

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ЦЕНТРАЛЬНОУКРАЇНСЬКИЙ НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ

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Дані методичні вказівки спрямовані на розвиток навичок і вмінь читання текстів за фахом і можуть бути використані як для аудиторної роботи під керівництвом викладача, так і для самостійної роботи.

Рецензент: доц., к.п.н. Миценко В.І.

Unit 1

1. Study the following words and word-combinations. Translate sentences into Ukrainian.

1. soil – ґрунт. земля
2. top soil (surface soil, surface layer of the soil) – верхній орний шар землі
3. soil level – поверхня землі
The surface layer of the soil is called a top soil.
4. subsoil (underground) – підґрунтя, нижні шари ґрунту
5. subsurface – підорний шар, верхня частина підґрунтя
Subsoil or underground is under the surface layer of the soil.
6. sterile subsoil – стерильне (безплідне) підґрунтя
7. fresh layer of soil – свіжезораний шар землі
8. soil weathering – ґрунтове вивітрювання
9. to cultivate the soil – обробляти землю (культивувати)
10. cultivation (tillage) – обробка землі

Tillage is very important and necessary for good crop.

11. fine soil particles – дрібні часточки землі
12. to wash down the soil particles – змивати часточки землі

The fine soil particles can be washed down through the soil during the rain.

13. to plough – орати, борознити
14. to plough deep – проорювати
15. to plough up – орати, розпушувати
16. to plough out – викорчовувати

To plough the soil successively you must carefully correct the machine.

17. ploughing – оранка

Ploughing is the cultivation of the soil.

18. autumn (fall) ploughing – зяблева оранка
19. deep ploughing – глибока оранка
20. early ploughing – рання оранка
21. initial ploughing – первинна оранка

The effectiveness of cultivation is often dependent on the quality of the initial ploughing.

22. plough – плуг

The earliest cultivations were done with a wooden plough.

23. single-furrow plough – однокорпусний плуг

Modern ploughs are ranged from single-furrow to eight- and ten-furrow ploughs.

24. to draw (drew, drawn) the plough – тягнути (волочити) плуг

The first wooden ploughs were drawn by men and oxen.

25. implement – знаряддя, пристрій

Plough is the earliest type of tillage implements.

26. crop – с/г культура, врожай

27. to grow (grew, grown) – рости, вирощувати

28. cropland – оброблена земля

29. croppable – придатний до обробітку

To grow good crops it is necessary to cultivate the soil between each crop.

30. root – корінь

31. to thrive – буйно розростатися

In the cultivated soil crop roots are able to thrive.

32. seed – сім'я, зерно; засівати, сіяти

33. seedbed – ґрунт, підготовлений до сівби; насіннєве ложе

34. to create a seedbed – готувати ґрунт для посіву

35. to bury the seeds – заорювати, загортати насіння у ґрунт

Ploughing is the most important cultivation in the process of creating a seedbed.

36. weed – бур'ян, дикоросла рослина

37. weedy – засмічений бур'янами

38. weedy – поле, засмічене бур'янами

39. weed control – боротьба з бур'янами

Controlling annual weeds is a very important task.

40. rot – гниль, гниття, гнити

Many weeds rot when buried deep into the soil.

41. to germinate – проростати

42. field germination – польова схожість

Seeds germinate only in proper conditions when they are near the surface.

43. rainfall – опади, дощ

44. annual rainfall – річна сума опадів

45. daily rainfall – добова кількість опадів

46. to exceed – перевищувати

47. transpiration – випаровування, транспірація (води рослинами)

48. evaporation – випаровування, перетворення на пару

Sometimes the rainfall exceeds evaporation and transpiration during autumn months.

49. plant – рослина

50. plant food – поживна речовина

51. to facilitate – полегшувати

52. to facilitate weeding – полегшити прополку

We must leave as level a surface as possible to facilitate the movement and work of subsequent machines.

53. lubrication

– змащування

54. trouble-free work

– безперебійна робота

2. Translate the following into Ukrainian:

A

B

1. to wash the fine soil particles

1. to prevent soil weathering

2. to invert the top soil

2. to grow good crops

3. croppable land

3. annual rainfall

4. to facilitate the movement of the plough

4. the initial ploughing

5. to exceed the movement of the machine

5. weed control

6. the first wooden plough

6. field germination

7. to control annual weeds

7. to draw the plough

8. the cultivation of the soil

8. early ploughing

3. Read the names of the following tillage operations and arrange them according to the order corresponding operations are carried out in the process of cultivation:

To bring a fresh layer of soil to create a seedbed, to cultivate the soil, to control weeds, to plough, to loosen the soil, to bury seeds (fertilizer), to expose sterile subsoil, to invert the soil.

