

The Human Earth (MAE 124/ESYS 103)

Lecture 5

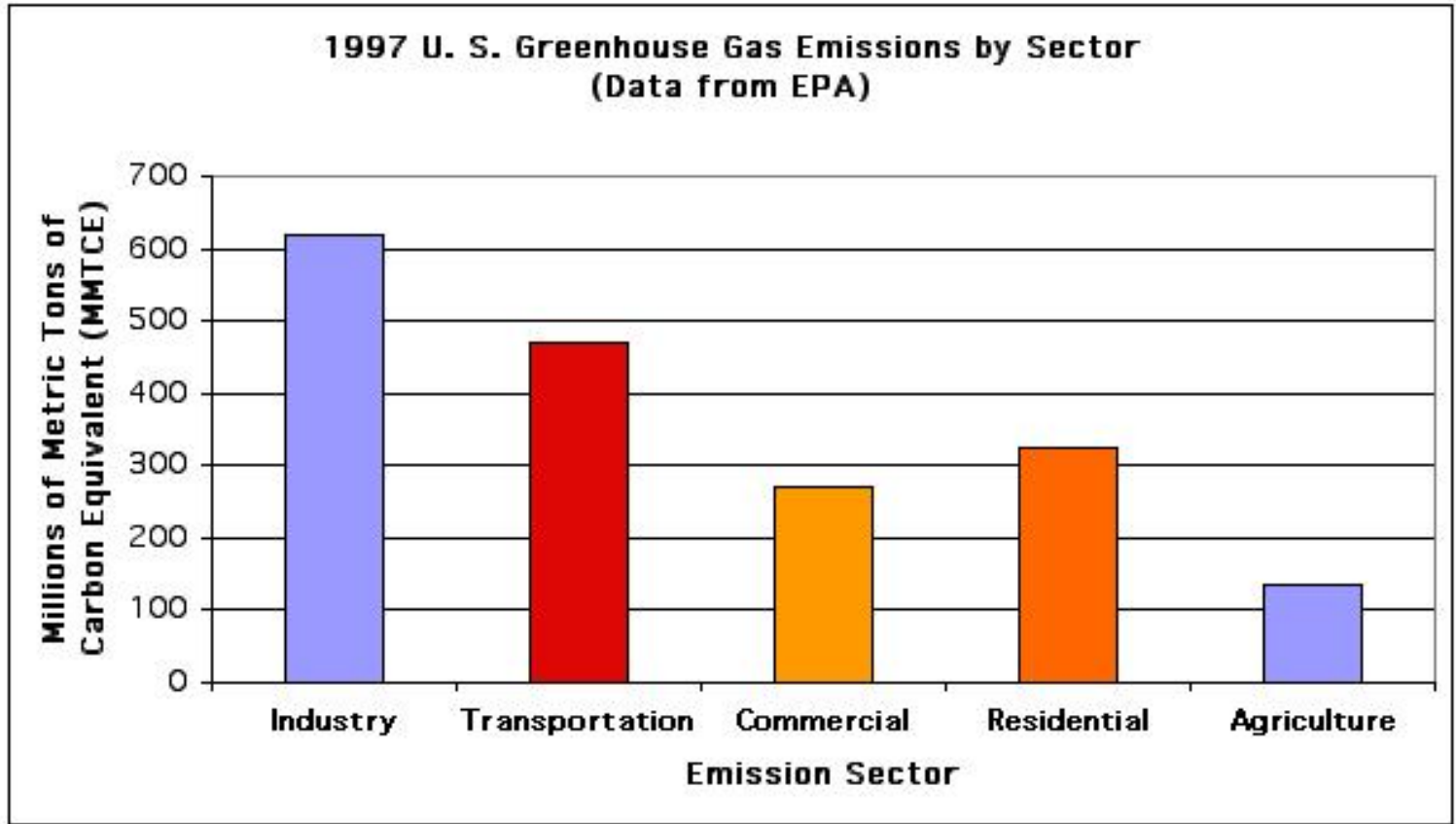
Green Business, Role of the Engineer

BP Rebranding

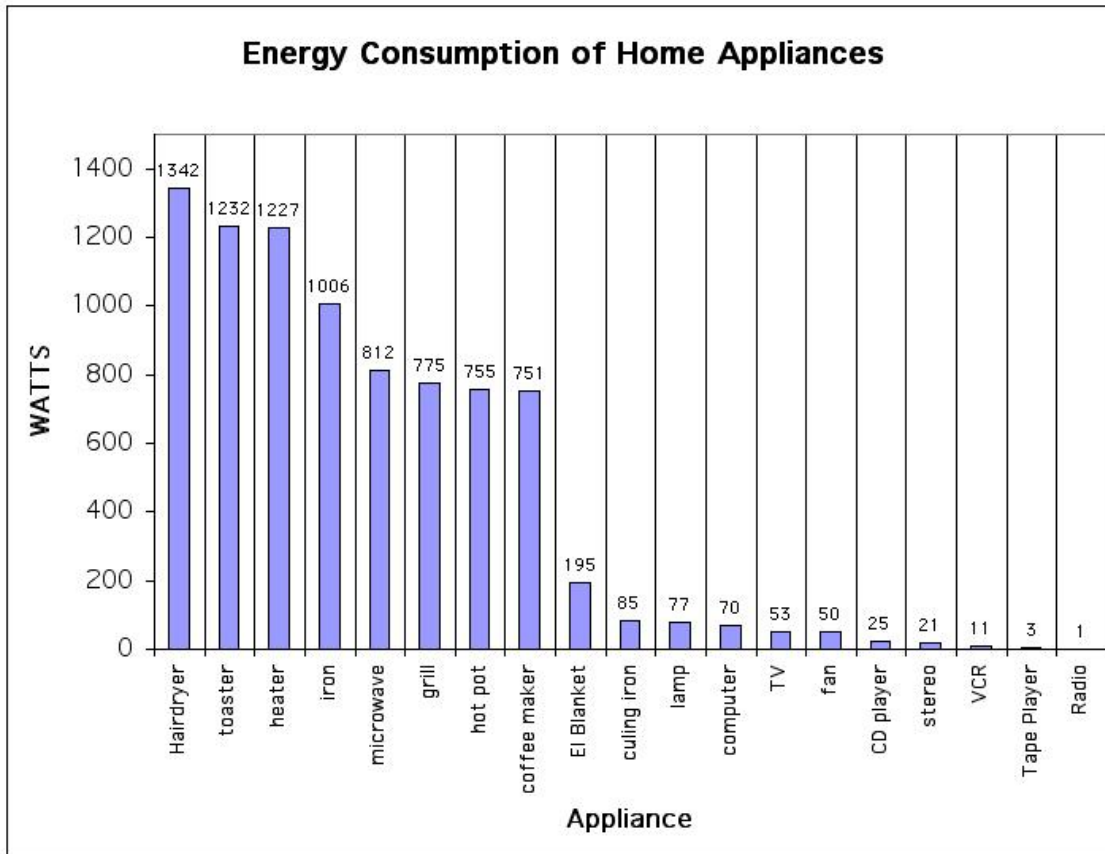


Green Peace

Identifying greenhouse gas emissions



Energy usage of home appliances



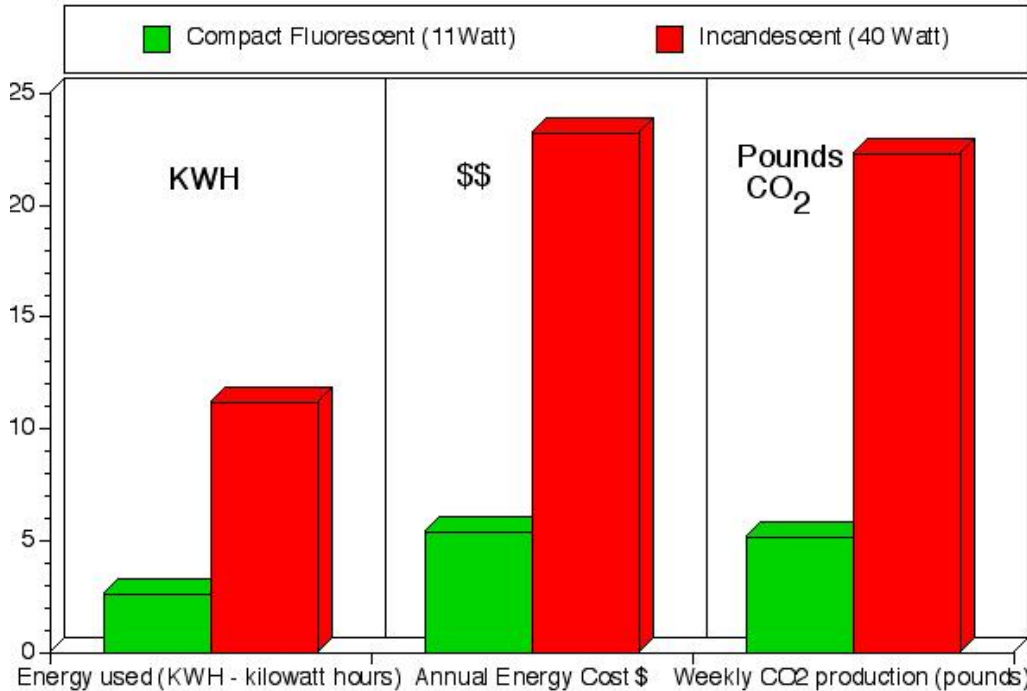
<http://www.bethel.edu/~kisrob/CampusEnvironment/GlobalWarming/GlobalWarming.html>

