



Quantitative

Eating at a Lower Trophic Level

PURPOSE

- ▶ Calculate and compare human food needs at different trophic levels, using the data to construct a biomass pyramid
- ▶ Analyze the benefits and drawbacks of eating at lower trophic levels on a global scale

BACKGROUND

A **trophic level**, or feeding level, is made up of all the organisms whose energy source is the same number of consumption steps from the sun in a given ecosystem. The trophic level of plants or producers is 1, while that of herbivores is 2 and that of animals that eat herbivores 3. Higher trophic levels can exist for animals even higher on the food chain. In this exercise you will compute numerical values for human energy needs based on diets at different trophic levels.

Problem

The owner of a soybean farm raises guinea hens for food and insect control. Guinea hens will eat grasshoppers and other insect pests and ticks. They also act as a “watchdog” by making a lot of noise when intruders approach their territory. The farmer allows the hens free range in his fields during the day and provides roosts for them at night.