



Іноземна мова за професійним спрямуванням (англійська)

Методичні вказівки до виконання самостійної роботи
для здобувачів освітньо-кваліфікаційного рівня молодший спеціаліст
галузь знань 20 Аграрні науки та продовольство
спеціальності 208 Агроінженерія
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Методичне видання складене відповідно до діючої програми курсу «Іноземна
мова» з метою перевірки знань та вмінь студентів та надання методичної допомоги
у процесі виконання самостійної роботи.

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Вступ

Дана методична розробка призначена для самостійної роботи для студентів III-IV курсів спеціальності Агроінженерія. Метою розробки є формування у студентів навичок самостійної роботи з професійно-орієнтованими текстами, розширення термінологічного словника і розвиток умінь і навичок спілкування в рамках своєї майбутньої професії.

Тематика обраних текстів охоплює сфери науки, техніки і сільського господарства. Методичні вказівки можуть стати вдалим доповненням до основного курсу, урізноманітнити мовне спілкування викладача і студентів на заняттях з англійської мови. Складається з чотирьох основних циклів, виділених за тематичною ознакою. Тексти кожного циклу дано в логічній послідовності: від загального уявлення галузі до конкретних машин і обладнання.

Розділ 1 “Engineering” складається з 4 уроків, система завдань яких дає можливість застосування алгоритму читання загальнонаукових текстів (в межах всіх його видів), освоєного студентами на першому етапі навчання, при читанні вузькоспеціальних текстів, сприяє більш повному розкриттю мисленнєвого і творчого потенціалу студентів, розвиваючи мовну здогадку і вміння робити логічно обґрунтований прогноз вірогідної інформації тексту, навчає різним формам усного та письмового (анотація) відтворення тексту,

Тексти розділів 2 «Types of engines», 3 «Farm Tractors» і 4 «Farm Machinery» призначені для позааудиторної самостійної роботи студентів і пропонують інформацію про сільськогосподарські трактори і машини, що приводяться в рух дизельним двигуном, тобто безпосередньо співвідносяться з матеріалом розділу 1. Тексти розділу 3 вводять студента в цікавий світ тракторів: історія тракторобудування, всесвітньовідомі виробники тракторів і їх кращі моделі, сьогодення і майбутнє механізації сільського господарства. Розділ 3 складається з текстів, що описують і, в якійсь мірі, рекламують новітні моделі сільськогосподарських машин, що випускаються провідними в цій галузі виробництва компаніями

Комплекс завдань розділів 2, 3 і 4 розрахований на подальше вдосконалення вмінь всіх видів читання, а також умінь виконувати декодування і інтерпретацію текстів на рівнях реферування з визначенням ключових елементів тексту та репрезентацією їх ієрархічної структури. Характер завдань не перешкоджають їх варіюванню і дозволяє індивідуалізувати самостійну роботу студентів, важливою складовою якої є робота з термінологічною лексикою, коли основний наголос повинен бути зроблений на використанні накопиченого активного і пасивного словника, засвоєних способів термінотворення, контексту, фонових знань, різних централізованих словників.

У висновку слід зазначити, що в цілому посібник стимулює інтелектуальне й емоційне розвиток особистості студентів, підвищує рівень їх загальної культури і освіти, створює сприятливі умови реалізації навчального процесу з урахуванням його соціокультурного аспекту.

Структура посібника не обмежує творчий пошук викладача і допускає використання методів навчання, прийнятних в її рамках.

Unit 1 Engineering

Text 1

Engineering Thinking

Engineering is putting knowledge of Nature to practical use. The final product of engineering is some physical thing: a machine, a tool, a garget. Engineering is solving problems. It is convenient to discuss engineering projects within the framework of five steps for solving problems

Will you restore the logical order of these steps?

A good engineer first ..., second ..., next ..., then ..., and last ...

defines the problem; b) verifies the solution; c) identifies possible solutions; d) implements the solution; e) selects a solution..

Can you prove the following ideas? Will you say a few words in favour of each?

It is important for an engineer to have a creative mind and to generate new ideas.

It is obligatory to consult the scientific literature available on the problem under study.

It is not recommended to trust the intuition.

It is desirable for an engineer to enjoy the whole life cycle of the product designed by him.

It is useful to have a feedback between an engineer and a customer.

Wordlist

engineering – інженерна справа, техніка

final product – кінцевий продукт

tool – інструмент

to solve a problem – вирішити проблему

framework – основа

creative mind – творчий розум

obligatory – обов'язковий

desirable – бажаний

feedback – зворотній зв'язок

Answer the questions.

What is engineering?

What is the final product?

Is it important to consult scientific literature?

Do you trust your intuition?

Text 2

Agricultural Engineering

The demand for specialists in agricultural engineering increases every year. To meet this ever increasing demand many agricultural higher schools and special secondary (technical) schools have been set up in our country.

They are training specialists for all branches of agricultural engineering, such as tractor and combine operators and specialists in mechanization and electrification in all farm operations.

The training takes into account different natural and climatic conditions in different regions of our country. It also includes practical work on farms.

Thousands of young specialists who have been trained at these schools are working on farms. They know how to operate various kinds of agricultural machinery, such as tractors, cultivators, seeders, harvesters, loaders, plows. They must also know how to solve various engineering problems.

Wordlist

demand for – попит на

to meet the demand – задовольняти попит branch – гілка, галузь

tractor operator – тракторист combine operator – комбайнер

to take into account – приймати до уваги

to operate – працювати, керувати

cultivator – культиватор

seeder – сіялка

harvester – комбайн

loader – погрузчик

plow (plough) – плуг (to plough – орати)

Answer the questions:

Does the demand for agricultural specialists increase or decrease?

How is the training the students organized?

What must young specialists know about their profession?

What farm machines are mentioned in the text?

1. Vocabulary:

Ability

Automatic control

Compact construction

Cooler

Demand

Design

Effectiveness

Electric power

Electrician

Engineering

Freezing

Opportunity

Processing equipment

Reasonable

Seasonable

Source

To handle

To reduce

2. Guess the meaning of the following international words and word combination:

industry, biological factor, engineer, principle, adaptable, effectiveness, mechanically, operation, period, design, variations, mechanization, automatic compact construction, milk, modern, reconstruction, intensification, classification, organize, stimulation, original.

3. Find the word on the right which should logically follow the word on the left:

agricultural	machines
biological	energy
field	effectiveness
electric	equipment
to reduce	the yield of crops
processing	factor
milking	knowledge
engineering	operations
to increase	engineering

Text 3

Machines

In his activities man makes use of a multitude of machines. Although most of them are of quite recent origin, a few simple ones are considered to have come from very ancient times. There were a lot of prehistoric implements, the bow and the arrow being the most ancient. They were his tools in his struggle for existence.

The wheel, one of the greatest inventions ever made by man is also of prehistoric origin. The inclined plane and its use have also been known. It was doubtless by its use that Egyptian slaves lifted the huge stones that went into the construction of the great pyramids.

The lever is probably of equally ancient origin. It is mentioned by the Greek Philosopher Aristotle as a means of lifting a great weight by using a very small force.

Tremendous changes in machine development were made in the 20th century. Now we use not only powerful devices, precise instruments, but also “clever machines”

Wordlist

activity – діяльність

multitude – велика кількість

bow and arrow – лук и стріла

to be of recent origin – бути недавнього походження implement – знаряддя, приладдя

wheel – колесо

inclined plane – похила площина

slave – раб

lever – важіль, рукоятка

powerful device – потужний прилад

Answer the questions.

