Q1 - Define Tillage, objective & Type & factor affecting of tillage

⇒ Defⁿ **Tillage** → Tillage is the manipulation of soil with tools and implements for loase the surface and bringing about conditions favourable for germination of seed & growth of crop.

OR

Mechanical manipulation of the soil for preparing soil for growing & raising crops.

* **objective of Tillage** →

(1) To make the soil loose and porous
(2) To aerate the soil
(3) To have repeated exchange of atmospheric air with the soil air
(4) To increase the soil temprature
(5) To control weeds
(6) To remove stubble of the previous crop.
(7) To destroy Insects.
(8) To break hard pan.
(9) To incorporate organic manures and fertilizers into the soil
(10) To invert the soil to improve Fertility. (11) To prepare seed bed For germination of seed

AGRO111

* TYPES OF TILLAGE →

[I] on season tillage → Tillage for a crop from start of crop season to the crop harvest known as "on season tillage operation".

A] Preparatory tillage →

I) primary tillage
II) secondary tillage
III) Layout of seed bed & sowing

B] Seed bed preparation -

c] Inter tillage or Intercwlture or after tillage -

[II] off season tillage →

Tillage operation during un-cropped season for special purpose other than that for immdiately raising the crop in the season are said to off ~~seso~~ season.

[A] preparatory tillage →

Tillage operation, which are carried out before the land is made ready for sowing or before sowing of crop is called "preparatory Tillage"

The following are preparatory Tillage.

① ploughing -
② clod crushing -
③ leveling of land -
④ Harrowing -
③ Manure mixing -
⑥ Compacting the soil -

[B] **Seed bed preparation** –

After preparatory tillage the land is to be laid out properly irrigation of crops, if water, available for irrigation and for sowing seeds, planting transplanting seedling. This operation is known as "seed bed preparation"

~~These follow~~ a seed bed consist of –

1) Harrowing –
11) Preparation of irrigation layouts –
111) Sowing –
1V) covering seeds –

[C] **Inter tillage or inter culture** →

– The Tillage operations which are carried out in standing crop or in between crop rows are called as "inter culture"

– Inter tillage includes the operation –

(I) Gap Filling –
(II) Thinning –
(III) Hoeing –
(IV) Weeding –
(V) Top dressing of fertilizers –
(VI) Earthing up –
(VII) Mulching –

Q2] Define Agronomy & scope and importance of Agronomy or Explain it's Relationship other science

⇒ 'Def' **Agronomy** →

Agronomy is the branch of Agriculture science which deals with the principle & practices of crop production & field management.

OR

It is the study of plants in relation to soil and climate.

* **Scope of Agronomy** →

(1) Agronomy is a dynamic discipline and scope of Agronomy is very vast

(2) Agronomy is also concerned with the management of livestock including their feeding.

(3) Agronomy also involves agronomic research on crops under different environmental condition like varying soil, climate, irrigation, fertilizer etc

(4) Agronomy also ~~involves~~ conducting the experiments in the field crops and laboratories.

(5) It is also involves the application of research outcome into develop suitable package of practices for particular crops under given set of soil and climatic condition

(6) It includes art of soil management crop production, proper method of Tillage suitable period of cultivation

* **Relationship of Agronomy with other sciences** →

I] **Basic science** – It is science, which reveals the facts or secrets of nature e.g chemistry, physics, mathematics Botany, zoology.

II] **Applied Science** – In the science in which the theories and theories and laws propounded in basic science are applied for problems in agriculture & other fields e.g Agronomy, Agricultural chemistry, Agricultural Entomology, Agricultural Botany.

1 **Agricultural chemistry** →

– comprising soil, water, plant Fertilizer and agril chemistry has been developed from basic science of chemistry.

2 **Plant pathology & Entomology** →

– Development from botany and zoology, plant pathology is related with Agronomy for management of diseases.

3 **Agricultural Economics** →

– Development from economics and useful for maintaining farm awards farm account and marketing.

[4] **Agricultural Extension** →

- Development from sociology psychology and anthopology and mainly related with different methods.

[5] **Agricultural Botany** →

- Development from Botany and zoology and includes plant morphology plant physiology and plant breeding.

[6] **Agricultural Engineering** →

- It is the concerned with care and use of improved tools implements and farm ~~mechanical~~ Machianary required for carrying out various field operation.

Q3] Define Weed & characteristics of Weed, and method of Weed control

⇒ Def^n **Weed** →

Weed is a plant growing at a place and time where it is not desired

OR

A weed is a plant growing where it is not wanted.

