МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
БІЛОЦЕРКІВСЬКИЙ НАЦІОНАЛЬНИЙ АГРАРНИЙ УНІВЕРСИТЕТ

Факультет права та лінгвістики
кафедра іноземних мов

РОБОЧИЙ ЗОШИТ

Англійська мова для магістрантів

напрям підготовки –6.090102 – технологія виробництва і переробки продукції тваринництва
ступень – магістр
спеціальність – 8.130201 – біотехнологія

Біла Церква
2017

УДК 378

Рекомендовано до друку вченою радою
факультету права та лінгвістики
(Протокол № 1 від 31 серпня 2017 р.)

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Робочий зошит: Англійська мова для магістрантів / О.В. Шмирова – Біла Церква, 2017 – 67 с.

Передмова

Розвиток ринкових відносин засвідчив, що Україна потребує висококваліфікованих фахівців, які мають володіти іноземними мовами для здійснення професійної та наукової діяльності. Однією з необхідних передумов високоефективної діяльності сучасних фахівців є не тільки ґрунтовні знання фаху, але й знання однією або декількох іноземних мов.

МАГІСТР — освітньо-кваліфікаційний рівень вищої освіти особи, яка на основі ОКР «Бакалавр» здобула повну вищу освіту, спеціальні уміння та знання, достатні для виконання професійних завдань та обов'язків (робіт) інноваційного характеру певного рівня професійної діяльності, що передбачені для первинних посад у певному виді діяльності.

Магістерські програми передбачають викладання ряду дисциплін іноземною мовою, здебільшого англійською, яка є мовою ділового спілкування у світі. На програми фахового спрямування вступають студенти, які після чотирирічного навчання здобули бакалаврський ступінь. Фахове спрямування магістерської підготовки передбачає надання поглиблених знань за окремими програмами, вдосконалення професійних здібностей для подальшої успішної роботи в виробничих та дослідницьких установах (організаціях, господарствах) агропромислового комплексу за обраним фахом.

Іноземна мова (ІМ) входить до нормативного блоку дисциплін програми підготовки магістрів. Поглиблений курс вивчення іноземної мови має за мету підготувати магістра до вільного спілкування на професійні теми, вивчати літературні джерела.

При вступі до аспірантури студент уже завершив основний курс навчання ІМ. Отже початковий рівень навчання ІМ у магістратурі повинен відповідати вимогам рівня В2 (Незалежний користувач) за Загальноєвропейськими рекомендаціями з мовної освіти (2003), оскільки відповідно до Програми з англійської мови для професійного спілкування (2005), він є вихідним рівнем основного курсу навчання ІМ.

В рамках фахового спрямування здійснюється підготовка також магістрів-дослідників. Підготовка магістрів-дослідників в університеті здійснюється на кафедрах, де відкрита аспірантура. Концептуальне визначення підготовки магістрів-дослідників передбачає, що магістр продовжує свою дослідницьку діяльність за обраною спеціальністю в аспірантурі або підвищує свої знання, навички та уміння, які необхідні для послідуючої практичної діяльності у науковоємних сферах виробництва (експертні лабораторії, біофабрики тощо). В своїх дослідженнях магістрантам необхідно використовувати наукову інформацію, що репрезентує сферу їхньої професійної підготовки, з інших джерел, у тому числі, й іншомовних. Такі джерела представлені фаховими виданнями, що містять наукові тексти. Цілями навчання магістрів професійно-орієнтованого читання наукових англомовних текстів є формування у них компетенції у читанні наукових англомовних текстів для вилучення наукової інформації з тексту. Відповідно до Програми з англійської мови для професійного спілкування (2005) випускники

магістратури аграрних ВНЗ мають володіти навичками та вміннями професійно-орієнтованого читання на рівні В2+ (Сильний Просунутий/Strong Vantage) за Загальноєвропейськими рекомендаціями з мовної освіти (2003).

У структурі посібника реалізовано чотири види мовленнєвої діяльності: читання, аудіювання, мовлення та письмо.

Мета посібника – допомогти магістрам, спеціалістам, аспірантам а також студентам старших курсів опанувати оригінальні фахові тексти, вдосконалювати навики реферування, анотування літератури зі спеціальності.

У посібнику магістрам і аспірантам пропонуються моделі, вирази, словосполучення для написання анотацій до кваліфікаційних магістерських робіт, тез до конференцій, наукових конференціях.

Для полегшення самостійної роботи пропонується вибірка лексичного матеріалу, яка здійснюється на рівні монографій, інструкцій, патентів, реферативних та довідкових матеріалів тез конференцій, наукових статей.

Вивчення та опанування матеріалу пропонованого посібника створить лексичну базу для професійного усного мовлення та вироблення навичок ведення розмов англійською мовою на науково-професійну тематику.

Даний посібник розраховано на такі спеціалізації: „селекція”, „технологія і переробки продукції птахівництва”, „технологія кормів і кормових добавок”, „технологія і переробки молока”, „технологія виробництва і переробки м’яса”.

Посібник містить автентичні фахові тексти професійного спрямування, завдання до них. Навчальний матеріал розподілено на 4 модулі. Посібник також містить додатки.

Форма контролю – модульний контроль, якій ставить перед собою завдання виявити, виміряти та об’єктивно оцінити знання студентів, які вони набули після вивчення однієї – двох споріднених тем. Він містить дві форми контролю: тестову письмову та усно-тестову.

Об’єктом контролю виступають читання, аудіювання, мовлення, письмо. Письмова форма перевірки знань передбачає відтворення змісту матеріалу, якій прослухано, наведення еквівалентів лексичних одиниць як українською так і англійською мовами, заповнення пропусків у реченнях (слів, фраз, граматичних конструкцій), складання міні-діалогів через пошук вірних відповідей.

Усна форма – це розгорнута бесіда до теми з перевіркою знань лексичних одиниць. Саме цим реалізується принцип комунікативності.

Модуль 1. Selection and breeding
Модуль 1. Селекція та розведення

Text 1
Crossbreeding Systems in Beef Cattle

***Task 1. Before reading and translating the text: consult a dictionary to translate key words*:** carcass, quality, beef cattle, crossbreeding, herd, inputs, management tools, benefits, heterosis, hybrid vigor, average, purebred, weaning weight, progeny, traits, heritability, marbling, demand, dam, heifers, gestation, survival, advantage, implementing, female, capture, estimate, environment, genetic backgrounds, source.

As selection for **carcass quality** has taken center stage in the **beef cattle** industry, cattle producers have adopted strategies that have decreased the use of **crossbreeding** in beef cattle **herds**. Crossbreeding leads to increased performance without any added **costs** or **inputs**. It is one of the few **management tools** that increase productivity and improve the line when properly used. Despite the **benefits** of the practice, however, cattle producers have adopted strategies that have decreased the use of crossbreeding in beef cattle herds because selection for carcass quality has primary importance in the beef cattle industry.

Crossbreeding works as a result of **heterosis,** also known as **hybrid vigor.** Hybrid vigor is the amount by which **crossbred** animals exceed (or differ from) the **average** of the **purebred** parents used in the cross (expressed in units or percent). This idea can best be illustrated through the example listed below for **weaning weight.**

Brahman average 500 lbs
Angus average 550 lbs
Average of purebreds 525 lbs
Average of crossbred **progeny** 575 lbs – (1/2 Brahman 1/2 Angus)
Hybrid vigor = 575- 525 = 50 lbs difference
Percent hybrid vigor 50/525 = 9.52%

Hybrid vigor is expressed in almost all beef cattle production **traits,** especially in reproduction and adaptability traits. Since reproduction and maternal traits have low **heritability,** response to selection will be slow. At the same time, significant improvement in these traits can be made through programs that maximize heterosis. The inverse is true with product or carcass traits. Significant and rapid progress can be made through selection for carcass traits, while crossbreeding has little or no effect. Growth traits are moderate for both heritability and heterosis, making progress possible through selection and crossbreeding.

Using this information, commercial producers can tailor a program to fit their individual needs. If a producer is concerned about carcass characteristics, the selection is the best way to improve quality. On the other hand, if reproductive rates need to be enhanced, crossbreeding is the quickest and easiest way to improve. It should be realized that no one breed is best at everything. Producers should use breeds that complement each other. For example, breeds that have low **marbling**

would need to be mated to animals with high marbling potential. Continental animals and British animals are good examples of breeds that complement each other. It also should be noted that breeds from diverse **genetic backgrounds** will express higher levels of hybrid vigor when crossed. For example, British breeds crossed with each other will result in hybrid vigor, but at lower levels than British breeds crossed with Continental or Bos indicus (Zebu) breeds. It should be stressed that there needs to be a planned program if expected results are to occur. In the past, producers have thought of crossbreeding as simply replacing bulls every 2 to 3 years with whatever breed was popular at the time. This has lead to problems with uniformity of the resulting product. Quality cattle need to be selected in order for crossbred cattle to out-perform straight bred cattle and produce the type of product that is in **demand** by the consumer. Crossbreeding will not overcome poor genetics.

Crossbreeding can be a very effective tool to improve reproductive and weaning rates in beef cattle. All cows were managed in a single herd and data was collected over a three-year period. Cows were located in central Texas. Weaning weights were adjusted to 205 days as well as for age of **dam.** Records from first-calf **heifers** were **excluded.**

Weaning weight per cow exposed to breeding is the best figure to sum up production efficiency. The calculation includes reproduction and **gestation** efficiency, calving management and **survival** from birth to weaning. Using the above data, the difference in the Hereford versus the Brahman X Hereford cows was 211 pounds of extra weaning weight per cow exposed. This points out the advantage of using crossbred cows, especially Bos indicus (Bi) X Bos Taurus (Bt) breed types. Olson et al., 1991, compared different crossbred cattle in Nebraska and Florida. The study showed that Bos indicus X Bos Taurus cows weaned calves approximately equal in weaning weight per cow exposed in Florida and Nebraska, but weaned 62 and 34 more pounds in comparison than Bos Taurus X Bos Taurus cows in Florida and Nebraska, respectively. The Zebu productivity **advantage** in Florida was up to three times greater than that experienced in Nebraska.

Using various systems of crossbreeding can have a significant impact. The various systems of crossbreeding yield different results in a beef cattle operation. The estimated herd production factor uses the straight bred herd as the baseline. Each system should be carefully analyzed before **implementing** the program in a commercial operation. Some systems will not work for small producers. Others require a stable source from which quality replacement **females** can be **purchased.** Each system has advantages and disadvantages. However, cattle producers should find a way to **capture** hybrid vigor in their herd.

Estimated herd production factor is the increase in production that would be realized in each crossbreeding system. Notice that the F-1 Cow/Terminal calf system results in the highest percent of heterosis expressed in a crossbreeding system with a factor of 1.25 while the straight bred herd is 1.00. This simply means that using the F-1 Cow/ Terminal calf system will result in a 25% increase in production. However, the other factors should be considered before determining which crossbreeding system to use.

Task 2. Answer the following questions

1. What kind of strategies have been adopted by cattle producers?
2. What can improve the line of breed?
3. What has primary importance in the beef cattle industry?
4. What is the other name of heterosis?
5. What is hybrid vigor?
6. How is hybrid vigor expressed?
7. Does crossbreeding have any effect for carcass traits?
8. What is the best way to improve quality of carcass?
9. What is the best way to improve reproductive traits?
10. Give an example of breeds which complement each other.
11. What did producers think about crossbreeding in the past?
12. What does have significant importance in selection?
13. Can crossbreeding overcome poor genetics?
14. Can crossbreeding improve weaning rates in beef cattle?
15. What is the best figure to sum up production efficiency?
16. What does the calculation of the data include?
17. Will various systems of crossbreeding work for all producers?

Task 3. Find in the text English equivalents to the Ukrainian ones

якість туши; індустрія м'ясного скотарства; у стадах м'ясної великої рогатої худоби; додаткові витрати; збільшувати продуктивність; має первинну важливість; схрещуванні тварини; чистопорідні батьки; схрещуванні нащадки; низька спадковість; значне покращення; комерційні виробники; доповнювати один одного; низька мармуровість; перестановка биків; якісна велика рогата худоба; попит у споживачів; дані були зібрані; корови, що вперше отелилися; бідна генетичні база; вага при відлученні.

Task 4. Translate the sentences below from Ukrainian into English

1. Схрещування працює як гетерозис, відоме як закон гібриду. 2. Селекція для якості туші має особливу важливість в індустрії м'ясного скотарства. 3. Селекція є найкращим засобом для того щоб покращити якісні характеристики туші. 4. Схрещування є найшвидшим шляхом для того щоб покращити репродуктивний рівень. 5. Слід мати на увазі, що не існує найкращих порід за всіма ознакам. 6. Виробникам слід використовувати породи, які доповнюють одна одну. 7. Кращий приклад порід, які доповнюють одна одну це континентальні і британські тварини. 8. Схрещування не подолає бідну генетику. 9. Схрещування може бути ефективним інструментом для того, щоб покращити рівень відлучення та репродуктивний рівень у м'ясної крупної рогатої худоби. 10. Вага при відлученні на одну корову є найкращим показником для визначення ефективності виробництва.

Text 2
Reproductive Efficiency

***Task 1. Before reading and translating the text: Consult a dictionary to translate key words*:** livestock, poultry, nutrition, health, humidity, losses, species, diversity, fiber, diseases, viability, muscling, mammary, nutrient, tenderness, ability, profitable, palatable, resistance, safety, consumption, digestion, susceptibility, availability, feedstuffs, grazing, overwhelming, economic return, gaps, compatible, goal..

The overall **goal** is to improve reproductive efficiency of **livestock,** and **poultry.** Research will focus on improving reproductive performance of animals through genetics, **nutrition, health** management, and on management of environmental factors such as temperature and **humidity.** Research advances and new biotechnologies will be developed to reduce **losses** due to reproduction problems in all **species** and maximize output of high quality products in the form of meat, milk and eggs.

Conserve, Characterize, and Use of Genetic Resources

U.S. livestock are produced in a wide array of environments and management systems. The efficiency of livestock and poultry production has dramatically improved due to advances in genetic selection programs, however, intense and highly successful selection generally leads to narrowing the genetic base of the species. Maintaining genetic **diversity** is essential for providing animal food and **fiber** products in the future by having livestock and poultry that will perform efficiently in different climates, production systems, and when exposed to new **diseases** and provide quality products that meet the changing demands of consumers. The National Animal Germplasm Program will identify, preserve, characterize, and distribute germplasm for future use. The associated information will be stored in the animal component of the GRIN (Genetic Resources Information Network) database. DNA of relevant germplasm will be stored and provided to researchers for genomic characterization and analysis. Research is needed to improve the **viability** of cryopreserved germplasm for some species.

Product Quality (Pre-Harvest)

New knowledge is needed to understand the genetics affecting product quality and improve the control and manipulation of physiological systems supporting **muscling,** growth, metabolism, and **mammary** function. Research will focus on identifying genes that influence product quality, factors directing **nutrient** partitions toward protein and less fat, enhanced nutrient composition in animal products and enhanced **tenderness** of meat.

Genetic Improvement

The rate that populations can be improved is compromised by lack of objective definitions of improvement, inadequate understanding of quantitative and molecular mechanisms controlling component traits and interrelationships among the traits, and less than optimal methods to incorporate quantitative trait loci (QTL) in breeding programs including the **ability** to move novel genes from one population to another. The primary objectives are to accelerate selection response toward efficient

and **profitable** production of healthy, nutritious, and **palatable** livestock and poultry products and improve the health and well-being of livestock and poultry through enhanced adaptation to different production environments and greater **resistance** to disease.

Genomic Tools

Animal Genomics will play an increasingly important role in assuring the continued profitability and competitiveness of U.S. animal agriculture. Identifying, mapping, and understanding the function and control of genes will permit the development of new genetic technologies and increase our ability to realize the full genetic potential of agriculturally important, food animals. Microorganisms are also an integral component of animal production and understanding the genomes of these organisms will enable the development of new products or management systems that will enhance profitability, quality, and environmental impact animal production and quality and **safety** of animal products. The objectives of this program are to map, identify, and sequence genes, determine the function of genes that influence animal production, and identify, sequence and determine the function of microbial genes that influence animal production. The genomic information will be used in genetics selection programs, to alter or develop management systems and develop new products for animal production or new meat, eggs and milk products for human **consumption.**

Growth and Development

Suboptimal growth and development are limiting factors in animal productivity. Basic information regarding developmental processes in agriculturally important animals is largely lacking. The primary objective of the program is to increase our understanding of the biological mechanisms underlying normal animal growth development of the musculoskeletal system, lactation, **digestion,** and nutrient metabolism. New knowledge in these areas is needed to improve animal production and the control and manipulation of muscling, growth, metabolism, and mammary function. Research is also needed on specific nutrient regulated biological responses.

Nutrient Intake and Utilization

Nutrition is the single most costly component in modern animal production. Suboptimal nutrition is a significant factor in the failure to realize genetic potential for production and increased **susceptibility** to disease. Economically optimizing nutrient supply and use is imperative for improving growth and reproduction, and to maximizing overall production efficiency. Research is needed in the following areas to improve animal nutrition: 1) chemical composition and **availability** of nutrients in **feedstuffs,** 2) nutritional requirements of **grazing** and non-grazing animals, 3) more efficient use of nutrients, 4) special attention to functions (e.g., reproduction, growth, and lactation), and 5) minimize non-productive nutrient losses.

