using Fans

- A room fan on a pedestal circulates air within the room to give a cooling sensation to people in the room. It speeds the evaporation from the skin and evaporation is cooling.

- Window fans exchange air. A fan is located in a window and can blow either in or out. If the fan blows out, the cool air will come in through open windows in other rooms. The room with the exhaust fan will not be the coolest.



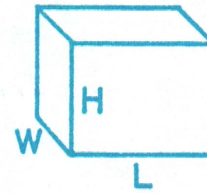
- In a two story house, locate the window fan in an upstairs window blowing out. Close upstairs windows, open the stairway door if there is one, open windows and doors in the areas that you want to cool. The cool outside air is sucked into the house downstairs, up the stairs and out the fan, cooling the whole house.



- An attic fan is located in the ceiling to the attic and blows from the house to the attic. Besides sucking in the cool air through open windows, the fan will force the hot air in the attic out through the louvers. This will remove the hot blanket of air that often make upstairs rooms warm.

- Michigan's night air is usually cool so a good fan system can be very effective in cooling a house.

- The size of a fan is measured in cubic feet per minute (cfm). To find the size you need, calculate the volume of the space to be cooled, length x width x height. Divide the volume by 1.5. The fan should be larger than this number.



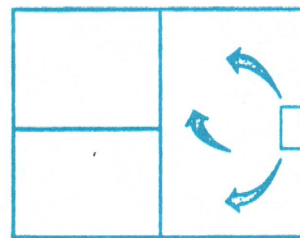
TO CHOOSE SIZE OF FAN!

$$\frac{L \times W \times H}{1.5} = \text{C.F.M. COMPACITY OF FAN.}$$

C.F.M. = CUBIC FEET PER MINUTE.

Choosing an Air Conditioner

Many people are electing an air conditioner for quick cooling in addition to filtering and dehumidifying air. Room air conditioners cool one or two rooms.



ROOM MECHANICAL AIR CONDITIONER

- CIRCULATES AND FILTERS AIR
- DEHUMIDIFIES

- In shopping for an air conditioner, the unit that gives the most cooling in BTU/hr per horsepower of the unit is the most efficient.
- If you want to cool most of the house a central air conditioning system is more efficient and quieter. A central system can be installed to use the warm air ducts of the furnace. In homes with hot water or electric heat separate ducts must be installed for the cool air.

The efficiency of an air conditioner can be increased by:

- Shading a window conditioner on the south side with an awning or shade trees.
- Be sure there are no air leaks around the unit where hot outside air can leak in.
- Use the warmest setting possible. It doesn't take too much cooling to provide relief on a warm day. It takes about 5% more energy for each degree of cooling.
- During the day keep doors, windows, fireplace dampers closed.
- At night raise the temperature several degrees or if the night air is cool open the windows and cool "naturally".
- Turn the air conditioner off when no one is home. A timer can be used to Turn the air conditioner on an hour before anyone comes home.

By James Boyd, Extension Housing Specialist, Depts. of Agricultural Engineering and Human Environment & Design

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