

The World of Agriculture -Student Notes

Directions:

Fill in the blanks.

What is Agriculture? Segment

1. Agriculture

- Is the science of _____ soil, growing crops and raising livestock to produce food and fiber
- Provides the necessities to maintain life
 - food
 - _____
 - shelter

2. Agriculture

- Has contributed to the _____ and development of civilization for approximately 10,000 to _____ years

Agri-Fact: Prior to agriculture practices becoming the normal way of life, people were primarily dependent on hunting and gathering wild animals and plants.

3. Agribusiness

- Involves the managing, marketing and _____ of food, fiber and fuel products for _____ and global markets

4. Agribusiness

- Is considered to be the largest industry in the United States due to the amount of _____ and employment
- Supplies producers with _____, such as feed and equipment, to produce agricultural products

Agri-Fact: One out of every six careers in the United States are agribusiness related.

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5. Agribusiness

- Is divided into two sectors
 - input sector
 - resources and _____ used to produce agricultural products
 - feed, seed, equipment, financing, etc.
 - output sector
 - processing and manufacturing of agricultural products
 - packers, _____, advertisements, processors, etc.

6. Agribusiness

- Has contributed to economic growth and _____ and improved standards of living
 - growth and development has contributed to increased productivity, better products and more _____ among the population

7. Agribusiness

- Has evolved over time from self-sufficient _____ to creating a sense of interdependency
 - consumers rely on agricultural producers for quality goods
- Has allowed agricultural _____ to reduce the amount of manual labor due to technological advancements

8. Agribusiness

- Has allowed farming to decrease from _____ million farms to approximately two million farms
- Has decreased the amount of farm land, but _____ the amount of production in the past 50 years

Agri-Fact: In the 1940s, there were approximately six million farms averaging 67 hectares each. Hectares are a unit of measurement for land—67 hectares is approximately 165 acres.

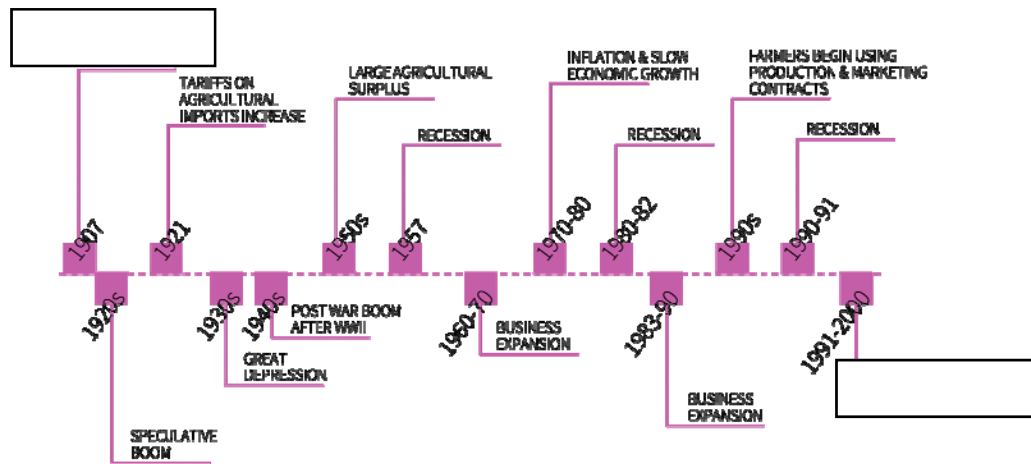
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9. Agribusiness

- Has enabled people to have careers _____ to the agricultural industry
 - many people moved from farms to _____ once the need for manual labor decreased

Agri-Fact: Allowing people to leave farms and enter nonfarm careers improved the economy by increasing purchasing power from consumers.

10. Timeline of Agribusiness



11. Regulatory Agencies

- For agribusiness include:
 - departments under the United States Department of Agriculture (USDA)
 - Agricultural _____ Service
 - Risk _____ Agency
 - The Agribusiness Council (ABC)

12. Regulatory Agencies

- For agribusiness include:
 - Agricultural Marketing Service (AMS)
 - develops standards for _____, marketing programs and agreements for USDA assistance programs
 - Risk Management Agency (RMA)
 - provides risk management solutions to strengthen the economic _____ through insurance

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13. The Agribusiness Council (ABC)

- Was initiated in 1967 by President Lyndon B. Johnson
- Strengthens the U.S. agricultural _____ through private trade and investment solutions in developing countries
- Raises awareness for national and _____ economic problems and solutions

14. Animal Systems

- Include the study of the following:
 - life _____
 - health
 - _____
 - genetics
 - management

15. Animal Systems

- Can be applied to the following productions:
 - _____ animals
 - livestock
 - aquaculture
 - _____ animals

Agri-Fact: Small animals refers to household pets such as dogs, cats, etc.

