Agricultural Geography: Where Food Is Grown and Why

- Study of spatial variation in farming and food production worldwide
- Explains environmental, economic, and cultural forces behind these patterns
- Course arc: environmental foundations, domestication, farming systems, spatial models, trade, land use, climate, teaching
- Guiding question: why does food come from particular places?
- How do those places change over time?
- For geography learners, students, teachers, and natural history educators

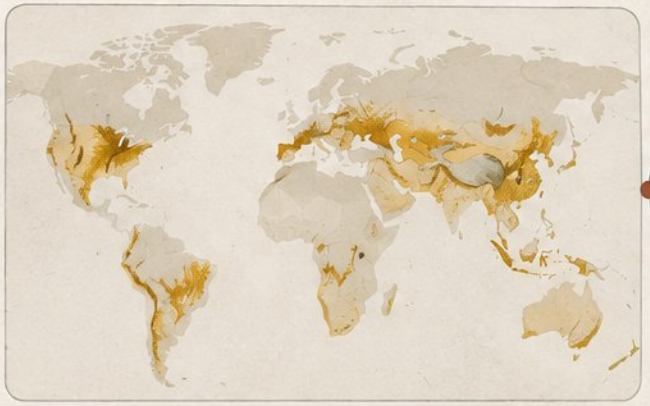




What Agricultural Geography Studies

- Two approaches: track single crops, or map farming regions
- Agriculture uses about one-third of global land surface
- The field now spans whole food systems, not just farms
- Scale matters: global patterns differ from farm-level patterns
- Field has broadened: inputs, processing, distribution, consumption







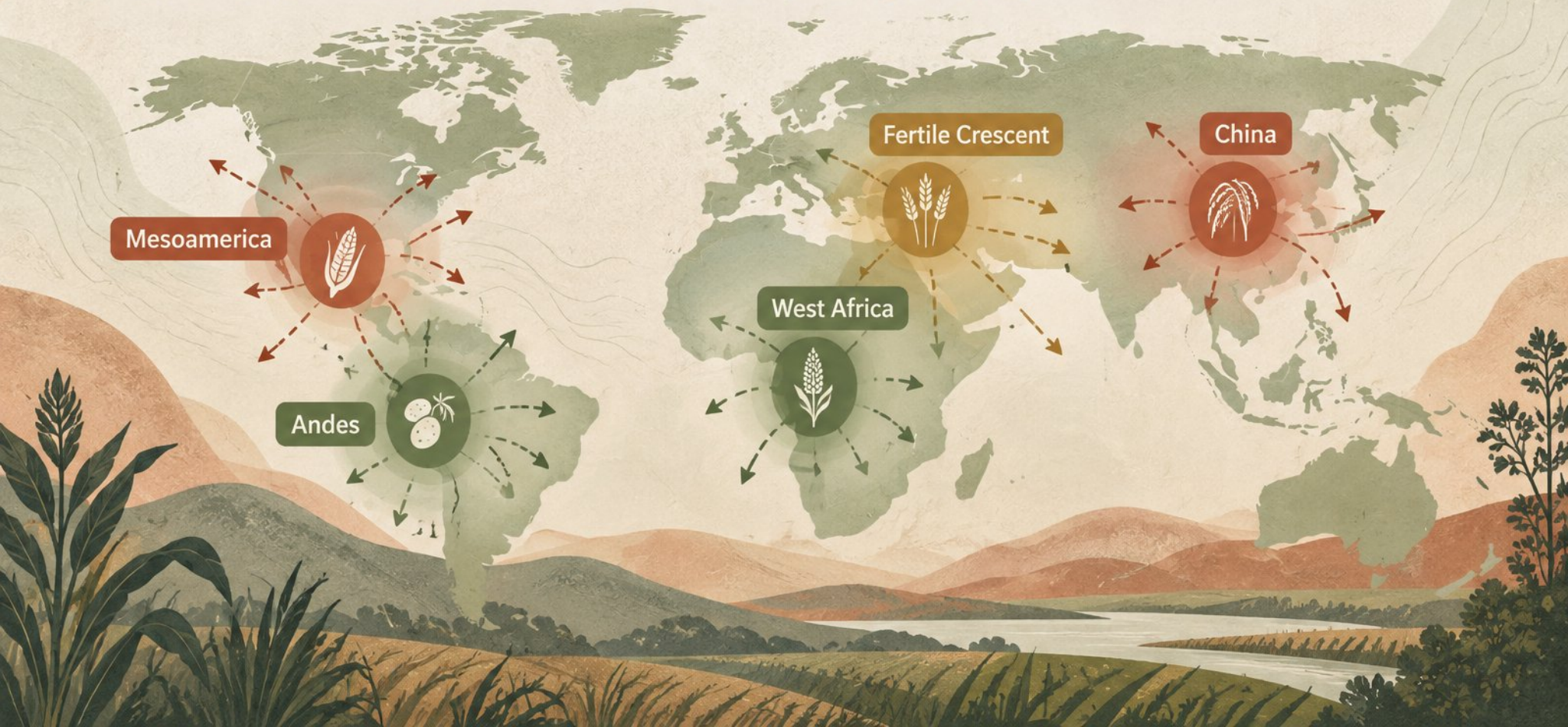
Environmental Foundations: Climate, Soil, and Terrain