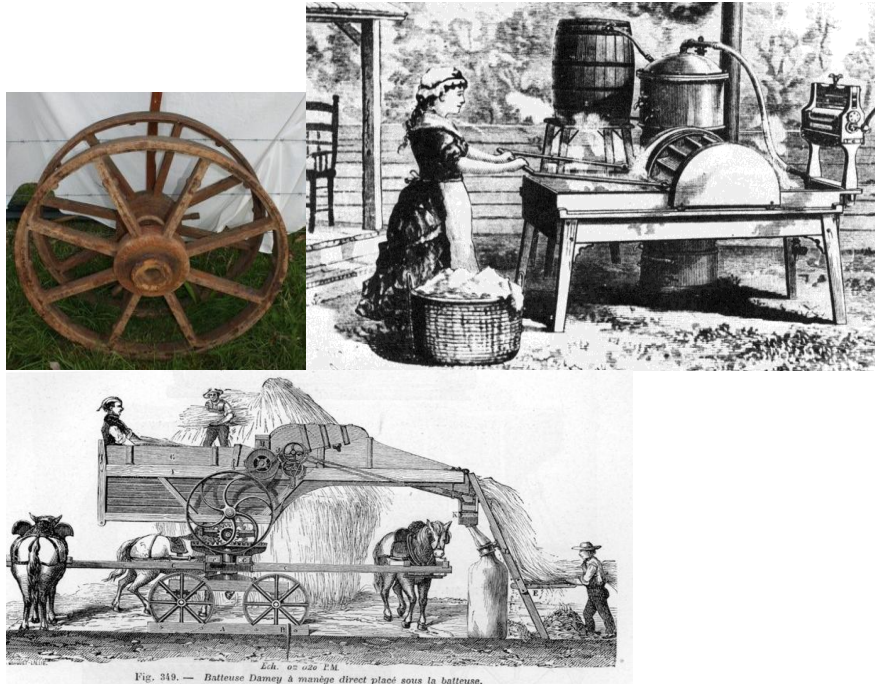
What implements have come from ancient times?

What role did the inclined plane play?

What can you say about machine development in the 20th century?

What "clever machines" do you know?

What were these machines used for?



Text 4

The Wheel

One of mankind's earliest and greatest inventions was the wheel. Without it there could be no industry, little transportation or communications, only crude farming, no electric power. Nobody knows when the wheel was invented. There is no trace of the wheel during the Stone Age, and it was not known to the American Indians until the White Man came. In the Old World it came into use during the Bronze Age, when horses and oxen were used as work animals.

At first all wheels were solid discs. The problem to be solved was to make the

wheels lighter and at the same time keep them strong. At first holes were made in the wheels, and they became some with iron and then with rubber.

Wordlist

mankind – людство

trace – слід

to come into use – знайти своє застосування

Bronze Age – Бронзовий Вік

solid – твердий

hole – отвір

Answer the questions.

What was one of the greatest world's inventions?

When was the wheel invented?

What was the problem to be solved with the wheels?

What was the wheel covered with?

Unit 2 Types of engines

Text 1

Engine

1. Vocabulary:

to make – змушувати

to be referred to as – називатися

to term – називати

to cause – змушувати, призводити

although – хоча

to create – створювати

shaft – вал

engine – двигун

internal combustion engine – двигун внутрішнього згорання

combustion chamber – камера згорання

to take place – проходити, відбуватися

2. Read and translate the text.

The engine is the source of power that makes the wheels go around and the car move. It is usually referred to as an internal combustion engine because gasoline is burned within its cylinders or combustion chambers.

This burning, or combustion, takes place at a high speed termed as an «explosion». The high pressure thus created causes a shaft to turn or rotate.

This rotary motion is transmitted to the car so the wheels rotate and the car moves. Most automobile engines have four or six cylinders, although some eight-, twelve- and sixteen cylinder engines are in use.

3. Fill in missing words:

1. This burning, or combustion, takes place at a (велика швидкість).
2. gasoline is (згорає всередині циліндрів) or combustion chambers.
3. power that makes the (колеса крутяться) and the car move.

4. The high pressure thus created causes a (вал повертається) or rotate.

5. Most (автомобільні двигуни) have four or six cylinders.

4. Translate into Ukrainian:

car moves

high pressure

internal combustion engine

wheels go around

source of power

rotary motion

sixteen cylinder engines

transmitted to the car

Most automobile engines

within its cylinders

5. Answer the questions:

1. What is transmitted to the car so the wheels rotate?

2. How many cylinders have most automobile engines?

3. What is the source of power?

4. What can you say about internal combustion engine?

Text2

Steam engine

1. Vocabulary:

steam chest – парозбірник

the more ... the more – чим більше ... тим більше

mostly – головним чином, в основному

to invent – винаходити

to boil – кипіти

pipe – труба

steam – пар

valve – клапан

piston – поршень

to reach – досягати

pressure – тиск

stroke – хід

speed – швидкість

opening – отвір

Read and translate the text.

The steam engine was the first high-speed engine ever invented. The principle of the steam engine is simple. When water is boiled, it changes in to steam. The more the steam is heated, the more pressure it has.

A steam engine has some important parts. One is a boiler where fire turns water into steam. The steam goes through a pipe to the other important part – the steam chest with a cylinder and a piston in it. There are valves, or openings, in the steam chest. As the piston moves in the cylinder, it opens and closes the valves automatically, so that fresh steam enters just when the piston has reached the end of its stroke. A rod from the piston is connected to a wheel.

Now steam engines are mostly used in locomotives.

3. Fill in missing words:

1. One is a boiler where _____ water into steam.

2. A rod from the piston _____ to a wheel.

3. The steam engine was the first _____ ever invented.

4. As the _____ in the cylinder, it opens and closes the _____,

so that fresh steam enters just when the piston has reached the end of its stroke.

Missing words: fire turns, valves automatically, high-speed engine, is connected, piston moves.

4. Answer the questions:

1. What is connected to a wheel?
2. What are some important parts of a steam engine?
3. What can you say about the principle of the steam engine?
4. Are there are valves, or openings, in the steam chest?
5. How now steam engines are mostly used?

Text 3

Diesel engine

1. Vocabulary:

gallon – галон – англ. (4,54 л); амер. (3,78 л)

to last – тривати, продовжуватися

screw – гвинт

spray – розбризкувати, бризки

fuel – топливо

spark plug – іскра свічки

to connect – з'єднувати

charging – завантаження

to inject – вприскувати

to ignite – запалювати

2. Read and translate the text.

Text 3

Diesel engine

A diesel engine is like a gasoline engine but simpler. Diesel engines are usually larger and can do more work. The fuel used in a diesel engine is oil. In diesel engines only air is blown into the cylinder. It does not need spark plugs.

Diesel engines can be four – stroke ones and two – stroke ones. Diesel engines use a cheaper kind of fuel and give more power for each gallon of fuel burned than gasoline engines. Besides they last much longer. in new trains and ships diesel engines run large generators which make electricity. The electricity runs motors which are connected to the wheels of the train or to the ship's screws.

The diesel engine is an internal combustion engine. It uses oil as a fuel. The fuel is introduced in the form of spray and the engine requires no special ignition device.

In the four-stroke cycle Diesel engine air alone is drawn into the cylinder on the charging stroke. This air is being compressed on the return stroke to a very high pressure. The result of the combustion is that the air is heated to a high temperature.

The heavy oil injected into the air at the end of the stroke will be immediately ignited by it. The oil burns rapidly, but without explosion. The compression pressure is much higher than that in any other oil or gas engine.