4. Fill in the blanks with the missing words. Translate the following sentences into Ukrainian:

1. The surface layer of the ... is called a ... soil.

2. A subsoil or underground is under the ... of the soil.

3. For centuries people have realized that cultivation of the ... is very important for good

4. The fine soil ... can be washed down during the

5. To prevent ... weathering you must ... the top soil completely.

6. The effectiveness of cultivation is often dependent on the quality of initial

7. Ploughing is done with a

8. The complete inversion is very effective in controlling annual

9. Sometimes ... exceeds evaporation and transpiration during the autumn months.

10. We must leave as level a surface as possible to ... the movement and work of the plough.

5. Make up all possible word-combinations using the words from the left and the right columns:

1. trouble free

a) particles

2. good

b) movement

3. initial

c) soil

- | | |
|-------------------|---------------------------------|
| 4. annual | d) crop |
| 5. fine | e) weeds |
| 6. surface | f) control |
| 7. top | g) operation |
| 8. weed | h) implement |
| 9. tillage | i) plough |
| 10. modern | j) weathering |
| 11. soil | k) work |
| 12. to control | l) the top layer of the soil |
| 13. to grow | m) the movement of the machines |
| 14. to cultivate | n) good crops |
| 15. to facilitate | |

6. Read the following text and tell (in Ukrainian) what aims are achieved by good cultivation of the soil:

Ploughing

Speaking of farm machines the plough must necessarily be mentioned in the first place. It is the earliest type of tillage implements. For centuries men have realized that to grow good crops successively on the same area of land it is necessary to cultivate the soil between each crop. The earliest cultivations were done with a pointed piece of wood drawn by men or oxen. It is from this primitive beginnings that the modern plough and techniques of ploughing have developed.

Ploughing is the first and possibly the most important cultivation in the process of creating a seedbed, for the extent and effectiveness of subsequent cultivation is often dependent on the quality of the initial ploughing. When ploughing a field the aims to achieve are:

1. To loosen the surface layers of the soil, and so allow a free movement of air and water and stimulate bacterial activity. This creates a medium in which the crop roots are able to thrive.
2. To invert the top soil completely to bring a fresh layer to the surface for weathering. It is important to avoid going too deep and exposing sterile subsoil. This complete inversion is also very effective in controlling annual weeds, for these will only germinate when near the surface and many rot when buried more than a few inches. With the rainfall which sometimes exceeds evaporation and transpiration during the winter months, some of those plant foods and very fine soil particles that tend to be washed down through the soil, are also brought back to the surface.
3. To leave as level a surface as possible to facilitate the movement and work of subsequent machines.

It was at the end of the seventeenth century when the metal single-furrow plough appeared in our country. Modern ploughs are lighter and stronger and they also range from a single-furrow to eight-and ten-furrow ploughs. Now ploughs are mounted directly to the tractor either by the use of mechanically or hydraulically controlled attachments. Correct operation and timely lubrication of the plough ensures trouble-free work and long service life.

7. Make a plan of the text. Give a title to each part.

8. Read the sentences expressing the main idea of each part.

9. Answer the questions on the text:

1. What was the earliest method of cultivation the soil?
2. How were the earliest cultivations done?
3. What is the effectiveness of cultivation dependent on?
4. What creates a medium in which crop roots thrive?
5. How can you avoid exposing sterile subsoil?
6. What is the importance of complete inversion of the top soil?

10. Speak on:

1. the origin of the plough;
2. the main stages of the cultivation process.

11. Make a written translation of the following text using a dictionary:

Ploughing is the basic tillage operation. Its essential feature is that a layer of soil is separated from the underlying subsoil and is inverted, so that any vegetation or manure present on the surface is buried and a layer of soil from below is brought to the surface, where it is exposed to the action of weathering agents and of other implements. The ploughing land is laid up in furrow slices, the type of slice depending upon the type of plough used and the nature of the soil. Ploughing is often the most important operation of the arable farmer, not only because of the basic nature of the work, but also from the standpoint of the power required.