Energy usage of home appliances

A tale of two lightbulbs with the same shape and the same light output.

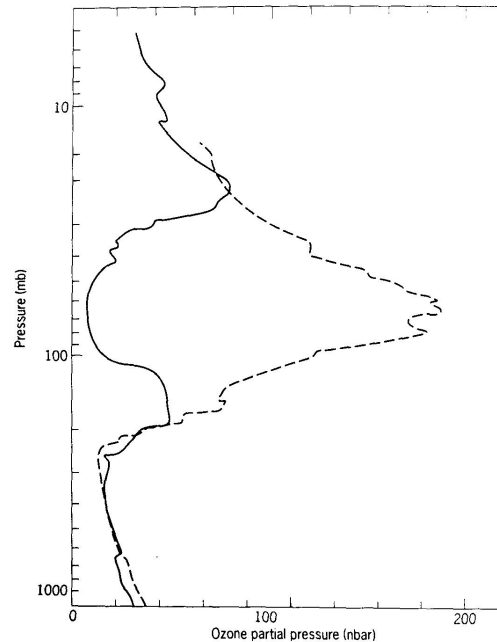
Compact Fluorescent bulb
445 lumens of light output
10,000 hour lifespan
\$10.00 Purchase Cost

Incandescent bulb
445 lumens of light output
1,000 hour lifespan
\$1.00 X 10 bulbs = \$10.00 Purchase Cost