3. Fill in missing words:

1. The _____ is an internal combustion engine.
2. This air is being _____ on the return stroke.
3. The electricity _____ which are connected to the wheels of the train or to the _____.
4. Diesel engines use a cheaper _____ and give more power for each gallon of _____ than gasoline engines.
5. In diesel engines only air _____ into the cylinder.

Bank of words: compressed, fuel burned, diesel engine, ship's screws, runs motors, kind of fuel, is blown.

4. True or false:

- 1) In new trains and plane diesel engines run large generators which make electricity.
- 2) The fuel used in a diesel engine is petrol.
- 3) In the four-stroke cycle Diesel engine air alone is drawn into the cylinder on the charging stroke.

4) The oil burns slowly, but without explosion.

5) In new trains and ships diesel engines run large generators which make electricity.

5. Answer the questions:

1. What happened at the end of the stroke?

2. Is in the four-stroke cycle Diesel engine air or petrol drawn into the cylinder on the charging stroke?

3. What is the result of the combustion?

4. What is fuel used in a diesel engine?

5. A diesel engine is like a gasoline engine but simpler, isn't it?

6. How diesel engines are used in new trains and ships?

UNIT 3

Text 1

FARM TRACTORS

The purpose of this Unit is to provide farm mechanization students with some information on their future profession which is concerned with Farm Tractors.

The texts included in the Unit provide an opportunity to get acquainted, to some extent, with this fascinating world: you will learn some facts from the history of tractor development, read about some greatest tractor manufacturers and their best models; the future of power farming is also the topic of this Unit.

Task 1

Read the title of Text 1 and try to predict its possible contents.

WHAT IS A FARM TRACTOR?

Tractors are widely used in agriculture as a source of mobile power. They find their use in a wide variety of farm jobs such as plowing, disking, planting, cultivating, fertilizing, harvesting, transport works and running machinery off the PTO shaft.

According to the work that the farm tractor is designed to perform, it is provided with such features which enable it to perform the particular work with the highest efficiency.

To make a farm tractor that would perform all the works with the same efficiency and economy is impossible because farming conditions and requirements are very different in different regions. As a result there are many types and kinds of tractors from which to make a selection.

Trailing farm machinery and implement, utility tractors, which are suitable for most all farm work, row-crop tractors for cultivating row crops and garden (orchard) tractors for work in gardens or orchards.

As to the design of the driver the tractors may belong either to wheeled-type

tractors or to track-laying type, often called crawlers.

Today's tractors are powerful, sophisticated machines. Equipped with a vast array of hi-tech features, including satellite navigation, high-capacity hydraulics, powershift transmissions and vibration-insulating cabs, they are designed to meet the ever-increasing demands of intensive modern agriculture.

Task 2

Read Text 1 using a dictionary. Memorize the terms on the subject. Answer these questions:

What are the jobs a farm tractor is designed to perform?

What does the abbreviation "PTO" mean?

Why is it impossible to make a farm tractor for performing all the works in agriculture?

What are the main types and kinds of a farm tractor?

How can you describe today's tractors?

Task 3

Find in Text 1 the paragraph describing today's tractors and translate it into Ukrainian in writing.

Task 4

Read Text 2 to find answers to the question: "What are the main components of a farm tractor?". You should use a dictionary.

Text 2

COMPONENTS OF THE TRACTOR

The construction of the tractor, regardless of its application, is quite established and includes definite devices and assemblies.

The arrangement of some of these devices and assemblies may be different, but it is

possible to illustrate general purpose tractors and some special tractors by a few representatives.

The construction of a tractor incorporates the following main units and assemblies:

Power unit including the engine with all its auxiliary devices-radiator, fan, starter device, fuel tank, pumps, etc.

Transmission assembly which consists of a clutch, a speed control unit, central gearing mechanism, universal joints, shafts, differentials or steering mechanism in track-laying tractors, final drives, axles. Transmission is designed for transmitting the torque of the engine to the tractor driving wheels and also to different working and auxiliary equipment.

Driver including driving, supporting and controlling mechanisms and serving for converting the rotary movement of the tractor driving wheels into the forward propelling of the tractor, and also for the tractor body support.

Steering unit which includes devices and drives to them, by means of which the operator may control the work of the tractor as a whole and of its separate units.

By means of the **steering device** the tractor may be caused to move, to change the direction and speed of the movement, to stop on steep hills and grades.

The **tractor frame** including the parts to which different tractor assemblies are secured.

Working and auxiliary equipment by means of which the tractor power is applied to perform different jobs, include the following: PTO, pulleys, trailing and mounted implements and so on.

Tractors are constructed with hundreds of parts. The smaller parts are built into major assemblies such as tractor chassis, engine, transmission, driving axles, brakes, steering system and hydraulic system.

Task 1

Write out all the terms to describe the main components of the tractor.

Memorize them.

Task 2

Describe the main components of the tractor.

START OF THE POWER FARMING REVOLUTION

Tractor power has revolutionized farming methods. When the first tractors trundled off on threshing tours in the American Mid-West in the early 1890s, however, they were crude and unreliable. There was little evidence they would ever offer serious competition to the steam engine. Steam reigned supreme for another 20 years or so before tractors took the lead in the power farming revolution.

Task 1 Look through Text 3 to answer these questions:

Where did the evolution of the tractor begin?

Who built the first tractor?

What other names of tractor pioneers are mentioned in the text? Which of these names are quite known to you?

Text 3

EVOLUTION OF THE TRACTOR

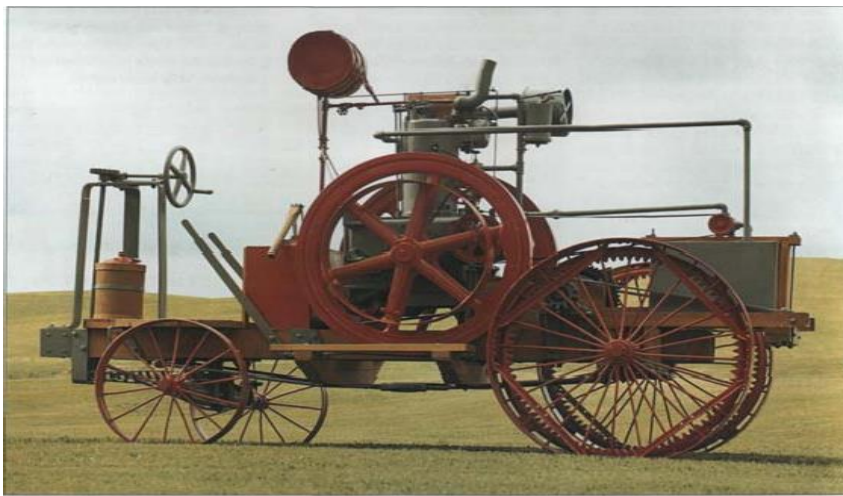
While it was in Britain that the first steam engines were developed, the evolution of the tractor began in the United States and later spread to Europe. Credit for building the first tractor is given to John Charter of the Charter Gasoline Engine Co. based on at Sterling Illinois. In 1889, Charter mounted a big, single-cylinder petrol or gasoline engine made by his company on the wheels of a Rumely traction engine.

The tractor was taken to farms near Madison, South Dakota, where it was used to drive a pulley belt powering a threshing machine. The performance of the tractor must have been satisfactory because Charter's company received orders to supply a further five or six tractors to farmers or contractors in the same area.

Competition for the Charter arrived in 1892 when at least three more experimental or pre-production tractors came onto the scene, all designed for threshing work and all built on the running gear of steam traction engines, with a slow- revving petrol engine to provide the power. Traction engine wheels and drive gears provided a readily available

base for the engine, and it was a logical starting point for the early tractor pioneers.

