

A Model of Agricultural Land Use

The Von Thunen model of agricultural land use was created by farmer and amateur economist J.H. Von Thunen (1783-1850) in 1826 (but it wasn't translated into English until 1966). Von Thunen's model was created before industrialization and is based on the following limiting assumptions:

The city is located centrally within an "Isolated State" which is self sufficient and has no external influences.

The Isolated State is surrounded by an unoccupied wilderness.

The land of the State is completely flat and has no rivers or mountains to interrupt the terrain.

The soil quality and climate are consistent throughout the State.

Farmers in the Isolated State transport their own goods to market via oxcart, across land, directly to the central city. Therefore, there are no roads.

Farmers act to maximize profits.

In an Isolated State with the foregoing statements being true, Von Thunen hypothesized that a pattern of rings around the city would develop.

There are four rings of agricultural activity surrounding the city. Dairying and intensive farming occur in the ring closest to the city. Since vegetables, fruit, milk and other dairy products must get to market quickly, they would be produced close to the city (remember, we didn't have refrigerated oxcarts!)

Timber and firewood would be produced for fuel and building materials in the second zone. Before industrialization (and coal power), wood was a very important fuel for heating and cooking. Wood is very heavy and difficult to transport so it is located as close to the city as possible.

The third zone consists of extensive fields crops such as grains for bread. Since grains last longer than dairy products and are much lighter than fuel, reducing transport costs, they can be located further from the city.

Ranching is located in the final ring surrounding the central city. Animals can be raised far from the city because they are self-transporting. Animals can walk to the central city for sale or for butchering.

Beyond the fourth ring lies the unoccupied wilderness, which is too great a distance from the central city for any type of agricultural product.

Even though the Von Thunen model was created in a time before factories, highways, and even railroads, it is still an important model in geography.

The Von Thunen model is an excellent illustration of the balance between land cost and transportation costs. As one gets closer to a city, the price of land increases.

The farmers of the Isolated State balance the cost of transportation, land, and profit and produce the most cost-effective product for market. Of course, in the real world, things don't happen as they would in a model.

Access to Markets

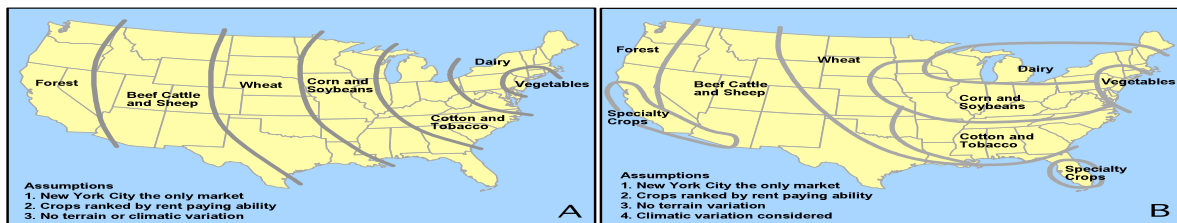
Two economic factors influence the choice of crops (or livestock) by commercial farmers: access to markets and overproduction. Because the purpose of commercial farming is to sell produce off the farm, the distance from the farm to the market influences the farmer's choice of crop to plant. Geographers use the von Thünen model to help explain the importance of proximity to market in the choice of crops on commercial farms.

The example shows that a farmer would make a profit growing wheat on land located less than 4 kilometers from the market. Beyond 4 kilometers, wheat is not profitable, because the cost of transporting it exceeds the gross profit. More distant farms are more likely to select crops that can be transported less expensively.

Application of Model

Von Thünen based his general model of the spatial arrangement of different crops on his experiences as owner of a large estate in northern Germany during the early nineteenth century. Von Thünen did not consider site or human factors in his model, although he recognized that the model could vary according to topography and other distinctive physical conditions. The model also failed to understand that social customs and government policies influence the attractiveness of plants and animals for a commercial farmer.

Inference of Von Thunen's Model to Continental United States



Truck Farming:

Horticultural practice of growing one or more vegetable crops on a large scale for shipment to distant markets where the crop cannot be grown due to climate. It is usually less intensive and diversified than market gardening where a variety of crops are grown on small farms for sale to local markets. At first this type of farming depended entirely on local or regional markets. As the use of railroads and large-capacity trucks expanded and refrigerated carriers were introduced, truck farms spread to the cheaper lands of the West and South, shipping seasonal crops to relatively distant markets where their cultivation is limited by climate. The major truck-farming areas are in California, Texas, Florida, along the Atlantic Coastal Plain, and in the Great Lakes area. Centers for specific crops vary with the season. Among the most important truck crops are tomatoes, lettuce, melons, beets, broccoli, other green vegetables, celery, radishes, onions, cabbage, citrus, potatoes, and strawberries.

Post World War II:

Truck and tobacco farming became significant on the Connecticut River terraces. Onions were a popular truck crop. Leaf tobacco, grown from a variety of Cuban imports, was planted under the shade of

cheesecloth screens. The product was found to be admirable for cigar manufacture and became a best-seller. Blueberries, grown in acidic soils on lands formerly covered with spruce, became a specialty crop in eastern Maine. In the bogs and swamps of southeastern Massachusetts, cranberries began to flourish. Rhode Island reds, a variety of chicken used for breeding, helped to inaugurate a significant interest in poultry production.

Potatoes—for the potato starch industry and for seed—became a major crop in cool, moist Aroostook County in northern Maine. The potatoes were farmed in a three-year rotation—potatoes, followed by oats, then hay, and back to potatoes. Oats and hay were fed to the animals; potatoes were strictly a money crop, a fine example of an agricultural specialty. Potato farmers fell on hard times during the 1950s and 1960s. Competition from potato farmers in Idaho and Oregon was keen. The number of farms in Aroostook County dropped from more than 4,500 to 1,300. There were a few good potato years in the mid-1970s. Another specialty area lies in western Vermont—in the Champlain Lowland. It is devoted to dairying.

Please read the attached and complete the following (on your own paper):

1) Draw Von Thunen's concentric circles on your own paper. Then, place each of the following agricultural activities in the correct circle in relation to the market (city). Then, give an example of each (corn, grain, cattle...etc)

- Cash grain and livestock
- Extensive grain farming or stock raising
- Specialty farming
- Mixed farming
- Dairying and market gardening

2) Access to markets and von Thunen

1. What are the two economic factors which influence the choice of crops by commercial farmers?
2. Which two costs is the commercial farmer most concerned with?
3. Briefly explain why "distance to market" is so critical, according to von Thunen?
4. Identify and briefly explain One point which support von Thunen's assumptions and ONE point which does not support von Thunen's assumptions noted from the reading and your associated interpretation. Please keep in mind historical context when doing this analysis. I.e. Von Thunen suggested this model 150 years ago! Also, please try to give specific examples wherever you can.

Truck farms

1. Where are truck farms typically located and what do they specialize in?
2. Briefly explain why truck farms are considered highly efficient?
3. How do you think this affects the local farmers vs. commercial farmers?