* **characteristics of weed** →

(1) The weed seeds germinate early and the seedlings grow faster

(2) They being hardy complete with crop plants for plant Nutrients moisture, space & Lower crop yields.

(3) The flower earlier runs to seed in profusion and mature ahead of Therefore weeds control.

(4) many weeds are non useful unwanted and undisirable.

(3) Weeds are harmful to crops same of the weeds are also Harmful to cattle on human beings

(6) They can thrive even under adverse conditions of soil. Climate Biotics stresses.

* **Method of Weed control →**

(I) preventive measures →

(II) control measures →

a) Mechanical Methods →

b) cropping or cultural methods →

c) Biological methods →

d) chemical methods →

(III) Integrated weed Management →

(I) **preventive Measures →**

(1) use clean seed free from weed seeds

(2) Use well decomposed compost or F.Y.M.

(3) Destroy weeds before Flowering and seedling

(4) Remove weed growth

(5) Do not permit the livestock to move from weed infested area to clean area

(6) Avoid shifting of soil from infested area to clean area.

Q4] Define seed & characteristics of good quality of seed.

⇒ Def^n [seed] →

Any material use for planting and propagation, whether it is an the form of seed of food, fooder, fibre and vegetable crops or seedling

OR

The seed may be defined as a fecilized ovule consisting of intact, embryo, stored food and seed coat which is viable & has goat a capacity to germinate

* [characteristics of good quality of seed.] →

(1) It should be genetically pure
(2) should exhibits or bear the morphological characters of the particular variety or hybrid of the crop
(3) Have High germination percentage.
(4) It should be dry and not mouldy in case of cereal, pulses, oilseed crop etc.
(5) Give strong and vigorous seedling growth under normal condition
(6) Well developed, plumpy, bold, uniform in shape, size, colour and texture.
(7) clean, free from any admixture, dirt and inert material,
(8) free from naxious or objectionable or satellite weed seeds.
(9) Dry and without moulds
(10) Adaptable crop variety or hybrid fitting in the cropping system.

Q5] What do you mean by cropping system ? state Types/ classification of cropping system

⇒ **Cropping system**

Cropping system may be defined as the order in which the crop are cultivated on a piece of land over fixed period.

* **Types / classification of cropping system →**

I) Monoculture –
II) Following or follow in rotation –
III) Multiple cropping –
  a) parallel multiple cropping –
  b) sequential multiple cropping –

a] **parallel Multiple cropping →**

i) Mixed cropping –
ii) Intercropping –
iii) Relay cropping –
iv) Allay cropping –
v) multi stored cropping –

b] **Sequential Multiple cropping →**

i) Sequence cropping
  a) Double –
  b) Triple –
  c) Quadricate –
ii) Ratoon cropping or Ratooning –

* cropping system based on the following factors –

(1) This interest & right in the land
(2) Extend of Land.
  (size of holding).

(3) Nature of different holding soil & their extends. -

(4) climatic co-ordination -

(5) Availability of irrigation facility -

(6) Agronomic character of crop.

Q67 Define soil and Explain the short physical properties of soil

⇒ Def^n **soil** →

soil refers to the loose surface material of earth surface derived from the original rocks and minerals through weathering process.

* **physical properties of soil** →

1) soil texture -
2) soil structure -
3) porosity -
4) Bulk density -
5) soil water -
6) soil Temprature -

(1) **soil texture** →

- Texture refers to the composition with respect to relative proportion of sand, silt and clay in the soil
- sand partical ranges from 0.02 mm in diameter, silt particles from 0.02 mm to 0.002 mm and clay particles are less than 0.002 mm.
- If the soil contains more than 80% of silt, the soils are called as silty.

(2) **Soil structure** →

- The arrangement of individual soil particles with respect to each other into a pattern is called soil structure.
- Soil structure influences soil properties such as soil Erodibility, porosity, hydraulic conductivity, infiltration, erosion, capillary conductivity.

(3) **porosity** →

- It is defined as the ratio of the volume of pores to the total soil volume.
- Pores are macro (more than 0.6 mm diameter noncapillary) and micro (less than 0.6 mm diameter capillary)
- Sandy soil have 30% to 40% and clay soil have 50% to 60% pore spaces.
- Addition of organic matter in the soil increases the porosity.

(4) **Bulk density** →

- (gram/cm^3) It is mass of oven dry soil per unit volume of soil.
- It is a apparent density.