One of the 1892 arrivals was the Capital tractor made by the Dissinger brothers from Wrightsville, Pennsylvania. They used an engine built under licence from the Otto company in Germany to power their tractor, which was designed for threshing. Little more was heard of the brother's first tractor venture, but the Dissinger family returned to the tractor market a few years later with a new Capital tractor which proved popular in the early 1900s. A more significant name in the list of tractor pioneers in 1892 was the J.I. Case Threshing Machine Co. It mounted a twin- put on a set of traction engine wheels and axles – made presumably by Case – and this was used as a test vehicle.



This is a replica of the tractor built by John Froelich in 1892.

Task 2 Read the text to find answers to these questions, you may use a dictionary:

What was the construction of the Charter?

What was the Charter used for?

What was a logical starting point for the early tractor pioneers?

Who made the Capital tractor?

What engine was used to power the Capital tractor? (While answering this question try to remember everything you know about Dr.Otto).

How can you describe the first tractor built by J.I. Case Threshing Machine Co.?

Task 3 Find in the text the paragraph describing the application of the Charter. Translate it into Ukrainian in writing.

Text 4

A NEW TRACTOR COMPANY IS BORN

One more member of the group of tractor pioneers in 1892 was John Froelich, who lived in Froelich, Iowa, a small town named after his parents. In 1890, he bought a petrol engine from the Charter Gasoline Engine Co. to power the drill he used for his business, and it may have encouraged his idea to use a similar engine in a tractor.

John Froelich designed his tractor with the engine in the middle and a platform at the front for the driver. This gave a good forward view, which was a big improvement at that time. He took his tractor and a new Case threshing machine to South Dakota. The records he kept of this threshing tour show the equipment was working for 52.5 days, and during that time it threshed 62000 bushels of wheat and other small grains. No major breakdowns were reported, and enthusiastic reports of the tractors performance attracted the interest of a group of businessmen in Waterloo, Iowa. Froelich was invited to a meeting where it was agreed to form a new company in Waterloo to build tractors based on his design. The company was established in January 1893 and was called the Waterloo Gasoline Traction Engine Company. John Froelich's first tractor was a highly significant development. It was probably the first tractor to be equipped with reverse as well as forward tractor correctly to power the belt drive to a tractor.

Another reason why John Froelich's tractor is so important is that it was the original forerunner of the modern John Deere tractor range (Waterloo Bay range).

Task 1 Read the title of Text 5 and tell everything you know about John Deere.

Task2. Read Text 5 to find answers to the questions that follow the text. You may use a dictionary

Text 5

THE BEGINNINGS OF JOHN DEERE

The Waterloo Boy tractors that took Deere into the market were the R and N models. The model R was introduced in 1915, with the production continuing until 1919, and the Model N was available from 1917 until 1924. This means both Waterloo Boy models were the first tractors to be sold by Deere, even though they never carried the John Deere name. They also introduced Deere to the twin-cylinder horizontal engine layout that remained a successful feature of almost every John Deere production tractor for more than 40 years. Although at first glance the R and N models look similar, sharing as they do the same layout of engine, transmission and cooling system mounted as individual units on a steel girder frame, there were important differences. Design changes introduced on the Model N included a two-speed transmission instead of the single-speed version found on Model R. Also, while the big ring gears on the driving wheels of the Model N are almost the same diameter as the wheel itself, on the Model R version, these are little more than half the diameter of the wheel. The Model N radiator is mounted on the left-hand side of the frame, viewed from the driver's seat, but on most models Rs it is on the right-hand side. The steering system is a less reliable indicator, as chain-link steering was fitted to all Model R tractors and to Model Ns built before about 1920, but this was replaced by more accurate worm and sector steering from 1920 onwards.

As well as being the first John Deere tractors, the Waterloo Boys possessed other claims to fame. One of the distributors of tractors exported to Britain, where they were sold under the Overtime brand name, was Harry Ferguson – the Overtime almost certainly triggered the early development of the Ferguson System of implement attachment and control.

What are the Models that took Deere into the market?

What feature remained a successful one of almost every John Deere production tractor for more than 40 years?

What are the differences between the R and N models?

Why is the name “Harry Ferguson” mentioned in the text? What do you know about this person?



The Waterloo Boy tractors were not alone in retaining a steel- frame structure well into the 1920s.

Task 2 Find in the text the paragraph describing the differences between the R and N models and translate it into Ukrainian in writing.

Task 3 Write a summary of Text 5 in English.

Task 4 Read the title of Text 6 and say what it is about.

Task 5 Look through the first paragraph of the text and say when and where the first British tractor was designed and built.

Text 6

THE BIRTH OF BRITISH TRACTORS

Britain was the first European country to experiment with tractor power, and the first tractor to be built commercially in Britain arrived in 1896. It was designed and built by Richard Hornsby and Sons of Grantham, Lincolnshire, and its full official name was the Hornsby-Akroyd Patent Safety Oil Traction Engine. The makers promised four versions of the tractor powered by engines with 16, 20, 25 and 32 HP output, but it is unlikely that all of these were built. The engine was a semi-diesel based on a Stuart and Binney design, built by Hornsby under a licence agreement. The layout was horizontal, and it was started by using a blow lamp and ran on paraffin with the power delivered through a transmission with three forward gears and one reverse.

Although the Hornsby tractor was designed like a traction engine for stationary work it was also suitable for heavy haulage job on farms or on public roads, as indicated by the extremely long chassis and three-speed gearbox.

Steam engine comparisons were also prominent in a description of the tractor published in 1886 in a leading journal, **Implement and Machinery Review**.

“The driver has a good deal easier time of it than in the case of a steam engine”, said the **Implement and Machinery Review**’s report: “there is no fire to be frequently stoked, nor are there any water or steam gauges to be kept under supervision. Indeed, the duties are so comparatively light that one man can easily undertake the driving without any assistance, which, of course, means a considerable saving on the user”. Another feature praised in the report was the fact that the engine’s exhaust system had been “rendered silent” to avoid frightening horses.

Task 2 Find in the text the paragraph describing the rate of the Model F production growth and translate it into Ukrainian in writing.

Task 3 Write a summary of the text in English.

Task 1 Look through the first passage of Text 7 and say if International Harvester produces only tractors.

Text 7

INTERNATIONAL HARVESTER

International Harvester was formed on 1902 when Deering and McCormic joined forces. In 1906, tractors were added to the highly successful range of general farm machinery and stationary engines; within five years, International Harvester had taken the lead as the largest farm equipment company of the world.

The tractor that played a crucial role in International's Success during the 1920s and 1930s was the Farmall, first available in 1924, with frameless construction replacing the traditional layout. The feature which brought well-deserved success to the Farmall was the fact that it was designed to meet the needs of rowcrop farmers. The new tractor was, of course, capable of doing other types of farm work as well-which is why the Farmall name

was appropriate-but it offered special advantages on farms where interrow jobs such as hoeing were important.

Other design features to attract rowcrop farmers included relatively light weight to minimize soil damage, plus a brake control for the steering which allowed the tractor to pivot on either of the rear wheels to make headland turns sharper. Later versions of the Farmall also provided a generous range of adjustment for the wheel spacing to suit different row width.

Farmall production started in 1924, using a four-cylinder IH engine delivering 18 HP at the belt pulley in its Nebraska test.

More Farmall models followed. The F 20 version, based on the previous model but with a 10 per cent increase in engine output to 20 HP, arrived in 1931, together with the 32 HP F30 Farmall. Another new model arrived in 1932, when the F12 was announced with a 16 HP engine, to be followed by the two-plough F14 Farmall in 1938. The success of the Farmall encouraged most of the leading US tractor makers into the rowcrop market. Deere's contribution was the GP or General Purpose tractor, Case offered

a special rowcrop version of its model C, Huber introduced the LC, and

Minneapolis-Moline designed its Twin City Universal Model for rowcrops.