Unit 2

1. Memorize the following adjectives and corresponding nouns:

- deep (глубокий) – depth (глубина)
wide (широкий) – width (ширина)
long (довгий) – length (довжина)
strong (сильний) – strength (сила)

2. Fill in the blanks with the proper words from task 1:

1. While ploughing it is necessary to avoid going too ... into the soil.
2. The ... of the field is about 3 km, and the ... is 200 m only. It is very ... , but it is not so

3. With this device we can regulate the ploughing

4. This machine is very It can work under stony or hard conditions.

3. Memorize the following words and word-combinations. Translate the sentences and word-combinations into Ukrainian:

1. to mount – монтувати, встановлювати, прикріплювати, навішувати

2. to mount directly – монтувати, навішувати прямо (безпосередньо) до чогось

3. to mount the plough behind the tractor – навішувати плуг на трактор

4. mounted – навісний

A modern plough is mounted directly behind the tractor.

5. mounting linkage – навісний пристрій, зчеплення

6. three-point mounting linkage – трьохточковий навісний пристрій

7. to attach – прикріплювати, приєднувати

A plough can be attached to the three-point mounting linkage.

8. to raise – підіймати

9/ to lower – опускати

The linkage can be raised and lowered hydraulically.

11. to penetrate – проникати

The function of the device is to penetrate and undercut through the soil.

12. unit – вузол, агрегат

13. principal (main) – головний, основний

the principal units of the plough, an important unit, the principal agricultural machine, the main units in contact with the soil

14. to suit – підходити, відповідати

15. suitable – підхожий

a suitable device, to suit hard and stony conditions, to suit the type of soil

16. to replace – замінювати

to replace the unit, to replace the detail with a new one

16. to adjust – регулювати, упорядковувати

17. adjustment – регулювання

18. accurately – точно

Before ploughing it is necessary to make all the adjustments accurately. The function of each part must be understood, so that adjustments can be made accurately.

4. Memorize the names of the main units of the plough. Translate the sentences into Ukrainian:

1. frame – рама

The frame is one of the main units of a plough. A typical mounted plough consists of a frame which is attached to the tractor.

2. leg – стійка плуга

3. frog – башмак

The parts of the plough are bolted to the frog, which in its turn is bolted to the leg of the plough. The plough leg is carried (підтримується) by the frame.

4. coulter – різак, ніж плуга

The function of the coulter is to make a vertical cut and divide the soil from the unploughed land. There are different types of coulters: a knife coulter (чересловий ніж), a disk coulter (дисковий ніж). Knife coulters may be used under very hard or stony conditions. Disk coulters are used when the knife type would cause difficulty by blocking.

5. skim coulter (skimmer) – передплужник

The skim coulter is used where land is to be worked down to a seedbed immediately (негайно, одразу) after ploughing.

6. share – леміш

7. digging share – підкопуючий леміш

The share is a triangular piece of steel or cast iron. The function of a share is to penetrate and then undercut through the soil at the desired depth.

8. bar point share - долотоподібний леміш

Under hard or stony conditions ploughs with bar point shares may be more suitable.

9. share tip (share point) – носок лемеша

The share tip is slightly turned down to help it penetrate.

10. share pitch – самозаглиблення лемеша

11. to protrude – висуватися, стирчати

The point protrudes to provide the suction and lead to land.

12. mouldboard – відвал плуга

The mouldboard is the part of the plough which turns the soil over. The mouldboard is a long piece of hard steel.

13. landside – польова дошка

The main components of a plough in contact with the soil are the coulter, the share, the mouldboard and the landside.

5. Read the following sentences containing a short description of the principal parts of a plough and their functions. Tell which component is meant in each case. The words in the right column will help you:

1) This is a triangular piece of steel or cast iron.

coulter

The function of this component is to penetrate and then undercut through the soil at the desired depth.

- | | |
|---|---------------|
| 2) The function of this part of a plough is to make
A vertical cut and divide the soil from the unploughed land. | share |
| 3) This is a part of a plough to which the share,
mouldboard and landside are bolted. | disk coulter |
| 4) This part of a plough has a shape of a disk.
It is used where the knife coulter would cause difficulty by blocking. | knife coulter |
| 5) The frog is bolted to this part of a plough.
It is carried by the frame. | mouldboard |
| 6) The job of this part is to make a vertical cut.
It is used under very hard or stony conditions. | frog |
| 7) This unit is attached to the tractor and it carries
the leg of a plough. | frame |
| 8) This is a part of a share. It is slightly turned down.
It provides the suction and lead to land. | skim coulter |
| 9) This part is used where land is to be worked down
immediately after ploughing. | share tip |

6. Fill in the blanks with the prepositions (of, for, to, through, at, under, with) and translate the following sentences into Ukrainian:

1. The plough consists ... some parts such as coulters, a share, a mouldboard and a landside.
2. The working surface ... the plough is suitable ... well cultivated soil.
3. The share, mouldboard and landside are all bolted ... the frog, which in turn is bolted ... the leg ... the plough.
4. The share is to penetrate and then undercut ... the soil ... the desired depth.
5. ... hard or stony conditions, ploughs ... bar point shares may be more suitable.

