Geography of Modern Agriculture

Human Geography
November 2005
Caloric intake

- most of world’s people have an adequate supply of calories
- the five concentrations have a calorie supply called well above adequate -120%
- outside of Africa only Haiti and Afghanistan show serious malnutrition
- many states in central and east Africa show malnutrition
map of protein

- Can not map areas of inadequate protein because we do not have concept of daily requirements
- difference in patterns of meat vs. vegetable protein
Production factors

• Agriculture types lie behind consumption patterns

• Major components of agriculture
  – Ecology of agriculture – impact of climate, soils and landforms
  – Set of linkages among primary production and consumption regions
  – Cultural taste
General patterns

- 13 varieties reflective of environment
  - Nomadic herders in arid regions
  - Shifting cultivation in tropical rainforest and savanna margins
  - Livestock ranching on dry margins of crop farming

- Farmers have cleared and tilled many environments and made new systems
Market impact within Zones

• Von Thunen model useful in discussions of land use
• The model is Important because it opens discussions of contemporary agricultural patterns.
Value of Nursery and Greenhouse Crops, Mushrooms and Sod Grown for Sale: 1992

United States Total: $7,634,924,000

Source: 1992 Census of Agriculture
Value of Bedding Plants Grown for Sale: 1992

United States Total
$1,391,175,000

Source: 1992 Census of Agriculture
Impact of market in Minnesota
Corn in MN Counties

Map 3

Corn as percentage
- less than 5
- 5 - 19.9
- 20 - 39.9
- 40 or more
- No data reported

* Corn acres harvested for grain divided by acres of harvested cropland

Data Source: 1992 Census of Agriculture

0  50  100  150  200  Miles
Ethanol Plants (processing corn)

Map 18

- Under construction
- Operating in 1998
- Being considered (Minnesota Brewing facility in St. Paul)

Note: 18 percent of Minnesota's corn is now milled as ethanol and related by-products. 8,000 Minnesota farmers own over 90 percent of the state's corn-milling industry.

Data Source: Minnesota Department of Agriculture, 1998
Commodity chains

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Grassland-based beef production (e.g., New Zealand)

- New Zealand Government
- Industrial inputs (e.g., seeds, sprays, fertilizer)
- Grassland livestock farming
- Trucking
- Freezing works
- Shipping

Grain-based beef production (e.g., U.S., E.C.)

- United States Government
- Industrial inputs (e.g., seeds, sprays, fertilizer)
- Grain farming (e.g., wheat, corn, soybeans)
- Beef rearing
- Trucking
- Feedlots

- U.S., E.C., or Third-World Countries Government
- Trucking
- Meat packers
- Trucking
- Food manufacturing

The word system is used to denote the intersection of a range of processes, embracing production to consumption. Designating different spheres of the economy connected with generating "agricultural" outputs are:

A = Agriculture
I = Industry
S = Services
Trade in Wheat

• Wheat is the major food commodity in international trade
• There are many production areas for wheat
• The demand for wheat is great and because local supplies are not adequate
• production area have become specialized
• Wheat is the ideal frontier crop.
WHEAT

Widths of flow lines is proportional to transfer of wheat. One half millimeter represents 2 million metric tons. Dashed line represents less than 500,000 metric tons. The flow lines do not necessarily indicate exact routes.

WHEAT Each dot represents 2,000,000 bushels (54,400 metric tons) per year.

Wheat World Production - 552,867,000 metric tons - Avg. 1994-96

Wheat Trade

World Imports - 100,170,500 metric tons - Avg. 1994-96

World Exports - 100,523,000 metric tons - Avg. 1994-96
Maize or Corn

• Like wheat corn moves from a few production areas to a small number of consumption zones
• Corn differs from wheat in that most of it is not consumed directly by humans
• Many industrial uses of corn oil and sweeteners.
MAIZE (CORN)

- Each dot represents 3,000,000 bushels (75,200 metric tons) per year.