Task 2 Read Text 7 to find answers to these questions, you may use a dictionary:

When did IH take the lead as the largest farm equipment company of the world? Why?

What is the Farmall? What feature brought the Farmall success?

What other design feature of the Farmall attracted rowcrop farmers?

When did Farmall production start?

What were some other Farmall models?

What was Deere's contribution to the rowcrop market?

Task 3. Read the title of Text 8 and tell everything you have learnt about John Deere from the previous texts.

Task 1 Read Text 8 to find answers to the questions that follow the text. You may use a dictionary.

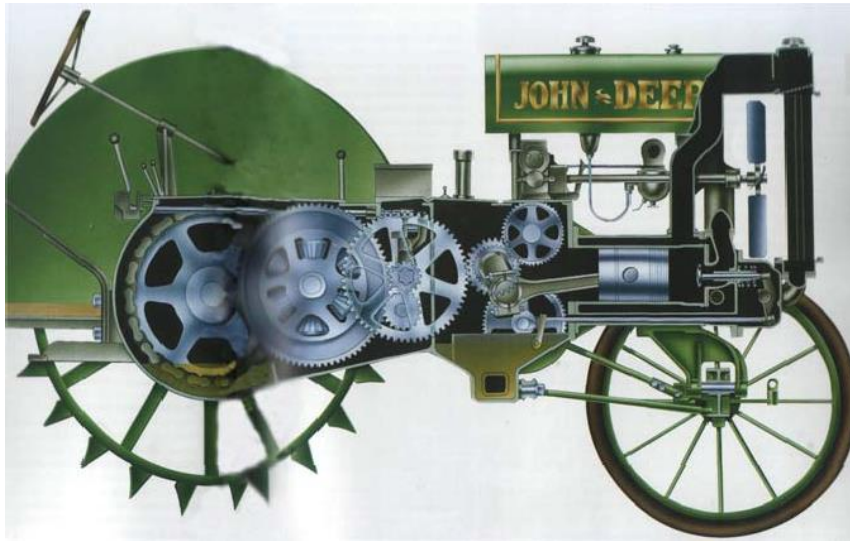
Text 8

JOHN DEERE

Another US company that survived the 1920s Fordson competition was Deere Co. It continued to sell the Waterloo Boy Model N during the early 1920s, while it worked on a replacement tractor to be sold under the John Deere Brand name. The Model D was announced in 1923.

The Model D was lighter, more compact and more maneuverable than its predecessor. It provided more power, and it was based a more up-to-date frameless design with enclosed gear drives, but one important design feature inherited from the Waterloo Boy tractors was the twin-cylinder horizontal engine. In fact, the engine on the Model D, and on virtually all other John Deere tractors produced until 1961, was the opposite way round. The cylinder head were at the front instead of at the rear, as

they had been on the Waterloo Boy tractors-but it was still a big, slow revving two-cylinder engine, one that continued to be a feature of John Deere tractors for almost 40 years.



History has shown that the choice of engine layout for the Model D was correct and the twin-cylinder design was probably an important factor in establishing Deere as one of the leading US tractor manufacturers, particularly during the 1920s and 1930s. The twin-cylinder engine was slower running and not as smooth as its rivals with four cylinders, but smoothness was not a big sales feature in the 1920s, and the two-cylinder engine offered other benefits that were more important.

It was a much more simple design with a reputation for long-term durability, and it was also easier to service and repair, an important advantage at a time when skilled mechanics were few and far between. Sales of the Model D had reached the 10,000

—per-year level by 1928, and more models were added to the range. The Model C, forerunner of the General Purpose rowcrop tractor, arrived in 1927, and production of the Model A started in 1934, followed by the Model B in 1935 – all with two-cylinder engines, of course.

What was one more company that survived 1920s Fordson competition?

Was the design of the Model D frameless?

What was the most important design feature of the Model D?

What was an important factor in establishing Deere as one of the leading US tractor manufacturers?

What were the advantages of the twin-cylinder engine used on the Model D?

What Models arrived in 1927, 1934 and 1935?

Task 3

Find in the text the paragraph describing the advantages of the twin-cylinder engine and translate it into Ukrainian in writing.

Task 1. Read the first paragraph of Text 9 and name the development that has made a major contribution to tractor performance and is featured on virtually every modern tractor.

Text 9

DIESEL POWER

Another important technical development in the 30-year period from about 1920 was the development of diesel-powered tractors. This is another example of a development that has made a major contribution to tractor performance and is featured on virtually every modern tractor.

Diesel tractor development began in Europe and the first company to offer a tractor with a diesel engine was Benz of Mannheim, in Germany. Benz began experimenting with diesel power after World War I had ended, and small-scale production started in 1921 or 1922. The engine was a twin-cylinder design, used initially in a small truck; in 1923, the same type of engine was offered as an option for the Benz-Sendling motor plough. This was a strange contraption with a single driving wheel at the rear. It had been available since 1919 with a petrol engine, but the 1923 version had the distinction of almost certainly being the world's first diesel-powered tractor.

The Benz range of diesel engines also included a single- cylinder version with hopper cooling, and, a four-cylinder diesel arrived in 1923 to be used as a truck engine. All the early Benz engines were designed with a pre-combustion chamber, a feature first patented in 1909 and developed to improve combustion efficiency. In 1926, the Daimler and Benz companies, named after the two earliest pioneers of the car industry, merged to form Daimler-Benz, now known as Daimler-Chrysler. The Benz name survived in Mercedes-Benz, one of the world's most prestigious five years after the merge; these were exported to a long list of countries, including Australia and Britain



Britain's first commercially successful diesel tractor was the Field Marshall, powered by a slow-revving, single-cylinder engine with a distinctive exhaust note.

Task 2 Read Text 9 to find answers to these questions, you may use a dictionary:

What does the term “diesel-powered tractor” mean?

What was the first company to offer a tractor with a diesel-engine?

When did the production of diesel-powered tractors
begin?

What were the constructions of the Benz range of diesel engines?

Can you name one of the world's most prestigious marques? Do it.

SHAPING THE MODERN TRACTOR

Driver comfort and safety, neglected for decades, are now important priorities. Safety cabs have been forced on the tractor industry by legislation which, coupled with cab suspension systems and sprung axles, has allowed faster, safer working speed. Other major developments include the introduction of rubber tracks, which have dramatically improved the performance of crawler models, turbocharged engines and a new generation of easy-to-use CVT (Constantly Variable Transmission) drive systems.

Task1. Look through Text 10 to find answers to these questions:

When did the first really serious attempt to make tractor driving a more comfortable occupation arrive?

How did Minneapolis – Moline call its new model?

Why does the Comfort tractor deserve to be remembered?

Text 10

MAKING COMFORT A PRIORITY

The first really serious attempt to make tractor driving a more comfortable occupation arrived in 1938 when Minneapolis- Moline announced its new UDLX tractor - Minneapolis-Moline called it a “Comforttractor”, and in the company’s publicity it was billed as “the World’s Greatest Tractor”. It was described as a three-or four-plough tractors. Engineers at Minneapolis-Moline designed a steel cab with glazed windows and noise-absorbing insulation for the Comforttractor. It was the first tractor designed and built with an enclosed cab, although it was also available without a cab. Inside the Cab, the equipment list was more generous than that of many 1930s cars. It included a radio and a heater, plus a wiper and a defroster for the front window. There was an electric clock, a roof light and an illuminated instrument panel, and it was almost certainly the first farm tractor equipped with both a cigar lighter and a built-in ashtray.

