

Eleventh Edition



**E**nvironmental Science  
*A Global Concern*

William P. Cunningham • Mary Ann Cunningham



# Food and Hunger

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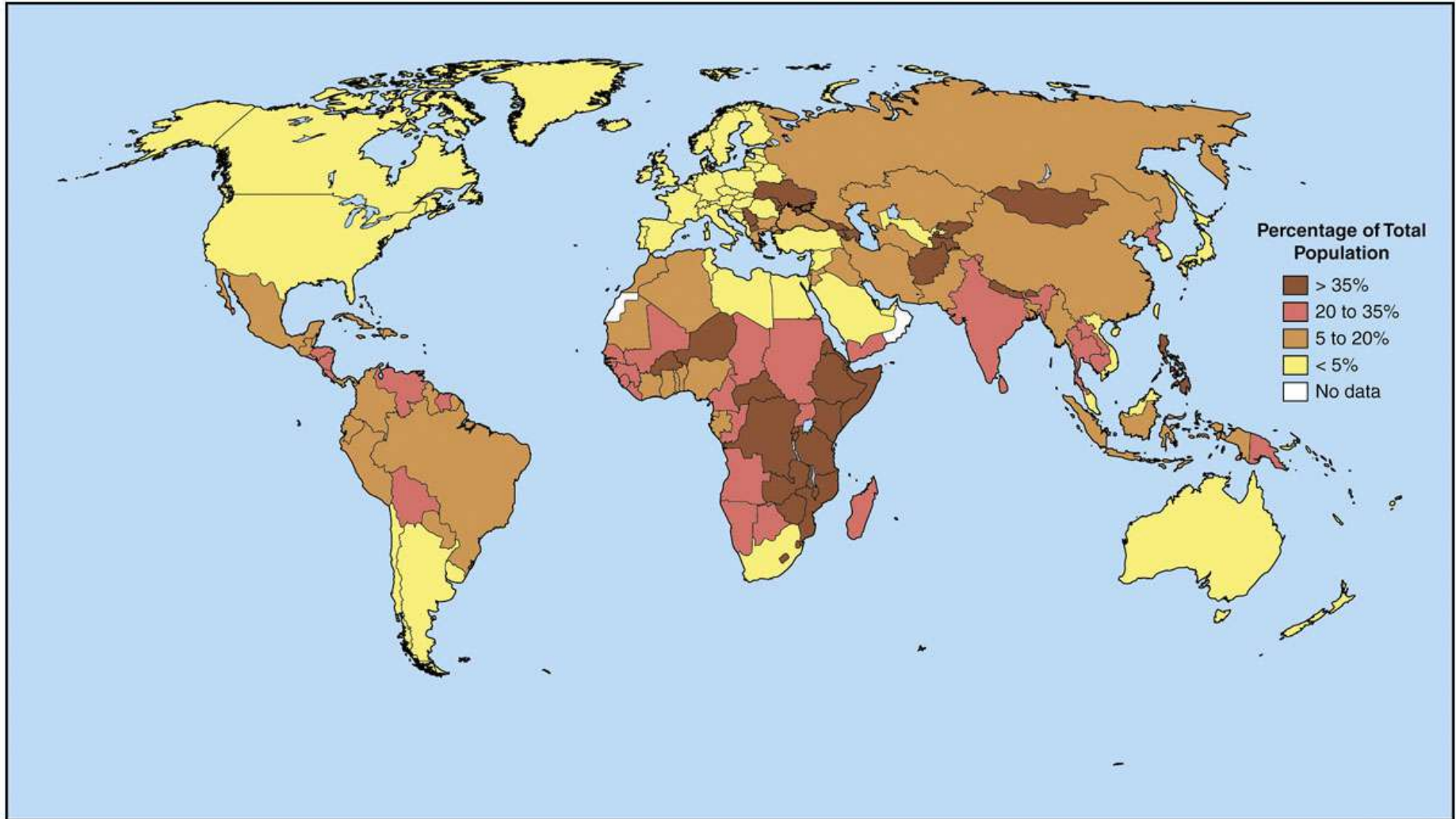