Integrated Systems

The **overwhelming** amount of information about animal production efficiency is difficult to use without the aid of computer-based technology. This technology application is needed to improve management decisions and strategies that will yield the greatest **economic return.** Computer models will contribute to identifying **gaps**

in scientific knowledge. Decision-aids are needed that integrate the components of animal production in modular formats that are **compatible** with farming systems programs. These decision-aids must be useful to farmers and producers.

Task 2. Answer the following questions

1. What is the overall goal of the research in the field of husbandry and poultry?
2. On what points will research focus?
3. What helps to improve the efficiency of livestock and poultry production?
4. What biological mechanisms do you know?
5. What are the primary objectives in genetic improvement?
6. What will permit the development of new genetic technologies?
7. What are integral components of animal production?
8. Where may the genomic information be used?
9. What is the primary objective of the growth and development program?
10. What may yield the greatest economic return?

Task 3. Find in the text English equivalents to the Ukrainian ones and learn them

Фактори навколишнього середовища; температура та волога; нові біотехнології; скоротити втрати; проблеми відтворення у всіх видах; високоякісні продукти; генетичні селекційні програми; звужування генетичної бази; тваринна їжа та продукти з волокна; відповідати потребам споживачів; інформація буде зберігатися; функція молочної залози; протеїн і жири; ніжність м'яса; якість продукції; генетичне покращення; кількісні та молекулярні механізми; взаємодія серед ознак; прибуткове виробництво; стійкість до хвороби; геномні засоби; прибутковість та конкурентоспроможність тваринництва; якість та безпека продуктів тваринництва; людське споживання; продуктивність тваринництва; м'язова-скелетна система; система травлення; коштовний компонент; споживні речовині в кормах; сприйняття хвороби; пасовищні та не пасовищні тварини; наявність споживчих речовин; допомога комп'ютерної технології; економічний обіг; генетичні ресурси.

Task 4. Translate the following sentences from Ukrainian into English

1. Дослідження буде сфокусоване на покращення репродуктивної функції тварин. 2. Ефективність виробництва домашній худоби та свійської птиці покращується завдяки генетичним селекційним програмам. 3. Підтримання генетичної різноманітності є необхідною для забезпечення в майбутньому їжею тваринного походження та волокнистими продуктами. 4. Нові знання необхідні для розуміння генетики яка впливає на якість продукту. 5. Генна інформація буде використана в генетичних селекційних програмах. 6. Базова інформація відносно процесів які розвиваються в тваринах сільськогосподарської важливості в основному відсутня. 7. Споживання є найбільш коштовним компонентом в сучасному виробництві тварин. 8.

Дослідження необхідні в такій області як більш ефективне використання поживних речовин. 9. Використання комп'ютерних технологій необхідно для покращення управлінських рішень та стратегій.

Task 5. Write a short annotation in English to the text 2

Text 3 (for self-studying**)**

New Zealanders comfortable with the use of animals for research, testing and teaching

***Consult a dictionary to translate key words*: survey, attitude, forestry, investigate, awareness, support, attitudes, confidence, issue, acceptable, suffering, canvas, precisely, current, legislation, pertaining, expectation, welfare, treatment, life-threatening, cancers, awareness, evidence, to support, representative, condone, provision, to ease, a pet.**

A national **survey** into New Zealanders' **attitudes** towards the use of animals in research, testing and teaching (RTT), commissioned by the Ministry of Agriculture and **Forestry** (MAF), has provided important new information about what New Zealanders really think about the use of animals in RTT.

The survey **investigated** New Zealanders' **awareness** and interest in the use of animals for RTT purposes and the levels of **support** and **attitudes** towards this use of animals. Awareness of the regulation of the use of animals in RTT and the degree of **confidence** held in the Animal Welfare Act 1999 was also examined.

Overall the level of interest in RTT is low. Only 33% of respondents expressed an interest in the **issue** generally and the majority agreed that the use of animals for teaching (72%) and research and testing (68%) was **acceptable** as long as there was no unnecessary animal **suffering.**

"We wanted to **canvas** views on the use of animals in RTT and establish **precisely** what the New Zealand public want to know about such animal use," says Dr Virginia Williams, MAF veterinary adviser. "This is the first New Zealand study of this kind**.** It was seen as important in ensuring that **current** practice and **legislation pertaining** to the use of animals in RTT meets societal **expectations** for the **welfare** and humane **treatment** of animals."

The main reason respondents were concerned was because they felt that animals would suffer, while the main reason they were unconcerned was because they felt it was necessary to protect human health. Respondents were more likely to find that animal use was justified if it was for research into **life-threatening** diseases such as **cancers.**

The regulation of the use of animals in RTT is not well understood. Only 21% of respondents declared an awareness of any rules and regulations and only 37% of those declared they knew a lot about the legislation.

While around half of the respondents felt less comfortable with RTT when they learned about the number of animals used each year in New Zealand, nearly

three quarters of them felt more comfortable when the membership of an animal ethics committee (AEC) was explained to them. There was also strong **evidence** that respondents **supported** the balanced make up of the AECs and were reassured by having an SPCA **representative** and veterinarian on committees.

"There will always be those that do not **condone** the use of animals in RTT, just as there will be those that are not concerned by it. This study shows that there is a need **to ease** public concerns through the **provision** of factual information about the regulatory system in New Zealand and the realities of the use of animals in RTT," Dr Williams said.

An independent telephone survey of 750 people throughout New Zealand was conducted between 30 June and 7 July 2005 by independent research company, UMR Research Ltd. The survey is considered to be representative of the country as a whole.

The survey was conducted in four parts. Part one collected demographic information and asked respondents whether they were, or had ever been, active supporters of an animal welfare or animal rights organization, whether they were or had ever been a parent, had children at school and whether they had **a pet.** Part two collected information about awareness and interest in the use of animals for research and testing purposes and separately for use in teaching. Part three looked at attitudes to the use of animals in RTT and the level of concern or lack of concern about such use and part four explored awareness of the Animal Welfare Act 1999.

Task 1. Make up 10-15 questions to the text.

Task 2. Write down a summary to the text (in Ukrainian).

Task 3. Write down an annotation to the text (in English).

Text 4. Animal husbandry (for self-studying)

Task 1. Read, translate and be ready to discuss in class
Task 2. Write down all terminology concerning animal husbandry

Animal husbandry, also called animal science, stockbreeding or simple husbandry, is the agricultural practice of breeding and raising livestock.

The science of animal husbandry is taught in many universities and colleges around the world. Students of animal science may pursue degrees in veterinary medicine following graduation, or go on to pursue master's degrees or doctorates in disciplines such as nutrition, genetics and breeding, or reproductive physiology. Graduates of these programs may be found working in the veterinary and human pharmaceutical industries, the livestock and pet supply and feed industries, or in academia.

Historically, certain sub-professions within the field of animal husbandry are specifically named according to the animals that are cared for.

1. Different types of animal husbandry
2. Ethical aspects of animal husbandry
3. Genetic erosion in agricultural and livestock biodiversity
4. Hybridization, Genetic engineering, Genetic pollution and Food security

Different types of animal husbandry

A swineherd is a person who cares for hogs and pigs (older English term: swine). A shepherd is a person who cares for sheep. A goatherd cares for goats. A cowherd cares for cattle. In previous years, it was common to have herds which were made up of sheep and goats. In this case, the person tending them was called a shepherd. Camels are also cared for in herds. In Tibet yaks are herded. In Latin America, llamas and alpacas are herded.

In more modern times, the cowboys or vaqueros of North and South America ride horses and participate in cattle drives to watch over cows and bulls raised primarily for food. In Australia many herds are managed by farmers on motorbikes and in helicopters. Today, herd managers often oversee thousands of animals and many staff. Farms and ranches may employ breeders, herd health specialists, feeders, and milkers to help care for the animals. Techniques such as artificial insemination and embryo transfer are frequently used, not only as methods to guarantee that females are bred, but to help improve herd genetics. This may be done by transplanting embryos from stud-quality females, into flock-quality surrogate mothers - freeing up the stud-quality mother to be reimpregnated. This practice vastly increases the number of offspring which may be produced by a small selection of stud-quality parent animals. This in turn improves the ability of the animals to convert feed to meat, milk, or fiber more efficiently and improve the quality of the final product.

Ethical aspects of animal husbandry

Ethical husbandry. A wounded Norwegian reindeer is moved on a snowmobile sled.

There are contrasting views on the ethical aspects of breeding animals in captivity, with one debate being in relation to the merits of allowing animals to live in natural conditions reasonably close to those of their wild ancestors, compared to the view that considers natural pressures and stresses upon wild animals from disease, predation, and the like as vindication for captive breeding.

Some techniques of animal husbandry such as factory farming, tail docking, the Geier Hitch and castration, have been attacked by animal welfare groups such as Compassion In World Farming. Some of these practices also are criticized by farmers who use more traditional or organic practices. Genetic engineering is also controversial though it does not necessarily involve suffering. People who believe in animal rights generally oppose all forms of animal husbandry.

Some domesticated species of animals, such as the vechur cow, are rare breeds and are endangered. They are the subject of conservation efforts.

Genetic erosion in agricultural and livestock biodiversity

See also: Genetic erosion and Agricultural biodiversity

Genetic erosion in agricultural and livestock biodiversity is the loss of genetic diversity, including the loss of individual genes, and the loss of particular combinants of genes (or gene complexes) such as those manifested in locally adapted landraces of domesticated animals or plants adapted to the natural environment in which they originated. The term genetic erosion is sometimes used in a narrow sense, such as for the loss of alleles or genes, as well as more broadly, referring to the loss of varieties or even species. The major driving forces behind genetic erosion in crops are: variety replacement, land clearing, overexploitation of species, population pressure, environmental degradation, overgrazing, policy and changing agricultural systems.

The main factor, however, is the replacement of local varieties of domestic plants and animals by high yielding or exotic varieties or species. A large number of varieties can also often be dramatically reduced when commercial varieties (including GMOs) are introduced into traditional farming systems. Many researchers believe that the main problem related to agro-ecosystem management is the general tendency towards genetic and ecological uniformity imposed by the development of modern agriculture.

Hybridization, Genetic engineering, Genetic pollution and Food security

In agriculture and animal husbandry, green revolution popularized the use of conventional hybridization to increase yield many folds by creating "High yielding varieties". Often the handful of breeds of plants and animals hybridized originated in developed countries and were further hybridized with local verities, in the rest of the developing world, to create high yield strains resistant to local climate and diseases. Local governments and industry since have been pushing hybridization with such zeal that several of the wild and indigenous breeds evolved locally over thousands of years having high resistance to local extremes in climate and immunity to diseases etc. have already become extinct or are in grave danger of becoming so in the near future. Due to complete disuse because of un-profitability and uncontrolled intentional, compounded with unintentional cross-pollination and crossbreeding (genetic pollution) formerly huge gene pools of various wild and indigenous breeds have collapsed causing widespread genetic erosion and genetic pollution resulting in great loss in genetic diversity and biodiversity as a whole.

A Genetically Modified Organism (GMO) is an organism whose genetic material has been altered using the genetic engineering techniques generally known as recombinant DNA technology. Genetic Engineering today has become another serious and alarming cause of genetic pollution because artificially created and genetically engineered plants and animals in laboratories, which could never have evolved in nature even with conventional hybridization, can live and breed on their own and what is even more alarming interbreed with naturally evolved wild varieties. Genetically Modified (GM) crops today have become a common source for genetic pollution, not only of wild varieties but also of other domesticated varieties derived from relatively natural hybridization.

It is being said that genetic erosion coupled with genetic pollution is destroying that needed unique genetic base thereby creating an unforeseen hidden crisis which

will result in a severe threat to our food security for the future when diverse genetic material will cease to exist to be able to further improve or hybridize weakening food crops and livestock against more resistant diseases and climatic changes.

Animal Husbandry, is breeding, feeding, and management of animals, or livestock, for the production of food, fiber, work, and pleasure. Modern methods concentrate on one type of animal in large, efficient farming units that generate animal products at the highest rate of return for investment. Intensive husbandry conditions include large numbers of animals in small lots, enriched feed, growth stimulation by various means, and vaccination against disease. Most of the world's domestic animals, however, are raised in small units under less efficient conditions and at lower rates of return.

Animals furnish more than one-fourth of the world's total value of agricultural products. They supply a much higher proportion of human food in the developed countries than elsewhere. In the United States, animal products account for more than one-half of the total agricultural income.

Traditional husbandry practices are closely associated with the degree of control needed over the animals that are kept and with the uses to which they are put. Most domesticated animals have multiple uses; for example, animals kept primarily for work also supply milk, meat, and clothing materials. The animals and their uses, however, are closely associated with the culture and experience of the people who care for them. In some regions of the world, cattle are not considered for use in the production of food. Studies have shown that the work power, fertilizer, milk, and the fuel from dung that the cattle provide in these regions are more efficient animal products than meat. Analysis of other cultural practices has often revealed unexpected efficiency of use fitted to local circumstances.

Environmental influences such as climate also play an important role in the domestication and use of animals. Water buffalo are used as draft animals to pull wagons and farm equipment in southern Asia, where they are adapted to the high temperature and humidity, while horses, which thrive in moderate climates, were the principal draft animals in the temperate regions until they were replaced by tractors. Cattle from India that are acclimatized to hot and humid conditions are prevalent in the southern United States because they are better adapted to the climate of the region than European cattle.

Draft Animals

Domesticated animals used primarily for work, transport, and leisure are widely distributed. They include the horse, mule, donkey (see Ass), ox, buffalo, camel, llama, alpaca, yak, reindeer, and dog.

Modern horses are thought to have descended from one or more of three subspecies, including the tarpan, Przewalski's wild horse, and the European forest horse. They are still used for draft in many countries of the world. They are also used for controlling other types of animals, for carrying packs, and for riding for leisure and sport. The world population of horses is estimated at about 56 million; approximately half are in North and South America and Africa, and half in Asia and Europe. Almost half of the 13 million or so mules in the world are found in Asia and the rest is fairly evenly distributed in Africa, North and Central America, and South

America. Of the more than 40 million donkeys, about half are in Asia and one-fourth in Africa.

Camels, llamas, and alpacas are used for carrying packs. Of about 18 million camels in the world, approximately three-fourths are found in Africa and the rest in Asia. The llama and alpaca are mostly limited to small areas in South America, although their popularity is increasing in North America. Practically all water buffalo are found in Asia. They are used primarily as draft animals but have potential for the production of milk and meat. Oxen are also important draft animals in Asia and in some parts of southeastern Europe. Dogs are used as draft animals in Alaska and Siberia, and are also used to control sheep and other animal herds.

Sheep and Goats

Sheep are used for wool, meat (mutton and lamb), and to a small extent for milk. Sheep are commonly divided into three types based on whether their wool is fine, medium, or coarse. Perhaps the first animals to be used in husbandry, they were domesticated in southwestern Asia about 11,000 years ago. About 1 billion are now widely distributed throughout the world, with the largest populations in Asia, Africa, Oceania, Europe, South America, and the western United States. Commercial sheep farming is usually conducted on large tracts of land, divided into operational units containing 1,000 or more animals per unit. Sheep are also raised as a secondary enterprise on many small farms. They are well adapted to semiarid regions and to land that is too steep or rough for the cultivation of crops.

Goats were first domesticated in the same region as sheep, and for the same uses, but about 1,500 years later. Worldwide population is estimated to be more than 740 million and shows a similar distribution.

Swine

Recent evidence suggests that swine were domesticated about 9,000 years ago in several world regions simultaneously. Worldwide population is estimated to be more than 940 million. Approximately half are raised in Asia, primarily in China. Europe, North America, and South America also have large numbers. Unlike most domestic animals, pigs are omnivorous and compete directly with humans for many foods. In the United States their production is concentrated in the Midwest, where pig husbandry is based on the conversion of corn and soybean meal into meat under intensive conditions.

Hog (animal), domesticated mammal, of the swine family, extensively raised in almost every part of the world as a food animal. Hogs belong to the order of even-toed hoofed animals. They are further classified into the suborder of animals with 44 teeth, including two enlarged canines in each jaw that grow upward and outward to form tusks. The terms hog, swine, and pig are often used interchangeably for these animals.

Hogs are probably descended from two wild swine, one species from Europe and the other species from Southeast Asia; they were perhaps first domesticated in China about 9000 years ago, and later in Europe. They were introduced into the

Americas by Christopher Columbus and the Spanish explorers, and present-day feral razorbacks are probably descended from those animals.

The adult domestic swine has a heavy, rounded body; a comparatively long, flexible snout; short legs with cloven hooves; and a short tail. The thick but sensitive skin is partly covered with coarse bristles and exhibits a wide range of color patterns. Like all swine, domestic hogs are quick-footed, intelligent animals.

Well adapted for the production of meat because they grow and mature rapidly, hogs have a short gestation period of about 114 days, and they produce large numbers of young each time they give birth. They are omnivorous and can scavenge a wide range of foods—perhaps one of the reasons they were first domesticated. As food sources, they convert cereal grains and legumes such as soybeans into meat. Other than meat, products from swine include leather (pigskin) for luggage and gloves, and bristles for brushes. For centuries they have also been used as a primary source of edible fat. In the United States until the mid-1920s, they were bred for the production of large amounts of lard. Swine in other countries such as England, however, were bred for the production of lean meat and were called bacon-type hogs. Modern swine are intermediate between these two types and are known as meat-type hogs. As the demand for fats has decreased, the meat-type hogs have been developed to resemble the bacon type more closely.