16. Animal Agriculture

- Accounts for 30 to 40 percent of world agricultural _____
- Focuses on producing animals which best _____ the market for meat, dairy and egg products

17. Animal Agriculture

- Impacts the U.S. economy by providing the following:
 - approximately two million job opportunities
 - approximately \$300 billion in economic output
 - approximately \$60 billion in _____ income
- Continues to gain _____ importance in the United States

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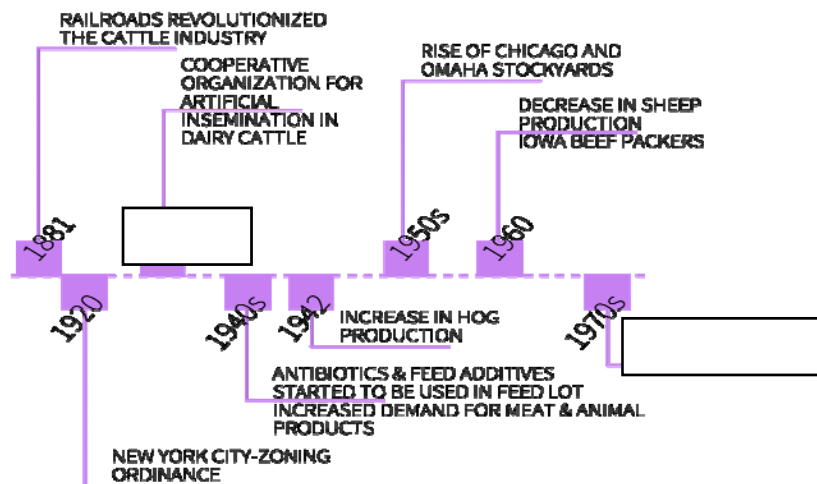
18. Animal Agriculture

- Has converted to fewer but larger operations
- Has increased productivity by _____ the use of manual labor and natural resources
 - this increase in productivity results in _____ food prices for consumers

19. Animal Agriculture

- Began with the domestication of animals approximately 10,000 years ago
- Has transformed how animals are _____, fed and processed
- Has utilized the new _____ to meet the demands of the growing population

20. Timeline of Animal Agriculture



21. Animal Agriculture

- Pertaining to animals being used for _____, testing, teaching or exhibition are regulated under the Animal Welfare Act (AWA)
- Pertaining to animals used for food and _____ production or food and fiber research are regulated by agencies under the USDA

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22. Regulatory Agencies

- For animal agriculture include:
 - Animal and Plant Health Inspection Service (APHIS)
 - department under the USDA
 - _____ agriculture health, the Animal Welfare Act and assists in wildlife protection
 - composed of many programs and organizations to cover the broad _____ of animal agriculture

23. Regulatory Agencies

- For animal agriculture include:
 - Center for _____ Medicine
 - department under the USDA
 - _____ the manufacturing and distribution of medicines and additives which are intended for animal use

24. The Animal Welfare Act

- Ensures animals are provided with proper _____, sanitation, nutrition, water and medical care
- Allows USDA inspectors to conduct _____, unannounced inspections

Agri-Fact: The USDA inspectors for the AWA are veterinary medical officers or animal care officers who have graduated from veterinary colleges and practiced veterinary medicine before joining the USDA.

25. Environmental Service Systems

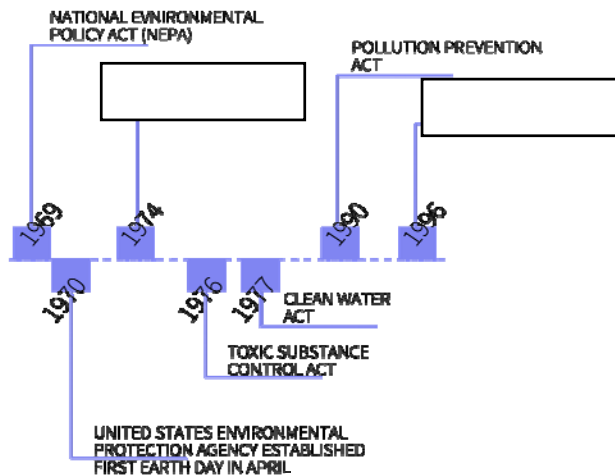
- Includes the study of the following:
 - recycling
 - _____ control
 - waste disposal
 - land _____
 - public health

26. Environmental Services

- Have a positive impact on the environment through their conservation efforts, such as:
 - prevention of soil erosion
 - protection of _____ habitats
 - preservation of national _____ and grasslands
 - practices which reduce air and water pollution

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27. Timeline of Environmental Services



28. Regulatory Agencies

- For environmental services include:
 - Office of Environmental Markets (OEM)
 - department under the USDA
 - leadership for _____, water quality, wetlands and biodiversity markets
 - United States Environmental Protection Agency (EPA)
 - enforces laws pertaining to public and environmental health
 - provides information about how to _____ human health and environmental risks

29. Food Products & Processing Systems

- Includes the study of the following:
 - food _____
 - food content
 - industry and government regulations
 - sanitation, safety, _____ and waste management

30. Food Safety & Processing

- Includes the study of the following:
 - food _____
 - food microbiology
 - _____ food technologies

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31. Food Safety

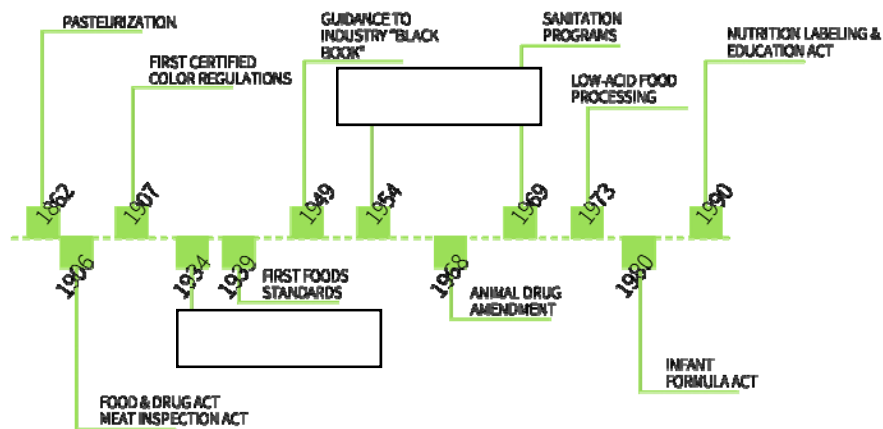
- Focuses on the handling, storage and _____ of food products
- Assists in providing a healthy, nutritious diet by helping to eliminate the risk of _____ illnesses
- Agri-Fact: The USDA predicts to prevent approximately 25,000 foodborne illnesses annually.