- Climate sets cultivation limits: temperature, rainfall, growing season, frost risk
- Agro-ecological zoning combines growing period, thermal regime, and soil mapping units
- Key soil properties: texture, drainage, nutrients, rooting depth, salinity, organic matter
- Slope constrains mechanization and raises erosion risk in suitability assessments
- These constraints combine into recognizable agricultural regions, not random patchwork



Origins of Agriculture and Crop Domestication

- Farming emerged independently in several hearths: Fertile Crescent, China, Mesooamerica, Andes, West Africa
- Domestication dates vary by crop: Near Eastern cereals 13,000–10,000 BP; Yangtze rice 9,000–6,000 BP; Mesoamerican maize 9,000–7,000 BP
- Vavilov's centers of origin linked domestication geography to genetic diversity centers
- Later scholars disputed the origin-diversity equivalence and added secondary centers and noncenters
- Ancient diffusion routes still shape where major crops are grown today



Classifying World Farming Systems

- Whittlesey's 1936 scheme uses five criteria: crops, methods, intensity, disposal, and farm structures
- Thirteen types span shifting cultivation, nomadic herding, rice farming, plantations, and dairy farming
- Classification rests on how farming works, not just what is grown
- Subsistence versus commercial orientation reshapes labor intensity, land use, and output per hectare