Breeds

The types of hogs that have been bred reflect their major use. An estimated 90 breeds are recognized today, in addition to more than 200 varieties.

Eight major hog breeds are raised in the United States. The Berkshire (black with white points) and the Yorkshire (also called Large White) originated in England. The Chester White, Duroc (red), Hampshire (black with a white belt), Poland China (black with white points), and Spotted (black with white spots) originated in the United States. The Landrace, a large, long, white pig, was imported from Denmark. The major breeds also differ in growth rate, the number of young produced, mature body size, and ability to graze.

Most commercial hog production in the United States is based on crossbred animals, because crossbreeding results in hybrid vigor. The most used systems are two-breed and three-breed rotational crossing. In two-breed crossing, the sire of one breed is bred to the dam of another breed. The offspring of this cross is bred to a sire of the same breed as the dam in the first cross, and the offspring of this cross is then bred back to a sire of the same breed as the sire in the first cross.

Production

Swine are reared under more intensive conditions than cattle and sheep. Such enterprises fall into three broad groups: production of purebred breeding stock, production of feeder pigs, and growing and finishing of feeder pigs for sale and slaughter. Some producers carry out all three activities, and recently many of them have formed cooperatives and built large farrowing units, where up to 1,000 sows can give birth. When the young feeder pigs are weaned at these large units, the individual members of these cooperatives buy them back for feeding and finishing.

Intensive production requires expert management and the cooperation of several different specialists, such as veterinarians and nutritionists. Feed costs account for about 75 percent of the total production costs, so careful selection of feeds for their nutritional adequacy and economy is important. Many other important elements must also be controlled when swine are raised under confined conditions. Newborn pigs are highly sensitive to cold. In addition, pigs have no sweat glands, so larger pigs must have facilities for keeping cool in warm environments. Proper ventilation also removes toxic gases, primarily hydrogen and ammonia from waste products. In addition, because the animals are confined in intensive production units, they must each be allotted a given amount of space. This ranges from about 0.3 sq m (about 3 sq ft) for each young pig to approximately 1.4 sq m (about 15 sq ft) for brood sows.

Under confinement, disease is controlled by vaccination, control of wildlife carriers of disease, antibiotics, and, in some cases, eradication of the disease-producing organisms. Compounds that can control the reproductive cycle, the length of the gestation period, and the timing of births have made it possible to control the breeding and farrowing so that a minimum of labor is required during weekends, when such labor is more expensive.

Cattle

Modern cattle are usually divided into three types: beef, dairy, and dual purpose, an intermediate type used for both milk and meat. It is believed that cattle were domesticated about 8,500 years ago in southeastern Europe, with Southeast Asia a probable second center of domestication. The world cattle population is more than 1.4 billion, with half concentrated in Asia and South America, and the rest in Africa, Europe, the countries of the former USSR, and the United States. Most beef cattle are raised on large rangelands, but following weaning, the young animals to be used for meat may be fattened in feedlots. Dairy cattle are managed in relatively large herds under intensive conditions near centers of dense population. Cheese, dried milk, and other specialized products, however, usually come from small farms with cattle set out to pasture.

Poultry

Poultry includes chickens, ducks, geese, guinea fowl, peacock, pigeons, swans, and turkeys. Each of these domesticated groups is descended from a closely related wild bird and was probably first developed in the areas where the wild bird was indigenous. World numbers are estimated at more than 15 billion chickens, about 1 million ducks, 245 million geese, and some 250 million turkeys. Chickens are numerous in most regions of the world. Most of the ducks are produced in Europe and Asia and most of the turkeys in the U.S. In the developed countries, production units for meat and eggs are large and intensive, with individual birds housed singly in cages or housed together in large numbers. Under these conditions, one operator can care for large numbers of birds with high labor efficiency and good control of disease and the environmental factors affecting production. See Poultry Farming.

Other Animals

Other domesticated animals of importance include, in the cattle family, the yak in Tibet, the mithan in India, and the banteng in Southeast Asia. The reindeer is important in the northern regions of North America, Europe, and Asia.

Although a few specialized farms have raised various animals (primarily mink and foxes) for their pelts, most furs are obtained from wild populations by hunting and trapping. In North America, muskrats and raccoons provide slightly more than half the total revenue. The former USSR was also a leading fur nation. See Fur Industry.

Current Trends

The major concern of animal husbandry today is the extent to which production can be maintained as the human population increases. The goal of research has been to increase the efficiency of the production of animal products by genetic selection and genetic engineering. For example, scientists have increased the size of sheep by inserting growth-hormone genes into embryos, and the same method can be applied to cattle and other animals.

Research is also being directed toward the development of animal strains in areas deficient in protein. Thus in South America the capybara is being exploited by Venezuela for its meat; it is taken from the wild in large numbers to lands devoted to cattle raising. In Peru, the government is encouraging the raising of guinea pigs for their food value, and elsewhere in Latin America research is being conducted into the farming of the iguana lizard.

Intensive methods for producing animal products include confinement of poultry in small cages, swine in small pens, and sheep and cattle in small lots. Confinement leads to savings in labor, feed, and other production costs. Confinement in individual pens may also afford savings from improved disease control and better protection from predators. Such practices have come under attack as cruel to the animals, and protective legislation has been advocated (see Animal Rights: Animals as Food and Products). Livestock and poultry farmers, on the other hand, claim that the animals are probably not under much stress because disturbed animals would show sharp decreases in productive capacity.

Also at issue are special additives, including hormones, antibiotics, vitamins, and other substances used to increase growth or productivity. In the United States, most of these substances are under the control of the Food and Drug Administration (FDA). The general guidelines are that any supplement must be proved safe and effective in the amounts used. The two most controversial growth additives are the hormone diethylstilbestrol (DES) and antibiotics. DES is now banned because in high doses it was found to be capable of causing cancer. Scientists who advocate the banning of antibiotics argue that resistant strains of bacteria in animals might transfer their resistance to bacteria that infect humans. The first proven instance of this occurred in 1984, when an outbreak of human salmonella infections in four midwestern states was traced to drug-resistant salmonella bacteria from calves in South Dakota that had been fed chlortetracycline.

Модуль 2. Технологія виробництва та переробки продукції птахівництва
Module 2. Producing technology and poultry products' processing

Text 1

Recent developments in ostrich farming

***Task 1. Before reading and translating the text consult a dictionary to translate key words*:** ostrich, males, strides, unfeathered, flesh, plumes, captivity, tamed, barbs, shaft, prominent, eyelashes, solely, crash, impose, hide, demand, steadily, thrive, heat, thigh, wing, solar, insulator, withstand, lungs, blood, uric, habitats, bush, plain, density, diurnal, nesting, dusk, gregarious, search, courting, submission, tail, mature, plumage, spiky, black-tipped, buff-coloured, mating, beak, forehead, toes, tiny, quills, mottled, latitude, altitude, squat, haunch, flap, hitting, alternate, thudding, hollow, booming, flutter, crouch, consummation, groaning, snap, clutch, dawn, loss, befits, pit, arid, veal, slaughter, value, awareness, jerky, biltong, leather, durable, tendons, torn, cornea, trim, dementia, conception, husbandry, viable, brooding, scope.

The **ostrich** is undoubtedly the world's largest living bird. Adult **males** stand 2.4 m tall and can weigh well over 100 kg; the hen is slightly smaller. Ostriches are flightless birds, with their great body size and reduced wing size rendering them incapable of flying. They have a long neck, long bare legs and two toes. Their strong legs allow them to run up to 70 km per hour when necessary, with **strides** of up to 8 m. Neck and thigh muscles are well developed and **unfeathered.** Since ancient times, ostriches have aroused people's interest. Apart from being hunted for their **flesh** and **plumes,** ostriches were kept in **captivity, tamed** and semi domesticated by the early Egyptians, Greeks and Romans. Egyptians and Roman women of noble birth rode ostriches on ceremonial occasions. There are descriptions in Tutankhamen's tomb of the king hunting the birds with a bow and arrow; a privilege that apparently was kept for the Pharaohs. In the Arabian Peninsula, ostriches were hunted for their meat, while their skin was used to make protective clothing. Unlike those of other birds' feathers, the **barbs** of the ostrich feather are equally long on both sides of the central **shaft**. This is why the ostrich feather was adopted in ancient Egypt as a symbol of justice and truth. Formerly found in Syria and Saudi Arabia until the middle of the present century, wild ostriches are now confined to Africa. The species name *Struthio camelus* comes from Latin. The word *camelus* is based on the similarities ostriches have with camels, such as their **prominent** eyes and **eyelashes,** their large size and their remarkable tolerance to the desert shaft habitat.

Commercial ostrich farming

The first commercial ostrich farm was established in South Africa in about 1860 **solely** for harvesting the feathers every six to eight months. Ostrich farms began to spread gradually to other countries, particularly Egypt, Australia, New Zealand,

the United States and Argentina, until the total number of ostriches raised commercially reached over 1 million by 1913. With the First and Second World Wars, however, the ostrich feather market **crashed** and the number of ostrich farms dropped significantly. The industry, nonetheless, managed to survive on a much smaller scale in South Africa. By keeping ostriches not only for their feathers but also for their meat and hides, it grew steadily thereafter. In 1986, just before the economic sanctions were **imposed,** South Africa exported a record high of 90 000 ostrich **hides** to the United States alone. The shortage of ostrich skins after 1986 caused prices to rise. This made ostrich farming an attractive proposition and a number of farms were established in Europe and more in the United States in an attempt to fill part of the ever-increasing international **demand.** The world ostrich industry had finally begun and continues to grow **steadily.**

Characteristics and behaviour

Adaptation of the ostrich

The ostrich is very adaptable and **thrives** under extreme conditions. Among the many ways of regulating its body temperature, it controls **heat** loss during cold weather by covering its **thighs** with its **wings,** and during hot weather, by lifting and moving its wings, it creates a gentle breeze. The feathers are excellent **insulators,** minimizing heat gain from direct **solar radiation**, as well as reducing heat loss during cold desert nights. It has a remarkable tolerance to heat, **withstanding** air temperatures of 56°C without undue stress. Heat is lost by panting via the well-developed air sac system that avoids over ventilation of the **lungs** and consequent dangerous water loss. Adaptations of the **blood** circulatory system permit its body to heat up to a greater extent than those of other warm-blooded animals while still keeping the head at a safe temperature. Ostriches rarely seek shade, as most desert animals regularly do. Furthermore, the ostrich's urine contains **uric acid** carried in a mucus-like substance that helps to minimize water loss . Ostriches may be found in a variety of open **habitats.** They normally avoid areas of thick **bush** or heavy tree cover, and inhabit wooded grasslands and other open country. Semi-arid, open and short-grass **plains** are usually associated with the highest ostrich **densities**. They are also able **to thrive** in very poorly vegetated areas.

Behaviour of the ostrich

Ostriches are **diurnal.** They are on their feet for most of the daylight hours, except when dust-bathing, resting or **nesting**. They invariably sit down at **dusk** and remain virtually inactive throughout the night unless disturbed. The chicks and juveniles are strictly **gregarious** and always remain in compact groups. Adults are semi gregarious and tend to be attracted to each other for short periods. Like camels, ostriches can travel for long distances in **search** of food and water. In addition to temperature control, ostriches use their wings for a variety of display purposes, including **courting**, protecting eggs and young and **submission.** The ostrich's posture communicates information to other birds. A more confident and aggressive bird will

hold its head and neck high, with the front of the body tilted upwards and the **tail** up, while a submissive bird will hold its head low and its tail down.

The breeding season

Ostriches are seasonal breeders, breeding only during particular seasons of the year. On average, the breeding/mating season lasts from six to eight months every year, although the timing and duration of breeding can vary with **latitude** and **altitude.** In the northern hemisphere, breeding commences during March and ends around August/September while in the southern hemisphere it begins around July/August and finishes by the end of March

Ostrich eggs

As **befits** the world's largest bird, the ostrich lays the largest egg of any living bird. Oddly enough, however, the ostrich egg is one of the smallest in relation to the size of the bird. **Measuring** 17 to 19 cm in length, 14 to 15 cm in width and weighing up to 1 900 g, the ostrich egg is only just over 1 percent of the female's body weight. The eggs vary from white to yellowish white in colour and their hard shiny surface is pitted with superficial pores of various sizes and shapes.

Ostrich products

Today, ostrich farms are considered to be among the most profitable agricultural projects. They are often referred to as "the farms of the future" because of the large variety of possible products and hence their high profit potential. Ostriches are raised commercially for their meat, hide and feathers.

Feathers

Ostrich feathers are used for cleaning fine machinery and equipment as well as for decorations and in the fashion industry. The quality of feathers produced from ostriches raised in Europe and North America differs from those produced in Africa. The best feathers come from the more **arid** regions of the world.

Meat

Ostriches produce red meat that is very similar in taste and texture to **veal** and beef depending on the age at which they are **slaughtered**. It is high in protein yet low in fat. A recent United States Department of Agriculture (USDA) publication compared the nutritive **value** of chicken and beef with that of ostrich meat. The study indicates quite clearly that ostrich meat is far better from the health point of view as it contains far less fat, and particularly less cholesterol, than other types of meat. Lately, with greater consumer **awareness** of the problems of high cholesterol levels in the **blood** and the possible association with increased incidences of heart attacks and cardiovascular difficulties, the demand for ostrich meat in the international

markets has been growing. The latest statistics show that current ostrich meat production is not enough to meet the increasing demand, whether in Europe, North America or Japan. It is expected that during the next decade, ostrich meat may gradually replace traditional types of meat. It is currently marketed in a variety of ways, including cold cuts, frankfurters, pâté, fillet steaks and sun-dried (**jerky or biltong)**, in addition to fresh meat.

Hide

Ostrich skin (**hide**) is considered to be one of the most luxurious **leathers**, and some even place it on a par with crocodile and snake skin. Ostrich leather is thick, **durable** and extremely soft and can be manufactured into a variety of products, such as shoes, bags, purses and jackets. In addition to their meat, skin and feathers, ostriches are being explored for medical purposes. The **tendons** of the ostrich leg are used to replace **torn** tendons in humans as they are long and strong enough for the human leg, and recent research in ophthalmology points to the possible use of ostrich eyes in **cornea** transplants. Ostriches are able to see clearly for over 12 km, and the cornea is large enough to be **trimmed** down to fit the human eye. Furthermore, the ostrich brain produces a substance that is being studied for the treatment of Alzheimer's disease and other types of **dementia.**

Comparison with other livestock

Recently, a number of beef producers in Europe and North America have switched to raising ostriches commercially because of the higher and faster financial returns of ostrich projects. When compared with traditional livestock, ostriches rate very highly. Whereas a cow produces a calf that reaches marketing weight after 654 days from **conception**, yielding 250 kg of meat, an ostrich produces not less than 40 chicks annually that reach marketing age after only 407 days from conception (42 days incubation + 365 days of age) and yield 1 800 kg of meat, 50 m^2 of leather and 36 kg of feathers each year (Table 2). Furthermore, the net weight of meat represents 50 percent of live weight in ostriches, a percentage much higher than that of other farm animals such as cattle, sheep and even poultry. In addition, the female ostrich can continue this annual production for up to 40 years. With the use of modern **husbandry** techniques and correct management, the overall production of one female ostrich during her "economic life" can reach 72 tonnes of meat, 2 000 m^2 of leather and 1450 kg of feathers. This production ability makes ostrich farming an extremely **viable** and highly economical proposition for developing countries. It is not difficult to raise ostriches successfully. As with traditional farm animals, the critical time is the first period of the ostrich's life. An ostrich chick requires good care, a balanced diet containing all essential nutrients in optimal quantities, and the right temperature must be maintained during **brooding up** to the age of four months.

Table1. The nutritive value of ostrich meat compared with traditional meats

Per 100 g raw meat	**Ostrich**	**Beef**	**Chicken**
Protein *(g)*	21.9	20.0	21.4
Fat *(g)*	1.0	15.6	2.6
Cholesterol *(mg)*	63	86	74
Energy *(cal)*	114	276	163
Calcium *(mg)*	5.2	9.0	13.0

Table 2. Comparison of some parameters of cattle and ostriches

	Ostriches	**Cattle**
Gestation/incubation period *(days)*	42	280
Offspring per year	40	1
Period from conception to slaughter *(days)*	407	645
Meat *(kg)*	1 800	250
Leather *(m^2)*	50.4	2.7
Feathers *(kg)*	36	-

Future of the ostrich industry

Today's commercialization of the ostrich is analogous to the early steps taken by the turkey industry back in the 1920s. In those days, turkeys were quite rare, difficult to find and extremely expensive, with some selling for breeding purposes for as much as US$ 2 000 each. By the mid-1960s there were more than 150 million turkeys in production worldwide. Currently, the ostrich industry in Europe and America is still mainly in the breeding phase, with little commercial processing taking place. Some birds are sold to other farmers and ranchers entering the ostrich business. Prices continue to be artificially high. As soon as the number of ostriches reaches a level high enough to support a slaughter market, however, prices are bound to drop. In 1992, over 150 000 ostriches were slaughtered worldwide; 95 percent of these were processed in South Africa. At present, there is no concrete indication as to when the ostrich population will be large enough to meet current, let alone future, consumer demand. In the last few years, ostrich farming has progressed dramatically and the world ostrich industry has achieved some economic stability. On many farms, however, the management of the birds, particularly the young chicks, is still relatively primitive. There is considerable **scope** for improvement in the areas of artificial incubation, chick nutrition, environmental requirements and selective breeding. Unfortunately, despite its great potential, the ostrich has received and continues to receive little attention from scientists. One possible way of attracting scientific interest and securing the proper recognition of the ostrich as an animal useful to people is to hold international symposiums and conferences. If ostrich

production is to provide the meat of the future, a scientific approach is the only way forward.

