

UNIT-II

Determinants of Agriculture

I. Physical Factors

- a. Terrain, Topography, Slope and Altitude
- b. Climate – Temperature, Rainfall, Sunshine, Frost, Moisture, Drought, Snow, Wind
- c. Soil

II. Socio-Economic Factors

- a. Land Tenancy
- b. Size of Holdings and Fragmentation of Fields
- c. Consolidation of Holdings and Operational Efficiency
- d. Labour
- e. Capital
- f. Transportation Facilities
- g. Marketing Facilities
- h. Region
- i. Government Policies

III. Institutional Factors

- a. Training Institutes
- b. Research Institutes
- c. Schools and Colleges
- d. Awareness Programmes

IV. Technological Factors

- a. Mechanization and Equipments
- b. Irrigation Technology
- c. Source of Energy etc.

Von Thunen's Agricultural Land Use Model

His area of study was Mecklenburg (Rostock in Germany) in 1826. His main aim was to show, how and why agricultural land use varies with the distance from a market. He gave two basic models;

i) The intensity of production of a particular crop declines with the distance from the market.

ii) The type of land use will vary with the distance from the market.

The land use and crop intensity model of Von Thunen is based on certain assumptions which have been described as under;

i) It should have an 'Isolate Estate'(no links with the rest of the world) with one city at the centre of an agricultural area.

ii) The city should be the sole market for the surplus production from the agricultural area and agricultural area should be the sole supplier of the city.

iii) In the market of the city all the farmers should receive the same price for a particular crop at any time.

iv) Soil fertility, climate, and other physical factors do not vary over the agricultural area.

v) Farmers should be economic men whose aim is to maximise their profits and have full knowledge of the needs of the market.

vi) There is only one mode of transport(in those days horse-carts and boats). The transport network in the region-both roads and navigable canal was poor and the cost of transport increased at a constant rate.

vii) The town existed in the centre of the agricultural land which had no counter magnets in its vicinity.

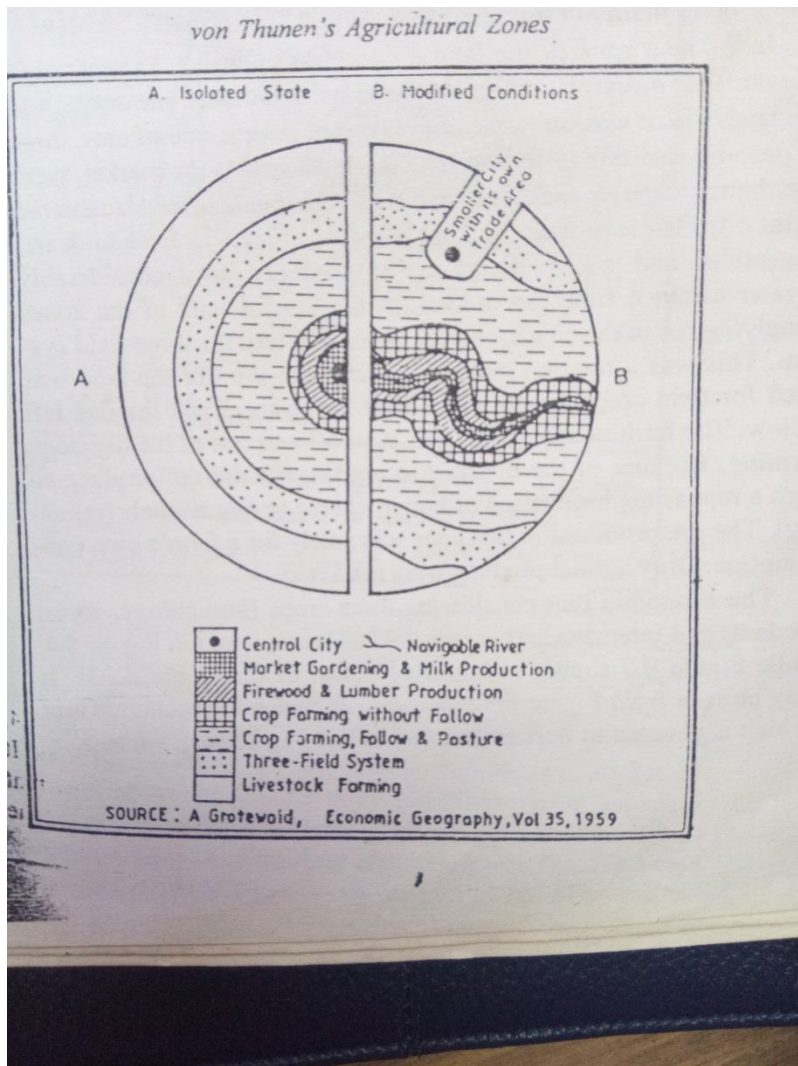
On the basis of these assumption Von Thunen constructed a land use model, having a number of concentric zones around each town. The more bulky products would be produced in the belts nearer the town. The more distant belts would specialize in products which are less in weight and volume but fetched higher price in market as they would afford to bear relatively higher transportation costs.

Zone I

The production of fresh milk and vegetables was concentrated in the zone I nearest to the city, because of perishability of such products.

Zone II

The zone II was used for production of wood, a bulky product in great demand in the city as a fuel in the early part of nineteenth century.



Zone III

The zone III was the zone of crop farming without fallow land. This was the zone where rye was an important market product. But the intensity of rye production decreasing with the distance from the market.

Zone IV

Zone IV farmers used a seven year crop rotation in which rye occupied only one seventh of the land. There was one year of rye, one of barley, one of oats, three of pastures and one of fallow.

Zone V

In the zone V, farmers followed the three fields system. This was a rotation system where by one-third of the land was used for field crops, another one-third of land for pastures and the rest was left fallow.

Zone VI

The farthest zone was of the livestock farming zone. This zone is mainly used for the purpose of livestock ranching.

Von Thunen incorporated two examples of modifying factors in his model. The effect of a navigable river where transport was more speedy and cost only one-tenth as much as on land, together with the effect of a smaller city acting as a competing market centre, Here the inclusion of two modification produces a much more complex land use pattern.

Olof Jonasson's Agricultural Land Use Model

Olof Jonasson, a Swedish geographer, modified the Von Thunen's model, relating to the economic rent of land in relation to market and means of transportation. He applied this model to the agricultural landscape patterns of Europe in 1925. He observed that in Europe and North America, zones of agricultural land use were arranged about the industrial centres. In both the continents, i.e., Europe and North America, the most intensive development of agriculture is the hay and pastures region in which the industrial centres are situated. Around these pastures are arranged concentrically the successive grades of land use-grain growing, pasturing and forestry. Jonasson advocated a model similar to the model of Von Thunen, around a theoretical isolated city in Europe.