32. Food Processing

- Primarily strives to _____ the shelf-life of food products by acting as a preservative
- Can include the following methods:
 - refrigeration
 - canning
 - drying
 - salting
 - _____

Agri-Fact: According to which methods were used in processing, some food products will lose some nutritional value.

33. Timeline of Food Safety & Processing



34. Food Safety & Processing

- Aims to decrease health _____ which endanger the population

Agri-Fact: Local outbreaks of foodborne illnesses can soon be an international emergency due to the speed and range of distribution.

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35. Regulatory Agencies

- For food safety and processing include:
 - Center for Disease Control and Prevention (CDC)
 - department under the Department of Health and Human Services
 - conducts _____ to provide the public with information about possible health threats
 - U.S. Food and Drug Administration (FDA)
 - protects public health by _____ the safety and effectiveness of the food supply, biological products, medicines, etc.

36. Natural Resource Systems

- Include the study of the following:
 - water
 - _____
 - soil
 - wildlife habitats

37. Natural Resources Systems

- Develop, preserve and _____ natural environments such as forests and rangelands
- Assist in protecting various species of wildlife which have been removed from their natural habitat due to urbanization
- Enforce laws concerning _____ seasons and animals which can be hunted

38. Natural Resources

- Will eventually be _____ if used continuously without proper management

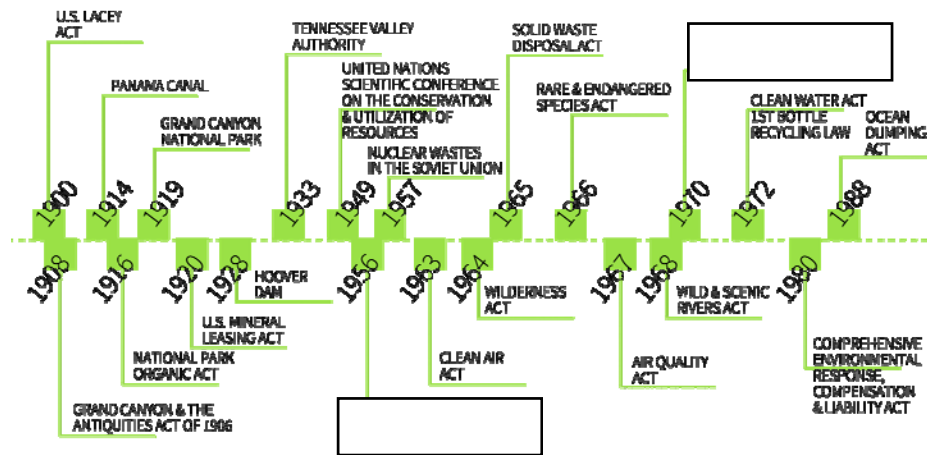
Agri-Fact: Forests and grasslands assist in purifying air and water, preventing soil erosion and providing proper habitats to wildlife.

39. Natural Resource Management

- Contributes to economic growth
 - ability of an _____ to produce goods and services within a specific time period
- Assists in providing the _____ with a constant supply of food, fiber and fuel

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40. Timeline of Natural Resources



41. Regulatory Agencies

- For natural resources include:
 - National Park Service (NPS)
 - department under the U.S. Department of the Interior (DOI)
 - provide education about the _____ of natural resource conservation
 - Natural Resource Conservation Service (NRCS)
 - department under the USDA
 - assists farmers, financially and _____, to conserve the environment

42. Plant Systems

- Include the study of the following:
 - _____ cycles
 - functions
 - _____
 - growth practices

43. Plant Production Systems

- Focus on providing _____ and food crops by using fewer resources, such as:
 - _____
 - pesticides
 - herbicides
 - water

Agri-Fact: Scientists have turned to utilizing biotechnology to develop plants and crops, causing the public concern for food safety to increase.

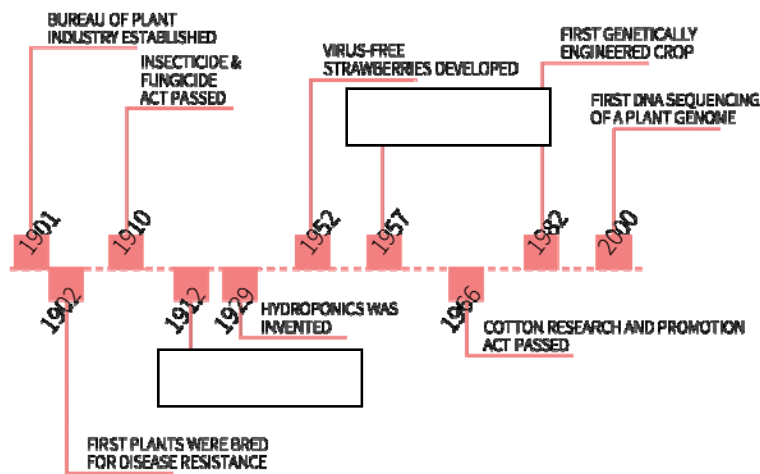
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44. Plants

- Play an important role in our economy
- Assist in providing _____ human needs, such as:
 - food
 - clothing
 - shelter
 - _____ care products

Agri-Fact: The basic needs are increasing at a rapid rate due to growing populations, higher incomes and urbanization.