Ozone changes

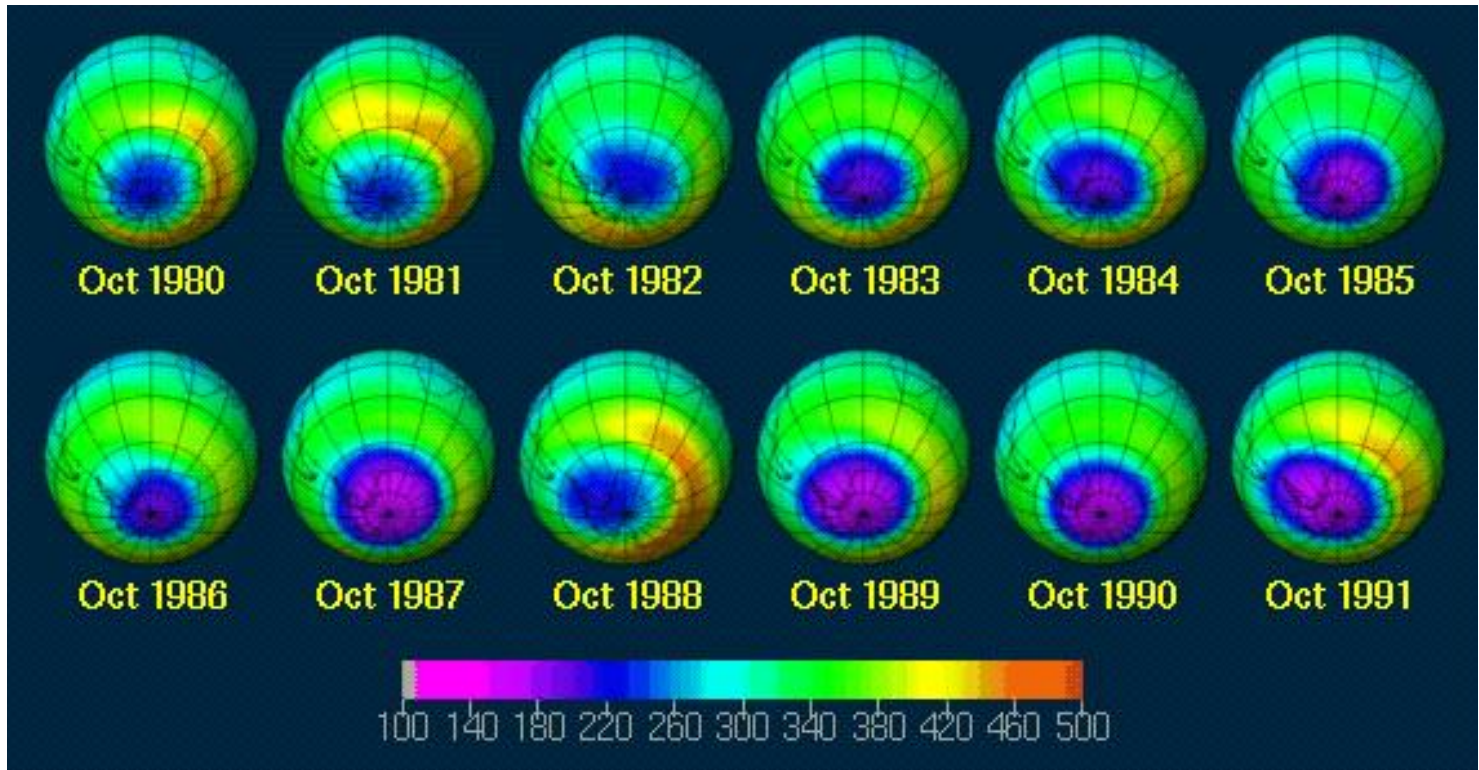
Figure 7: Vertical distribution of ozone partial pressure (nbar) observed at Halley Bay Station on 15 August 1987 (high values), and 15 October 1987 (low values), respectively.