Regional Profiles: Comparing Farming Systems

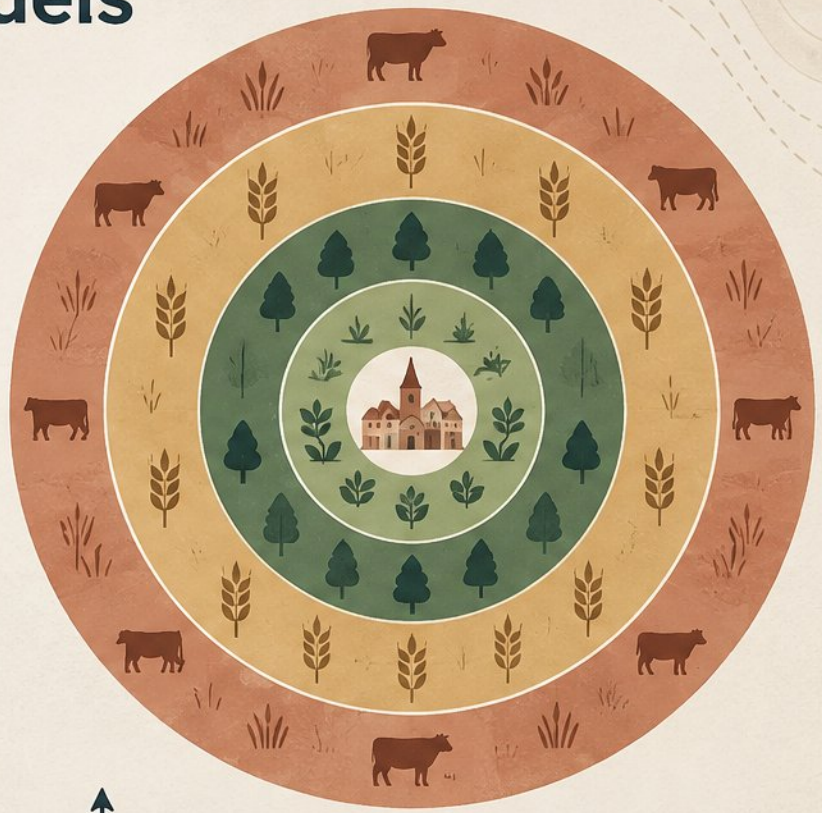


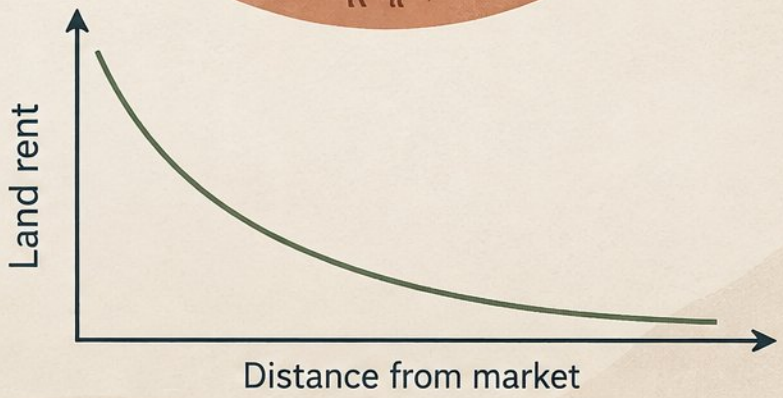



- Monsoon Asia: intensive subsistence rice farming in deltas; labor-intensive, land-efficient
- Temperate grasslands: commercial grain farming across the Prairies, Steppes, and Pampas
- Mediterranean: winter-rain, summer-drought systems growing olives, grapes, and wheat
- Tropical and dryland: shifting cultivation, plantations, and nomadic herding
- Compare labor intensity, land use, and output per hectare across systems
- Ask why farmers in different places make different choices

Von Thünen and Spatial Models of Agricultural Land Use

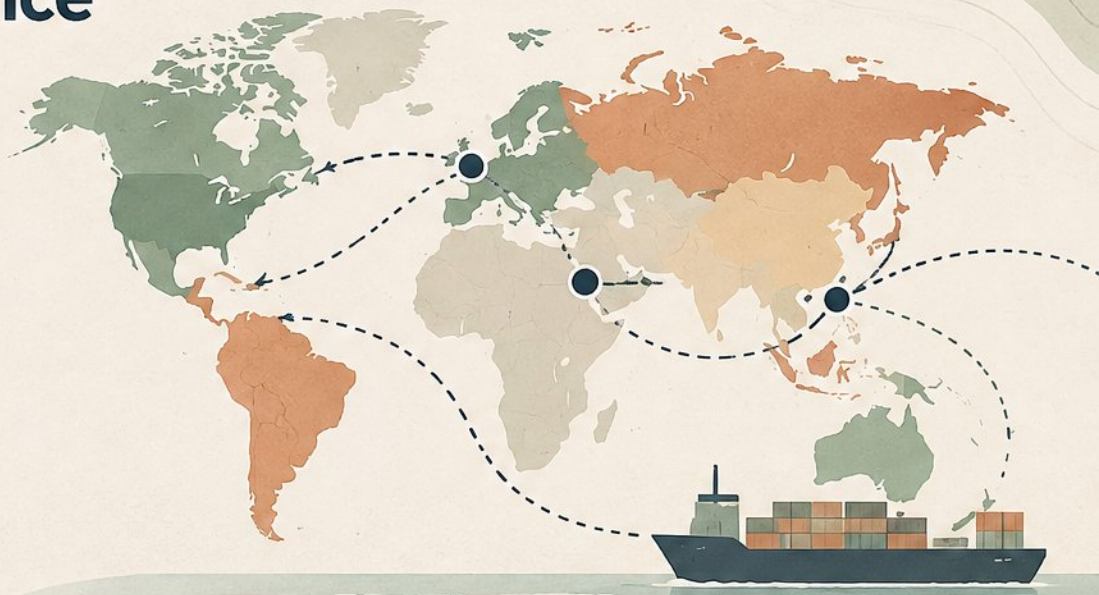
- Isolated state: one market, uniform plain, distance-based transport costs
- Rings: dairying and market gardening → forest → grain → ranching
- Land rent = price − production costs − transport costs
- Modern critiques: refrigeration, transport, policy, and physical variation loosen assumptions
- Still a strong teaching tool for accessibility and urban pressure