7. Translate the following sentences paying attention to the infinitive:

1. The share is a triangular piece of steel or cast iron. Its job is to penetrate and undercut through the soil at the desired depth.
2. The point of a share protrudes to provide the suction and lead to land.
3. The plough is the earliest type of tillage implements invented to be drawn by animal power.
4. To get useful and long life of a plough it is necessary to keep it in good order.
5. The plough is designed to cut and lift the soil, turn it over and bury the surface growth.
6. The purpose of a coulter is to help penetration by cutting the hard soil surface, grass roots and other surface covering and to prevent the surface trash packing around the plough leg.

8. Read the following text and tell (in Ukrainian) about the construction and function of a share tip:

The modern plough is mounted directly behind the tractor attached to the three-point linkage, being raised and lowered hydraulically. The function of each part of the plough must be understood, so that adjustments can be made accurately.

The typical mounted plough consists of a frame, which is attached to the tractor. The main components in contact with the soil are the coulter, the share, the mouldboard and the landside.

The coulter is carried by the frame of the plough. The share, mouldboard and landside are all bolted to the frog, which in turn is bolted to the leg of the plough. The plough leg is carried by the frame.

The share is a triangular piece of steel or cast iron. Its job is to penetrate and then undercut through the soil at the desired depth. When new, the share tip is slightly turned down to help it penetrate. This is called share pitch or share suction. The tip is also turned slightly to the left, when viewed from above and behind.

This keeps the plough straight behind the tractor and prevents it moving sideways. It is known as the lead to land. Under hard or stony conditions, ploughs with bar point shares may be more suitable. The working tip of the share consists of the square steel bar drawn to a chisel-shaped point. The point protrudes to provide the suction and lead. The remainder of the bar is held in position under the frog by a set pin.

Shares wear according to the type and conditions of the soil, and should be changed when the pitch and suction have been lost to such an extent that work suffers.

Commentary

1. in turn – в свою чергу
2. is slightly turned down – ледь повернутий донизу
3. when viewed from above and behind – коли дивитися зверху та ззаду
4. prevents it moving sideways – запобігає його рухові в сторони
5. drawn to a chisel-shaped point – розплющений на кінці у вигляді долота
6. the remainder of the bar – решта бруска (пластини)
7. set pin – болт з потайною головкою; установочний штифт
8. wear – зношуватися
9. work suffers – страждає робота (плуга)

9. Answer the questions on the text:

1. What parts of the plough does the frame carry?
2. What is a share?
3. What is the function of the share?
4. What is the function of the share tip?

5. When are the bar point shares used?
6. How is the bar point share constructed?

10. Tell about the design of a plough and the functions of its main components.

11. Read and translate the following text using a dictionary:

The Share

The share, which makes a horizontal cut separating the furrow slice from the soil below, fits on the front of the frame.

Ploughshares, like mouldboards, are of very varied shapes.

The share of the lea plough has a definite 'neck' that has the effect of placing the cutting edge well in advance of the mouldboard. This 'lead' at the cutting edge assists in keeping the furrow slice unbroken, allowing it to raise gently up the mouldboard without any pulverizing action.

The cutting edge of the digging plough share is close to the forward part of the mouldboard and often almost at right angles to the line of draught. Points and wings are usually separately renewable. Most share used in Britain are made of chilled cast iron, but cast alloy steel and forged steel are also used.

When chilled cast iron shares become blunt they may be improved by grinding the upper edge. When a steel share becomes blunt, it may be sharpened by a component smith by beating out and rehardening. Steel shares may be cast in one piece or made of two or three pieces of metal welded together. They can be treated to give long wear by using a welding outfit to apply a layer of satellite or other very hard compounds along the bottom side of the cutting edge. On rocky or hard, stony land the bar pint share may be used. This consists of a steel bar which passes through the frame and forms the point of the share. When the point becomes blunt, the bar may be turned over or reversed end for end.

Under extreme conditions, use of the bar point share results in considerable economy owing to its comparatively long life.