45. Timeline of Plant Systems



46. Regulatory Agencies

- For plant systems include:
 - Animal and Plant Health Inspection Service (APHIS)
 - department under the USDA
 - responsible for _____ agriculture from pests and disease
 - regulates products of _____
- Agri-Fact: Plants considered to be products of biotechnology have traits such as resistance to pests or diseases and/or tolerance to herbicides.

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47. Regulatory Agencies

- For plant systems include:
 - U.S. Food and Drug Administration (FDA)
 - department under the _____
 - ensures safety and proper _____ of all food and feed derived from plants

Agri-Fact: Genetically modified organisms (GMOs) are regulated by APHIS and the FDA to ensure safety.

48. Power, Structural & Technical Systems

- Includes the study of the following:
 - agricultural equipment
 - power _____
 - alternative fuel
 - woodworking
 - _____
 - welding
 - project planning

49. Power, Structural & Technical Systems

- Have changed the agricultural _____ in many ways since the early 1900s
- Have allowed agriculture to _____ from large numbers of small, specialized operations to small numbers of large, specialized operations

50. Power, Structural & Technical Systems

- Have allowed agricultural operations to _____ from labor intensive to labor extensive
- Have provided machinery such as _____ to work in place of humans and animals

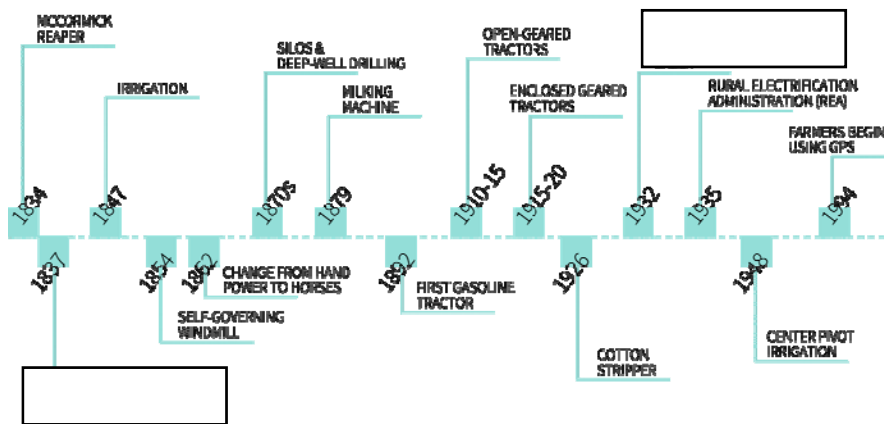
Labor extensive refers to an operation having minimal labor expenses. Whereas, labor intensive refers to an operation having high labor expenses.

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51. Power, Structural & Technical Systems

- Allowed producers to save money by switching from animal power to machine power
 - animals used for working purposes would eat a _____ of the products produced
 - producers realized fuel, oil, etc. for machines reduced their costs
 - allowed people to invest in other aspects of the _____ by enabling them to leave the farming operations

52. Power, Structural & Technical Systems Timeline



53. Regulatory Agencies

- For power, structural and technical systems include:
 - Occupational Safety and Health Administration (OSHA)
 - provides information about _____ health and safety standards
 - for example, if farms are not family operated, OSHA sets regulations for employers such as _____ Rollover Protection (ROPS)

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Issues in Agriculture Segment

1. Issues in Agriculture

- Can include:
 - political policies
 - food safety
 - air, _____ and soil pollution
 - waste disposal
 - decreased farm land
 - water _____
 - climate change

2. The Trans-Pacific Partnership

- Was created to ease the trade policies and regulations of commodities traded between _____ nations
- Began with four countries, but developed into a deal with countries which make up 40 percent of the world's _____
 - including Japan, Mexico, Canada, Vietnam, Australia and Peru

3. The Trans-Pacific Partnership

- Faces challenges such as:
 - allowing _____ companies to challenge U.S. laws
 - does NOT strengthen labor rights in other countries
 - could _____ the struggle for developing countries to stabilize their economies

4. Challenges in Food Safety

- Include:
 - use of antibiotics in food-producing animals
 - concerns for antibiotic _____ in humans
 - foodborne illnesses
 - health concern
 - genetically _____ organisms (GMO)
 - health, environmental and economical concern

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5. Antibiotics in Animal Agriculture

- Are used for disease _____ and treatment
- Increase the safety of our food supply by reducing the chance of bacteria _____

Agri-Fact: According to the Animal Health Institute, studies comparing meat from organic and conventional raised animals have shown there is little microbiological difference between the two.

6. Antibiotics in Animal Agriculture

- Are used accordingly to ensure continual effectiveness
- Are heavily regulated and _____ by the following agencies
 - United States Food and Drug Administration (FDA)
 - USDA
 - Centers for Disease _____ and Prevention (CDC)

7. Antibiotics

- Have strict withdrawal periods
 - meaning the animal cannot be _____ before the time period is over
- Are ensured to be _____ from the animals' system before meat, dairy or egg products are available to the public
 - Food Safety and Inspection Service (FSIS)

8. Challenges in Environmental Services

- Include:
 - air, water and soil pollution
 - waste _____
 - recycling, _____ waste

9. Air, Water & Soil Pollution

- Can cause health, environmental and _____ problems such as:
 - _____ respiratory problems
 - damages crops, animals and bodies of water which decreases yields
 - causing illnesses which lead to missing days of work or school

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10. Waste Disposal

- Is becoming a challenge due to the amount of solid waste being produced
- Emits _____ due to the products which are made of chemical toxins
 - mercury
 - flame _____

11. United States Environmental Protection Agency (EPA)

- Has provided some tips to help improve air, water and soil quality:
 - recycle paper, _____, glass and aluminum products
 - reduce gas _____
 - seal all cleaner and chemical containers
 - maintain vehicles to manufacturer's standards

12. Foodborne Illnesses

- Are caused by the _____ of contaminated food or beverages
- Lead to one in _____ Americans becoming ill, and cause approximately 3,000 deaths annually

Agri-Fact: Food can become contaminated by coming in contact with intestinal parts during harvest, being washed with contaminated water, or handling mistakes in the processing or preparation procedures.