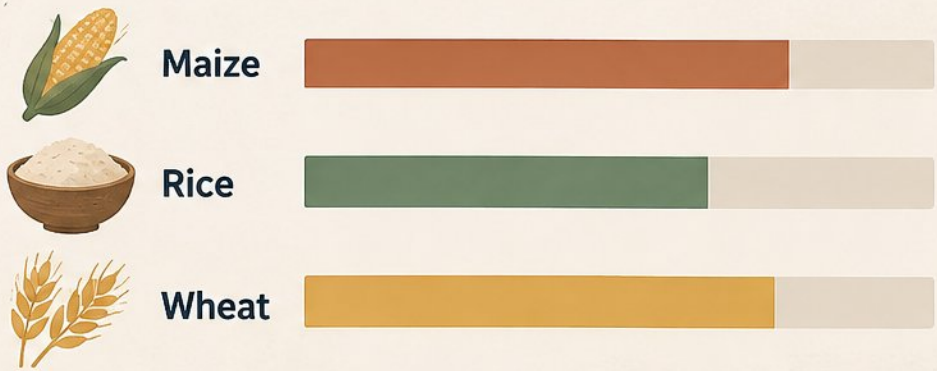


Food Trade, Supply Chains, and Global Interdependence

- Top exporters 2025: EU, US, Brazil, China, Canada
- Top importers: US, EU, China, UK, Japan
- Cereal exports highly concentrated among a few suppliers
- Asia largest net importer; Americas largest net exporter
- Cold chains and shipping link farms to distant consumers
- Concentration creates risk when routes or exports are disrupted