Commentary

- | | |
|--------------------|-------------------|
| 1. furrow slice | – ґрунтовий пласт |
| 2. lea plough | – луговий плуг |
| 3. neck | – шия, шийка |
| 4. to chill | – охолоджувати |
| 5. to become blunt | – затуплятися |
| 6. to grind | – шліфувати |
| 7. to sharpen | – загострювати |
| 8. to weld | – зварювати |
| 9. satellite | – стеліт |

12. Speak on the design of a share.

Unit 3

1. Memorize the following words and word-combinations. Translate into Ukrainian the word-combinations and sentences which are not translated:

1. furrow – борозна

2. furrowing – бороздіння, нарізання борозни

3. open furrow – відкрита (розгінна) борозна

The combination of the share and the coulter creates the furrow.

4. furrow wall – стінка борозни

5. furrow slice – ґрунтовий пласт

6. furrow bottom – дно борозни, корпус борозноутворювача

7. crest of the furrow – гребінь борозни

Furrow depth, furrow width, furrow length

The coulter separates the furrow slice from the unploughed land.

8. furrow plough – борозноутворювач

9. single-furrow plough – однокорпусний плуг

10. multi-furrow plough – багатокорпусний плуг

The furrow width of a single-furrow mounted plough or the width of the first furrow of the multi-furrow one may be varied by adjusting the setting of the tractor wheels.

11. to cut – різати

12. cutting tool – ріжучий інструмент

13. cutting edge – ріжучий край

The coulter like all other cutting tools must be given a clearance () behind the cutting edge.

14. to set (to install) – установлювати

15. properly set – вірно встановлений

16. setting – установка

Correct setting, the setting of the coulter, tractor wheel setting.

17. to check the setting – перевірити установку

Correct setting of the plough leads to fuel economy and a better standard of work.

Before ploughing it is necessary to check the setting of all the principal units.

18. neither ... nor ... - ані ..., ні ...

19. either ... or ... - або ..., або ...

Neither stepped nor ragged – ані витоптана, ані нерівна

20. clearance – зазор, отвір

Vertical clearance, the clearance between share points.

21. to increase/ to decrease clearance – збільшити/зменшити отвір

The vertical clearance has to be increased with deeper ploughing up to a distance equal to half the ploughing depth.

22. plough clearance – просвіт під рамою плуга

23. side clearance – ширина захвату корпуса плуга

24. trash clearance – зазор під рамою

25. to foul – забруднювати

The vertical clearance has to be increased to prevent the bearing () of the disk coulter fouling the ground.

26. straw – солома

27. surface trash – пожнивні залишки

For straw or other surface trash the coulter will have to be lowered slightly to ensure that it cuts cleanly.

28. to ride out – вискакувати

Hard or stony conditions will cause () the disk to ride out of the ground, bringing the plough with it.

29. to fit – підігнати, пристосувати

30. draft – тяга

Knife coulters are attached to the plough frame and although less affected by hard going, they require more draft and will not cut surface trash very effectively.

2. Read and translate the following words and word-combinations:

Coulter, disk coulter, skim coulter(skimmer), knife coulter, landside, o create the furrow, unploughed land, vertical cut, properly set, correct setting, neither stepped nor ragged, share point, the depth of ploughing, vertical clearance, to foul the ground, plough frame, multi-furrow plough, two-furrow plough, furrow slice, mouldboard.

3. Using the words from the left and the right columns make up all possible word-combinations and give their Ukrainian equivalents:

A	B
1. vertical	a) plough
2. horizontal	b) setting
3. cutting	c) clearance
4. multi-furrow	d) furrow
5. disk	e) cut
6. digging	f) tool
7. bar point	g) coulter
8. furrow	h) share

- | | |
|-----------------|----------|
| 9. satisfactory | i) depth |
| 10. correct | j) width |
| 11. proper | k) edge |

4. Complete the sentences. Translate them into Ukrainian:

1. The function of the coulter is to make a vertical
2. The coulter makes a vertical cut separating the furrow slice from the unploughed
3. Knife coulter may be used under very stony or hard
4. To get useful and long life of the plough it is essential to keep it in good
5. The fuel economy and a better standard of work are dependent upon the correct

5. Fill in the blanks with the verbs (to intend, to revolve, to divide, to cut, to set). Translate the sentences into Ukrainian:

1. The disk coulter ... for vertical cutting of soil layer and for obtaining even furrow walls.
2. The coulter disk ... in two roller bearings.
3. The function of the coulter is to make a vertical cut and ... the soil from the unploughed land.
4. Correct setting of the plough ensures that the furrow wall is ... cleanly.
5. properly ... , it should leave a clean vertical face on the unploughed land which is neither stepped nor ragged.