Source : J. C. Farman (in WMO 1990a).

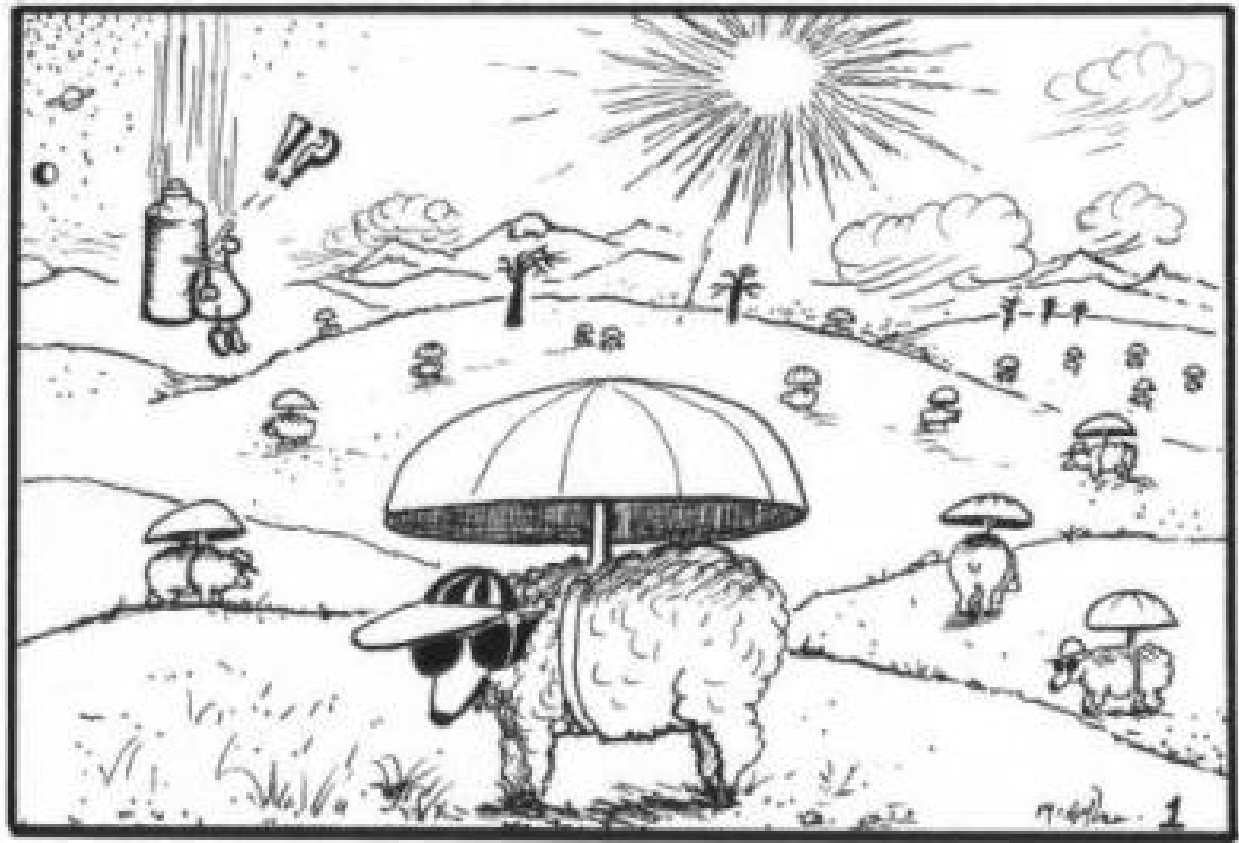
Tolba, et al., 1992. Ozone depletion. Chapter 2 in *The world environment 1972-1992*. New York: Chapman and Hall.