Task 2. Find English equivalents to the Ukrainian ones and learn them

Технологія виробництва; переробка продукції; продукція птахівництва; дорослий самець; птахи, які не літають; довгі голі ноги; плоть та плюмаж; випуклі очі; мешканець пустелі; для збирання пера; шкіра страусів; приваблива пропозиція; міжнародний попит; постійно зростати; виживати при критичних умовах; втрата тепла, накривати стегна крилами; пряма сонячна радіація; витримувати температуру повітря; вентиляція легенів; кровотворна система; теплокровні тварини; шукати тінь; сечова кислота; відкрити простори; товсти кущі; напив засушливі рівнини; найвища щільність; денні птахи; стадні; в пошуках їжі та води; статево зріли; період спарування; статеві органи; прибуткові сільськогосподарські проекти; схожі за смаком та текстурою; науковий підхід; проведення міжнародних конференцій; збалансоване годування.

Text 2. Commercial Ostrich Production (for self-studying)

Task 1. Read and translate the text. Make up 15-20 questions to the text.

Task 2. Write down a summary of the text (in Ukrainian).

Task 3. Write down an annotation of the text (in English).

Ostrich production in the United States must currently be considered a highly speculative venture. Ostriches may be a short-term attraction or they may become a minor agricultural industry of some economic importance. Current demand for ostrich breeding stock far surpasses supply, resulting in excessively high prices for all ages of birds. It is anticipated that these prices will decline dramatically once speculative demand for breeders is satisfied and prices become dependent on market demand for products such as skin or hide, plumage, and meat. Successful large-scale production depends on implementing scientifically proven practices in management and husbandry; breeding, brooding and rearing; nutrition, health maintenance and, above all, hatchery management and incubation. Maximum utilization of quality forage will likely be necessary to make production economically feasible. Producers should plan ahead when buying breeding stock to avoid potential inbreeding problems. Be careful to avoid purchasing cull stock and non-breeders. When purchasing adults obtain only guaranteed breeders from reliable sources. Be realistic on price. In North Carolina, a chick breeding pair costs approximately $6,000 and an adult pair (1-year-old) costs about $12,000. Before one attempts such an undertaking, it is highly recommended that marketing information for ostrich products should be

investigated. This information can be obtained by contacting. Methods for raising ostriches are variable and no two ostrich farms are alike. For these reasons, it is difficult to predict production costs. Accurate expenses and profits can only be predicted by the feed costs, and the market value of ostrich products, eggs, or birds within your market area. At present, the only available market in North Carolina is the sale of breeding pairs, and it is estimated that it costs about $200 per month to feed and maintain one adult breeding pair. One thing to remember in evaluating start-up costs of an ostrich farm is that the cost will be amortized over the life of the operation. This would result in a reduction of the cost per bird or egg over the operation's lifespan.

Nutrition

Nutritional practices recommended by some self-professed experts often are not based on sound nutritional principles. Nutrition related mortality problems in chicks and young juveniles include malnutrition or starvation, intestinal obstruction, and leg abnormalities. It is absolutely essential that ostriches have clean, potable water available at all times. They must receive feedstuffs that provide adequate levels of protein and essential amino acids, and meet vitamin, mineral, and energy requirements. The following program is practical and has provided excellent results in rearing ostrich chicks. When chicks are 24 to 48 hours old they should be started on a good quality turkey or game bird starter ration containing at least 18% protein. These rations are formulated to provide all nutrients necessary for optimum growth and health during the first two weeks of life. Fresh foods, including chopped lettuce, kale, and spinach, are low in energy and protein and are not needed by chicks. Some greens, such as spinach and chard, contain oxalic acid which can inhibit the absorption and use of calcium and contribute to leg abnormalities. High fiber foods can cause intestinal obstructions in young chicks and result in 'starve out' deaths. Never feed any feedstuff that is moldy, musty, or suspect in any way. Botulism or intestinal problems can occur. Raw bone (often fed for mineral content) can easily cause health problems and should never be fed to ostriches. Chicks should receive continuous light and have access to the starter ration at all times during the first 3 weeks. After that, they can be fed all they will consume in two short (20 minutes) daily feeding periods. Good quality small alfalfa pellets should be available to chicks on a continuous basis when twice daily feeding of the started ration commences. Chicks may also be given oyster shell or grit at this time. Supplementing the high protein starter ration with alfalfa will ensure that chicks consume adequate levels of essential nutrients while minimizing excessive weight gain which may contribute to leg weakness problems. Night lights are not required after chicks reach 3 weeks of age. Water should be rinsed daily and scrubbed every 3 days with a mild disinfectant. Inexpensive, water soluble vitamins and electrolytes for poultry should be added (at the recommended level) to the drinking water for the first 1 to 3 weeks. The fat soluble vitamins - A, D3, E, and K - are compounded with a starch or protein emulsifier to enhance dispersion and availability in water. This will ensure an adequate intake of vitamins, particularly A and D3. Other additives are not needed.

Refusal to eat and drink is a common problem with a young ostrich chicks. This problem can be easily alleviated by placing several older chicks (1 to 3 weeks of age) that are already eating with the younger chicks. If older chicks are not available, domestic poultry chicks can be placed with new-hatched ostrich chicks to teach them to eat and drink. At 8 weeks of age chicks can be placed on a good quality ratite, game bird, or turkey grower ration and fed what they will eat in two daily feeding periods. Continue to offer alfalfa pellets as a supplemental feed unless good quality forage is available. Juveniles can be maintained on this program until they reach sexual maturity. Breeder rations contain a high calcium level and should not be fed to juveniles. Adults and older juveniles can be ranged on well drained, succulent pasture plots or they can be maintained under dry-lot conditions. Pastured birds should be maintained on small plots and rotated periodically for optimum grazing efficiency. Birds on large acreage may become semi-wild and difficult to manage. Succulent forages such as irrigated alfalfa, wheat, rye, vetch, oats, or Bermuda grass are desirable for juveniles and adults and will reduce production costs significantly. Some forages may be too tough or high in fiber or too low in protein and energy to provide the nutrient level required for desired growth performance. If ostriches are allowed to forage on natural grasses or grain, try to balance this nutrient intake with the amount of commercial feed that is fed. Ostriches should not be allowed to become overweight. Excess body weight in the form of fat is detrimental to egg production by breeders and to meat quality of birds that are to be slaughtered. Breeding birds on pasture should receive daily supplements of a good quality, high protein ratite, turkey, or game bird breeder ration to ensure optimum egg production, fertility, and hatchability. Breeders in dry-lot confinement also should be fed the ratite or turkey or game bird breeder ration with continuous supplemental feeding of good quality alfalfa pellets or cubes of hay. Pellets or cubes are less wasteful and easier to feed than hay. Breeders should have access to oyster shell, grit, or commercially prepared bone meal during the breeding period. The addition of poultry vitamins and electrolytes to the feed or water may improve fertility and hatchability.

Breeder Flock Management

Well-nourished ostrich hens begin laying at approximately 2 years of age and are reported to have a productive life of more than 30 years. Egg production is variable but can exceed 70 eggs per year. Production begins in early spring and continues into the fall. Healthy hens may lay throughout most of the year--particularly if they are placed on an appropriate lighting program. The reproductive performance of birds is regulated by the length of daylight per day. Lighting programs generally use a combination of natural daylight and artificial light to stimulate and maintain egg production and fertility in breeder birds. Time clocks should be used with artificial light sources in order to control day length in a consistent manner. Juvenile hens and cocks should be reared separately from 1 year of age to sexual maturity. Mature hens and cocks should be separated after the breeding season. This will allow the birds to be more rested and they will begin egg production more readily when placed together for the breeding season. Eggs are

usually infertile during the early part of the breeding season. This is usually caused by infertility in the cock. Breeding cocks should receive 16 hours of light per day beginning 3 to 4 weeks before being penned with their hens. After being placed together, hens and cocks should receive 16 hours of light per day during the entire breeding season. If the ostrich farm is located in an area of the country which has a natural day length longer than 16 hours, at the time clock to match the longest natural day length. After natural sunset, 2-5 foot-candles of artificial light intensity at head height should be adequate to stimulate and maintain egg production. Two foot-candles is actually very dim light. If you held this document at arm's length under two foot-candles of light, you should barely be able to read it. Day length must NEVER be shortened and light intensity must NEVER be decreased during the laying cycle. Three of four days of diminished light or shortened day lengths may cause the entire flock to almost completely stop egg production. The breeding pen for each cock and his two to four hens should be 1 to 3 acres in size and well drained. Birds in larger enclosures are more difficult to manage. Eggs also will be more difficult to find and collect. Ideally, there should be a 6 to 8-foot-wide lane between pens to prevent fighting between cocks. A few trees or shrubs in the pens will provide privacy and help induce mating. Eggs are normally laid in a shallow scrape. They should be collected twice daily. Reproductively active cocks can be extremely protective and aggressive. Caution should be taken when entering their breeding areas. Aggressive cocks can be fed and penned in a catch or holding pen while eggs are collected. Keep in mind that an adult cock may stand 8 feet tall and weigh over 350 pounds. The ostrich is a very fast runner with strides of 16 to 23 feet in length.

Hatchery Management

Hatchery management is critical for successful hatchability. Hatchability problems can be caused by inadequate breeder nutrition, mating problems, improper egg handling, incubator or Hatcher malfunctions, and humidity or temperature problems. Successful management of a moderate size hatchery requires a high degree of expertise and attention to detail. Cleanliness is very important. The environmentally controlled hatchery building should be designed for durability and ease of cleaning. It should be of sufficient size to handle the egg volume anticipated and must include areas for egg cleaning and culling, egg trays, cooling and storage, incubation and hatching, chick holding, equipment washing and storage, as well as office and sanitary facilities. Equipment requirements for the hatchery include a standby generator, forced draft incubators and hatchers, service tables, a vacuum for cleaning, pressure washer, tray washers, and carts. Incubators, and hatchers, which can be utilized for ostrich eggs, are manufactured and sold by several commercial companies.

Incubation Requirements

Ostrich eggs should be stored with the large end up at a room temperature of 65 to 70 F. During this holding time, the egg should be rotated twice a day. Better hatchability will occur if eggs are set (placed in the incubator) within 2 to 4 days after

lay. Longer storage will reduce hatchability. Never set an excessively dirty egg. Manure or dirt should be gently scraped off or lightly sanded with a fine grit sandpaper. It is generally not advisable to wash eggs unless absolutely necessary. Only in extreme situations should eggs become wet during the cleaning process. Dirty eggs can be rinsed with commercially available 3% hydrogen peroxide. If eggs are to be wet, the wash water and rinse water must be at least 10 F warmer than the eggs. There should also be an individual towel for each egg and towels should not be reused. Disinfectants should not be used. The use of disinfectants in the cleaning solution can alter the egg shell cuticle and affect the rate of water loss during incubation, thus possibly adversely affecting chick quality and hatch time. Incubation time to hatch for ostrich chicks is between 39 and 44 days with 42 days being about the average. The optimum incubation conditions for the ostrich are in the range of 97.0 to 98.4 F dry bulb temperature with a relative humidity in the 20 to 30% range (wet bulb 67 to 73 degrees Fahrenheit). The optimal incubator humidity for ostrich eggs is 25% to allow a 15% loss of initial egg mass during a 45 day incubation period. The higher the dry bulb temperature the lower relative humidity needs to be. For instance, at a dry bulb temperature of 98.3 F it is estimated that the relative humidity needs to be as low as 20% (wet bulb 68 F), whereas at an incubation temperature of 97.5 F the relative humidity may need to be as much as 30% (wet bulb 72 F). It should be remembered that the higher the incubation dry bulb temperature the more water that is produced in the egg, thus creating the need for a lower incubation humidity to remove that water from the eggs. Individual hatchery incubation requirements will be dependent upon the lowest wet bulb\lb temperature that can be maintained in the setter room when the air conditioners are set on 100% fresh air. This will determine the lowest operating humidity of the incubators. It is recommended that eggs be transferred no earlier than internal piping (when a chick pips into the air cell internally). This can be confirmed by candling. If this procedure is followed, the hatch time can be more accurately predicted. If the relative humidity in the hatcher cannot be controlled, the embryo should be allowed to externally pip before moving to the hatcher. It is suggested that the hatcher be maintained at the same relative humidity as the incubator until at least external pipping has occurred. This will allow the egg to lose the water necessary to get the proper oxygen intake during this very critical period of time of embryo development. During the final stages of the hatching process and after external pipping, a relative humidity of 30 to 40% is recommended. It is also suggested that the hatcher dry bulb temperature be run at .5 F higher than the incubator temperature since the hatcher will routinely have fewer eggs than the incubator. After hatching, the chicks should be allowed to remain in the hatcher only for the time sufficient to provide for drying without dehydration. A chick that is up and moving about is ready to be removed from the machine. On the average, the holding time after hatch should be about 12 hours.

Brooding

Ostrich producers often experience high mortality in chicks and young juveniles as the result of improper brooding and poor early management practices. The

following recommendations, when effectively implemented and carefully followed, will significantly improve livability and quality of both chicks and juveniles. Caretakers must be trained and properly supervised to maintain desired conditions and to recognize and correct problems. The brooding facility must be designed to protect chicks from predators (dogs, foxes, etc.) as well as from inclement weather. Chicks should NEVER be allowed to get soaking wet. It must be kept dry and sanitary at all times and should be designed for effective ventilation and ease in cleaning. Concrete floors in brooding units make them easy to clean. Temperature at chick level should be 88 to 92 F during the first 10 days of life, then 80 to 85 F until they are 3 weeks of age. From 3 through 8 weeks the ideal temperature is between 70 and 80 F. Chicks must never be exposed to chilling temperatures nor allowed to become overheated. Chicks brooded in small pens with raised wire floors and heated with infrared heat lamps are particularly susceptible to chilling in cool weather. Warm room brooding (uniform temperature throughout the room) will prevent this problem. Space heaters or central heating is recommended. If chicks are placed on litter material such as wood shaving, rice hulls, or washed builder's sand, the litter should be covered with burlap for the first 7 to 10 days to keep chicks from eating litter and developing intestinal obstruction problems. After the burlap is removed, the litter or sand should be stirred daily to stimulate drying an prevent packing. Slick surfaces cause 'spraddle legs,' which is always fatal. NEVER cover litter with newspaper, cardboard, plastic, or other slick material or place chicks on such materials.

If ostriches are allowed to forage on natural grasses or grain, try to balance this nutrient intake with the amount of commercial feed that is fed. Ostriches should not be allowed to become overweight. Excess body weight in the form of fat is detrimental to egg production by breeders and to meat quality of birds that are to be slaughtered. At 6 to 8 weeks of age, chicks can be ranged outside in good weather, but they must be sheltered at night. They can be managed in groups of 25 to 50 birds. Young ostriches will swallow anything. Pens must be well drained, clean, and free of coarse, dry vegetation, pebbles, small rocks, wire, staples, and other debris which may cause intestinal obstruction or death, if consumed. Clean up all spilled feed. Again, NEVER allow ostriches access to moldy, wet or spoiled feed. At 4 months of age, chicks are fairly hardy and can be ranged outside with less danger of intestinal obstruction problems. Shelter and shade must be available to protect both birds and feed during inclement weather and at night.

General Management Tips

Ostriches are hardy animals that readily adapt to a variety of climatic conditions. Performance should be satisfactory in most areas, provided adequate shelter is available in pasture plots and pens to protect adults and older juveniles form extreme conditions such as snow, ice, heavy winds, cold rain, and sleet. In summer, shade must be available. Chicks and juveniles younger than 1 year must, of course, be well protected against bad weather. The shelter should be designed so that birds must enter through a confinement pen. This makes it easier to catch them. Feed and water

should be located inside shelters in order to condition birds to enter the shelters freely, as well as to protect feed from the weather. Feeders should be positioned so that caretakers can fill them without being exposed to aggressive males. Both feeders and waiters should be the open type and should be adjustable so that they can be kept at chest height of the birds. Fences for older juveniles and adults should be at least 5 feet high and constructed of 5 to 7 strands of smooth, barbless wire. The bottom wire should be high enough above the ground so that the caretaker can escape from aggressive cocks. Mesh wire is sometimes used for outside fencing to keep out predators, but should not be used in pens because the birds can injure themselves on it. Fence posts should be on the outside of pen areas. Loading chutes and catch pens should be at least 8 feet high and of solid construction to prevent frightened birds from seeing beyond the pen and attempting to escape by jumping or climbing out. Tame, gentle ostriches are much easier to handle and less prone to injury than non-gentle, semi-wild birds. Caretakers should spend time with chicks and young juveniles to tame them. Move gently among the birds, taking care to avoid frightening them. Daily hand-feeding of tidbits to juveniles is recommended. Ostriches can be trained to follow but are difficult to drive. Teaching young ostriches to follow by trailing pellets, lettuce, etc. will make handling easier as they mature. In chicks and young juveniles, there is little difference between the sexes. Early sex determination is difficult, but can often be made by examining the sex organs. The penis of the cock is slightly larger than the hen's clitoris, although both are very similar in appearance. At about 9 months of age, sex determination becomes easy when the penis emerges during urination. Chicks can be tattooed, branded, or microchipped at 1 day of age. The brand can be placed on the bare patch of the belly immediately behind the thigh. A thin wire can be formed into the identifying numerals or letters, heated red-hot and touched to the skin to create a permanent mark. Leg and wing bands also can be used for identification, but these may create health problems.