6. Read the following sentences. Paraphrase the italicized words and word-combinations:

1. The purpose of the coulter is to make a vertical cut and separate the soil from *virgin* land.
2. Correct *installation* of the plough leads to fuel economy and a better standard of work.
3. On some ploughs the skimmers are *mounted* to the frame and not to the disk.
4. The size and shape of the furrow slices are determined by the *design* of the plough body and by its *installation*.
5. *Skimmers* are of two main types: a large one with a straight shank (хвостовик) *attached* directly to the plough beam, and a smaller combined skim and disk coulter.
6. Properly set, the coulter should leave a *clean vertical face* on the unploughed land.

7. Read the following text and tell (in Ukrainian) what kind of work a skim performs:

The function of the coulter is to make a vertical cut and divide the soil being raised by the share from unploughed land. The combination of the share and the coulter creates the furrow. The coulter consists of a disk mounted above the share, which cuts through the surface vegetation and the soil as it revolves.

The setting of the coulter is quite critical. Properly set, it should leave a clean vertical face on the unploughed land, which is neither stepped nor ragged. The basic setting is one finger (3/4 in.) to the landside of the share point and two fingers (1 1/2 in.) above the share. This has to be varied according to the depth of ploughing and conditions in the field. The vertical clearance has to be increased with deeper ploughing up to a distance equal to half the ploughing depth to prevent the

bearing of the disk coulter fouling the ground. For straw or other surface trash the coulter will have to be lowered slightly to ensure that it cuts cleanly.

Hard or stony conditions will cause the disk to ride out of the ground, bringing the plough with it. The setting for these conditions is to raise the disk and move it back from the point of the share. In this way the share will have more lead over the disk and will be less likely to rise.

Under very stony or hard conditions, knife coulters may be used. They are attached to the plough frame and although less affected by hard going they require more draught and will not cut surface trash very effectively.

A skim (or skimmer) is often fitted to a disk coulter to move a small 'furrow' from the corner of the main furrow and place it under the latter. This ensures all surface material is buried and prevents the top corner or crest of the furrow quickly growing green with weeds. The tip of the skim should be set over the centre of the disk and as close as it is possible. The skim should be given a clearance at the back.

On some ploughs, the skims are attached to the frame and not the disk. This has the advantage of preventing blockage, in that the disk is able to swing away from the skim when the surface trash begins to accumulate, allowing the trash to pass. This type of skim is sometimes used without a coulter, the vertical cut being made partly by the skim and partly by the leading edge of the mouldboard.

Commentary

1. the share will have more lead over the disk – леміш буде вести за собою диск
2. swing away – висуватися
3. leading edge = cutting edge

8. Read along only those sentences that correspond to the contents of the text:

1. The coulter consists of a disk mounted above the share.
2. The disk undercuts through the soil horizontally.
3. With deeper ploughing the vertical clearance between the coulter disk and the share has to be increased.
4. Under hard or very stony conditions knife coulters may be used.
5. Under hard or stony conditions the disk has to be raised and moved back.
6. Knife coulters are attached to the leg.
7. To prevent the blockage skims are attached to the frame.

9. Give English equivalents to the following words and word-combinations:

Монтувати, скріпляти болтами, встановлювати як належить, обертатися, дисковий ніж плуга, передплужник, леміш, горизонтальне різання шарів ґрунту, борозна, ґрунтовий шар, багатокорпусний плуг, збільшувати просвіт, забруднювати ґрунт.

10. Answer the following questions:

1. What is the function of the coulter?
2. What does the coulter consist of?
3. Where is the coulter disk mounted and what does it do?
4. How must the setting of the coulter be made?
5. What purpose does the vertical clearance must be increased for?
6. Where may the knife coulter be used?
7. Where are the plough skims attached?
8. What is the function of the skimmer?

11. Make a plan of the text.**12. Speak on:**

1. The coulter and its kinds.
2. The function of each kind of coulter.

13. Read and translate the following text using a dictionary:**The Coulter**

The coulter, whether it be of the knife, disk or skim type, must be set correctly for the performance of good work. The knife coulter is usually set with its points slightly forward, so that it forms an angle of from 55 to 85 degrees with the blade, but where stumps or rocks are encountered, the angle may be increased to over 90 degrees so that the plough is thrown out of the ground if the coulter strikes an obstruction.

For normal work, the point of a knife coulter is set $\frac{1}{2}$ in. (12-25mm) above the point of the share and $\frac{1}{4}$ in. (12mm) towards the unploughed land.