13. Foodborne Illnesses

- Can be prevented by the following:
 - proper storage
 - proper cleaning
 - proper _____
 - proper preparation
 - proper cooking

Agri-Fact: Food products should be cooked for a long enough time period at a high temperature to kill any harmful bacteria.

14. Genetically Modified Organisms (GMO)

- Have been utilized for many centuries
- Are created from _____ the genes within DNA to obtain a desired trait
 - for example, scientists alter a plant's genetic makeup to obtain a desirable trait
 - _____ tolerance
 - pest and disease resistance

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15. Genetically Modified Organisms (GMO)

- Are created through the use of biotechnology
- Are efficient for the following reasons:
 - resisting pests and _____
 - improving characteristics
 - for example, GMO sweet _____ will have a longer lasting sweet flavor compared to naturally grown sweet corn
 - increasing crop yields

16. Genetically Modified Organisms (GMO)

- Are regulated by the following agencies to ensure safety and educate the public:
 - Animal and Plant Health Inspection Service (APHIS)
 - protects American agriculture from _____ and disease
 - Environmental Protection Agency (EPA)
 - regulates bio pesticides
 - ensures toxins are _____ safe and non-allergenic

17. Genetically Modified Organisms (GMO)

- Are _____ by the following agencies to ensure safety and educate the public:
 - Food and Drug Administration (FDA)
 - regulates the safety of GMOs consumed by _____ or animals

Agri-Fact: Most agencies and organizations which study and regulate food safety agree GMO food ingredients are safe for human consumption.

18. Challenges in Natural Resources

- Include:
 - decreased amount of _____ land available
 - increasing water _____

Arable land has the capability to produce crops

Scarcity refers to the shortness in supply available compared to the supply which is desired

19. Arable Land

- Is a valuable resource used for the _____ of food and fiber products
- Has decreased due to human development, _____ and over usage for agricultural activities

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20. Arable Land

- Can be replenished through sustainable production practices such as:
 - multicropping
 - planting multiple crops on the same land during the same seasons
 - minimal pesticide use
 - use _____ methods for pest management
 - crop rotation
 - using crop rotation, _____, mulching and less machinery to maximize soil health

21. Water

- Is highly important and _____ in all phases of agricultural productions
- Used for agricultural purposes accounts for 70 percent of the world's freshwater
- Pollution is caused from excess use of nutrients and _____

22. Water Conservation

- Can be improved from the following practices:
 - drought-tolerant crops
 - growing crops which are appropriate for the producer's climate
 - irrigation scheduling
 - knowing how, when and how much water to provide to crops, avoiding under or _____
 - storing water
 - utilizing wells or _____ to collect rainwater throughout the year

23. Challenges in Plant Production

- Includes:
 - _____ changes
 - pesticides

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24. Climate Changes

- Which have an impact on crop production include the following:
 - temperature
 - for example, warmer weather could allow crops to grow faster, but _____ growth could reduce the amount of time seeds have to mature
 - frequency and intensity of extreme weather
 - excessive or low amounts of _____ can harm crops and reduce yields

25. Crop Protection

- Is the only possible way to improve _____ on crops after harsh changes in the climate

26. Crop Protection

- Includes:
 - crop insurance
 - assists producers in recovering from _____ disasters
 - technology
 - using biotechnology to increase yields by making plants disease resistant and improve _____ toward climate changes such as drought and cold temperatures

27. Pesticides

- Are used to protect crops from _____, weeds and pests
- Assist in _____ crop losses and increasing the quality of products

28. Pesticides

- Include:
 - insecticides
 - control insects
 - herbicides
 - control _____
 - fungicides
 - control fungi, mold and _____
- Agri-Fact: Ancient Sumerians used sulfur as a pesticide to protect their crops from insects.

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29. Pesticides

- Are regulated by the following agencies to ensure health and safety for food products:
 - U.S. Environmental Protection Agency (EPA)
 - establishes maximum _____ levels and amount of pesticide which can safely remain on products
 - U.S. Food and Drug Administration (FDA)
 - monitors levels on fruits and vegetables
 - U.S. Department of Agriculture (USDA)
 - surveys pesticide residues in meat, _____ and dairy products

Trends & Technology in Agriculture Segment

1. Trends & Technology in Agribusiness

- Include:
 - new supply chains
 - systems involved in transporting and transforming commodities from inputs to _____ products
 - researching e-commerce
 - transactions performed _____
 - development of and continuing advancements in precision agriculture

2. Precision Agriculture

- Utilizes technology to allow producers to make smarter decisions based on collected data of the following factors:
 - weather
 - soil and air quality
 - crop _____
 - _____ costs

3. Precision Agriculture

- Could assist in increasing food production and decreasing the environment _____ of agriculture

Agri-Fact: According to IBM Research, by 2050 the world population is expected to reach 9.2 billion people, meaning food production will need to increase by 70 percent.