Cereal Export Concentration

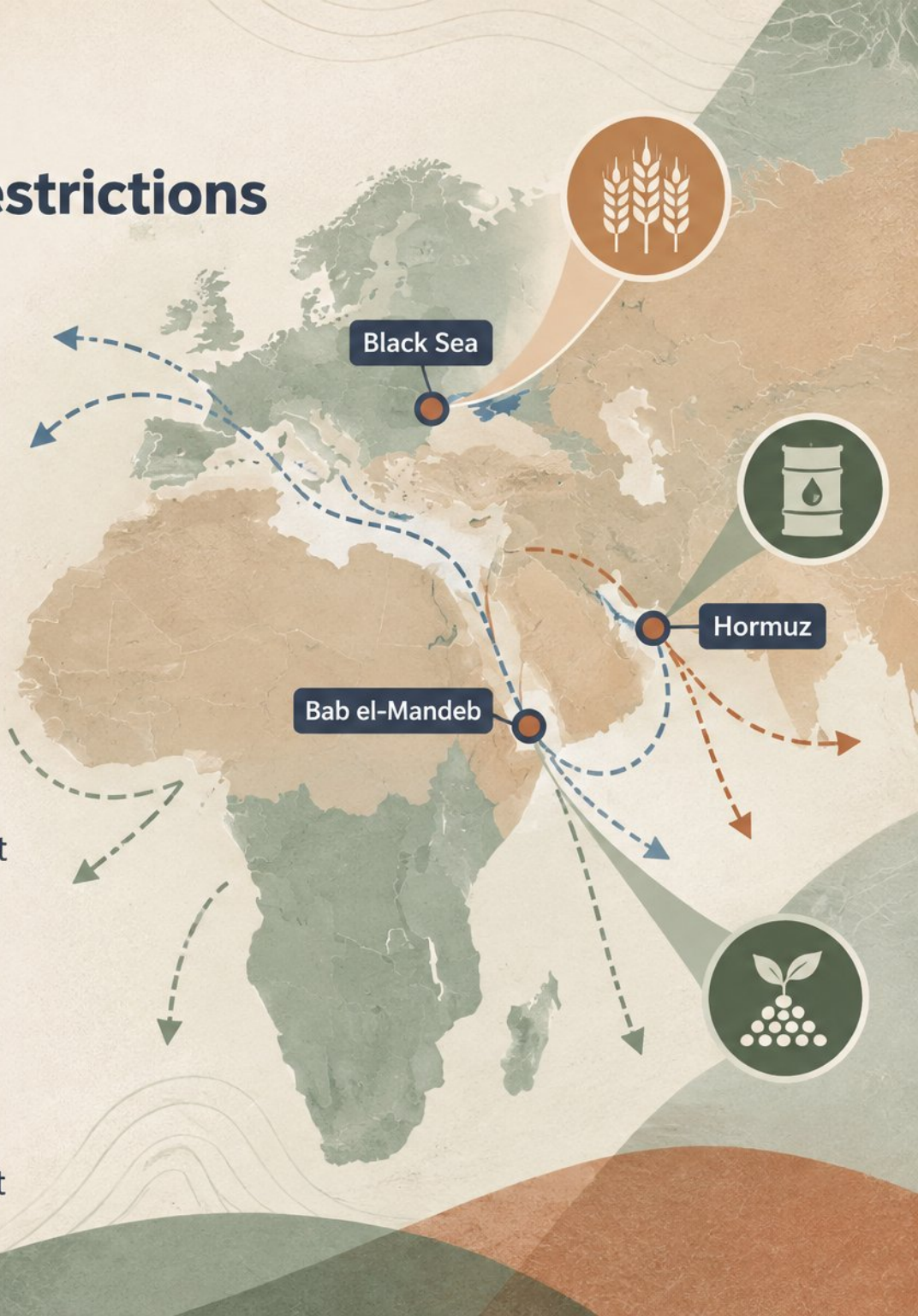


Net Importers and Net Exporters



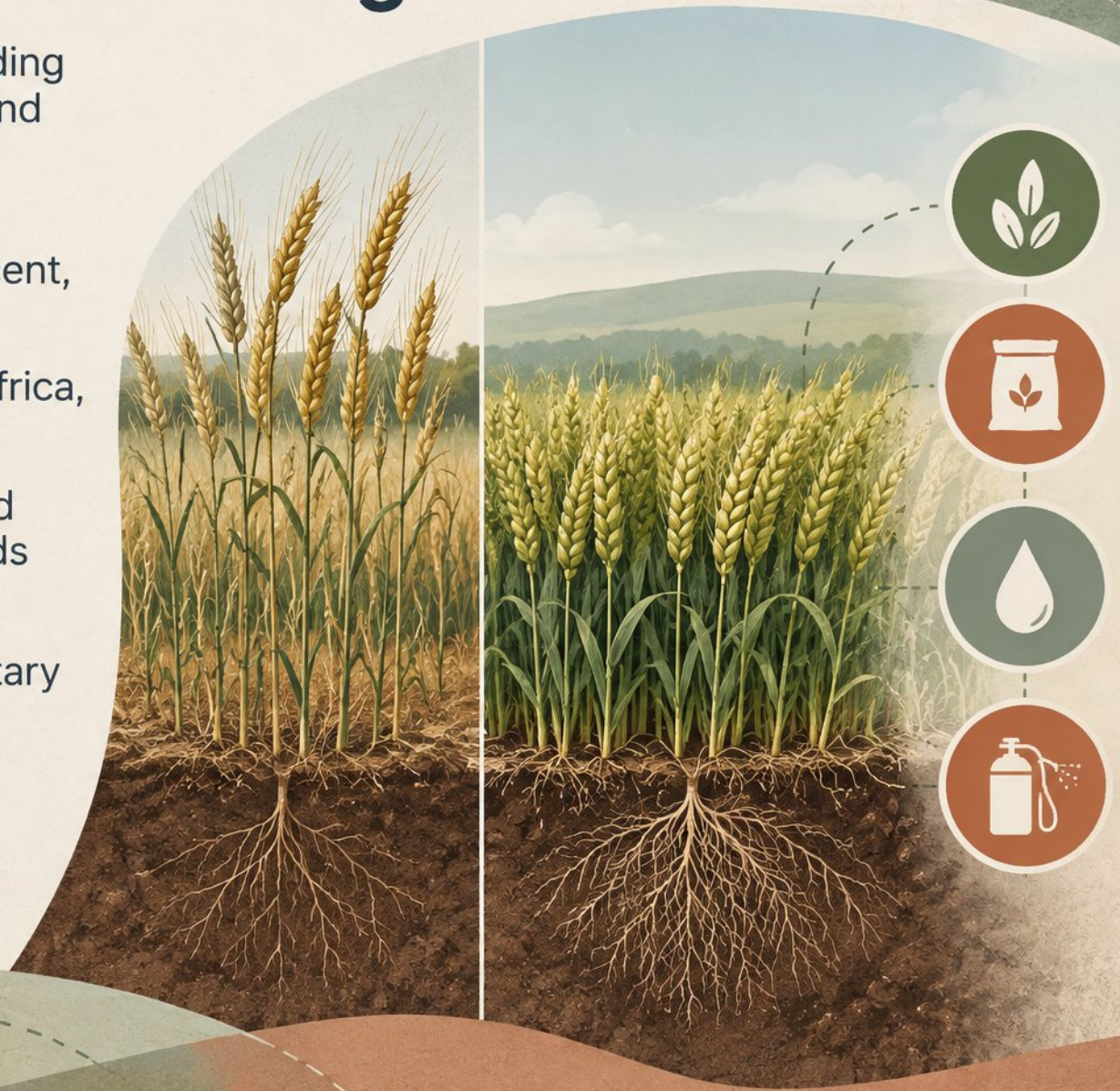
When Food Stops Moving: Chokepoints and Export Restrictions