The coulter, like all other cutting tools must be given a clearance behind the cutting edge, so that the side which is towards the unploughed land does not rub hard against the furrow wall.

The clearance at the back edge should be from $\frac{1}{16}$ to $\frac{1}{8}$ in. (1.5 – 3mm).

For average conditions the disk coulter should be set $\frac{3}{8}$ - $\frac{5}{8}$ in. (9-15mm) to the landside of the share point, and a vertical line dropped from the axle of the coulter should fall just behind the point.

Bad coulter-setting is responsible for much bad tractor-ploughing. Disk always tend to run narrow, and it is easy to show with the help of a dynamometer that setting the rear disk too narrow causes a considerable increase of draught (often 200-300lbf (0.9-1.3kN) with a tree-furrow plough) as well as bad work.

Modern disk coulters have a fitting that allows them to be tilted. With the disks set over 2-3 notches, so that the lower edge undercuts the unploughed land, a crested furrow slice is produced and this often gives a good result with rough old turf where skimmers will not function effectively.

Skimmers are of two main types: a large one with a straight shank attached directly to the plough beam, and a smaller combined skim and disk coulter. Both types should be set with the point close to the disk to avoid blocking. Under difficult conditions the independent skimmer often works best

Commentary

1. ... where stumps or rocks are encountered – де зустрічається каміння
2. if the coulter strikes an obstruction – якщо ніж ударяється об перешкоду
3. that allows them to be tilted – що дозволяє їм нахилитися
4. notch – зарубка, мітка
5. turf – дерен, торф

Unit 4

1. Memorize the following words and word combinations. Translate the sentences into Ukrainian:

1. body – корпус
2. plough body – корпус плуга
3. rear body – задній корпус
4. ley plough body – корпус болотного плуга

The ley body is long and narrow and only ploughs to a maximum of 5 to 6in. deep.

5. general-purpose body – багатокорпусний плуг

The general-purpose body is shorter and broader and can plough to 8in. deep.

6. digger (plough) body – плуг з розпушувальними корпусами
7. deep plough – плуг для глибокої оранки
8. semi-digger (plough) body – корпус плуга з напівгвинтовою робочою поверхнею

The semi-digger body is shorter and deeper with a slightly concave (ввігнутий) surface.

9. to replace – замінити
10. replacement – заміна
11. replaceable – замінний

Replaceable edge, replaceable unit (part), to replace the blade, leading (cutting) part, leading edge

12. shin – гомілка; груди полиці; польовий обріз робочої поверхні

The leading edge may be replaceable and is known as a shin.

13. to fix – закріплювати, встановлювати
14. to pull the plough – тягти плуг
15. rolling – трамбування ґрунту

The rolling wheel produces less friction (тертя) than the fixed landside, hence less draft is needed to pull the plough along.

2. Fill in the blanks with the words given below:

1. The mouldboard is the part of the plough which turns the furrow ... over and consists of a long curved piece of hard wearing steel.
2. The leading ... may be replaceable and is known as a

3. The semi-digger ... is shorter and deeper with a slightly concave
4. The rolling ... produces less friction than the fixed landside, hence less draft is needed to pull the ... along.

(body, slice, wheel, shin, surface, edge)

3. Read the text and tell about the design of a mouldboard:

The mouldboard is a part of a plough which turns the furrow over and consists of a long curved piece of hard-wearing steel. The leading edge may be replaceable and is known as a shin. There are various types of mouldboards designed to produce finishes to the furrow and to produce the best work at particular depths, widths and speeds.

1. **The lay body** is long and narrow, and only ploughs to a maximum of 5 to 6in. deep. This type of body, once famous in competition work, is now rarely used, as the furrow, being gradually turned, remains unbroken and requires considerable working to produce a seedbed.
2. **The general purpose body** is slightly shorter and broader and can plough to 8in. deep. This also gives quite a continuous type of furrow.
3. **The semi-digger body** is shorter and deeper with a slightly concave surface./ The furrows are turned over more rapidly, causing some breaking to occur which reduces the need for subsequent cultivation and create a great surface area for weathering during winter. This type of body will plough to a depth of 12in.
4. **The full digger body** is even shorter and capable of ploughing to a depth of 18in. on suitable soils producing a very broken furrow slice.

As a plough turns a furrow, there is a force in the opposite direction which is resisted by the landside of the plough. This is a long piece of metal fitted on the side of the plough against the unploughed land (landside) which presses against the furrow wall. There is a landside on every 'body' of a multi-furrow plough, but that on the rear body is usually the longest. Some ploughs have a rolling landside which is a spring-loaded wheel running against the furrow wall. The rolling wheel produces less friction than the fixed landside, hence less draft is needed to pull the plough along.