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4. Precision Agriculture

- Limitations include:
 - high costs and _____ investments for producers
 - requires many years of research before systems can be used to their full abilities
 - leads to demanding work to collect and _____ data

5. Trends & Technology in Animal Agriculture

- Include:
 - advancing breeding and genetics
 - researching animal _____
 - utilizing _____ to meet demands
 - anticipating the use of livestock biometrics

6. Advancing Animal Breeding & Genetics

- Focuses on improving desired traits in _____ animals
- Will allow the animal agriculture industry to become more efficient by producing _____ genetics

Agri-Fact: For example, cattle numbers have decreased over the past years, but the total production of beef and milk has increased due to advanced genetics.

7. Researching Animal Nutrition

- Allows producers to understand the needs of animals in each stage of production
 - neonatal
 - growing
 - _____
 - breeding _____
- Helps discover _____ management practices to increase feed efficiency and productivity

8. Implants

- Are used as a growth _____ in some food-producing animals
 - typically cattle
- Contain estrogen to increase _____ growth and performance

Agri-Fact: According to the FDA, implants have a zero day withdrawal period, meaning meat from animals is safe to eat any time after being treated.

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9. Implants

- Have allowed cattle to increase feed efficiency and daily gains
- Enhance nutrient _____
 - absorbing more nutrients means less feed is wasted
- Enhance growth performance
 - absorbing more nutrients allows _____ functions to happen at a quicker rate

10. Livestock Biometrics

- Is anticipated to electronically _____ animal identification and vital information to producers
- Could be achieved through the use of _____ equipped with global positioning system (GPS) and radio frequency identification (RFID)

11. Trends & Technology in Environmental Services

- Include
 - “going green”
 - researching ways to improve human health
 - developing _____
 - anticipating the use of air, soil and water _____

12. Bioenergy

- Refers to heat, electricity or fuel produced from plant or animal materials
- Benefits include:
 - does NOT contribute to _____ carbon dioxide in the atmosphere
 - is a renewable energy source
 - products used to create bioenergy are _____

13. Bioenergy

- Limitations include:
 - less energy content compared to fossil fuels
 - costs of labor, _____ and storage are higher
 - nutrients and water are _____ in some areas
 - required to produce bioenergy products

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14. Air, Soil & Water Sensors

- Could assist in increasing sustainability by providing information pertaining to air, _____ and water quality
- Could assist in increasing crop yields
- Could provide information to _____ scientists for research purposes

15. Trends & Technology in Food Safety & Processing

- Include:
 - increasing _____
 - applying new _____ to increase food safety
 - anticipating the use of in vitro meats

Agri-Fact: The Food Safety and Inspection Service (FSIS) describes “new technology” as the new application of equipment or methods used in harvesting food-producing animals.

16. Traceability

- Controls information about food products, such as:
 - the _____ it was produced
 - _____ practices

17. Traceability

- Is divided into three categories:
 - ascending traceability
 - allows user to _____ product information to raw materials
 - internal traceability
 - allows user to trace receipts, storage, manufacturing, packaging and _____ methods within a company
 - descending traceability
 - allows user to determine the destination of a product

18. New Technologies

- In food safety and processing include:
 - high pressure processing
 - products are sealed in its final package, and are pasteurized with a _____ technique
 - steam pasteurization
 - heat pasteurization to reduce harmful _____ in beef

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19. In Vitro Meats

- Are also identified as cultured meat or _____
- Are meat products which have never been a part of a complete, living animal
- Are being created in several _____ projects, but have yet to be approved for public consumption

20. Trends & Technology in Natural Resources

- Include:
 - increasing _____
 - researching ways to control climate change
 - utilizing wind _____ to harness wind for electricity

21. Sustainability

- Focuses on the following:
 - conserving natural resources
 - developing _____ power sources
 - reducing _____ and harm to the environment

22. Wind Turbines

- Create electricity by the wind's _____ energy turning the blades and shaft, which is connected to a generator

23. Wind Turbine

- Benefits include:
 - utilizing an abundant source
 - creating a _____ source of electricity
 - being one of the _____ and most sustainable ways to generate electricity
 - free from producing pollution or emissions

24. Wind Turbine

- Limitations include:
 - land use
 - winds farms require _____ tracks of land
 - threat to wildlife
 - migrating birds
 - location
 - located far from _____ where the most electricity is needed

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25. Trends & Technology in Plant Systems

- Include:
 - vertical farming
 - researching genetic _____ to increase crop yields
 - utilizing _____ systems
 - anticipating the use of crop sensors

26. Hydroponics

- Is the growing of plants with _____ and water without the use of soil
- Consists of placing the plant's _____ system into water with a nutrient solution

27. Hydroponics

- Benefits include:
 - plants _____ more nutrients
 - plants grow approximately 30 to 50 percent faster
 - extra _____ in hydroponic systems stimulate growth

28. Hydroponics

- Limitations include:
 - _____ to initially begin
 - requires constant _____
 - requires power to operate

29. Trends & Technology in Power, Structural & Technical Systems

- Include:
 - utilizing computer-aided design (CAD) and global positioning system (GPS)/geographic _____ systems (GIS)

30. CAD

- Is a computer software used in _____ which plan and design agricultural projects
 - architects
 - _____
 - drafters
 - artists
- Is helpful in creating two-dimensional drawings or three-dimensional models

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31. CAD

- Benefits include:
 - increasing the _____ of the designers
 - improving the quality of a design
 - saving and storing all data and _____ for future references

32. CAD

- Limitations include:
 - expensive to purchase
 - continuing software _____
 - reduces _____ opportunities
 - cannot produce back up copies of designs

33. GPS

- Is a satellite-based navigation system
- Includes 24 _____ which are placed into orbit
- Satellites circle the earth twice daily to relay _____ information to GPS receivers

Agri-Fact: GPS satellites were placed into orbit by the United States Department of Defense because they were originally intended for military use.