With two upholstered seats in the cab and a top speed of 64 km/h (40 mph) on the

road, the UDLX could spend the day ploughing and then provide suitable transport for a romantic trip to a restaurant or the movies in the evening. Safety terms included full road lighting equipment front and rear, a bumper for protection at the front plus energizing Bendix brakes, and there was safety glass in all the windows and a sun visor at the front. The transmission was a specially developed five-speed gearbox allowing on-the-move shifting, the power unit was the Minneapolis-Moline four cylinder petrol engine, and electric starting was included in the standard specification. A belt pulley was provided for stationary work “Just as the city man needs a comfortable closed car to pursue his activities, so the farmer who spends a big share of his time on a tractor needs and wants greater comfort on the job”, it was confidently asserted in the UDLX sales leaflet.



For well over half a century, the only concession to driver comfort on most tractors was a shaped metal seat mounted on a springy steel support. Tractor manufacturers and their customers share the blame for giving safety and comfort such a low priority.

Read Text 10 to find answers to some more questions, you may use a dictionary:

What did the equipment list of the Comfort tractor include?

What did safety items include?

What was the power unit used in the UDLX?

What was confidently asserted in UDLX sales leaflet?

What were the disadvantages of the Comfort tractor?

Task 2 Look through Text 11 and say what system for tractor cabs it describes.

Text 11

In 1977, Renault Agriculture, the tractor division of the car and commercial vehicle company, had begun work on a cab suspension project; in the same year, engineers from Renault had visited the Britain's Silsoe Research Institute (SRI) to exchange ideas on how suspension systems could be designed.

Renault was also developing suspension systems for truck cabs, and the two research teams were able to work together. In spite of this advantage, it took 10 years to complete the development programme. The production version was called the Hydrostable cab, and it was announced at the SIMA machinery show in Paris in 1987 as standard equipment on Renault's high- specification TZ series tractors.

Renault engineers developed a combination of coil springs, anti-roll bars, shock absorbers and transverse rods to produce the suspension system for the Hydrostable cab. It is claimed to have at least some effect on all of the five types of movement tractor drivers are subjected to during their work. These are vertical movements from the tractor tyres, longitudinal movements caused mainly when trailed implements are towed at speed, lateral movements linked mainly to bigger tractors on large tyres, and pitching and rolling movements.

Although the new cab suspension attracted enthusiastic comments from some users and won a number of awards for innovations, including a gold medal from the Royal Agricultural Society of England sales remained disappointing at first. After eight years, only about 15 per cent of UK customers were specifying the Hydrostable cab on their new Renault tractors. Since then, however, demand has increased sharply; by 1999, almost 80 per cent of the Renault models sold in the United Kingdom were equipped with the suspended cab. Sales have been helped by the results of a series of tests carried out in Germany in 1996. The tests showed that vibration levels on the tractors fitted with the Hydrostable cab were reduced by up to 35 percent in some situations. Also, when driving over rough surfaces at high working speeds, it took up to twice as long for the driver in

the Hydrostable cab to experience symptoms of stress. Since then, Renault has improved the Hydrostable suspension by providing an adjustment which enables the driver to alter its responsiveness, and it added a front-axle suspension option for some of its tractors in the year 2001.



Renault revolutionized driver comfort when it introduced cabs with a full suspension system in 1980s.

Task 2 Read the text to find answers to the questions below.

You may use a dictionary. Title the text.

When did Renault begin work on a cab suspension system? Whom did they work with?

How was the production version of the suspension system called?

What are the five types of movement tractor drivers are subjected to during their work?

When has demand for Hydrostable cabs increased?

What are the advantages of the Hydrostable cabs?

Task 1. Look through Text 12 and name the companies mentioned in connection with suspension development.

Text 12

MORE SUSPENSION DEVELOPMENT

Massey-Ferguson has a different suspension system. It was introduced in the year 2000 for the 6200 and 8200 series tractors from 105 HP upwards and is called the Quadlink system. It consists of moving links, plus one hydraulic ram and a set of hydraulic accumulators, and there is also an electronic control operating the hydraulic valves maintaining the optimum pressure in the accumulators. The ram and the accumulators provide the shock-absorbing action and the system allows up to 90 mm (3.54 in) of vertical travel.

The Italian-based same Deutz-Fahr tractor and machinery group also has its own front-axle suspension unit. The pivoting action of the front axle is linked to a strut located longitudinally and allowing a 22-degree arc of movement. The strut is joined to the front-axle support by two double-acting hydraulic cylinders, and these are linked to three gas-filled accumulators to provide the shock absorption function. When the Same Deutz-Fahr system is operating, the cylinders raise the axle by 45 mm (1.77 in), and it is automatically lowered again when the system is deactivated.

A cab suspension system has also been available on some Same group tractors since the year 2000, and this is claimed to be the first of its kind with a self-leveling action.



Caterpillar Challenger tractors are marketed throughout Europe and in some other countries under the German-based specialist manufacturer Claas name colours.

A special feature of the front suspension system on some Case IH and Steyr tractors is that it operates on the front wheels instead of the axle. The advantage claimed for this arrangement is

That it allows each of the wheels to move independently, thus cushioning the bumps more effectively. There is a control switch in the cab allowing the driver to activate the system or turn it off and the suspension system also controls the ground clearance by adjusting the front-axle height.

Although the obvious benefits of using a front-axle suspension are improvement in driver comfort and a possible increase in forward speed for some types of field work, additional advantages are claimed by some of the tractor companies offering this type of suspension. One of the claims is that an axle suspension helps to maintain a more positive contact between the tractor front wheels and the ground surface, particularly where the ground is uneven. This can help to improve stability and safety when the tractor is traveling at speed, and with a powered front axle it can also mean improved tractor efficiency.

Task 3. Read Text 12 to find answers to the given questions.

You may use a dictionary.

What is called the Quadlink system?

What are the main features of the Same Deutz-Fahr suspension system?

What is a special feature of the front suspension system on some Case IH and Steyr tractors?

What are the obvious benefits of using a front-axle suspension?

Are there any additional advantages offered by a front- axle suspension? What are they?

UNIT 4

FARM MACHINERY

More and more machines are used on farms today increasing labour productivity.

Machines that are used for crop production include those that till the soil, plant the crops, perform various cultural practices during the growing season and harvest the crops.

Many machines are known to be powered by tractors. Implements such as ploughs, cultivators, harrows, sweepers, drills and planters may be mounted on a tractor or they may be pulled by a tractor.

However, an increasing number of farm machines are now self-propelled. These machines are grain combine harvesters, cotton pickers, forage harvesters, and many other specialized farm machines.

In this Unit you will find some information on two main groups of farm machines: 1) cultivating, seeding and planting machinery, 2) harvesting machinery.

Text 1

Agricultural machines are used to till soil and to plant, cultivate, and harvest crops.

Modern machinery is extensively used in Western Europe, Australia, the United States, the Russian Federation and Canada.

Modern large agricultural implements, adapted to large-scale applied methods, are usually powered by diesel or petrol fuelled internal combustion engines. The most important implement of modern agriculture is the tractor. It provides locomotion for many other implements and can furnish power, via its power shaft (приводный вал), for the operation of machines drawn behind the tractor. The power shaft of tractors can also be set up to drive belts that operate equipment such as feed grinders, pumps, and electric power generators. Small implements, such as portable irrigators, may be powered by individual motors.

Many types of implements have been developed for the activities involved in growing crops. These activities include breaking ground, planting, weeding, fertilizing and combating pests.