(5) **Soil Temprature** →

- Tillage is a helpful from maintaining optimum soil temprature.
- Tillage is useful For prepair air of water Relationship in the soil
- expaeing the soil to heat of the sun.

(6) **Soil water** →

- Tillage is useful for increasing infiltration moisture retentive capacity of the soil due to increase in pore spaces.
- It also enable the free drainage upto water tube.

Q 7 Define seed dormancy. Write a Notes on seed dormancy & write it's types.

⇒ Def^n **seed dormancy** →

seeds can be dormant if they are viable, but do not germinate even under favourable conditions

(i) seed dormancy is helpful because it prevents pre-harvesting sprouting.

(ii) If the crop is cought in rains at maturity stage, the seed will not germinate.

(iii) Case of no dormancy the seeds will germinate in the field if cought in rains maturity

(iv) It is also a bad character as seeds can not be used for so using immediately unless this period is over by breaking dormancy.

* **Types of seed dormancy** →

(1) Innate dormancy →

(2) Enforced dormancy →

(3) Induced dormancy →

[1] Innate Dormancy →

- May be due to the genetical characters of the seed or due to hard seed coat.

[2] Enforced dormancy →

- Due to the conditions of deficient oxygen, excess CO_2, deep placement.

[3] Induced dormancy →

- This Type of dormancy results due to sudden physiological change in seed.

Q8] Define seed vaibility & explain its Types OR Write down note on "seed vaibility"

⇒ Def^n [seed vaibility] →

seed vaibility means that a seed is capable of germinating and producing a normal seedling.

(OR)

It is the ability or capacity of the seed to germinate.

* [Types of seed vaibility] →/ stages

(1) Nucleus seed –
(2) Breeder's seed –
(3) Foundation seed –
(4) Registered seed –
(5) certified seed –

(1) **Nucleus seed** →

i) It is produced and maintained by the respective plant breeder at the main research station.

ii) The plant breeder selects seed of individual plants with true morphological and genetical character of variety of perticular crop.

iii) Thus seed's are of high genetically purity and being very small in quantity are often costly.

(2) **Breeder's seed** →

i) It is very important class of seed

ii) They are the seeds or vegetative propogation materials directly produced or controlled by originating plant breeder.

iii) It is multiplied at the receptive research station and if required on other research farms, agricultural college farms etc

(3) **Foundation seed** →

i) The seed certification authority staff insect the plot from time to time.

ii) The off type plants, disease and pest affected plants and weeds are removed for avoiding their mixture in seed.

iii) As per seed act, the seed is tested for it's purity, germination and moisture percentage.

(4) Registered seeds →

- Registered seeds are the progeny of the foundation seeds, which are multiplied on the farms of registered under guidance and supervision of the seed certification staff.
- If the quantity of foundation seed is less than requirement then this stage of seed multiplication is followed.

(5) Certified seeds →

- The term certified seed production is widely used to denote the production of commercial seed sold to the farmers for raising crops.
- The seed is tested for its purity germination and moisture content as per the seed certification standards.

Q9] Define Harvesting & Explain the method of Harvesting.

⇒ Def^n Harvesting →

The process of separating crop plants from the field is known as "Harvesting.

* Method of Harvesting →

1] cutting the plants close to the ground level →

In this method the cereal crops like Jawar, Bajara, wheat maize and paddy are cut close to the ground level by sharp sickle

(2) picking of pods or Fruits →

- pods of the pulses crops like mug, udid, pea, etc. are picked up When they are matured. The fruits of Brinjal tomato, bhendi and chilies are also harvested by picking method.

(3) Digging the produce from the soil →

- crops like turmeric, ginger, groundnut, sweet potato, onion and garlic are harvested by digging the soil with the help of kudali and produce is collected from the soil cleaned & stored.

(4) Mechanical Harvesting →

- The groundnut and the potatto digger are used for harvesting of groundnut and potato crop. By using the power machinery the crops like wheat and sugarcane also Harvested.

Q10] Write a Notes on "seed treatment".

⇒ * OBJECTIVE OF SEED TREATMENT →

(1) control of Disease –

(2) convenience in sowing –

(3) Quicker germination –

(4) Nitrogen fixation.

(5) protection against insects –

(6) Including earlines –

(7) Inducing variation –

(8) Increasing yield –

* Different Field crops →

1) cotton – cotton see are subjected to different treatment for easy and convenient sowing

a) cow dung paste treatment –

b) Sulphuric acid treatment –

c) cotton seeds are also treated with 1% mercurial compound such as agrosan @ 2gm/kg of seed for control of seed borne disease like wilt.