Health

Mortality and health problems diagnosed mainly in chicks and juveniles include starvation and malnutrition, intestinal obstruction, leg abnormalities, and coliform infections. Causes include improper brooding or nutrition, stress, improper handling, and genetics. Diagnoses in a variety of areas in the United States have confirmed rhinitis, candidiasis, *Salmonella*, *aspergillosis*, and coccidiosis infections. Parasites identified include lice and ascarids. Ostrich diseases and parasites, reported in Africa include anthrax, tape worm, ire worm, nematodes, opthalmia, lice, and ticks. While none of these has proven to be a problem in the United States, it is possible that imported ostriches may bring them in and create future problems. Professional assistance should be obtained promptly when a health problem is suspected. Indiscriminate use of medications can create problems and should be avoided.

Text 3 (for self-studying)
Feeding Quail

All poultry and game bird feeds are referred to as "complete" feeds. They are designed to contain all the protein, energy, vitamins, minerals, and other nutrients necessary for proper bird growth, egg production and health. Feeding other ingredients, either mixed with the feed or fed separately, upsets the balance of nutrients in the complete feed. Feeding additional grains or supplements is discouraged. Young game birds kept for meat production or sport hunting are fed differently than birds saved for egg production or breeding. Meat-type Bobwhite quail have larger bodies and gain weight quicker than birds grown for "flight" purposes. Diets must contain nutrient levels that meet the dietary needs of the birds being produced. Meat-type birds fed as flight birds are more expensive to produce and use more feed; they are larger than necessary and not considered as good fliers. In contrast, smaller strains of Bobwhite quail are usually considered as good flight birds but not recommended as good meat producers. They do not convert feed to meat as well and produce less desirable carcasses when slaughtered.

Feeding Programs

Feed quail chicks a "starter" diet soon after hatching. Continue feeding the starter until birds are six or eight weeks old. The starter diet has the highest level of protein a bird receives during its lifetime. As the chicks age, their requirements for most nutrients decline, including dietary protein. But they need more energy. After the chicks reach six or eight weeks old, feed meat-type birds a "finisher" diet, or feed flight birds and those saved for egg production a "developer" diet. Feed meat birds a finisher diet until slaughter. Feed flight birds and immature breeders the developer diet until you sell them or until they are about 20 weeks old. A few weeks before you expect egg production, offer breeders a "layer" diet until they complete their egg production period. Another species of game birds used for meat or egg production are coturnix or pharaoh quail. They are seldom raised for hunting. These birds mature at an earlier age than bobwhite quail and may begin laying eggs at six to eight weeks of age. Coturnix quail grown for meat are provided starter and finisher diets, whereas laying/breeder birds are fed starter and breeder diets. It is important to provide the correct diet to the birds if you want the desired results. Remember, birds saved for egg production are fed developer diets, not finisher diets. Mature laying/breeder birds are fed only laying diets. Otherwise, you will see reduced egg production and more thin-shelled eggs.

Vitamins

Vitamins are always added to feeds in amounts that meet minimum dietary requirements. This ensures that birds receive plenty of vitamins for proper health and performance. Higher levels are not usually harmful, but excessive vitamin supplementation is unnecessary and expensive. Minimum vitamin requirements for various ages of birds are shown in below. When adding vitamins to the diet as a

premix, be sure to use enough premix to supply minimum levels of all vitamins. You may have to add extra amounts of some vitamins to achieve minimum levels for other vitamins. This may increase the cost of the complete feed but is better than creating vitamin deficiencies. In periods of stress caused by disease, shipping or sudden changes in the environment it is recommended that additional vitamins and electrolytes be provided in the drinking water until the stressing condition is corrected.

Minerals

Like vitamins, adequate levels of minerals must be provided to all birds. Minerals in breeder feeds are especially important. Laying quail require higher levels of minerals for egg shell formation. Chicks require high levels of minerals for proper bone formation and development. Breeder feeds are fed only to laying birds. If a breeder feed is fed to chicks, reduced growth and unnecessary stress results. Although not always required for survival, a trace mineral premix added to diets will give better performance. Trace minerals are the minerals required at very low levels for good growth and production. Most feed ingredients contain these minerals but sometimes not enough of them. Many minerals are included in commercial vitamin premixes. The premix provides enough trace minerals when added at the rate of two pounds per ton of feed.

Medicated Feeds

Game bird feeds are available with several types of medications for preventing or treating diseases. The two most common medications added to feeds are coccidiostats and antibiotics. Coccidiosis is a parasitic disease of the digestive tract caused by protozoan organisms called coccidia. It is difficult to control by sanitation practices alone. The best prevention is continuous use of a drug or coccidiostat that reduces coccidia populations. The coccidiostat is usually added to the feed at low levels and fed continuously. Some coccidiostats are given at elevated levels for treating the disease when symptoms appear. Consult a nutritionist or pathologist before increasing the drug level, since some coccidiostats are toxic at elevated levels. Growing birds are fed a ration containing a coccidiostat from hatch until the last week before slaughter. An unmedicated diet if fed during the last week to assure that no drug residues remain in the tissues of the birds. The feeding of unmedicated diets before slaughter is recommended when using any dietary drug, regardless of whether the restriction is required or not. As birds mature, they develop a resistance to the coccidia organisms if you control exposure. Birds grown for breeder replacements are fed a coccidiostat until about 16 weeks of age. The medicated feed is then replaced with a feed not containing a coccidiostat. Spotty outbreaks of the disease can be controlled by including a coccidiostat in the water. Two coccidiostats with Food and Drug Administration (FDA) approval for use in quail feeds are monensin sodium (Coban) and amprolium. Antibiotics are also be added to some feeds to improve performance and maintain healthy birds. When are added at low (prophylactic) levels, antibiotics prevent minor diseases and produce faster, more

efficient growth. Higher (therapeutic) levels for treating disease outbreaks are usually given in water or injected into the bird. Examples of FDA approved antibiotics for quail diets are bacitracin and penicillin. Bacitracin (50-200 grams per ton) or penicillin (20-50 grams per ton) is permitted in game bird diets preventatives against ulcerative enteritis (quail disease). Higher levels are not recommended nor permitted by FDA. Treatment levels are best administered in the birds' drinking water. This works better because sick birds usually drink water but do not necessarily consume feed. Including bacitracin in diets of all game birds is recommended to maintain healthy, productive birds. When using any drug, carefully follow all label warnings and instructions. Always comply with all instructions that require a medication withdrawal period before slaughter or saving eggs for human consumption.

Diet Formulations

Several diets are included below that provide adequate levels of all nutrients for the type of birds cited. All ingredients must be used without substitution or alteration of quantities. Deviation from the recommended diets alters the levels of all nutrients and can create undesired problems. Always consult with a poultry nutritionist or your county agent before making dietary changes. Most commercially prepared game bird feeds are fed in "crumble" form. These small feed aggregates are formed by partial regrinding or crumbling pellet made from the "mash" feed. Frequently the crumbles of starter feeds are too large for newly hatched quail to eat. Additional grinding is necessary to produce particles of the desired size. Crumbles are not necessary for good production although they have several desirable characteristics. Mash diets made from the dietary formulations shown below produce excellent performance. The assortment of ingredients used has intentionally been kept to a minimum. Many additional ingredients can be used, but ingredient substitutions require reformulation to adjust for nutritional variations in feedstuffs. Attention to high quality ingredients is essential when making bird feeds. Before making the diets, make sure all ingredients are available. Poor quality ingredients may be tolerated in diets of some types of farm animals but not quail. If you use poor quality feedstuffs in quail diets, you will experience production problems. Never use a feed ingredient unless it is of highest quality. Often high-quality commercial quail feeds are not available and substitutes are needed. You can substitute comparable turkey feeds for quail feeds without hurting performance. In most cases, chicken diets can be fed to growing bobwhite quail that are raised for slaughter. Check with a qualified nutritionist before making dietary substitutions. If production problems occur that are "feed related", first get a sample of the feed. A one-quart sample of the feed is usually adequate. Contact an Extension Poultry Specialist for help in solving the problem. Submit a one- to two-cup portion of the feed to a laboratory for analysis of nutritional characteristics. Store the remaining sample for future reference. If problems are unusually severe, temporary replacement of the suspect feed may be necessary until the cause is determined. Only use a suitable diet from another feed manufacturer, and preferably, from a different feed dealer. Purchasing additional feed from the same dealer and manufacturer may extend your problems because the new

feed may have the same problem-causing characteristics. After determining the cause of the problem, if it is not feed related, you can resume using the original dealer's feed.

Water

Many producers overlook the importance of providing clean, fresh water to their flocks. Water, though not considered a nutrient by many producers, is the most important nutrient for animals. Like all farm animals, quail need clean water at all times. Drinking water must not get too hot or cold, or the birds may refuse to drink. Clean the water troughs and replace with fresh water at least once daily. Keep water and feed troughs clean of droppings, litter, soil and other contaminants. Position feed troughs to keep them clean and dry. Empty feed troughs at least two or three times weekly (daily if necessary) and refill with dry, fresh feed. Do not wash feed troughs unless they are excessively contaminated with wastes or unless the feed gets wet. Do not let the feed get moldy. Moldy feeds can kill quail.

Text 4. Poultry (for self-studying)

Task: Read the text and be ready to discuss the questions after the text

Poultry is the class of domesticated fowl (birds) farmed for food or for their eggs. These most typically are members of the orders Galliformes (such as chickens and turkeys), and Anseriformes (waterfowl such as ducks and geese).

The ancestors of the domestic chicken can be traced back to a bird living in the jungles of South East Asia. This was a small, partridge-coloured type of fowl called the Gallus bankiva. It bred once a year laying only one clutch of twelve eggs (see Figure 1 from Accompanying Booklet of Figures).

Chickens feature in art work of the ancient Egyptians (around 4000 BC) when they were kept for religious purposes. The early morning crowing of cocks led the Egyptians to believe that they were announcing the Sun God! There are records of chickens being kept as domestic animals in India as long ago as 3200 BC. Chickens probably reached Europe about two thousand years ago where they were valued not only as food producers but for the sport of cock fighting.

The modern chicken has undergone selected breeding and is now a very different bird from its ancestor. The once a year, short laying period of the jungle fowl has been extended to a long laying period of about ten months. The modern bird now lays up to three hundred eggs instead of one clutch of twelve eggs. The desire to sit on eggs and hatch them has been bred out of the modern birds so that they seldom go broody. Young birds reach sexual maturity and begin laying at twenty to twenty-four weeks of age unlike the wild jungle fowl who was only ready to lay at one year old.

Although the laying powers of chickens has been developed to a remarkable degree. Birds stop laying once a year when they go into a moult (replace their feathers). Once over a moult, the birds will begin to lay again but production during this second laying season will be about 20% below the production of the first season. However, the eggs from the second layer season will be larger.

Healthy hens can continue to lay for many seasons but the normal practice with commercial poultry is to keep the birds for one season's lay and then sell them for meat. New point-of-lay pullets are bought in to replace the older birds. Depending on the size of the poultry unit and the available housing, a supply of eggs can be maintained throughout the year by replacing the various flocks at different times of the year. Egg production is highest in spring and summer which is the period of lengthening daylight. In order to achieve the best production in winter, birds that are housed should be provided with artificial light. Birds that are kept on free range will follow the natural pattern of the seasons.

Poultry are economic converters of home grown food into both eggs and meat. Poultry manure is also a very valuable source of plant nutrients.

What constitutes poultry?

Poultry refers to birds within the scientific order "Galliforme".

This order is broken up into a number of families.

The family Phasianidae includes the common domestic fowl, as well as pheasants, partridge, quail and pea fowl.

The family Numididae encompases the guinea fowl

The family Meleagridae encompases turkeys.

Waterfowl, including ducks and geese, belong to the family Anatidae

What is a Bantam? In general, a bantam is not a particular breed. The word bantam may be used to describe a miniature version of a standard breed

Classifying Fowls. The breeds of poultry are so numerous that they cannot be considered in detail in these notes. Poultry can however, be divided into three groups as follows:

Fowls are often classified according to their function, as follows:

*A light breed is a breed used for egg production.

These animals are usually small to medium in size, active and grow fast

*A dual Purpose breed is one that gives a reasonable production of both eggs, and meat.

*A heavy breed is one that gives good meat production, but usually poor egg production. These birds are generally friendly, and slower moving.

*An ornamental breed is one that is kept mostly because of their appearance (eg. They may have a different or even attractive appearance)

Today, most commercial poultry producers use hybrid (crossbred) stock for either egg or meat production. The main purpose of keeping a pure breed is to provide the foundation stock for the breeding of hybrids. Hobbyists also keep pure breed strains for exhibition purposes.

Egg Laying Breeds

Egg laying breeds have the following characteristics:

*They are highly productive, white egg layers

*They seldom go broody

*They are light in weight, lean and not very heavily feathered

*They are active, nervous and become excitable when disturbed

*They have a good food conversion ratio. Being small, they eat less than the larger breeds but produce more eggs.

Egg production: White Leghorns are prolific layers of white eggs. Golden Comets and Red Sex Links are excellent layers of brown eggs. In general, chicken breeds with white ear lobes lay white eggs, whereas chickens with red ear lobes lay brown eggs.

Eggs and meat: Dual purpose breeds include several American and English breeds such as Ply-mouth Rocks, Sussex, and Wyandottes. These breeds lay reasonably well and are large enough for meat production.

Meat: For meat production only, nothing compares with the fast growth of Cornish Cross (White Cornish x White Plymouth Rock). They reach 4-5 lbs in 6weeks and 6-10 lbs in 8-12 weeks. They have active flighty dispositions, laying of white eggs, non-broodiness, and flying expertise. More examples are Leghorn, Ancona, and Minorca. "

Task 1. Assignment Questions:

1. List and provide a short description of poultry pests and diseases that occur in your area.
2. Explain how you would go about diagnosing pests and diseases of poultry.
3. Explain how you would treat pests and diseases of poultry in your area. Specify at least six pests and/or diseases.
4. Describe a poultry vaccination program for a poultry farm you have visited.
5. Report on the techniques for, and significance of quarantine for poultry.

Task 2. Study the following questions and answers. Be ready to discuss diseases of poultry

1. What is Avian influenza (bird flu)?

Avian influenza is a highly infectious disease affecting many species of birds, including commercial, wild and pet birds.

The most severe form of the disease (highly pathogenic) is a notifiable disease which was last confirmed in the United Kingdom in 1992.

Recent outbreaks of a new form of the virus, H5N1, have arisen in the Far East and more recently in Eastern Europe.

All people that keep poultry and other domestic birds should remain vigilant for signs of the disease and all keepers should maintain a high level of biosecurity to reduce the risk of introducing the disease.

2. What are the signs of the disease?

The severity depends upon the strain of virus and the type of bird infected.

Birds infected with Highly Pathogenic Avian Influenza viruses (HPAI) may die suddenly or show a range of clinical signs including respiratory signs, swollen heads, dullness and a drop in egg production.

Some birds, especially waterfowl, can be infected with Low Pathogenic Avian Influenza viruses (LPAI) without showing any signs of disease.

3. Once it is present, how is it spread?

AI is spread by movement of infected birds or contact with their secretions, particularly faeces, either directly or through contaminated objects, clothes or vehicles.

4. **Why is there so much concern about the current outbreaks?**

There is concern that the virus may change (reassort or mutate) to emerge as a new virus that is easily transmissible between people and capable of causing disease in people, birds and other animals.

5. Does it affect humans and if so, how?

Avian influenza (bird flu) is primarily a disease of birds. It is caused by influenza viruses closely related to human influenza viruses.

Transmission to humans in close contact with poultry or other birds occurs rarely and only with some strains of avian influenza.

The severity of disease in humans varies from mild disease to severe respiratory disease. This depends on the strain of virus and characteristics of the person infected.

Human deaths have been reported following severe disease.

6. What measures should we take now or in future to protect those who work with poultry?

High standards of personal hygiene for poultry workers will help prevent ingestion and inhalation of infective material and reduce the risk of transmission to others.

Thorough washing with soap and water is an effective method of decontamination and may usefully be enhanced by the use of anti-viral hand wash/wipes following effective washing.

The UK, like other countries, needs to increase its vigilance to match this increased global risk. All keepers of birds must be vigilant about the health of their birds.

You should also consider the advice to keepers, available on the Defra website.

7. What is Tamiflu?

Tamiflu is a drug which is believed to help protect humans from the H5N1 strain of the bird flu virus. Tamiflu is usually available through prescription only, for between £25 and £30.

Task 3. Read Poultry – General Questions and study the answers of the specialist in keeping poultry.