34. GIS

- Is a computer system which receives information from GPS then stores, checks and _____ the information
- Can use any information relative to location:
 - latitude
 - _____
 - address
 - ZIP code

35. GPS/GIS

- Has advanced agriculture by allowing for precision practices such as:
 - farm planning
 - field mapping
 - soil sampling
 - _____ guidance
 - crop scouting
 - _____ rate applications
 - yield mapping

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Educational Opportunities Segment

1. Agribusiness

- Incorporates the following courses into degree programs:
 - economics
 - business _____
 - accounting
 - _____
 - management
 - finance

2. Educational Opportunities for Agribusiness

- Can include:
 - two-year colleges
 - students can receive an Associate's degree
 - can be completed within _____ years
 - four-year universities
 - students can receive a Bachelor's or Master's degree
 - can be completed within _____ to six years

Agri-Fact: In any career, individuals with higher education and more experience will be more inclined to receive career advancement opportunities.

3. Animal Agriculture

- Incorporates the following courses into degree programs:
 - breeding and genetics
 - nutrition
 - _____
 - physiology
 - food science and _____
 - meat science

4. Educational Opportunities for Animal Agriculture

- Can include:
 - trade schools
 - offers Associate's degrees or certifications
 - _____ technicians, trainers, groomers, etc.
 - two-year colleges
 - offers Associate's degrees or courses which could transfer to four-year universities
 - welfare specialists, _____ assistant, etc.

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5. Educational Opportunities for Animal Agriculture

- Can include:
 - four-year universities
 - offers Bachelor's, Master's or Doctorate degrees
 - teacher, livestock production _____, food/meat product development, etc.

6. Animal Agriculture

- Can continually be _____ to the public through the following:
 - breed associations
 - American Angus Association, National Swine Registry, etc.
 - U.S. Poultry and Egg Association
 - American _____ Science Association (ADSA)

7. Animal Agriculture

- Can continually be taught to the public through the following:
 - institutions
 - National _____ for Animal Agriculture (NIAA)

Agri-Fact: The NIAA's purpose is to provide information, education and solutions to the public about challenges facing the animal agricultural industry.

8. Environmental Services

- Incorporate the following courses into _____ programs:
 - biology
 - chemistry
 - _____ sciences
 - ecology

9. Educational Opportunities for Environmental Services

- Can include:
 - two-year colleges
 - offers Associate's degrees or _____ which could transfer to four-year universities
 - environmental science technician, etc.
 - four-year universities
 - offers Bachelor's, Master's or Doctorate degrees
 - toxicologist, _____ researcher, policy development and analysis, etc.

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10. Environmental Services

- Can continually be _____ to the public through the following:
 - organizations
 - Association for the _____ Environment (AHE)
 - National Environmental Health Association (NEHA)

Agri-Fact: The NEHA allows its members to continue their education through online courses, conferences and the Journal of Environmental Health.

11. Food Products & Processing

- Incorporate the following courses into degree programs:
 - biology
 - _____
 - food technology
 - food processing
 - food safety
 - food _____

12. Educational Opportunities for Food Products & Processing

- Can include:
 - two-year colleges
 - offers _____ or Associate's degrees
 - food science technicians, chef, etc.
 - four-year universities
 - offers Bachelor's, Master's and Doctoral degrees
 - food technologist, _____, animal nutritionist, etc.

13. Food Products & Processing

- Can continually be taught and _____ through the following:
 - trade organizations
 - Food Processing _____ Association (FPSA)
 - institutions
 - Institute of Food Technologists (IFT)

Agri-Fact: The FPSA's purpose is to provide its members with networking, marketing and educational opportunities to assist in the future of the industry.

The World of Agriculture -Student Notes

14. Natural Resources

- Incorporate the following courses into degree programs:
 - biology
 - chemistry
 - _____
 - natural resource management
 - _____sciences

15. Educational Opportunities for Natural Resources

- Can include:
 - two-year colleges
 - offers Associate's degrees or courses which could transfer to four-year universities
 - entry-level positions, management of _____ resources, etc.
 - four-year universities
 - offers Bachelor's, Master's and Doctoral degrees
 - conservation _____, game warden, systems ecologist, etc.

16. Natural Resource Management & Conservation

- Can continually be taught and improved through the following:
 - workshops
 - provided by the United States Department of Agriculture Forest _____
 - organizations
 - Soil and Water _____ Society

Agri-Fact: The USDA provides leadership and technical workshops to inform individuals about topics and policies and to improve their skills.

17. Plant Science

- Incorporate the following courses into degree programs:
 - biology
 - chemistry
 - _____
 - _____science
 - conservation sciences

The World of Agriculture -Student Notes

18. Educational Opportunities for Plant Science

- Can include:
 - two-year colleges
 - offers Associate's degrees or _____ which could transfer to four-year universities
 - greenhouse manager, landscaping businesses, etc.
 - four-year universities
 - offers Bachelor's, Master's and Doctoral degrees
 - agronomist, plant _____, science teacher, etc.

19. Plant Science

- Can continually be taught and improved through the following:
 - associations
 - American Society of _____ Biologists
 - _____ Science Society of America

Agri-Fact: The Soil Science Society of America offers courses to plant science professionals to receive certifications which help further their knowledge and skills.

20. Power, Structural & Technical Systems

- Incorporate the following courses into _____ programs:
 - mathematics
 - physics
 - power systems
 - structural systems
 - _____ systems
 - engineering

21. Educational Opportunities for Power, Structural & Technical Systems

- Can include:
 - trade schools
 - offers _____ or Associate's degrees
 - welding, diesel technicians, mechanics
 - two-year colleges
 - offers Associate's degrees or _____ which could transfer to four-year universities
 - CAD technician, electrician, etc.