Ground is broken by ploughs. Harrows are used to smooth the ploughed land. The disc harrow, which has curved, sharp-edged steel discs (сталльні диски, заточений по кутах), is used mainly to cut up crop residues before ploughing. Specialized implements called planters are necessary for sowing crops that are planted in rows. Manure is distributed most efficiently by a manure spreader.

After crops have begun to grow, a cultivator is used to destroy weeds and loosen and aerate the soil. A variety of mechanical spraying and dusting equipment is used to spread chemicals on crops and fields; the machinery may be self-powered or drawn and powered by a tractor.

Most cereal crops are harvested by using a combine – a machine that removes the fruiting heads, beats off the grain kernels, and cleans the grain as the combine moves through the fields. A machine called a field chopper (косилка-подрібнювач) cuts down green hay for use as animal feed.

Use of agricultural machinery substantially reduces the amount of human labour needed for growing crops.

Wordlist

to till – культивувати, обробляти

extensively – обширно

implement – інструмент

large-scale – крупномасштабний

to provide locomotion – приводити в рух

combating pests – боротьба зі шкідниками

harrow – борона

residues – залишки рослинності

manure spreader – розкидач добрив

self-powered – самохідний

Answer the questions:

What are agricultural machines used for?

How can farm machines be powered?

What is the most important implement in agriculture? Why?

What activities are involved in crop growing?

What is cultivator used for?

What is a combine?

What is the main function of machinery in agriculture?

Text 2

CULTIVATING AND SEEDING MACHINERY

At the dawn of history we find man practising the most elementary method of modifying soil conditions. He broke up the surface and prepared a seedbed, using for this purpose the most primitive of all cultivating devices, a digging implement like a hoe. In early times the principal crops were cereals or pulse and a fibre crop-flax.

The greatest mechanical advance during these early days of agriculture was the evolution of the plough from the primitive hoe. The advent of the plough enabled man to supplement his labour

by animal power and is one of the great landmarks of agricultural progress.

The plough is the most important tillage tool, and it has been brought to its present state of scientific perfection only after tireless experimentation. During the middle ages the variety of implements had advanced but little, though the roller was known but was not employed generally in agriculture.

In the eighteenth century there was a conscious and organized attempt to improve agricultural implements. New methods and inventions were being applied to most

farming operations, and new conditions were being created favorable for the great advance which followed.

By the 19th century such a complexity of implements had been introduced as to justify the term "farm machinery". In agriculture, as in industry, the use first of water-power and then of steam had immensely stimulated the invention of machinery supplementing or replacing manual labour. A threshing-machine was invented late in the 18th century and was gradually coming into use early in the 19th. It was driven by water or wind, sometimes by horse labour, and later by steam. In still more recent times an

Important practical contribution to the mechanization of the farm came from the discovery of the internal combustion engine. Used first of all to drive stationary machinery, as chaff-cutters, root-cutters and corn-mills in the barn, in the second decade of the 20th century the internal-combustion engine also made headway as a source of power for field operations.

Farm implements and machines are now very numerous and very diversified.

Task 3. Read the text using a dictionary to find answers to these questions:

What was the most elementary method of modifying soil conditions?

How can you describe the greatest mechanical advance during the early days of agriculture?

Why is the plough considered to be the most important tillage tool?

Was the roller employed in agriculture during the middle ages?

When was the term "farm machinery" introduced?

What is a threshing-machine? When was it invented?

How did the internal combustion engine contribute to the mechanization of the farm in the second decade of the 20th century?

Task 1. Look through Text and say what it is about. Title the text.

Text 3

CULTIVATING, SEEDING AND PLANTING MACHINERY

Research has demonstrated that normally the moldboard plough (plow) is the most efficient tool for pulverizing the soil and covering the trash to provide a

satisfactory seedbed.

The modern plow is mounted directly behind the tractor, attached to the three-pointed linkage, being raised and lowered hydraulically. The typical mounted plow consists of a frame which is attached to the tractor. The main components in contact with the soil are the coulter, the share, the moldboard and the landside. The coulter is carried by the frame of the plow. The share, moldboard and landside are all bolted to the frog which, in turn, is bolted to the leg of the plow. The plow 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. The function of the coulter is to make a vertical cut and divide the soil being raised by the share from the underplowed land. The combination of the share and the coulter creates the furrow.

The moldboard is the part of the plow which turns the furrow over and consists of a long, curved piece of hardwearing steel.

Task 2. Read Text using a dictionary and name the main parts of a plow. Describe their functions

Task 3. Read the title of Text and say what seedbed machines are described in it.

Text 4

Tractor

Most commonly, the term "tractor" is used to describe a farm vehicle that provides the power and traction to mechanize agricultural tasks, especially (and originally) tillage, but nowadays a great variety of tasks. Agricultural implements may be towed behind or mounted on the tractor, and the tractor may also provide a source of power if the implement is mechanized.

The first powered farm implements in the early 19th century were portable engines – steam engines on wheels that could be used to drive mechanical farm

machinery by way of a flexible belt. Around 1850, the first traction engines were developed from these, and were widely adopted for agricultural use. The first tractors were steam-powered plowing engines. Steam-powered agricultural engines remained in use well into the 20th century until reliable internal combustion engines had been developed.

Tractors can be generally classified as two-wheel drive, two-wheel drive with front wheel assist, four-wheel drive (often with articulated steering), or track tractors (with either two or four powered rubber tracks). The classic farm tractor is a simple open vehicle, with two very large driving wheels on an axle below and slightly behind a single seat (the seat and steering wheel consequently are in the center), and the engine in front of the driver, with two steerable wheels below the engine compartment. This basic design has remained unchanged for a number of years, but enclosed cabs are fitted on almost all modern models, for reasons of operator safety and comfort.

A modern 4-wheel drive farm tractor



Four-wheel drive tractors began to appear in the 1960s. Some four-wheel drive tractors have the standard "two large, two small" configuration typical of smaller tractors, while some have four large, powered wheels. The larger tractors are typically an articulated, center-hinged design steered by hydraulic cylinders that move the forward power unit while the trailing unit is not steered separately.

In the early 21st century, articulated or nonarticulated, steerable multitrack tractors have largely supplanted the Caterpillar type for farm use. Larger types of modern farm tractors include articulated four-wheel or eight-wheel drive units with one or two power units which are hinged in the middle and steered by hydraulic clutches or pumps. A relatively recent development is the replacement of wheels or

steel crawler-type tracks with flexible, steel-reinforced rubber tracks, usually powered by hydrostatic or completely hydraulic driving mechanisms. The configuration of these tractors bears little resemblance to the classic farm tractor design.

Wordlist

vehicle – засіб пересування

a great variety of tasks – великий ряд задач

may be towed – може бути відбуксирований

may be mounted on – може бути встановлений

source of power – джерело енергії

reliable – надійний

front wheel – переднє колесо steering – рульове управління

for reasons of operator safety and comfort– для безпеки та комфорту оператора

flexible – гнучкий

Answer the questions:

What is a tractor?

How can agricultural implements be attached to the vehicle?

What is a portable engine? When was it used?

How can tractors be generally classified?

What can you say about modern tractor of the 21st century?

Text 5

JOHN DEERE FIELD CULTIVATORS

The 980 Field Cultivator is completely redesigned to provide you with a more reliable seedbed machine.

And, with many sizes and styles, there's sure to be a 980 Field Cultivator for

you. Working widths range from 12 to 44 feet, with eight new narrow-frame flex-fold models from 20 ½ to 28 ½ feet. Choose tall and tough C-shanks, or vibrating S-tines. Both feature improved residue-handling capacity. Plus, you can choose from three finishing attachments: a coil-tine harrow (featuring a convenient, new flip-up feature), a spike-tooth harrow, or rolling baskets.