Ozone hole over Antarctica



<http://www.atm.ch.cam.ac.uk/tour/part2.html>

Responses to the Ozone Hole



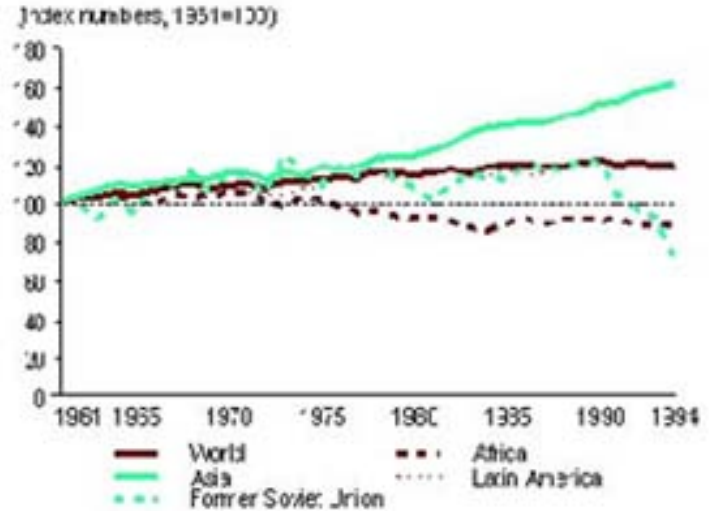
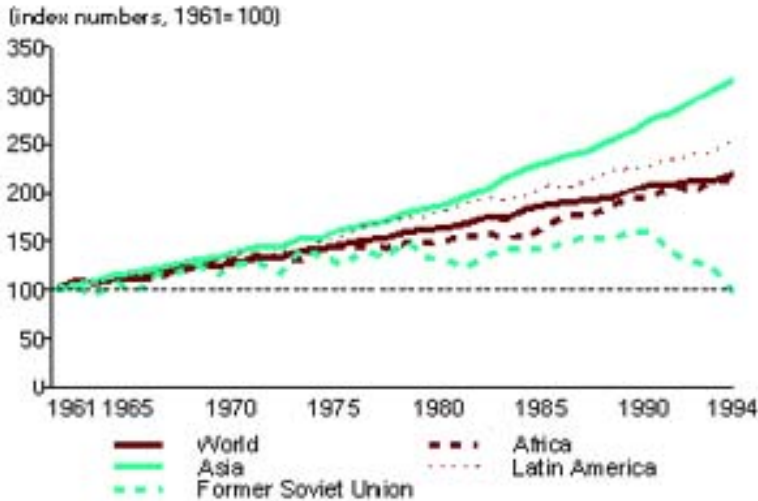
<http://www.scoop.co.nz/stories/HL0510/S00154.htm>