- Three maritime chokepoints: Hormuz for fuel and fertilizer, Bab el-Mandeb and the Red Sea for Europe-Asia trade, and the Black Sea for grain
- Russia and Ukraine supply roughly one-third of global wheat trade, so Black Sea disruption echoes from Egypt to Bangladesh
- Recent shocks: Ukrainian grain exports in late 2026 ran about 29 percent below the previous season
- Fertilizer restrictions affected up to 15 percent of global fertilizer trade
- Export restrictions often backfire, amplifying shortages and price spikes, as in 2007-08 and 2022
- Shipping networks take months to stabilize, so food-system effects outlast the initial event



The Green Revolution and Technological Change

- Packages combined high-yielding varieties, fertilizer, irrigation, and pesticides
- Wheat yields in developing countries rose about 208 percent, 1960–2000
- Asia adopted far faster than Africa, widening regional disparities
- Gains concentrated in irrigated and high-rainfall areas; drylands lagged
- Success required complementary inputs: seed plus water plus fertilizer
- Today: precision agriculture, biotechnology, and debates over equity



Land Use Change, Urbanization, and Food Security

- Urban areas doubled from 33 to 71 million hectares, 1992–2015
- Cities took about 24 million hectares of fertile cropland
- Converted cropland is 30–40 percent more productive than replacement land
- About 80 percent of projected 2030 cropland loss is in Asia and Africa
- Food security: availability, access, utilization, stability





Climate Change and Sustainable Food Production

- Climate trends have cut global wheat yields by roughly 10 percent
- High-emission projections show major declines in maize, soybean, and wheat
- Adaptation—irrigation, crop switching, resilient varieties—offsets only part
- Mitigation: soil carbon, agroforestry, and lower farm emissions
- Contested pathways: sustainable intensification, agroecology, regenerative agriculture





Teaching Agricultural Geography:
Maps, Cases, and Field Connections

- Use thematic maps and FAO agro-ecological zones to reveal spatial patterns
- Anchor global processes like trade shocks in familiar local case studies
- Link crops, soils, and landscapes through field visits and virtual fieldwork
- Ask students to explain why a crop grows where it does
- Test von Thünen models against real landscapes and note where assumptions fail







Synthesis: Why Food Comes From Where It Does



- Revisit the core question through four lenses: environment, history, economics, and policy
- Recognize recurring trade-offs: productivity, sustainability, equity, and resilience
- Trace one disruption—a port closure or export ban—through trade, prices, and local access
- Apply the course framework to a food item or farming region you choose

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