# Hunger Around the World

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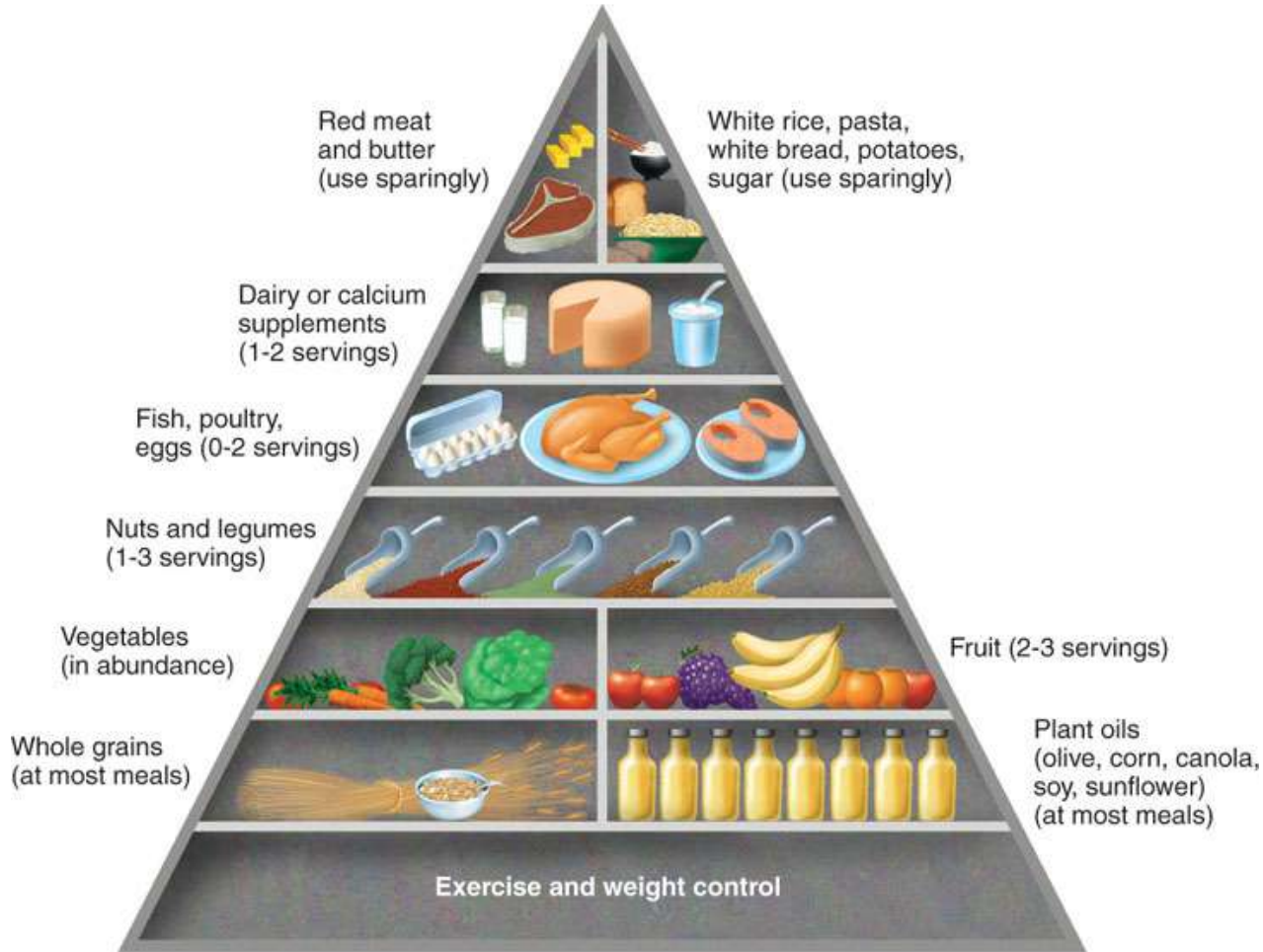