The 980 is built tough to handle high use and high residue. Plus, many options let you customize the 980 to your working conditions.

Two spacings are available for each shank style. On S-tine models, choose 4½ - or 6-inch shank spacings. On C-shank models, go with 6-or 9-inch spacings. Narrow spacings give better chemical incorporation and seedbed leveling, while wide spacings offer better residue flow. If you farm contours and terraces, choose a narrow-frame model. They flex to hug the ground and they fold up tight for narrow transport.

Finally, three seedbed attachments let you fine-finish fields just the way you want them.

Standard on all 980 Field Cultivators is the new single- point, crank depth control. It is less touchy and easier to set, and it is mounted on a new, 3-cylinder, series hydraulic system. This new system maintains your depth, with fewer problems, as it eliminates rockshaft play and oil transfer between cylinders.

If you own a 55,60, or 7000 series Tractor, you can opt for new electrohydraulic depth control. It lets you control depth with your 3-point-hitch control. It provides more precise depth control than you've ever imagined, and boosts productivity by keeping you in tractor cab.

If your operation involves confined fields where quick, sharp turns and tight transport dimensions are important, you'll love the hitch-mounted maneuverability of the 960 Integral Field Cultivator.

It's available with vibrating S-tines or heavy-duty C- shanks. Working width range from 10 to over 25 feet, the smallest of which requires a tractor of only 40 horsepower.



Like its drawn cousin, the 980, the 960 offers three optional finishing attachments to create the perfect seedbed in your soil conditions: a coil-tine harrow; a spike-tooth harrow; and rolling baskets. Optional spray equipment provides trip-saving application of preemergence chemicals.

If you need a big field cultivator for use in heavy residue, check the specs on the 985. This five-section acre-eater's mammoth working widths range from 47 to 62 feet. That's plenty of size to knock out big acres fast.

C-shanks give you 24 inches of underframe clearance and 135 pounds of trip force maintains constant sweep depth in heavy residue conditions. Standard shank spacing is 6 inches, and you can choose 9-inch spacing for even better residue flow. Fore-and aft clearance is an impressive 125 inches. That's nearly double the clearance on the previous model.

Task 4. Read the text using a dictionary to find answers to these questions:

What field does the 970 Roller Harrow tackle?

Why does the 970 have no center bearing problems?

In what way do the roller wheels provide more strength and durability?

What are the two wheel choices provided by the 970?

How is it possible to adjust the S-tynes to work at the

Text 6

GRAIN COMBINE HARVESTER

Grain combine harvester is a farm machine – usually operated by one man – which cuts the corn, then threshes out the grain and winnows it. The cleaned grain is gathered in the bin of the combine and then taken away by trucks.

In front of the combine there is a table which cuts down the stalks brought up to it by the reel which then again feeds them onto the central part of the table while the transporter catches them up and sends them off to the threshing unit. In the thresher the grain is threshed out of the stalks and next through the deck mounted under the threshing cylinder falls upon the bolter and thence passes to the screen.

The straw is fed on to the straw-walker. Here it is shaken to remove the left-over grain while the straw itself is gathered on a strawtacker. As to the grain, it is now freed from impurities by a current of air coming from the fan. Then it falls through the riddle and through the grain auger runs to the flight elevator which finally conveys it to the bunker or bin. After the grain is discharged from the bin it passes over to the pocket separator which classes the grain for different purposes: as seedstock, milling material, grist, etc. thence it goes to the bin and finally to the elevator.

Task 1. Read the text using a dictionary to find answers to these questions:

What is a grain combine harvester?

What is the function of the table in front of the combine?

What is the function of the reel, the transporter?

What is a grain auger in a combine?

What does the pocket separator do?

Can you say that the text describes a conventional combine harvester? Give you reasons.

Text 7

Combine

The combine harvester, or simply combine, is a machine that harvests, threshes and cleans grain crops. Among the crops harvested with a combine are wheat, oats,

rye, barley, corn (maize), soybeans and flax (linseed). The first combine was invented by Hiram Moore in 1838. It took many decades for the combine to become popular. Early combines often took more than 16 horses to drive them. Later combines were pulled by steam engines. George Stockton Berry joined the combine into a single machine using straw to heat the boiler. The header was over forty feet long, cutting over one hundred acres per day.

How does this incredibly complex machine work? The header is a cutting machine that cuts the stems, and the reel is located in the same places them on a conveyor belt header.

The screw conveyor moves the stems with the header to the inching mechanism, which in turn transfers them to the first threshing chamber. Threshing grain is due to the interaction of the rotating drum with concave. From there, through the slots at the bottom of the concave, threshed grain and debris fall on the transportation board.

At the same time, the drum rolls straw with no embossed grain bargrating. Beyond that, the straw walkers goes to the grid, where it shakes out the rest of the grain. At the next stage, straw, or by going through the chopper, blown into TCP (tractor trailer dump), or enters into a drive that steals his shock when filling the ground. Meanwhile, the grain enters the hopper from which, after filling is discharged through pipe auger truck.

Wordlist

to harvest– збирати урожай

rye – жито

barley – ячмінь

decade – десятиліття

steam engine – паровий двигун incredibly – надзвичайно

stem – стебло

chamber – камера

interaction – взаємодія

drum – барабан

debris – лом, сміття

grid- решітка, сітка

chopper – подрібнювач

reel – мотовило

screw – шуруп, гвинт

tilt camera – похила камера

Answer the questions:

What is a combine?

What crops can be harvested with the help of the combine?

Who invented the first combine?

Text 8

Harvesting

Harvesting is the final stage in agricultural production. Therefore particular attention is devoted to mechanizing harvesting operations. There are many kinds of harvesting machinery: grain harvesters, forage harvesters, cotton, corn, potato harvesters, haymaking machines, hillside combines. As grain harvesting is most important among other farming processes, let's first consider grain harvesters or combines.

The combine is a machine that harvests, threshes and cleans the grain, as it moves along the field. Combines may be both power-driven and self-propelled. Among the numerous types of combines developed in our country the most efficient machines are the «Don-1500», the «Niva» and the «Enisey»/ They are available in single-drum and twin- drum modifications and meet modern standards of

output, reliability, adaptability to various crops and crop conditions, appearance and the operator's comfort.

Answer the questions.

What is the final stage in agricultural production?

What kinds of harvesting machinery do you know?

What does the combine do?

What modern standards do our combines meet?

CLEVER FARMING:

FORAGE HARVESTER OR SELF-LOADING WAGON?

Self-loading wagons and self-propelled forage harvesters with high capacities are suitable for preparing silage at large farms. Both processes have been assessed during field tests in actual farming conditions. With regard to their technical suitability, the distribution of chopped lengths with self-loading wagons and forage harvesters is comparable and both processes produce the same high quality silage. Due to the high pressure exerted by the wheels on the ground, both processes require fields with very high load bearing capabilities. Jumbo self-loading silage wagons with volumes of up to 48 m³ achieve very high transport capacities. The actual costs for each process depend on the actual farm operating conditions. The self-loading wagon process has cost advantages over the forage harvester where the area to be harvested annually is smaller to medium-sized, transport distances are shorter and yields lower. The number of machines, operators and the investment costs are lower with a self-loading wagon than with a forage harvester. Arguments in favour of a self-propelled forage harvester are a large area to be harvested annually, a high transport requirement and/or whether the farm in question grows maize.

The decision for one of the two processes therefore requires that the actual farm operating conditions are taken into consideration

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