Most modern ploughs are without depth wheels and are suspended from the tractor three-point linkage.

Draft control is suitable for both undulating and flat conditions where the soil texture is fairly constant.

4. Answer the following questions:

1. What is the construction of a mouldboard?
2. What purpose is a mouldboard designed for?
3. What are the types of a mouldboard?
4. What is a landside? Describe its construction.
5. What purpose is a landside designed for?

5. Make a plan to the text.

6. Speak on:

1. The plough mouldboard.
2. The types of a body.
3. The plough landside.

7. Read and translate the following text using a dictionary:

Tractor plough design has now settled down to a few well established types.

Mounted ploughs have so many advantages that the trailed types have been superseded. With small mounted ploughs the main trend is towards the simplicity of an implement designed purely for draught-control hydraulics. For larger implements, semi-mounting is most common.

Many direct-coupled ploughs, when at work, have the depth controlled by levers or screws that operate on a land wheel of some kind but most small modern ploughs are controlled entirely by adjustment of the linkage mechanism connecting them to the tractor.

There is a limit to the size of a plough that can be lifted in this way but there are few implements that cannot be satisfactorily handled in semi-mounted form.

Long, five-furrow or six-furrow semi-mounted ploughs can be hydraulically controlled and lifted out of work at both front and rear. Some are automatically draught-controlled at both front and rear, the action of the rear cylinder being regulated in the same way as that of the main left cylinder in the tractor. On another type the front of the plough is controlled by the automatic draught-controlled system, while working depth at the rear is regulated by a screw-controlled depth wheel, which also acts as a steering and hydraulic lift wheel when the implement is out of work. The rear wheel in this case runs on the unploughed land.

When it is desired to operate a relatively narrow, deep digging mounted plough behind a tractor which runs entirely on unploughed land, it is necessary to provide an offset hitch which will place the plough in the desired position, will distribute the inevitable side-draught between the tractor and the plough in the best possible way.

Another type offset hitch for three-point linkage implement may be used when it is desired to plough right up to the boundary of a field.

Reversible or one-way tractor ploughs save the trouble of setting up and closing ridges, eliminate the troublesome open furrows associated with our normal methods of ploughing, save time in turning and reduce the running along headlands.

Level seedbeds are a great advantage for root crops seeds as sugar beet, and even when grass and corn crops are grown the disappearance of the open furrows leads to easier operation of many implements and machines, and often reduces machine breakage and allows an increased speed of working.

Disadvantages include the extra cost and weight of implement: setting the implement to do good work takes longer time and needs more skill; and it is difficult to arrange for two or more tractors to plough the same field without sacrificing one of the main advantages – a level finish.

Experiments show that on some soils use of a shallow plough, specially designed for high-speed work at only 3-4in. (75-100mm) deep, can provide effective subsoil-breaking, with good weed control. A typical implement for use with a tractor of about 80 h.p. (60kW) has eight 12in. (300mm) furrows and can be used at a high forward speed.

Subsoil ploughs are designed to break up the lower layers of soil without bringing them to the surface. Many trials have been carried out with the object of determining the value of subsoiling, but the results have been of little value owing to the lack of studies of the exact conditions of the soil before and after operation.

There are both wheeled subsoilers and subsoilers for attachment to various kinds of three-point linkage. The simplest type is a mounted implement for attachment to three-point linkage.

Disc ploughs bear little resemblance to mouldboard ploughs, for a large revolving concave steel disc replaces the share, coulter and mouldboard. The disc is set at an angle to the line of travel, and it turns a furrow slice to one side with accompanying action. The usual size of the disc is about 24in. (610mm), and this will turn a furrow to 12in. (250-300mm) wide. With trailed implements the discs are mounted on a heavy frame, and the large amount of side thrust due to the pressure of the soil is carried by the three wheels, the two-furrow ones being inclined in a suitable direction to withstand it.

The wheels are often weighted to assist in the penetration of hard land, since the discs themselves have little 'suction'.

Disc ploughs suitable for mounting on the hydraulic lift linkage have now been developed – largely in response to the needs of farmers in countries where mouldboard ploughs are seldom or never employed. Disc ploughs are well adapted to ploughing extremely hard soils. They are widely used in America and South Africa, but find little favour in England.

8. Speak on:

1. The design of a plough.
2. A short description of each part of a plough and its functions.