Silent Spring



<http://www.engr.psu.edu/wep/EngCompSp98/EBeckner/rachel.html>

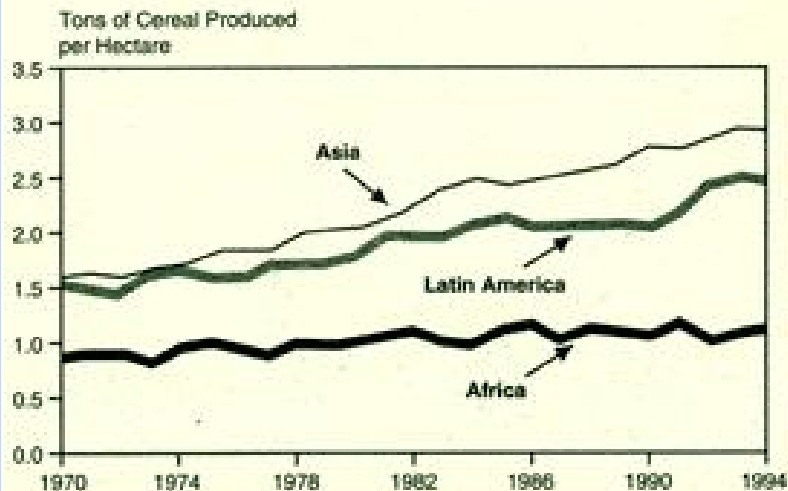
Food Production and the Green Revolution



http://www.globalchange.umich.edu/globalchange2/current/lectures/food_supply/food.htm

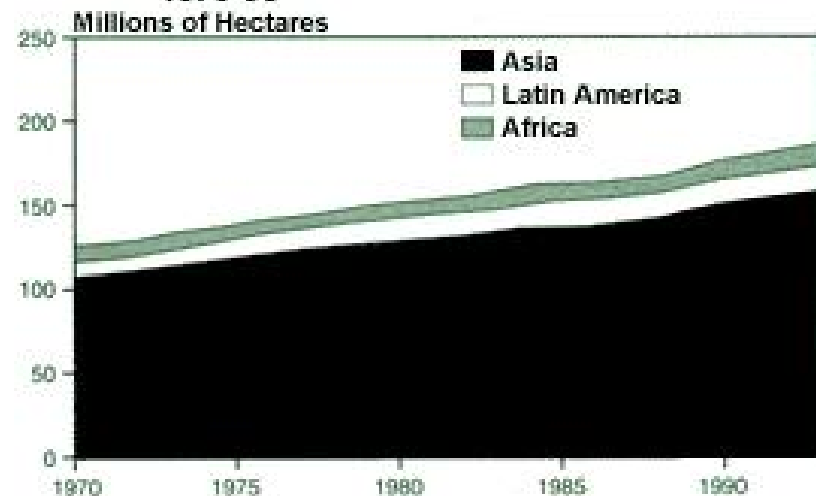
Cereal yields per hectare

Figure 8— Cereal yields in major developing regions, 1970–94



Source: Food and Agriculture Organization of the United Nations, "FAOSTat-PC, Production Domain, 1995" (computer disk), version 3.0 (Rome, 1995).

Figure 9—Irrigated land in major developing regions, 1970–93

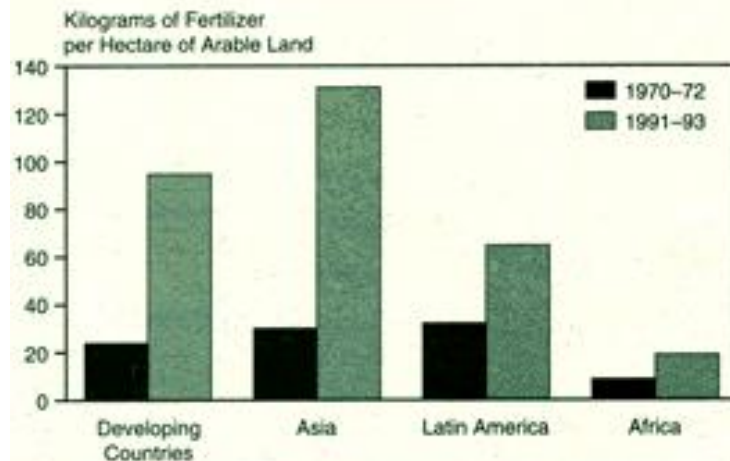


Source: Food and Agriculture Organization of the United Nations, "FAOSTat-PC, Land Use Domain, 1995" (computer disk), version 3.0 (Rome, 1995).

