

BAE 103
Energy in Biological Systems

Problem Set No. 13
Concepts: Psychrometrics Continued
Due Date: Wednesday, April 4

- 13.1. Ventilation is used in greenhouses to control temperature and gas levels. The air inside this greenhouse is at 90°F dry bulb and 80% RH. The outdoor air is at 60°F dry bulb and 50% RH. A fan in the end wall moves air at a rate of 1200 ft³/min (negative pressure system).
- Show the heating-humidification process on a sketch of the psychrometric chart by drawing lines showing the process. Indicate where the air is in the solar collector and where it is in the corn mass.
 - How much energy is added to the air entering the greenhouse (Btu/hr)?
 - What is the combine rate of evaporation and transpiration for the plants and bedding materials in the greenhouse (lb_{H2O}/hr)?
 - At what temperature can we expect condensation on any inside surface?