Can I keep chickens in my garden?
How do I introduce new chickens to an existing flock?
How many eggs does one hen lay per day?
Do you have to have a rooster for a hen to lay eggs?
How long do hens lay eggs?
Do chickens eat slugs and earthworms?
Are chickens noisy?
Can I eat fertile and non-fertile eggs?
How long do chickens live?

Are free-range chickens the same as organic chickens?
When a hen lays an egg which end comes out first?
How long does it take for a chick to hatch?
What is the difference between white and brown eggs?
My hens are eating eggs. What do I do?
How do I wash dirty eggs?
Can I keep chickens on my council allotment?
What breed of chicken lays the largest and the most eggs?
My roosters spurs are removing all the feathers on my the back of my hens. Is there a safe way to remove his spurs?

1. Can I keep chickens in my garden?

There may be local restrictions. Check with your local authority Environmental Health department.

Also check with your solicitor if there are any restrictions specified in your deeds for the area.

Finally check with your neighbours, especially if you plan to keep a cockerel. Site the run where it will not pose a nuisance to neighbours either through noise or smell.

2. How do I introduce new chickens to an existing flock?

The chickens are likely to fight until a pecking order has been established. If there is a large enough space there may not be any problem. One solution is to create a temporary barrier or fence from chicken wire. This will allow the chickens to get used to each other and after a few weeks the barrier can be removed.

3. How many eggs does one hen lay per day?

This depends on: the time of year; the breed of the hen; the diet of the hen; the age of the hen; and, how the hen is looked after.

Most of the standard breeds of chickens that have been selected through the years for egg production will lay between 180 – 320 eggs per year for their first year of laying.

On one extreme, there are records of hens averaging an egg a day for over a year. The rate of laying tapers in the second year and beyond, until it may only take place during the spring.

Some of the breeds that haven't been selected for egg production (selected for show, or other qualities, instead) may only lay eggs in the spring and early summer.

Appropriate feed mixtures also stimulate egg production. Provide 14 to 16 hours of light for hens to lay regularly.

One hen can only lay, at the most, seven eggs per week while most chickens lay fewer. A hen which lays one egg every day is a very good layer.

4. Do you have to have a rooster for a hen to lay eggs?

No. Without a rooster, hens will still lay eggs.

There are no roosters to be found at all the chicken farms, where most eggs come from. If you don't have a rooster, the eggs can't be fertile, and won't hatch.

5. How long do hens lay eggs?

Egg productivity diminishes after the first year. It is still good the second year, but then declines rapidly.

At about three or four years, production is not very efficient. Most commercial and farm hens are culled after their second season of laying.

6. Do chickens eat slugs and earthworms?

Yes - they eat slugs and earthworms. A chicken is unlikely to eat too many as their instinct is to forage for a variety of food items.

7. Are chickens noisy?

Roosters are noisy. Hens are much less noisy. Hens will be completely silent at night when it is dark.

A hen will cackle at times during the day, and will occasionally (especially when disturbed by an unfamiliar person or animal) squawk, but she will be quiet most of the time. Many hens will cackle after they have just been laying their eggs, but these, and most other sounds, are not very loud, and are certainly quieter than most sounds that may occur in the surrounding neighbourhood.

8. Can I eat fertile and non-fertile eggs?

Yes - non-fertile eggs are just as nutritious and tasty as fertile eggs.

9. How long do chickens live?

Chickens can live anywhere from 5 - 10 years depending on the breed and quality of life provided.

10. Are free-range chickens the same as organic chickens?

No, there are important differences. Organically raised hens are never given hormones, antibiotics or pesticides.

Free-range chicken producers have no regulations associated with production methods. They are free to use antibiotics, hormones, and non-organic feeds.

Both organically raised and free-range chickens have access to the outdoors and are never kept in confinement cages.

11. When a hen lays an egg which end comes out first?

The small end of the egg.

12. How long does it take for a chick to hatch?

Usually around 21 days depending on the breed.

13. What is the difference between white and brown eggs?

The main difference is in the breed of chicken. Nutritionally, the eggs are usually the same. This depends on feeding and management.

14. My hens are eating eggs. What do I do?

Hens will eat broken eggs if they find them. Hens keep an eye on each other, and when one finds food, others crowd in. In this way, egg-eating can spread through a flock. Hens do not normally consider unbroken eggs to be edible, but if they have anything stuck to them, such as smears of yolk from another egg, they'll peck at that. Sometimes hens learn to break eggs on purpose this way.

To reduce egg-eating, you should:

- Provide darkened nests. Hens do not like to eat in the dark, and they are less active in the dark. They break fewer eggs moving around in the nest boxes, and if they do break one, they're less likely to eat it.

- Use large nest boxes with a small door. In ordinary nest boxes, two or three hens will jam themselves into a nest meant for one, and this breaks a lot of eggs. Roomier nests lead to less breakage.
- Use deeper litter. This will prevent the litter from being scratched out of the nest and fewer eggs will be broken.
- Collect eggs frequently.
- Provide one nest for every four hens. Avoid overcrowding.
- Provide the right feed rations. Deficiencies can lead to thin-shelled eggs.

15. How do I wash dirty eggs?

Dry clean by rubbing the egg until all dirt is removed.

Wet cleaning is more complicated. The basic issue is that dirty eggs are covered with bacteria, which have trouble getting through the shell. When the shell is wet, they pass through the shell more easily.

Always wash eggs in water that is warmer than the egg and you should sanitise the eggshells to kill any bacteria on the shell. Dry the eggs with a paper towel.

16. Can I keep chickens on my council allotment?

In the UK you may keep hens on council owned allotments.

In England and Wales the Allotments Act 1950 includes allowance of hens to be kept on allotments.

In Scotland the Allotments (Scotland) Act 1892 allows fowl to be kept. This act is still part of the existing legal framework for allotments.

Local council rules may specify that no livestock can be kept on an allotment but this is not in force legally unless the council have a local by-law approved (which is unlikely).

17. What breed of chicken lays the largest and the most eggs?

Rhode Island Reds and Sussex are noted as the pure breed that lays most eggs (around 260 per year) and for quite a long time!

Most hybrids will probably match or even exceed that number as they are bred to produce eggs but for a shorter life span.

Some of the latest hybrids are geared up to lay 300-320 eggs per year.

Black Rocks lay about 330 per year and the 2nd year eggs are pretty large.

Battery hens lay absolutely massive eggs. Far bigger than any hybrids.

18. My roosters spurs are removing all the feathers on the back of my hens. Is there a safe way to remove his spurs?

You can trim and file down the spurs to remove the sharp points.

Module 3. Milk producing technology and processing
Модуль 3. Технологія виробництва та переробки молока

Text1. Dairy farming

Key words: **eventual, retail, alfalfa, silage, supplement viable, durable, substantial, grazing, wagon, feasible, vacuum pump, extension, pail, device, dump, surcingle, hung, underneath, strap, surge, hose, cart, vacuum-breaker, debris, suck, series, aisle, unwrapp, hooks, pipeline, parlor, ports, shrank, sucking, nipples, udder, assembly, bend over, mastitis, windmills, well, tub, refrigeration, draw, coil, agitator, freeze, chiller, sheet, flattening out, reuse, embed, array, sewage, parlor, loafing barns, disposal, dispersion, methane digesters, pollution.**

Dairy farming is a class of agricultural, or more properly, an animal husbandry enterprise, raising female cattle, goats, or other lactating animals for long-term production of milk, which may be either processed in-side or transported to a dairy factory for processing and **eventual retail** sale. Most dairy farms sell the male calves born by their cows, usually for veal production, or breeding depending on quality of the Bull calf, rather than raising non-milk-producing stock. Many dairy farms also grow their own feed, typically including corn, **alfalfa,** and hay. This is fed directly to the cows, or is stored as **silage** for use during the winter season. Additional dietary **supplements** are added to the feed to increase quality milk production.

History of dairy farming

Dairying has been part of agriculture for thousands of years, but historically it was usually done on a small scale on mixed farms. Specialist scale dairy farming is only **viable** where either a large amount of milk is required for production of more **durable** dairy products such as cheese, or there is a **substantial** market of people with cash to buy milk, but no cows of their own.

Centralized dairy farming as we understand it primarily developed around villages and cities, where residents were unable to have cows of their own due to a lack of **grazing** lands. Near the town, farmers could make some extra money on the side by having additional animals and selling the milk in town. The dairy farmers would fill barrels with milk in the morning and bring it to market on a **wagon.**

Before electrification most cows were still milked by hand, one after the other, each morning and night at milking time. This was **feasible** when a farm had up to about six cows but took too long as the herd size increased. Electrification brought the **vacuum pump**, and the automatic milking machine.

The first milking machines were an **extension** of the traditional milk **pail.** The early milker **device** fit on top of a regular milk pail and sat on the floor under the cow. Following each cow being milked, the bucket would be **dumped** into a holding tank.

This developed into the Surge hanging milker. Prior to milking a cow, a large wide leather **strap** called a **surcingle** was put around the cow, across the cow's lower back. The milker device and collection tank **hung underneath** the cow from the strap. This innovation allowed the cow to move around naturally during the milking process rather than having to stand perfectly still over a bucket on the floor.

Surge later developed a vacuum milk-return system known as the Step-Saver, to save the farmer the trouble of carrying the heavy steel buckets of milk all the way back to the storage tank in the milkhouse. The system used a very long vacuum **hose** coiled around a receiver **cart,** and connected to a **vacuum-breaker** device in the milkhouse. Following milking each cow, the hanging milk bucket would be dumped into the receiver cart, which filtered **debris** from the milk and allowed it to be slowly **sucked** through the long hose to the milkhouse. As the farmer milked the cows in **series**, the cart would be rolled further down the center **aisle**, the long milk hose **unwrapped** from the cart, and hung on **hooks** along the ceiling of the aisle.

The next innovation in automatic milking was the milk **pipeline.** This uses a permanent milk-return pipe and a second vacuum pipe that encircles the barn or milking **parlor** above the rows of cows, with quick-seal entry **ports** above each cow. By eliminating the need for the milk container, the milking device **shrank** in size and weight to the point where it could hang under the cow, held up only by the **sucking** force of the milker **nipples** on the cow's **udder.** The milk is pulled up into the milk-return pipe by the vacuum system, and then flows by gravity to the milkhouse vacuum-breaker that puts the milk in the storage tank. The pipeline system greatly reduced the physical labor of milking since the farmer no longer needed to carry around huge heavy buckets of milk from each cow.

The final innovation in automatic milking was the milking parlor, which streamlined the milking process to permit cows to be milked as if on an **assembly** line, and to reduce physical stresses on the farmer by putting the cows on a platform slightly above the person milking the cows to eliminate having to constantly **bend over.** Milking parlors allowed a large concentration of technical equipment to gather in one place, which permitted automatic milk take-off devices. Before this, milking was not entirely automatic, and each cow needed to be monitored so that the milker could be removed when the cows were almost done lactating. Leaving the milker on too long following lactation could lead to health problems such as **mastitis.**

History of milk preservation methods

Keeping milk cool helps preserve it. When **windmills** and well pumps were invented, one of its first uses on the farm besides providing water for animals was for cooling milk, to extend the storage life before being transported to the town market. The naturally cold underground water would be continuously pumped into a **tub** or other containers of milk set in the tub to cool after milking. This method of milk cooling was extremely popular before the arrival of electricity and **refrigeration.**

When refrigeration first arrived, the equipment was fairly small and did not have the ability to rapidly cool the large volume of milk that was entering the storage tank in a short period of time. This problem was resolved through the development of the ice bank. This is a double-walled tank design where water and cooling **coils** fill the space underneath and around the milk tank above.

All day long, the small compressor and cooling system slowly **draws** heat out of the water, while a second pump continuously circulates the water around the coils. Ice eventually builds up around the coils, until it reaches a thickness of about three inches surrounding each pipe, and the cooling system shuts off. When the milking operation starts only the milk **agitator** and the water circulation pump blowing water across the ice and the steel walls of the tank are needed to rapidly reduce the incoming milk to a temperature below 40 degrees. But because the ice is not permitted to build up until it touches the milk storage tank, the milk does not get cold enough to also **freeze.**

This cooling method worked well for smaller dairies up to about 40 cows, but for large numbers of animals a better system was needed to rapidly cool the incoming warm milk. This is usually done using a device known as a plate **chiller**, which is a heat exchanger. Alternating stainless steel plates cause the milk to flow in a thin **sheet** across the plates, while cold water is circulated in a thin sheet on the other side of the plates. **Flattening out** the milk flow permits quick, even cooling for all the milk, compared to a round tube where the center core does not cool as rapidly as the walls.

The plate chiller has high cooling demands, and for many farms this involves a step back into the past, back to the days of windmills and milk-can cooling, except now a large volume of naturally cold underground water is continuously streamed through the plate chiller to quickly bring down the milk down to the temperature of the underground water at about 50 degrees F. The water is usually not just dumped back into the ground again, but **reused** for washing and other purposes. But the milk still is not as cold as it needs to be, so the milk storage tank is still used to do further cooling, to bring the milk down to 40 degrees. But with the development of high-power 3-phase electrical service, ice-bank chillers are typically no longer used. Instead the milk storage tank is a direct-cooling system with cooling coils **embedded** in the walls of the tank, that quickly pull the heat out and dump it across a large **array** of possibly several different high-horsepower compressors and condensing units. Once the milk has achieved 40 degrees F after milking is finished, only one or two cooling units need to run occasionally to maintain the correct temperature.

Sewage from huge dairies

In the San Joaquin Valley of California a number of dairies have been established on a very large scale. Each dairy consists of several modern milking **parlor s**et-ups operated as a single enterprise. Each milking parlor is surrounded by a set of 3 or 4 **loafing barns** housing 1,500 or 2,000 cattle. Some of the larger dairies have planned 10 or more series of loafing barns and milking parlors in this arrangement, so that the total operation may include as many as 15,000 or 20,000 cows. The milking process for these dairies is similar to a smaller dairy with a single milking parlor but repeated several times. The size and concentration of cattle creates major environmental issues associated with manure handling and **disposal,** which requires substantial areas of cropland (a ratio of 5 or 6 cows to the acre, or several thousand acres for dairies of this size) for manure spreading and **dispersion,** or several-acre **methane digesters**. Air **pollution** from methane gas associated with manure management also is a major concern. As a result, proposals to develop dairies

of this size can be controversial and provoke substantial opposition from environmentalists including the Sierra Club and local activists.

Task 1. Answer the following questions

1. What is dairy farming?
2. What lactating animals do you know?
3. Do most dairy farms sell the male calves and why?
4. What kinds of feed do many dairy farms grow?
5. Why are dietary supplements added to the feed?
6. What is kept and grown on mixed farms?
7. What durable dairy product do you know?
8. How were cows milked before electrification?
9. How are cows milked nowadays?
10. What was the next innovation (after surge and step-saver) in automatic milking?
11. What method of milk cooling was popular before the arrival of electricity and refrigeration?
12. How the problem of small refrigeration equipment was resolved?
13. How was the ice bank designed?
14. What method of milk cooling was invented after refrigeration?
15. Where is the process of milk cooling quicker: in the round tube or in the plate chiller?

Text 2. Dairy cattle

Terminology

A young dairy animal is known as a calf. A female calf which has not given birth to a calf and is less than thirty months old is called a heifer. When the heifer is seven months pregnant or has reached the stage in pregnancy where the udder starts to swell, it is known as a springer. After calving, or when more than thirty months old, a female dairy animal is known as a cow. The process of birthing a calf is known as calving or parturition. A male dairy animal is called a bull at any stage of life, unless castrated, in which case it is known as a steer until it is four years old, then it is called an ox. A dairy animal's mother is known as its dam. Similarly, a dairy animal's father is known as its sire.

Modern times

Historically, there was less distinction between dairy cattle and beef cattle than is the case now, with animals of the same species often being used for both meat and milk production. Dairy cattle are now specialized animals, and most of them belong to breeds which have been bred specifically to give large volumes of milk. This milk is made into various products, including cheese, yogurt, butter, ghee, cottage cheese, whey, and ice cream, and is consumed around the world.

Dairy farms

Dairy cattle may be found in herds on farms where dairy farmers own, manage, care for, and collect milk from them. These herds range in size from small boutiques of fewer than five cows to large conglomerates of 25,000 cows or more. The average dairy farmer in the United States owns about one hundred cows and is about 55 years old.

Life of dairy cattle

Dairy cattle are distinguished by sex at birth. Only females can produce milk, and thus heifers, young cows, are generally considered more valuable than bulls, which are castrated and then they are sold for meat. If the bull looks good enough to be used for breeding it will grow up to be a bull and it will be used for mating. So when we are eating beef we are eating a steer and not a female cow.

Most dairy calves are separated from their dams within a few hours of birth. Such separation ensures decreased risk of disease passing from dam to calf and also allows the dam to begin producing milk for human consumption as soon as possible. The dam's first milk, called colostrum, is rich with antibodies and immune factors and is required for newborn calves to survive. A calf must drink two quarts (2 L) of colostrum within twelve hours of birth or its future may be in jeopardy, as a newborn calf has no immune system of its own and must rely on maternal antibodies contained in the colostrum for protection. The dam's milk quickly changes into milk more suitable for commercial consumption, and within three days after calving, a cow's milk is already on its way to human hands. Most young stock then subsist on milk replacer, a commercial feed additive used to take the place of the cow's natural milk, until old enough to consume more solid foods.