<http://www.ifpri.org/2020/synth/trends.htm>

Cereal yields per hectare

Figure 10—Fertilizer use in major developing regions, 1970–72 and 1991–93

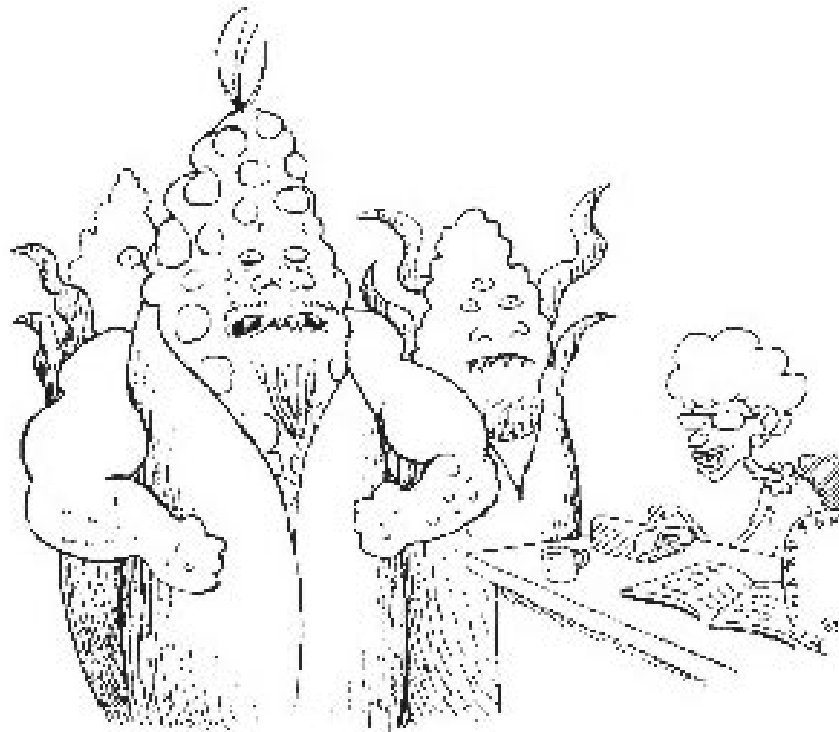


Source: Food and Agriculture Organization of the United Nations, "FAOSTat-PC, Land Use Domain, 1995" (computer disk), version 3.0 (Rome, 1995).

Note: Data are three-year averages.

<http://www.ifpri.org/2020/synth/trends.htm>

The Green Revolution



"There's some genetically modified corn here to see you, Mr. President."

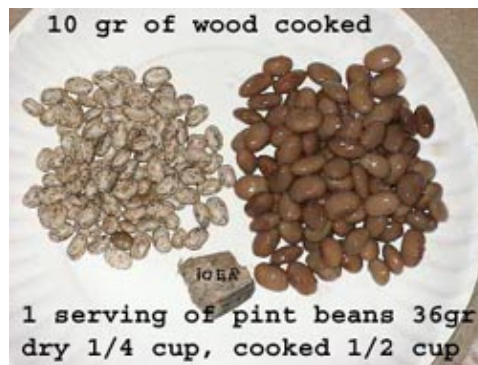
<http://zmagsite.zmag.org/Apr2004/tokar0404.html>

Appropriate Technology: cook stoves



www.llu.edu/llu/sph/envh/africa.htm

Appropriate Technology: cook stoves (2)



Henson BMHB1 Biomass Cook Stove <http://www.lanny.us/bmhb1.html>

Appropriate Technology: Freeplay wind-up radio



<http://www.sustainabletimes.ca/articles/freeplay.htm>