11) coriender → see are spited in two lobules under slight pressure for even germination.

111) Gaelic – clove are separated before sowing in order to provide space.

Q11] Give the classification of crops with suitable Example

→ * classification of crops –

(1) classification on the basis of climate →

a) Tropical crop or warm season crops – The crops, which require warm climate or High temp are called Tropical crop e.g Rice, maize, Sorghum.

b) Temprate crops or cool season crops →
The crops which require cool and dry climate or low temp. and generally grown in winter season, are called temprate crops. e.g Wheat, barley, oat, mastard.

(2) classification on the basis of season →

i) kharif crop – e.g Rice, Ragi, maize, sorghum
ii) Rabi crop – e.g Wheat, barley, mustard
iii) Summer crop – e.g summer groundnut, green gram, gourds, okra etc

(3) classification on the basis of life of a crop →

i) Seasonal crop – e.g Rice, pearl millet, maize, sorghum, wheat, oat.
ii) Two seasonal crop – e.g turmeric, ginger, long staple cotton.
iii) Annual crop – e.g sugarcane
iv) Biennial crop – e.g Banana, papaya etc
v) perenial crops – e.g mango, guava, orange

(4) classification on the basis of source of water →

i) Rainfed crop –
- The crop which is grow only on rain water is also Rainfed crop
e.g rice, sorghum, maize, pearl millete.

(3) classification on basis of root system →

i) Tap rooted crop – e.g cotton, legumes, Red gram, black gram, cow pea
ii) Adventitious Root crop – e.g cereals, wheat, sorghum, maize

(6) classification on the basis of economic importance →

i) Cash crop - e.g cotton, sugarcane, coffee
ii) food crop - e.g Lucern, berseem, maize

(7) classification on the basis of use or Agronomic classification →

i) Cereal or Grain crop - e.g Rice, wheat, maize, oat barley
ii) Legume or pulse crop - e.g pigeon pea, black gram, horse gram
iii) forage or fodder crop - e.g sorghum, maize, Bajara, cowpea
iv) Root crops - e.g Radish, carrot, sugarbeet
v) Tuber crops - e.g potato, sweet potato
vi) Fibre crop - e.g cotton, sunhemp, linseed
vii) sugar crops - e.g sugar cane
viii) oil seed or oil crops - e.g castor, niger.
ix) Drug crops - e.g tobacco
x) spice crops or spices → e.g turmeric, ginger
xi) vegetable crops → e.g Brinjal, tomato, cabbage, bhendi
xii) Green manure crops - e.g dhaincha

(8) Botanical or Morphological or Taxonomic classification

i) Graminae - e.g All cereals, Rice, maize, wheat
ii) Leguminoceae - e.g All legumes, red gram
iii) Cruciferaceae - e.g mustard, radish
iv) cucurbiticeae - eg: cucumber, pumpkin
v) Liliaceae - eg. onion, garlic
vi) Solanaceae - e.g potato, tobacco.
vii) malvaceae - e.g cotton, okra
viii) Compositae - sunflower, safflower
viii) convolvulaceae → sweet potato

Q12] Explain the Method of sowing

→ (1) Brodcasting –

(2) Drilling or line sowing –

(3) Dibbling –

(4) Transplanting –

(5) planting –

(6) putting seeds in plough furrow →

(1) Brodcasting →

- It broadcasting methods, seeds are spread uniformly over well-prepared land and is cover by ploughing or planking
- It is scattering or spreading of seed on the soil by hand all over the field & then covering by soil with light implements.

(2) ~~Drilling or line sowing~~ →

(3) Dibbling

- In this method, the seeds are placed in a furrow, pit or hole at a predermined spacing with a dibbler, planter or more commonly by hand
- This method is ideal for crops such as groundnut, castor, maize, sugarcane, potato, onion.
- This method is suitable for crops requiring specific geometric area for canopy development.

(2) Drilling or line sowing →

- To overcome the problems of broadcasting drilling the seeds in line come into practice

- covering of seeds is necessary when indigeneous or two-bowl seed drill is used
- cost of mechanical seed drill is more
- This adopted for sowing crops like sorghum, pearl millet, upland rice, wheat, oat.

(4) **Transplanting** →

- When more than one crop is to be grown in a year on the same piece of land, the time occupied by each crop has to be reduced.
- The seedling growth in the early stages is very slow.

