

## **Agricultural land use theory by Von Thunen**

Welcome students, My name is Dixita Shingadi,

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This course is Geography of Natural

Resource Development and in this

module we will be talking about

agricultural land use theory by Von Thunen.

This is the outline of the

presentations where we will be

discussing about the assumptions,

zones and criticism

faced by this theory.

Learning outcomes

Students will be able to understand the changes in

the agricultural land use pattern

as we move away from the market as

given by Von Thunen. They

will be able to know the criticisms

which is being faced by this theory.

So this theory of agricultural land use

was developed by Johann Heinrich Von Thunen in Germany.

He gave this theory in the year 1826,

You have to remember that,

This theory was given way back

in 19th century and whatever the

observations he did in his

country that is in Germany,

he tried to put forth these in

the form of this theory. So many

Observations may not be applicable

in recent times, but then this theory was widely

useful in in the past. This is the model which basically

analyses the agricultural location

patterns and the objective of

this theory is to show why and  
how agricultural land use varies  
with the distance from the market.

Basically, he wanted to show how  
these agricultural land use pattern  
changes as you move away from the market.

There are two postulates of this theory.

First one is, the intensity of production  
for particular crop declines as  
you move away from the market.

Basically, the crop intensity  
declines and the type of land use also varies  
with the distance from the market.

These are the assumptions which are  
given by Von Thunen and he stated that:

This model of agricultural land use will be  
applicable only if the following conditions exist.

Now let me remind you

again, that these assumptions,

what he had given,

which he had stated in this theory,

was given as per the conditions

that he noticed in his country

the way back in 19th century.

First, he stated that there should be

an isolate estate with only one city at

the center of an agricultural area.

This isolated estate was not having any

connection with the rest of the world.

Then the city is sole market

for the surplus production

from agricultural area and the

agricultural area is the sole

supplier of commodities to the city.

It is like, only one agricultural area

supplying products to the market and then

that city was the only soul market

for that agricultural area.

He further stated that in the

market of the city all farmers receives

the same price for a particular crop.

This are some other assumptions that

this agricultural area is an isotropic surface wherein it maintains

the homogeneity in terrain, topography and climatic conditions.

He stated that the farmers are rational

who behave as an economic man and they

conduct the agricultural activity in

such a way to optimize their profit.

Then the farmers have a full

knowledge of the needs of the market.

So whatever the market needs,

the farmers are fully aware of that.

Accordingly, they undertake the production.

Now there is only one form of transport,  
so when he said the one form of transport,  
he basically means the road  
transport that too the horse car.

At that time when this theory was put forth,  
or when this theory was published,  
only that one form of transport was  
available. The town existed in  
the center of an agricultural lane  
with no other markets in the city.

Well, this model of Von Thunen basically  
examines the location of several  
crops in relation to the market,  
and then this model is constructed  
around the concept of rent.

Rent basically means the economic  
rent and by economic rent

he basically means the net profit

which is owned by the farmer.

He stated that the net profit which

has been earned by the farmer is controlled

by various factors like production

cost per unit of the commodity.

which is stated as 'a', then it's

market price which is stated as 'P'.

The yield per unit of land which

which represented by letter 'e' and the

distance from the market to the

production point which represents K.

Whatever the net profit which farmer is

going to earn is controlled by several factors,

that is the production cost, market price,

the yield per unit of land and

the distance from the market.

He basically gave more importance

to the economic factors and then based on his assumptions,

the Von Thunen constructed a

land use model having a number of

concentric zones around each market.

He basically gave the six

zones and in each of these zones

different production is done.

This is the diagram which was given by

Von Thunen to explain this theory.

It represents the isolated state

wherein there is only one central city.

One city is there at the center

and there are different zones as you

move away from this central city.

As you move away from this market area,

the agricultural land use changes

and it is in the form of concentric circles.



Later he also tried to explain influence of some other factors also and how it changes this whole land use pattern, which we will see in the later part of the presentation.

First zone is market gardening and milk production wherein in the the production of fresh vegetables, fruits and flowers is done.

These activities are done in the zone one because they are perishable in nature and at that time that is in the year 1826 in that particular year, modern forms of transportation and the storage facilities was not available. So basically the location of these or the production of these perishable goods was done in the zone one which was closed by to the market.

Zone two is for firewood and lumber production.

Zone two is reserved for the production of wood and this wood was in great demand in the market in the 19th century because it was a source of fuel. Due to its bulkiness, it gives rise to higher transportation costs and that is why this forestry it yielded a higher location rent.

Then zone three is for crop farming without fallow.

Here rye is an important market product.

Rye is an important crop which is grown in this zone three.

As the distance from the market increases, the intensity of rye production also decreases.

Zone 4 is for crop

Farming, fallow and pastures.

Agriculture is less intensive

in this zone due to low fertility.

But farmers use a seven-year crop rotation period.

In this there was one year for rye, one year of

barley, one year of oats,

three years of pastures

and one year of fallow.

So, this is how they follow the

Seven-year crop rotation period.

Then zone 5 is 3 field system wherein

the entire field is divided into 3 parts,

where in  $\frac{1}{3}^{\text{rd}}$  of the land is used

for field crops where important crop is grown.

Since he had developed

this theory in context of Germany,

and the rye is an important

crop in that particular country.

Then  $\frac{1}{3}^{\text{rd}}$  of the land is for pastures and

the rest of the land is left fallow.

Then Zone 6, which is the outermost zone is kept for livestock farming,

It is mainly devoted for ranching, production of butter, cheese and

slaughtering of cattle's.

These are the six zones which

has been given by Von Thunen for the

isolated state. Later what he did

is after a few years he also gave

the modified conditions wherein if

there is navigable river in that area,

another small city will develop

in the market area in the vicinity.

Then the agricultural land use

pattern will change. If you compare

both isolate state and modified

conditions then you will observe

that in the modified condition it

shows the complex land use pattern

and it is not simplified as the

isolated state. It doesn't

have a concentric zone.

We have seen the assumptions and the

zones given by Von Thunen.

But there are lot of

criticisms which is being faced by this theory.

As I said in the beginning,

that this theory was developed a long back,

that is in the year 1826, and much of his observations was

true at that time. Much of his observation doesn't apply

in the present times. The existence of isolated

state and only one market

center is not applicable in the recent times.

Then demand factor was not given

importance by the Von Thunen. At present

it is very difficult to find the state in its isolated entity. Now it may not be necessary that the perishable commodity should be produced near the market because we have advanced form of transportation and we have good storage facilities.

It may not be necessary that you should produce all these perishable commodities in the zone one or very close by to the market.

Then there's the physical factors like soil fertility, slope, climate, drainage, etc was not given much importance by the Von Thunen.

Though this theory has been criticised on several grounds, but then there are certain facts

that we cannot ignore. First of all,

this theory is useful in two ways.

One thing was, he was the first

person or first geographer,

who gave the importance

to the economic factors.

Before him, the most of the geographers gave

importance for the physical factors

wherein they were focusing on the

physical factors or the geographical factors.

He was the one who gave

importance to transportation cost

or the distance from the market,

and he also developed this concept

of location rent theory which was used as a

base by most of the researchers to

carry out their further studies.

These are the references. Thank you.