The cow

Dairy heifers are treated most generously by farmers, as the heifers form the farmer's future herd of cows. As a cow cannot produce milk until after calving (giving birth), most farmers will attempt to breed heifers as soon as they are fit, at about fifteen months of age. A cow's gestation period is about nine months (279 days long), so most heifers give birth and become cows at about two years of age.

A cow will produce large amounts of milk over its lifetime. Certain breeds, of course, produce more milk than others; however, each breed normally used in dairy production ranges from 8,000 to 12,700 kg (18,000 to 28,000 pounds) of milk per annum. The average for milk cows in the US in 2005 was 8,800 kg (19,576 pounds).

About 70 days after calving, a cow's milk production will peak. The cow is then bred. The cow's production slowly dwindles until, at about 305 days after calving, the cow is 'dried', when the farmer stops milking her. About sixty days later, one year after her previous calf was born, a cow will give birth ag Alternatively, farms may choose to forego this cycle, and settle for the lower production rate of perennial cows. A survey performed by DHI Computing Service in Utah, found that average production had dropped to 21.6 kg/day (corresponds to 7,900 kg/year) after four years of continuous milking.

When kept inside year-round most dairy cows live to be five or six years old before their annual milk production decreases to the point where it is no longer profitable for a farmer to keep them. Grazing cows will not produce as much milk; however, they will likely have a longer lifetime, up to 12 years depending on production that is measured monthly, because a farmer who grazes his cattle will generally retain cows that produce less milk than cows owned by farmers who raise cattle in barns. At death, the cow is butchered and sold for its meat.

More recently, certain practices have been enacted to ensure that high quality cows' progeny is more widespread than what is naturally possible. Some cows are 'flushed', where 7-12 embryos are removed from their reproductive systems. These embryos are then transferred into other cows who serve as surrogate mothers. This process is called an 'embryo transfer'.

Text 3. Automatic milking (for self-studying)

The milking process

The milking process is the collection of tasks specifically devoted to extracting milk from an animal (rather than the broader field of dairy animal husbandry). This process may be broken down into several sub-tasks: collecting animals before milking, routing animals into the parlour, inspection and cleaning of teats, attachment of milking equipment to teats, extraction of milk, removal of milking equipment, routing of animals out of the parlour.

Milking schedules

Maintaining milk yield during the lactation period (approximately 300 days) requires consistent milking intervals, usually twice daily and with maximum time spacing between milking. In fact all activities must be scheduled around the milking process on the dairy farm. Such a milking routine imposes restrictions on time management and personal life of an individual farmer, as the farmer is committed to milking in the early morning and in the evening for seven days a week regardless of personal health, family responsibilities or social schedule. This time restriction is exacerbated for lone farmers and farm families if extra labour cannot easily or economically be obtained, and is a factor in the decline in small-scale dairy farming. Techniques such as once-a-day milking and voluntary milking (see below) have been investigated to reduce these time constraints.

Automation in milking

To alleviate the labour involved in milking, much of the milking process has been automated: many farmers use semi-automatic or automatic cow traffic control (powered gates, etc.), the milking machine has entirely automated milk extraction, and automatic cluster removal is available to remove milking equipment after milking. Automatic teat spraying systems are available, however there is some debate over the cleaning effectiveness of these.

The final manual labour tasks remaining in the milking process were cleaning and inspection of teats and attachment of milking equipment (milking cups) to teats. Automatic cleaning and attachment of milking cups is a complex task, requiring accurate detection of teat position and a dextrous mechanical manipulator. These tasks have been automated successfully in the voluntary milking system.

Voluntary Milking Systems (VMS)

Since the 1970s, much research effort has been expended in investigating methods to alleviate time management constraints in conventional dairy farming, culminating in the development of the automated voluntary milking system (VMS).

Voluntary milking allows the cow to decide its own milking time and interval, rather than being milked as part of a group at set milking times. VMS requires complete automation of the milking process, as the cow may elect to be milked at any time during a 24 hour period. A typical VMS layout is shown in Fig. 1. The milking unit comprises a milking machine, a teat position sensor, a robotic arm for automatic teat-cup application and removal and a gate system for controlling cow traffic. The cows are permanently housed in a barn, and spend most of their time resting or feeding in the loose-stall area.

When the cow elects to attend the milking unit (due to conditioned habit or udder fullness), a cow ID sensor reads an identification tag on the cow and passes the cow ID to the control system. If the cow has been milked too recently, the automatic gate system routes the cow past the unit. If the cow may be milked, the cow is routed into the milking unit, where automatic teat cleaning, milking cup application and milking takes place. As an incentive to attend the milking unit, concentrated feedstuffs may be fed to the cow in the milking unit, and the barn may be arranged such that access to the main feeding area can only be obtained by passing the milking unit.

The innovative core of the VMS system is the robotic manipulator in the milking unit. This robotic arm automates the tasks of teat cleaning and milking attachment and removes the final elements of manual labour from the milking process. Careful design of the robot arm and associated sensors and controls allows robust unsupervised performance, such that the farmer is only required to attend the cows for condition inspection and when a cow has not attended for milking.

Typical capacity for a VMS is 60-70 cows per milking unit. VMS usually achieve milking frequencies between 2 and 3 times per day, so a single milking unit handling 60 cows and milking each cow 3 times per day has a capacity of 7.5 cows/h. This low capacity is convenient for lower-cost design of the robot arm and associated control system, as a window of several minutes is available for each cow and high-speed operation is not required.

VMS units have been available commercially since the early 1990s, and have proved relatively successful in implementing the voluntary milking method. In fact, VMS is the only automatic milking system (AMS) available to farmers. The terms AMS or “robotic milking” (RMS) are universally used to describe the VMS systems by the various manufacturers and the dairy industry press, however it can be seen that VMS is a specialised subset of AMS.

Advantages

Elimination of labour. The farmer is freed from the milking process and associated rigid schedule, and labour is devoted to supervision of animals, feeding, etc.

Increased milking frequency. Milking frequency may increase to three times per day, however typically 2.5 times per day is achieved. This may result in less stress on the udder and increased comfort for the cow, as on average less milk is stored. Higher frequency milking increases milk yield per cow, however much of this increase is water rather than solids.

Perceived lower stress environment. There is a perception that elective milking schedules reduce cow stress. An objective study found no decrease in stress between automatic and conventional milking.

Herd Management. The use of computer control allows greater scope for data collection. Such data allows the farmer to improve management through analysis of trends in the herd, for example response of milk production to changes in feedstuffs. Individual cow histories may also be examined, and alerts set to warn the farmer of unusual changes indicating illness or injury. Information gathering provides added value for AMS, however correct interpretation and use of such information is highly dependent on the skills of the user.

Disadvantages

High initial cost. VMS systems cost approximately €120,000 per milking unit (presuming barn space is already available for loose-stall housing). This does not compare favorably with conventional parlours, where a much higher milking capacity may be obtained for similar or lower cost.

Low return on investment. The low capacity of VMS systems means that economy of scale cannot be used to offset the high capital investment. While large installations exist, VMS herds beyond 300 cows are rare. A VMS takes longer to pay for itself than a conventional parlour.

Increased complexity. While complexity of equipment is a necessary part of technological advancement, the increased complexity of the VMS milking unit over conventional systems reduces the ability of the farmer to perform repairs, increasing reliance on manufacturer maintenance services and possibly increasing operating costs. The farmer is exposed in the event of total system failure, relying on prompt response from the service provider. If service is not immediately available the farmer must milk the herd with a single milking unit or use a redundant backup parlour. In practice VMS systems have proved robust and manufacturers provide good service networks, but the risk remains present.

Difficult to apply in pasture systems. VM works best in zero-grazing systems, in which the cow is housed indoors for most of the lactation period. Zero-grazing suits areas (e.g. the Netherlands) where land is at a premium, as maximum land can be devoted to feed production which is then collected by the farmer and brought to the animals in the barn. In pasture systems, as used in most of the world, cows graze

in fields and are required to walk to the milking parlour. It has been found that cows tend not to attend the milking unit if the distance to walk is too great.

Lower milk quality. Somatic cell count (SCC)and Plate loop count (PLC) are, respectively, measurements of the quantity of white blood cells and total number of bacteria present in a milk sample. A high SCC indicates reduced udder health (as the immune system fights some infection) and implies lower milk quality. Machine milking of any kind increases SCC, however VMS herds consistently show higher SCCs than conventionally milked herds. A high PLC indicates bacterial contamination, usually through poor sanitation or cooling and similarly implies low milk quality. High PLC in VMS may be attributed to the continuous use of milking lines (rather than twice a day in conventional systems), which reduces the time window for cleaning, and the incremental addition of milk to the bulk milk tank which may not cool efficiently at low milk levels.

Possible increase in stress for some cows. Cows are social animals, and it has been found that due to dominance of some cows, others will be forced to milk only at night. Such behaviour is inconsistent with the perception that VM reduces stress by allowing "free choice" of milking time.

Decreased contact between farmer and herd. Effective animal husbandry requires that the farmer be fully aware of herd condition. In conventional milking, the cows are observed before milking equipment is attached, and ill or injured cows can be earmarked for attention. Automatic milking removes the farmer from such close contact with the animal, with the possibility that illness may go unnoticed for longer periods and both milk quality and cow welfare suffer. In practice, milk quality sensors at the milking unit attempt to detect changes in milk due to infection, and farmers inspect the herd frequently. However this concern has meant that farmers are still tied to a seven-day schedule.

Environmental concerns. Cows at pasture spread waste (manure) on the pasture. Concentration of animals in zero-grazing VM systems increases the accumulation of excrement that must be collected and treated by the farm.

Task 4. Study animals vocabulary list and definitions

diurnal occurring or active during, or belonging to, the daytime rather than nighttime.
diversity the state or condition of being unlike; dissimilarity, a variety.
extinction the act or process of becoming or making extinct, or of being ended or putting an end
habitat the natural environment of a plant or animal.
herbivore an animal that feeds on plants.
invertebrate without a spinal column or backbone; not vertebrate.
nocturnal active at night.
predator an animal that eats the flesh of others
prey the object of a hunt or pursuit, usu. one animal caught and eaten by another

vertebrate a member of the large group of animals that have a backbone or spinal column, including mammals, birds, amphibians, reptiles, and fishes

carnivore a flesh-eating animal, esp. a meat-eating mammal. a plant that eats insects

conservation the preservation of a resource, esp. a natural resource such as soil, water, or forests, from loss, pollution, or waste.

Animal Vocabulary: Families and Behavior

Herbivores are animals, such as deer, who eat plants.
Carnivores are flesh-eating animals, like lions.
Omnivores, such as bears and humans, eat both meat and plants.
Invertebrates are animals without backbones, such as worms and insects.
Vertebrates are animals with backbones. Reptiles, amphibians, birds, and mammals are all vertebrates.
Marsupials are families of mammals, such as kangaroos and opossums, whose females carry their young in an external pouch.
Monotremes are rare mammals, such as the platypus and echidna (or "spiny anteater"), that lay eggs.
Nocturnal animals, such as owls, are active at night.
Diurnal animals, such as squirrels, are awake during the day.
Pinnipeds are aquatic mammals with flippers, like seals and walruses.
Quadrupeds are animals with four feet, such as cows.
Bipeds, like humans and gorillas (and some dinosaurs!), walk upright on two legs.
Primates include humans and their closest mammalian relatives. They share flexible arms and legs, skilled fingers (and sometimes toes), and relatively big brains. The many species of apes, monkeys, and lemurs are among the primates.
Cetaceans are ocean mammals, including whales and dolphins.
Rodents, like squirrels and gerbils, have large front teeth for gnawing and cheek teeth for chewing.
Arachnids are arthropods, such as spiders, scorpions, mites, and ticks.

Test yourself.

Biology of animals

1. A _____ is an amphibian. It is a vertebrate that lives on land as well as in water. It lays eggs in water.
a) newt b) raven c) salmon d) dog e) lizard

2. _____ is a reptile. It is a vertebrate that lays eggs and has lungs for breathing. Its sleek body is covered with many scales
a) A frog b) A fox c) A sardine d) An alligator e) An albatross

3. A snake is _____. A _____is a vertebrate that lays eggs and has lungs for breathing. Its sleek body is covered with many scales

a) a bird b) an amphibian c) a fish d) a reptile e) a mammal

4. A toad is _____. An _____ is a vertebrate that lives on land as well as in water. It lays eggs in water.
a) a reptile b) a mammal c) an amphibian d) a bird e) a fish

5. A shark is _____. A _____ is a vertebrate that lives in water. It has a streamlined body that helps it to swim**.**
a) a fish b) a reptile c) a bird d) a mammal e) an amphibian

6. A _____ is a bird. A _____is a bird. It is a vertebrate that has wings and many feathers covering its body. It has a streamlined body that helps it to fly.
a) salamander b) crocodile c) cow d) pigeon e) mackerel

7. A whale is _____. A _____is a vertebrate that gives birth to young ones.
a) an amphibian b) a reptile c) a fish d) a bird e) a mammal

8. An owl is _____. A _____is a vertebrate that has wings and many feathers covering its body. It has a streamlined body that helps it to fly.
a) a reptile b) a fish c) an amphibian d) a mammal c) a bird

9. A _____ is a fish. A _____is a fish. It is a vertebrate that lives in water. It has a streamlined body that helps it to swim.
a) lizard b) horse c) sardine d) frog e) dove

10. _____ is a reptile. An _____is a reptile. It is a vertebrate that lays eggs and has lungs for breathing. Its sleek body is covered with many scales.
a) An albatross b) An alligator c) A frog d) A sardine e) A fox

Module 4. Business letters
Модуль 4. Ділове листування англійською мовою

Стандартний діловий лист

Для формального ділового листа краще використовувати лист формату А4. У всіх ділових документах, чи то лист, факс, резюме, прийнято робити широкі поля для того, щоб можна було приєднати документ в папку: ліве та праве – по 2,5 см, верхнє – не менше 4 см.

Зліва вгорі пишемо зворотну адресу. В більшості європейських країн адресу пишуть «в зворотному порядку»: спочатку вказують ім’я та прізвище адресата, тоді - номер квартири (офісу), номер будинку, вулицю, місто, код міста, регіон (в Америці вказують штат, в Великобританії – графство) та країну.

24 Harrison Road Cleaveland, Ohaio 36879
March 28, 1999

Перед датою бажано зробити дійний інтервал. Назву місяця можна написати словами, або цифрами. Якщо ви вирішили використати цифровий формат, то варто пам'ятати про те, що в Великобританії спочатку вказують число, тоді місяць та рік, в Сполучених Штатах спочатку пишуть місяць. Далі пишемо адресу одержувача (справа).

Victor Sharp, Personnel Manager Earnst & Young 23 Rachelle avenue Dallas, Texas 14336

Якщо існує потреба посилання на попередній лист, то це варто зробити перед зверненням.

Our ref. № 12-15 **(**якщо ви посилаєтесь на свій попередній лист)

или

Your ref. № 1611 (якщо ви посилаєтесь на свій попередній лист)

Dear Mr. Sharp: **(**перед зверненням потрібно зробити подвійний інтервал).

Якщо ви особисто знайомі з адресатом, то звернення повинно починатися словами "Dear Mr. X". До жінки звертаємось Mrs., якщо відомо, що вона заміжня, чи Ms. в інших випадках (якщо вона одинока, вдова, чи якщо ви не маєте жодної інформації про її соціальний статус).

Якщо ви з адресатом особисто не знайомі чи взагалі не маєте уявлення в чиї руки потрапить лист, варто написати:

To whom it may concern: (дослівно: тій особі, в чиїх повноваженнях є дане питання)

або

Dear Sir or Madam: (безособове). Зверніть увагу, що після звернення європейці та американці ставлять двокрапку. Знак оклику неприйнятний.

Текст листа повинен бути «компактним», написаним через один інтервал. Однак між абзацами слід пропускати по два рядки. Не залежно від змісту лист варто закінчувати на позитивній ноті.

Обов'язково вкінці листа вказати, як можна з вами контактувати. Цим ви в черговий раз підкреслите, що очікуєте від свого кореспондента певних дій.

Ну, і, нарешті, заключні:

Sincerely yours, (щиро ваші)

Yours faithfully,

Yours truly,

підпис

Якщо до листа додаються певні документи, слід обов'язково про них зазначити в листі. Для цього після підпису в лівому нижньому кутку пишуть ***Enclosure:*** … і вказують кількість документів та їх назви.

<u>Деякі формули ввічливості:</u>

- Thank you for your letter of …. (дякуємо за ваш лист від ...).

- We have received your letter of … and have pleasure in giving you full information on … (ми отримали вашого листа і маємо задоволення надати вам повну інформацію).
- I refer to your letter dated 9th of September, 20 ___(я відповідаю на ваш лист датований .....).
- In reply to your letter of … we wish to inform you …(я відповідаю на ваш лист від ..... ми бажаємо інформувати вас .....)
- I am writing to give you particulars of ..(я пишу, щоб надати вам деталі..)
- I am writing to make you an offer of …(я пишу, щоб зробити вам пропозицію ...)
- Thank you very much for the order received this morning (дуже дякуємо за замовлення, яке ми отримали вранці).
- Many thanks for sending us an order for … (дуже дякуємо, що надіслали нам замовлення на.....)
- Very many thanks for the telephone message which I received this morning. We are writing to confirm our verbal arrangement that … .(дуже дякую за телефонне повідомлення, яке я отримав вранці. Ми пишемо щоб підтвердити нашу усну домовленість).
- With reference to …. (your advertisement, your letter) – (з посиланням на вашу рекламу, ваш лист).
- We are dealing with …. (your order, your request, your complaint)…. as soon as possible – (ми будемо розглядати ваше замовлення, прохання, скаргу ..... якомога скоріше).
- We wish to … (reserve a room) – (ми бажаємо зарезервувати кімнату).
- We hope this is acceptable … (ми сподіваємось, що це є можливим).