(5) **Planting** →

- some of the crops ar sown by using vegetative plant parts and the method of sowing in such crop is known as planting.
- preparation of irrigation layouts is essential for planting & giving irigatn to the crop.

(6) **putting seed in Plough furrow** →

- This method is followed for crops like chickpea and wal in some areas for better utilization of residual soil moisture
- The seeds are dropped behind the plough in the plough furrow with the help of manual Labour and are covered by Successive turn of ploughing

Q 13] Agroclimatic zones of Maharashtra

⇒ * AGROCLIMATIC ZONES OF MAHARASHTRA →

Zone	Head office
(1) South Konkan Costal zone	— Vengurla
(2) North konkan costal zone	— Karjat
(3) Western Ghat zone	— Igatpuri
(4) Western Maharashtra plain zone	— Pune
(5) sub montane zone	— Kolhapur
(6) Western Maharashtra Scarcity zone	— Solapur
(7) Central Maharashtra plateau zone	— Aurangabad
(8) central Vidarbha zone	— Yawatmal
(9) Eastern Vidarbha zone	— Sindewai

Q 14] Role of Agromist in Agriculture

⇒ * Role of Agronomist →

(1) A person who expert in Agronomy is known as 'Agronomist'

(2) The role of Agronomist in Agriculture is very Important.

(3) Agronomist aims at obtaining maximum production at minimum cost.

(4) knowledge used for higher crop production

(5) He is concerned with production of food, fibre to meet the needs of increasing population.

(6) Agronomist carry out research by considering soil, climate, crop / variety

(7) He is key person with working knowledge of all agricultural diciplines.

Q15] Enlist different tillage implements & explain the factor affecting tillage operation.

⇒ * Tillage Implements →

(1) Wooden (indigenous or deshi) plough –
(2) Mould board plough –
(3) Disc plough –
(4) chisel plough puddler –
(5) Rotary plough or Rotary hoe –
(6) cultivators Blade harrow –
(7) puddler –
(8) Iron or inversion plough –
(9) subsoil plough –
(10) Ridge plough –
(11) Blade harrow –
(12) Norwegian harrow –

* Factors affecting the tillage →

(1) previous crops →

- The types of crop decides the type and extent of preparatory cultivation required by the land.
- If the land is follow for several years and to bring under cultivation deep tillage with is required.

(2) Type of soil →

- Fine textured soil like clay, poorly drained soils need deep cultivation to improve airation, course sandy or loamy soils may not need deep cultivation
- Weed infested soil needs deep cultivation

(3) Weed Intensity →

- Weed infested fields needs deep cultivation similarly land infested perenial deep rooted weeds like kans etc.

(4) crop to be grown →

- Deep cultivation also depends upon types of crop to be grown.
- The crops which requires firm seed bed and which fibrous root system like jawar, do not deep cultivation.

(3) climate →

- climate influence the moisture content in the soil.
- In low rainfall area deep cultivation is necessary to conserve more moisture.

(4) Types of farming →

- crop under rainfed area are fully dependent on rain water.
- only one crop during a year is grown.

Q16] Define soil productivity. and Enlist the factors affecting soil productivity

⇒ Def^n soil productivity →

It is the capacity of the soil to produce crop with specific systems of management and it's Expressed in terms of Yields.

* Factor affecting soil productivity →

A] Internal factors –

- the genetic or hereditary factors which can not be Manipulate.

B] External factors →

(1) climatic factors –

(1) precipitation –
(II) Temprature –
(III) solar radiation –
(IV) Wind velocity –
(V) atmospheric gases –

(2) Edaphic factors –

(3) Biotic factors –

I) plants –
II) Bacteria –
III) Animals –

(4) physiographic factors –

(5) Anthropic factors –

Q17] Define Fertilizer. Enlist different Methods of Fertilizer application.

⇒ Def^n [Fertilizer] →

Any natural or manufactured material dry or liquid added to the soil in order to supply one or more plant nutrients.

* [Method of Fertilizer application] →

(I) Solid forms –

A] Broadcasting – At sowing and top dressing

B] placement method – plough sole, deep, subsoil

C] Localized placement –
- Contact
- Pellet
- Side dressing
- band - Hill and rows.

B] Liquid forms →

- starter solution -
- foliar application -
- direct application to soil -
- application of fertilizer through Irrigation water.

