GLOBAL USES OF LIVESTOCK

FOOD
Meat
Milk
Eggs
Figure 1–1  Contributions of various food sources to world energy (calorie) supply for people. Source: Based on FAO statistics.
Figure 1–2  Contributions of various food sources to world protein supply for people. *Source:* Based on FAO statistics.
Importance of Eggs, Meat and Milk:

Rich in all nutrient classes:
- Amino acids
- Energy
- Macro & Micro Minerals
- Vitamins

N.B. NRC recommends a limit of 6 ounces of meat per day.

Cover Photo: National Geographic (Aug. 2004) (Link to article)
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Box 3.4 How Many Calories Do I Need Each Day?

Table 3.1 shows the dietary reference intakes for people in different groups. But not everyone in each group is the same. To obtain an absolutely accurate calculation of how many calories you burn each day, you would need to undergo a complicated and expensive clinic assessment. But you can make a good estimate by using the following formulas (applicable to people over age 19 who are not excessively over- or underweight).

For men:

\[
661.8 - 9.53 \times \text{AGE (yrs)} + \text{PAC} \times \frac{[(15.92 \times \text{WEIGHT (kg)}) + (539.6 \times \text{HEIGHT (m)})]}{}
\]

For women:

\[
354.1 - 6.91 \times \text{AGE (yrs)} + \text{PAC} \times \frac{[(9.36 \times \text{WEIGHT (kg)}) + (726 \times \text{HEIGHT (m)})]}{}
\]

Plug in your age, weight (1 pound = 0.4536 kg), and height (1 inch = 0.0254 m).

The physical activity coefficient (PAC) takes on one of four values, depending on how active you are:

<table>
<thead>
<tr>
<th>Daily Exercise Level</th>
<th>PAC</th>
<th>Example of Daily Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary</td>
<td>1.00</td>
<td>None</td>
</tr>
<tr>
<td>Mildly active</td>
<td>1.12</td>
<td>30 minutes of moderate walking</td>
</tr>
<tr>
<td>Active</td>
<td>1.27</td>
<td>30 minutes of moderate walking, 25 minutes of moderate bicycling, and 40 minutes of tennis</td>
</tr>
<tr>
<td>Very active</td>
<td>1.45</td>
<td>45 minutes of moderate cycling, 25 minutes of jogging, and 60 minutes of tennis</td>
</tr>
</tbody>
</table>

Depending on height and weight, calorie requirements can vary widely for different people in the same PAC category. Consider two 21-year-old men. One is 5 feet 3 inches tall, weighs 104 pounds, and has a sedentary lifestyle. His daily calorie requirement is about 2,000. The other is 6 feet 3 inches tall, weighs 199 pounds, and has an active lifestyle. His daily calorie requirement is about 4,000.
World Hunger Statistics:

More than 840 million people in the world are malnourished — 799 million of them live in the developing world.

More than 153 million of the world's malnourished people are children under the age of 5.

Six million children under the age of 5 die every year as a result of hunger.

Malnutrition can severely affect a child's intellectual development. Malnourished children often have stunted growth and score significantly lower on math and language achievement tests than do well-nourished children.

Lack of dietary diversity and essential minerals and vitamins also contributes to increased child and adult mortality. Vitamin A deficiency impairs the immune system, increasing the annual death toll from measles and other diseases by an estimated 1.3 million-2.5 million children.

While every country in the world has the potential of growing enough food to feed itself, 54 nations currently do not produce enough food to feed their populations, nor can they afford to import the necessary commodities to make up the gap. Most of these countries are in Sub-Saharan Africa.