The World of Agriculture -Student Notes

22. Educational Opportunities for Power, Structural & Technical Systems

- Can include:
 - four-year universities
 - offers Bachelor's, Master's and Doctoral degrees
 - _____, engineer, equipment operators, etc.
 - organizations
 - Association of Equipment Manufacturers (AEM)
 - Farm Equipment _____ Association (FEMA)

Global Agriculture Segment

1. Globalization

- Refers to _____ technologies, ideas or businesses throughout the world
- Increases the net income in many places which decreases the levels of poverty
- Has _____ rapidly due to advancements in technology which have lead to reduction of transfer costs
 - total costs of moving products
 - transport, loading, unloading, administrative, etc.

2. Globalization

- Has allowed agricultural production to increase much _____ than in the past
- Has increased demands for _____ and livestock around the world
 - including developing countries

3. Global Agricultural Markets

- Are affected by the _____ of world markets
- Depend on factors, such as:
 - _____
 - economic growth
 - income

4. Global Agricultural Markets

- Are regulated by the World Trade Organization (WTO)
- Are a crucial part in reducing poverty
 - allowing fair access to land, water and other _____ to have the ability to produce products
 - growth in incomes increases _____

The World of Agriculture -Student Notes

5. Global Agricultural Markets

- Can include:
 - crops
 - livestock
 - _____
 - finance
 - metals

6. Global Crop Markets

- Can include:
 - corn
 - wheat
 - _____
 - cotton
 - rice

Agri-Fact: The United States is the worlds largest producer and exporter of corn, while Japan is the worlds largest importer.

7. Global Livestock Markets

- Can include:
 - cattle
 - swine
 - _____

Agri-Fact: Commercial livestock productions support global food supply. Commercial productions produce livestock and crops intended for widespread sales and distribution.

8. Global Energy Markets

- Can include:
 - oil
 - gas
 - _____
 - unleaded
 - _____
 - coal

Agri-Fact: China is becoming the world's largest importer of oil, while India is becoming the largest importer of coal.

The World of Agriculture -Student Notes

9. Global Metal Markets

- Can include:
 - gold
 - _____
 - steel
 - platinum

Agri-Fact: Pure metals such as aluminum, silver and copper are extracted from ores in the earth's crust.

10. Global Currency

- Is a type of currency which is accepted _____ the world
- Is used for trade and international _____

11. Global Currencies

- Can include:
 - U.S. dollar
 - one U.S. dollar is equivalent to .90 _____
 - one U.S. dollar is equivalent to 113.28 Japanese _____
 - Euro
 - one euro is equivalent to \$1.11 U.S. dollars
 - one euro is equivalent to 125.77 Japanese Yen
 - Japanese Yen
 - one yen is equivalent to \$0.0088 U.S. dollars
 - one yen is equivalent to .0079 Euro

12. Global Agricultural Trends

- Include:
 - increased population
 - global output will need to double in the coming decades
 - increased commodity prices
 - caused by the demand of developing _____
 - increased equipment sales
 - sales in developing _____
 - increased manufacturing
 - expansion of manufacturing industry

13. Global Marketing

- Refers to _____ and sending a product worldwide to reach an international market
- Is divided into _____ stages

The World of Agriculture -Student Notes

14. Stages of Global Marketing

- Include:
 - stage one
 - _____focus
 - all marketing and sales are concentrated on the home market
 - stage two
 - domestic focus with exports
 - dependent on the home _____, but creates an export division of the company

15. Stages of Global Marketing

- Include:
 - stage three
 - focus is shifted to _____
 - companies adapt their marketing to _____operations
 - stage four
 - focus is on a global level
 - extend products and services to emerging global markets
 - assist in maintaining the global economy

16. Factors Influencing Global Markets

- Include:
 - economy
 - businesses should _____marketing decisions depending on the status of the economy
 - government
 - taxes, consumer age limits, _____, licensing requirements, etc.

The World of Agriculture -Student Notes

17. Factors Influencing Global Markets

- Include:
 - supply lines
 - can be affected by weather, _____ disasters or the cost of fuel
 - marketing should be focused on situations abroad to allow supplies to fit the market
 - consumer trends
 - have the ability to _____ the direction of a business
 - when trends change, the market must adapt to what the consumers want or need

18. Global Marketing Practices

- Include:
 - brand management
 - brands are challenged with competition, _____ and distribution issues
 - brands should be _____, quick to recover and growth-oriented
 - flexible
 - brands should be balanced and able to adapt accordingly to each market
 - brands' flexibility should NOT lessen brand values

19. Global Marketing Practices

- Include:
 - technological advancements
 - many companies have shifted to technology-enabled solutions
 - should be used to adapt to increasing _____ or consumer demands
 - being proactive
 - companies should be able to assist in the evolution of emerging _____ and technologies
 - companies should be able to integrate new tools into functions of the business

The World of Agriculture -Student Notes

20. Global Marketing

- Impacts:
 - customer satisfaction
 - meeting the customers needs and wants
 - cost of prices
 - providing higher quality products at the _____possible price
 - business opportunities
 - _____across borders

21. Global Marketing

- Offers many business opportunities
 - once a business plateaus in a developed economy, offering their products across borders will help _____business
- Allows developed _____to provide new technologies to developing countries

Agri-Fact: Due to Brazil, Russia, India and China becoming more industrialized, the U.S. and western European companies are able to expand their businesses.