Q18] Difference between soil fertility & soil productivity & Intercropping & mixed cropping

→ ① [soil fertility]

I) It is considered as an index of available nutrients to plants.

II) It is one of the Factor for crop production

III) It can be analyzed in the laboratory

IV) It is potential status of the soil to produce crops

[Soil productivity]

I) It is a broader term to indicate yield of crops

II) It is interaction of all factors that determine the magnitude of yields

III) It can be assessed in the field under particular climatic condition

IV) It is resultant of various factors influencing soil management.

② [Intercropping]

I) The main object to utilize the space left between two rows of main crop.

II) There is no competition between main & sub crop

III) subsidiary crop are of short duration and they are harvested earlier than main crop.

IV) Both the crops are sown in rows and sowing time is similar

[Mixed cropping]

I) The main object is to get at least one crop under any climatic hazard.

II) Almost all crops compete with one another

III) The crops are almost same duration

IV) The crops may be broad casted.

Q19] Give detail classification of manures and fertilizers with suitable example

⇒ 1) **Bulky organic Manures** →

Bulky organic manures contain small percentage of major (N, P & K) Nutrient they are applied in large quantity.

2) **Concentrated organic manures** →

concentrated organic manures Have higher percentage of major nutrient content than bulky organic manure.

i) plant origin a) Non edible oil cake
b) Edible oil cakes

ii) Animal origin - e.g Blood meal, Fish meal

* **Fertilizer** →

Fertilizers are industrially manufactured chemicals containing plant Nutrients. Nutrients content is higher in fertilizer than in organic manures and nutrient availability is faster.

classification of fertilizers

(1) straight fertilizers → e.g Urea, Ammonium sulphate

(2) complex fertilizers → contain two or three primary plant Nutrient. The primary Nutrients are chemically combined e.g Diammonium phosphate, nitrop-phosphate.

(3) Mixed fertilizers → are physical mixture of straight fertilizers. Fertilizers are also grouped on the Nutrient in the fertilizers.

a) **Nitrogenous fertilizer** →

i) Nitrogen fertilizers → e.g sodium nitrate, calcium Nitrate,

ii) Ammoniacal fertilizers – e.g Ammonium sulphate, Ammonium chloride.

iii) Nitrate Ammoniacal fertilizers – e.g Ammonium nitrate, calcium amonium nitrate

iv) Amide fertilizers – e.g urea, calcium cynide.

(b) **Phosphatic fertilizers**

i) phosphatic fertilizer containing water soluble phosphatic acid – e.g single super phosphate, double super phosphate

ii) phosphatic fertilizer containing citric acid soluble phosphoric acid e.g basic slag.

iii) phosphatic fertilizer containing phosphoric acid. e.g rock phosphate

(c) **potash fertilizers** →

– potash or potassium containing fertilizer is called potassic fertilizer.

i) chloride form – e.g potassium chloride, mop

ii) Non chloride form – e.g potassium Nitrate

Q20] Define Tilth. give the characteristics of good Tilth.

⇒ Def^n **Tilth** →

It is the physical condition of soil resulting from tillage

* **characteristics of good tilth** →

– soil should be loose, porous, friable and free drainage.

- Micro and macro pores should be in equal proportions which facilitate sufficient amount of moisture
- size of soil aggregates is about 1-6 mm
- It should be favourable for proper germination of seeds, emergence and proper growth and development of crop.

Q 21] Difine Tillage. Effect of Tillage.

⇒ Def^{n} [Tillage] → Tillage is a manipulation of soil with tools and implements for loose the surface and bringing about conditions favourable for germination of seeds.

* [Effect of Tillage] → [A] Beneficial Effect

(1) Effect on physical properties of the soil –

a) pore space –
b) soil structure –
c) Bulk density –
d) soil water –
e) soil temprature –

(2) Effect on chemical properties

(I) It accelerates weathering of soil –
(II) Leaching of toxic salts –
(III) Improve the availability of Nutrients –
(IV) Increase efficiency of applied material –

(3) Effect on Biological properties –

I) management of weeds
II) Management of insect pest & Disease
III) proper functioning of plant roots

(4) Effect of Tillage on crop growth –

I) Improve aeration

II) make the soil loose & porous wich increase infiltration

III) Destroy insect / pests

IV) Improve structure of soil

V) making favourable conditions for crop growth

[B] Bad Effects →

I) compaction of soil due to heavy machinery

II) excessive tillage formation of powdery condition of soil

III) Inter tillage may damage crop.

IV) Import tillage may effect on crop yield