Заключні формули

- ***We look forward to hearing from you soon*** (ми з нетерпінням чекаємо вашої відповіді).
- ***We are looking forward to your reply*** (ми з нетерпінням чекаємо вашої відповіді).
- ***Your early reply will be appreciated*** (ваша рання відповідь буде оцінена)
- ***We much appreciate your interest in the matter*** (ми маємо оціниь вашу зацікавленість у справі)
- ***If you need any further information, do not hesitate to contact us*** (як що вам потрібна подальша інформація, не соромтесь, звертайтесь до нас).
- ***We trust that this information will be of assistance to you*** (ми віримо, що ця інформація буде вам в допомогу).
- ***We trust our proposals will be acceptable to you*** (ми віримо, що наші пропозиції будуть
- ***Can we be of any service to you?*** (чи можемо ми бути до ваших послуг?)
- ***I should be grateful if you would grant me an interview*** (я був би дуже вдячним, як що би ви запропонували мені інтерв'ю).

- ***We would appreciate your cooperation on this matter*** (будемо вдячні за співпрацю).
- ***Thank you in advance for your cooperation*** (наперед дякуємо за допомогу).
- ***Awaiting your prompt reply*** (в очікуванні швидкої відповіді).
- ***I enclose …. (a catalogue/ pricelist/brochure)*** – (я додаю каталог, список цін, брошуру).
- ***Please supply… / Please send …. / Please let us know***…(будь ласка надайте... надішліть ..... дайте нам знати....)
- ***With kind regards*** (з добрими відношеннями).
  Yours truly, (щиро ваш)
- ***With best wishes*** (з найкращими побажаннями)
- ***Yours sincerely*** (щиро ваш)

Task 1. Study how to write a cover letter for a job application

Get the job you've always dreamed of by sending the perfect resume and cover letter. Your skills set and experiences are impressive, so let your potential employers know by highlighting them in your job applications with perfect English writing. Achieve the highest level of English grammar, spelling, and punctuation in your cover letter for a job application with White Smoke English writing software, the comprehensive writing tool. Follow the tips below for writing an effective cover letter, and then see the example of a cover letter for a job application that you can refer to as a template when you write your own cover letter.

First Paragraph – Why You Are Writing

If someone you know referred you to a potential employer, be sure to mention it! Your reader will be encouraged to keep reading when s/he sees a name she recognizes.

-Taylor Doe suggested that I write to you regarding a position as a teacher at your school….

If you are responding to a published job listing, reference it in this paragraph.

-Please accept my application for the computer programmer position you published in the Computers Today. I am confident that my background and experience with computer programming will prove to be a suitable match for your needs….

If you are writing to inquire about a potential job opening – a prospecting letter – it is especially crucial to write a strong paragraph that will catch and hold your reader's attention. You must also be specific about what type of job you are seeking.

-I read recently in Up-to-Date Magazine that your company was ranked first in the field of racecar paints. Because I will be graduating from Best University in May, I am anxious to continue my work with chemistry and paints on a full-time basis. I would like to discuss my research and practical experience with creating paints, and how it matches your work.

Middle Paragraph(s) – What You Have to Offer
The middle paragraphs are your place to shine. Here you should include 1-3 focused paragraphs that highlight why you are a good candidate for a job, as you can see in the job application cover letter sample that follows these tips. Illustrate how your particular abilities match specific qualifications listed in the job posting; tell about your potential for fulfilling the employer's needs in a prospecting letter. In both cases, refer to particular skills you possess and details about the organization to show you've done your research. Describe your strengths, interest, achievements, and motivation. Also, refer your reader to your resume, but do not repeat word for word what's written there. Instead, add more details that highlight your experience.

Closing Paragraph – How You Will Follow Up
After you have interested your potential employer with the first paragraphs of your cover letter for a job application, indicate how you will be in contact. Be direct in expressing your interest in a job, and indicate that you will follow up with a phone call to schedule an appointment at a mutually convenient time. Then make the call within the time frame! In some cases phone calls are prohibited or not welcome, but you should at least check that your materials were received.

The final – and crucial – last step in writing a cover letter for a job application is proofreading. Even with the most impressive skills set and experience, a cover letter with errors in spelling or English grammar will get you nowhere. An employer will doubt your intelligence and abilities if s/he reads a cover letter with mistakes. Check your writing for a professional finished product using White Smoke online writing software, and avoid potentially costly mistakes. In one click with White Smoke, you have easy access to the most comprehensive writing toolkit – English grammar check, spell check, punctuation check, online dictionary, context-based synonyms from a thesaurus, and unique enrichment feature that suggests adverbs and adjectives for better writing. Write a better cover letter with White Smoke online software, and land your dream job!

Task 2. Study the following sample of cover letter

Marilyn Appleton
12300 Hilltop Drive
Mantana, CA 99444
(919) 345-5566

February 19, 2006

Rick Reviewer
Manager, Recruiting and Training
A&D California Winery
2222 Vintner Road
Modesto, CA 94544

Dear Mr. Reviewer:

I am graduating in May 2006 with a Bachelor of Arts in Communication Studies with an option in Organizational Communication from California State University, Chico. I am interested in a sales position with your company because A&D California Winery has established a worldwide reputation in the wine industry and remains family-owned.

Growing up in an agricultural community has taught me the different challenges a person faces when working in the industry. In addition, as a senior at Chico State, I learned to deal with a variety of management and sales challenges through courses in human resource management, speech communication, interpersonal communication, and negotiation. Along with my education, my experience as a sales coordinator for ABC Farms has confirmed my interest and success in a sales career.

I understand A&D is dedicated to turning challenges into opportunities and change into growth. This growth has resulted in a reputation for high quality and strong customer relationships. This is the type of organization where I am confident my skills and knowledge would be best suited. Some of my skills and knowledge include:

Proven sales experience
Ability to work effectively as part of a team
Experience in the agricultural industry
Interpersonal communication skills
Strong public speaking skills

Although my resume provides a summary of my background and experiences, I would like to meet with you in person to discuss any available opportunities with A&D California Winery. I can be reached at (530) 345-1212 or ssellers@roanoke.net. Thank you for your time and consideration.

Sincerely,
Samantha Sellers

Task 3. Study the Resume and write down your own one

RESUME

Name	**Henry George Whitfield**
Address	22 Collier Lane Horsham Leeds LS3 6PT
Telephone	01532 27963
Date of birth	18 February 1974

Education

1983-92	Southfield High School. Leeds
1993-6	Nottingham University EA (Hons) English and Sociology
Languages	Fluent French
Computing skills	Microsoft Word

Work experience

April 1996 to present time	Working with disabled children in Botton Village, a community care centre near York
1994-1995	Secretary of the university climbing club, led a team to the Pyrenees.
July 1992- May 1993	Lived in Paris Worked as a porter in a children's hospital. Acquired excellent French language skills.
October 1990-June 1992	Worked at weekends as an assistant in a chemist's shop.

Interests Travel, cinema, working with children, climbing.

Referees
Give the name, address and job title

Task 3. Study presentation framework and be ready to use phrases in your own presentation

Presentation framework

Opening	First of all thank you all very much for coming here today. My name's X and I'm the marketing manager for Y. Let me briefly take you through what we'll be discussing today. First we're going to be analyzing the current scenario. Then we'll take a look at a few problems I believe some of you have been having. Once we've identified the problems we can then look at the options available. Finally, I'll outline what I believe to be the best course of action. Please feel free to interrupt me if you have any questions, or of there's anything you don't follow.	• Establish eye contact with all of audience, then focus on a friendly face. • Indicate on your route map as you go through the various stages of your presentation – note the variation in tenses. • Speak clearly and not too fast. Adopt an authoritative but friendly tone. Use WE predominantly. • Alternatively, ask them to leave questions till the end.
Situation	So, if I might start with the present situation. As you know…	• *As you know* helps you to inform those who don't know, without offending

	What you might know is that … This then is the way things look at the moment	those who do. • Briefly reiterate the main points of the current situation.
Sequence markers	Now let's take a look at some of the implications of this. We've focused on X, now let's look at Y. If you can imagine… But of course the main reason for this is … So, basically, we've got three main problems.	•Throughout the presentation, make sure your audience knows where they are in the overall structure. Keep reminding them what you have already covered and what you are now going to tell them.
Problems	The most obvious consequence of this strategy / scenario etc. is … This means that … This is also causing…	• Give audience, not just strings of data. • List the problems.
Options	I believe you've already tried several solutions. Let me briefly outline what these are, then you'll be able to see how our solutions differ. Back in 1996 you tried … The following years saw a period of… We've had four main approaches, nine of which has radically improved on its predecessor, and all of which have left you a fair way behind your competitors. The questions have basically remained the same: How should we do …? Do we need to do …? How much would it cost if …?	•Use chart to remind audience of past solutions. Don't spend too much time on negative things, audience really wants to know what you have to offer – don't keep them waiting unnecessarily. •Occasionally, use questions rather than simply listing points.
Visual aids	If you take a look at this slide / graph/ etc. As you can see from this bar chart…	
Solution	The one fundamental drawback of all those approaches was … Our solution is to do X. I don't really want to get into the technicalities of all this, but for those of you who are interested … So, how does it work? How long will it take to implement?	•Use visual aids to emphasize your points. Make comparisons or analogies. • In outlining your proposal draw on the evidence you've laid earlier on. Try and relate it directly to

Recapping	Is it going to cost you the earth? Obviously this solution can be fine tuned to your particular needs… What we've done is to analyse why this problem has been so recurrent and we found three main reasons: X, Y, and Z, plus an additional one, P. By focusing on P rather than X, Y, and Z, we have managed to…	audience's need and feelings. • Express their concerns in the form of questions. Answer your own questions clearly and efficiently. • Don't bore audience with technicalities – give them hand-outs at the end. • Reiterate the main points of your presentation, preferably with different words and from a different angle.
Closing	Well, that's just about it. As I said, I've left out a lot of detail, but I think you'll find all you need to know in this literature. Thank you for listening so patiently. Now, has any one got any questions?	• Give audience a reason for acting on what you've been proposing. •Leave your audience feeling comfortable about what you've said.

SUPPLEMENTS

SUPPLEMENT 1

The list of some irregular verbs

Infinitive	past simple	past participle
Be	was/were	been
Beat	beat	beaten
Begin	began	begun
Break	broke	broken
Bring	brought	brought
Build	built	built
Buy	bought	bought
Catch	caught	caught
Choose	chose	chosen
come	came	come
Deal	dealt	dealt
do	did	done
drink	drank	drunk
Drive	drove	driven
Eat	ate	eaten
Fall	fell	fallen
Fight	fought	fought
Find	found	found
Fly	flew	flown
Forbid	forbade	forbidden
Forget	forgot	forgotten
Forgive	forgave	forgiven
Freeze	froze	frozen
Get	got	got
Go	went	gone
Grow	grew	grown
Hang	hung	hung
Have	had	had
Hear	heard	heard
Hide	hid	hidden
Hit	hit	hit
Hold	held	held
Hurt	hurt	hurt
Keep	kept	kept
Know	knew	known
Lead	led	led
Leave	left	left
Lend	lent	lent
Lose	lost	lost
Make	made	made
Mean	meant	meant
Meet	met	met
Pay	paid	paid
Read	read	read
Ride	rode	ridden
Ring	rang	rung

Rise	rose	risen
Run	ran	run
Say	said	said
See	saw	seen
Seek	sought	sought
Sell	sold	sold
Send	sent	sent
Shake	shook	shaken
Shoot	shot	shot
Show	showed	shown
Shut	shut	shut
Sleep	slept	slept
Speak	spoke	spoken
Spend	spent	spent
Spread	spread	spread
Stand	stood	stood
Steal	stole	stolen
Strike	struck	struck
Swear	swore	sworn
Sweep	swept	swept
Swim	swam	swum
Swing	swung	swung
Take	took	taken
Teach	taught	taught
Tear	tore	torn
Tell	told	told
Think	thought	thought
Throw	threw	thrown
Understand	understood	understood
Wake	woke	woken
Wear	wore	worn
Win	won	won
Write	wrote	written

SUPPLEMENT 2

Латинські терміни, які зустрічаються в науково-технічної літературі

ab init (abinitio) **–** з початку	**seg. (sequens) –** наступний
ad fin (ad finitum**) –** до кінця	**sv (sub voce) –** під цим заголовком
ad inf (ad infinitum**) –** до безкінечності	**us, ut sup. (ut supra) –** як зазначено вище
ad int (ad interim**) –** тим часом	**v (versus) -** проти
ad hoc – для даного випадку	**vid. (vide) –** дивися
	v (volume) – том
e.g (exempli gratia**) –** наприклад	**viz** (videlicet) - а саме
et al. (et alii) – та інші	**vo (verso) –** з іншої сторони
etc. (et cetera) – і так далі	**vs (versus) –** проти
fig. – малюнок	**contra –** проти
i.e. (id est) **–** тобто	**de factor –** фактично
ib., ibid (ibidem) – там же	**in toto –** повністю
id. (idem) – теж видання	**l. c. (locus citatus) –** цитоване місце
in loc. cit. (in loco citato) – у цитованій праці	**pro et contra –** за і проти
iq. (idem qiod) – теж саме	**verbatim –** дослівно, буквально
lb (libra) – фунт	**vice versa –** навпаки
lc (loco citato**) –** цитоване місце	**in brevi –**коротко, лаконічно
NB (nota bene) – зауважте	**eo ipso –** внаслідок цього
PS (post scriptum) – післяслів	**ergo –**отже
sc (scilicet) – а саме	**ex parte –** неповно, однобічно

SUPPLEMENT 3

Reading of numerals
Читання числівників

I. Cardinals

1-12 - one, two …..
100 - hundred
1000 - thousand
1,000,000 - million
13-19 – **teen –** thirteen, …
20; 30 – **ty –** twenty
21-29 – twenty-one ….
223 – two hundred **and t**wenty three
416 – four hundred **and** sixteen
hundred – a hundred – hundreds
thousand – a thousand – thousands
million – a million – millions
but: two hundred times; thirty thousand years
possible: two million, two millions
but: two million five hundred samples

II. Ordinals

First, second, third
- th – the fourth, **the** sixth ….

III. Fractional

2/3 – two-thirds
3/6 – three-sixths
Decimal fractions:
7.58 – seven point five eight
11+1=12 – eleven **and/plus** one **are** twelve
30 – 20 = 10 – thirty **minus** twenty **is** ten
10 x 10 = 100 – ten **times** ten **is** one hundred
50 : 10 = 5 – fifty **divides** into ten **is** five

How much **are** eleven and two? How much **is** eleven minus two?

Degree – 1)a unit for measuring temperature:
e.g. The freezing point of water is 32◦ degrees Fahrenheit (F). A degree of Centigrade scale is 1.8 times a degree on the Fahrenheit scale.
2) a unit for measuring the opening of an angle; (protractor measuring 120-degree angle)
Power (math) – the product obtained by multiplying a number by itself one or more times: e.g. 16 is the fourth power of 2;
- raise to the second, the third power

SUPPLEMENT 4

Reading of different symbols
Читання різних символів

m^2 - square meter
m^3 - cubic meter
m/s – meter per second
m/s^2 - meter per second squared
s^{-2} - second to the minus 2nd power
rad/s – radian per second
Hz – hertz
kg/m^3 - kilogram per cubic meter
m^3- meter to the third power
kg ·m / s – kilogram-meter per second
kg ·m^2 / s – kilogram-squared meter per second
N/m^3 - newton per cubic meter
Pa – pascal
J – joule
W – watt
Kg/(s· m ·Pa) – kilogram per second meter pascal
% - per cent
‰ – parts per thousand (промилле)
ppm – parts per million (миллионная доля)
$tf \cdot s^2/m^3$ - tonne-force-squared second per meter to the 3d power
kg/(h· m · mm H2O) – kilogram per hour-meter-millimeter of water
g / (h· m · mm Hg) – gram per hour-meter-millimeter of mercury
kcal /kg – kilocalorie per kilogram
lb – pound – фунт (453.59 gr.)

SUPPLEMENT 5

Алгоритми реферування прочитаного

1.	The article The piece of news The abstract	is headlined	"……."

2.	The title The headline	of the article of the abstract	Is "……"

3.	It	was has been	published in a (an)	British American Canadian Australian	newspaper "…" magazine "…" journal "…" supplement "…"	this last	year. week. month.

4.	The author (s) of	the book the article	is (are)	Mr./ Dr. /Prof. X (not pointed out)

5.	The article The editorial The book	is about is devoted to is dedicated to is concerned with deals with considers touches upon dwells on discusses stresses emphasizes	……..

6.	It should be	noted stressed pointed out emphasized mentioned	that	……..

NOTES