World Production - 559,077,000 metric tons - Avg. 1994-95

- UNITED STATES: 48.5%
- CHINA: 20.2%
- OTHER: 21.3%

Maize Trade

- World Imports - 70,417,500 metric tons - Avg. 1994-96
- World Exports - 71,025,000 metric tons - Avg. 1994-96

Width of flow lines is proportional to movement of maize. One line millimeter represents 2 million metric tons. trademark lines represent less than 500,000 metric tons. The flow lines do not necessarily indicate exact volume.
Rice

- Third major crop in international trade
- Major surpluses produced in East and Southeast Asia
- Middle East a consumer of both wheat and rice.
Geography of fowl

• There are a huge number of birds raised for human consumption
• Nearly all parts of the world produce poultry
• The production of poultry in the United States is highly industrialized
• The production in the United States is highly concentrated
Number of Broilers and Other Meat-Type Chickens Sold: 2002

1 Dot = 2,000,000 Broilers

United States Total
8,500,313,357
Geography of swine

- The production of hogs is highly regionalized
- There are great concentrations in Asia
- Essentially no hog production in Islamic world
- New centers of factory farms developing United States in North Carolina and High Plains
Fig. 1—Hog farms and built-up areas in Texas County, Oklahoma, in 1997. Each small, square quarter-section has one or more hog farms, which are clusters of two to ten buildings. The Seaboard Corporation processing plant is just northeast of Guymon, the county seat, which is close to the center of the county. Source: Campbell 1997.
Fig. 2—By sheer good fortune, the U.S. Department of Agriculture happened to schedule aerial photography of Texas County, Oklahoma, in February 1995, when the first few hog farms were being developed. Hog farms are most easily identifiable by the small black spots on the white...
Geography of Cattle

- Distribution of cattle highly regionalized
- Concentration in India results from cultural patterns
- Nomadic herding patterns still visible in the geography of cattle.
- Ranching areas in colonial zones still visible
STOP
NO ADMITTANCE
AUTHORIZED PERSONNEL ONLY
BIO-SECURITY AREA
Acres of All Hay Harvested, Including Alfalfa, Other Tame, Small Grain, and Wild, as Percent of Harvested Cropland Acreage: 2002
Geography of sheep

• Distribution of sheep reflects two types of agriculture, Mediterranean and the ranching patterns produced by colonial endeavors.
World Fresh and Frozen Meat, Export, 2001

Source:
UN Statistics Division
2001
World Fresh and Frozen Meat, Import, 2001

Value in Millions of US Dollars

Mapmaker:
Roxanne Clark
April 2004

Source:
UN Statistics Division
2001
Geography of Horses

• Pattern of horses in United States shows the change in role of horse in diet and agriculture.

• Horses are now urban pets
Horses and Ponies - Inventory: 2002

1 Dot = 500 Horses and Ponies

United States Total
3,644,278
Horses and Ponies in MN Counties

Map 15

Horses & Ponies per Square Mile*

- Fewer than 1
- 1 - 2
- 2 - 5
- No data reported

*Number of horses and ponies in each county divided by square miles in each county

Data Source: 1992 Census of Agriculture

0 50 100 150 200 Miles
Geography of Vegetable Oil

• Growing item in international trade
• Increasing demand for oil in wealthy countries produced colonial trade patterns
• Major shift in United States to soy bean production away from traditional crop rotation
World Export of Cut Flowers, 2003

Mapmaker: Roxanne Clark
April 2004

Source: UN Statistics Division
2003
World Cut Flowers Import, 2003

Mapmaker: Roxanne Clark
April 2004

Source: UN Statistics Division
2003
World Alcoholic Beverages Import, 2001

Mapmaker: Roxanne Clark
April 2004

Source: UN Statistics Division 2001
World Alcoholic Beverages Export, 2001

Mapmaker: Roxanne Clark
April 2004

Source: UN Statistics Division
2001