# Harvard Dietary Pyramid

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Harvard food pyramid

Data from Willett and Stampfer, 2002













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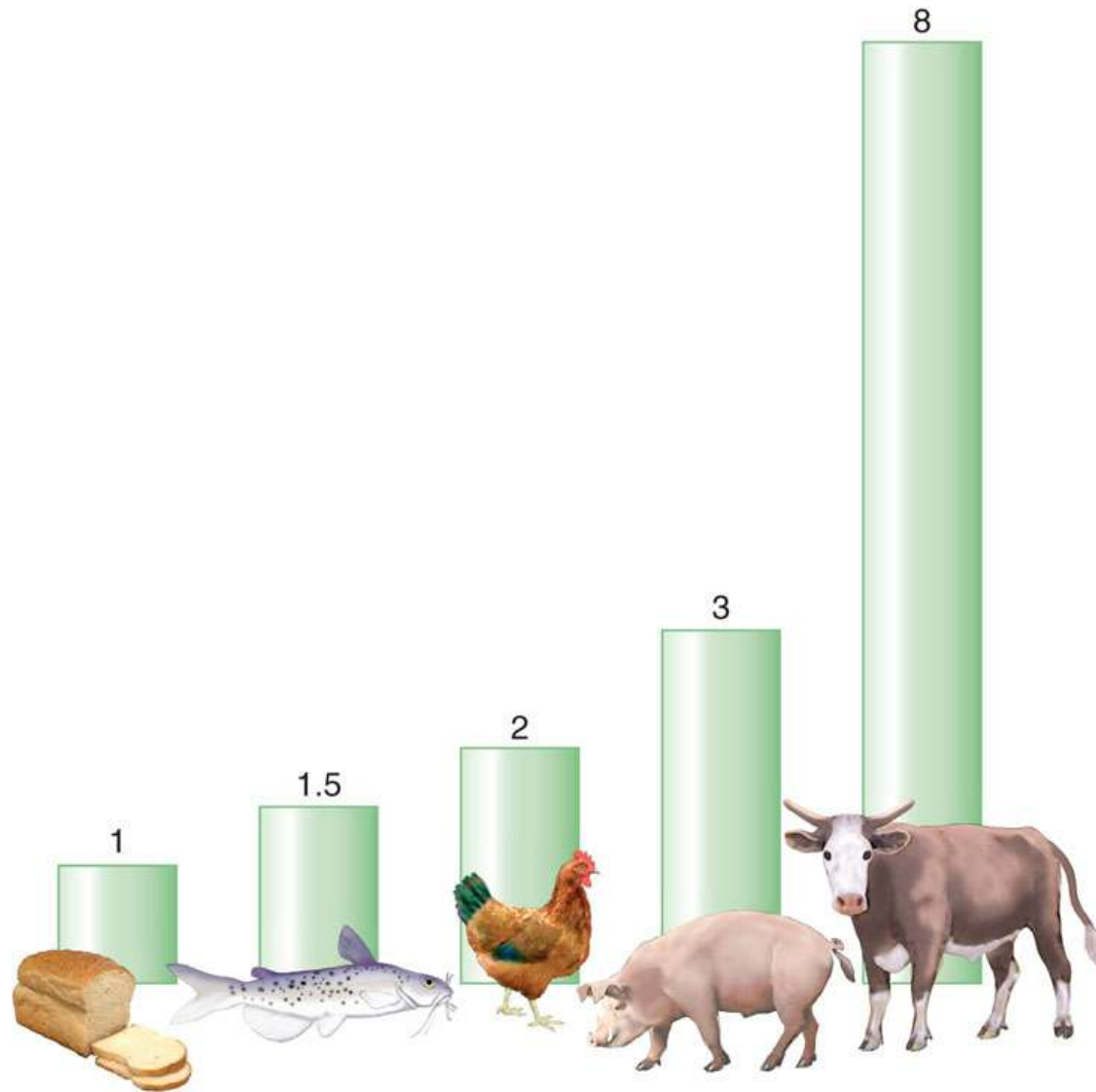
# Costs and Benefits of Meat Production

ie. It takes  $> 8\text{kg}$  of grain to produce  $1\text{kg}$  of beef.



# Grain Needed to Produce Various Meats

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# Rotational Grazing

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Photo by Jeff Vanuga, courtesy of USDA Natural Resources Conservation Center







# The Green Revolution and New Crops

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# Semi-Dwarf Wheat

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# Genetic Engineering Produces New Crops

## Genetic engineering

genetically modified organisms  
(GMOs)

Can produce crops with pest-resistance and wider tolerance levels to frost, drought, low nutrient soils, salty soils, etc.

Can improve protein or vitamin content of crop

Can incorporate oral vaccines into foods such as bananas for use in developing nations

Animals can be modified to grow faster or produce pharmaceuticals in their milk.



# Gene Transfer Techniques

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