Source: Care.org.
Nutrient Deficiencies:

- Anemias
- Alopecia
- Depressed immunity
- Dermatitis
- Hemorrhage
- Kwashiorkor
- Mental impairment
- Pellagra
- Poor digestion
- Stunted growth

N.B. In 1915, more than 10,000 people died of pellagra in the United States alone.
Figure 1-1  Pounds-per-capita consumption of meat is much higher for industrialized countries and is rising for developing countries, in contrast to least developed countries. (USDA)
Major species: (Providing 90% of all protein from meats)

- buffalo
- cattle
- goats
- horses
- poultry
- sheep
- swine
World’s Meat Supply

Minor species: (Providing 10% of all protein from meats)

- alpaca
- antelope
- capybara
- elk
- guinea pigs
- kangaroo
- rabbits
- yak

Photo: Sergio Arispe
World’s Milk Supply

Major species:

- alpaca
- buffalo
- camel
- cattle
- goats
- reindeer
- sheep
- yak

American Water Buffalo Association

Water Buffalo 67@yahoo.com
Major species:

- alpaca
- buffalo
- camel
- cattle
- goats
- reindeer
- sheep
- yak

Video: [http://www.youtube.com/watch?v=dk7zMiVBxk4](http://www.youtube.com/watch?v=dk7zMiVBxk4)
In 2009, Americans consumed 58.1 pounds of beef, 46.6 pounds of pork, 69.4 pounds of poultry meats, 15.8 pounds of fish/shellfish (total of 189.9 pounds), and consumed 22 gallons of fluid milk, 32.8 pounds of cheese, 20.2 pounds of ice cream, and 246 eggs (U.S. Census Bureau, 2012).

In 1940, one farmer supported (fed) 18.5 people, whereas in 2000, 140 people were fed.

According to the 2007 USDA Census of Agriculture report, large family farms with sales in excess of $250,000 represent only 9% of the total number of farms but produced 63% of all agricultural products sold.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. Farms</th>
<th>U.S. Pop’n (%)</th>
<th>Farm size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>5.4 million</td>
<td>14.2</td>
<td>225 acres</td>
</tr>
<tr>
<td>1997</td>
<td>1.9 million</td>
<td>&lt;1.0</td>
<td>487 acres</td>
</tr>
</tbody>
</table>
Why are American farmers so productive or efficient?

1. Less government control
2. Favorable climate and environmental conditions
   - Rich soil, flat land, and ample rainfall in the midwest
   - Short-season plants in the north
   - Marginal cropland good for grazing
Global Food Crisis

Factors:
- Distribution
- Economics
- Low animal production
- Population growth
- Politics

N.B. Two-thirds of ruminant and poultry species are found in the LDCs, but two-thirds of meat and four-fifths of milk are produced in the DC’s!
GLOBAL USES OF LIVESTOCK

FIBER

Feathers
Fur
Horns
Leather
Mohair
Wool
GLOBAL USES OF LIVESTOCK

N.B. Draft animals provide the power for the cultivation of nearly 50% of the world’s cultivated land and the hauling of over 25 million carts. More than 240 million cattle and 60 million buffalo are kept as work animals. Source: Teleni and Murray (1991), cited by Cheeke (2004).
GLOBAL USES OF LIVESTOCK

FUEL
Biogas
Manure
Feathers/Hair
Slaughter by-products
The integrated farming system

Ponds (water plants fish)

Rice
Cassava
Oil palm
Sugar palm
Sugar cane

Ducks
Pigs
Buffaloes
Cattle

Family & Market

Biodigester

Source: Preston (1995)
GLOBAL USES OF LIVESTOCK

SOCIAL
Ceremonial
Competition
Heritage/Values
Power
Prestige
Wealth
Famous Cattle Drive at Ft. Worth Stockyards

Photo: David Wright
GLOBAL USES OF LIVESTOCK

PLEASURE
Companionship
Hobby
Recreation
Stress Reliever
GLOBAL USES OF LIVESTOCK

RESEARCH

Applied
Basic
Biomedical experimentation
Biotechnology

American Society of Animal Science
GLOBAL USES OF LIVESTOCK

PROFIT

Business
- Commercial
- Seedstock

Assets
Cash reserves