

GRADE 9; AGRICULTURE

NUTRITION NOTES

CBC RATIONALIZED WORK

Well-organized, simplified learning notes that provide clear, concise information in a logical sequence, making key concepts easily accessible and memorable, enhancing understanding and retention while fostering engagement and facilitating effective study.

By providing a clear focus on key ideas, these Mwalimu Consultancy Notes foster better retention and comprehension, making learning more accessible and enjoyable.

UPDATED VERSION

This is a Free Sample/Overview of the Original Notes

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NATIONAL GOALS OF EDUCATION IN KENYA

Education in Kenya should:

1. Foster nationalism and patriotism and promote national unity.

Kenya's people belong to different communities, races and religions, but these differences need not divide them. They must be able to live and interact as Kenyans. It is a paramount duty of education to help young people acquire this sense of nationhood by removing conflicts and promoting positive attitudes of mutual respect which enable them to live together in harmony and foster patriotism in order to make a positive contribution to the life of the nation.

2. Promote the social, economic, technological and industrial needs for national development.

Education should prepare the youth of the country to play an effective and productive role in the life of the nation.

a) Social Needs

Education in Kenya must prepare children for changes in attitudes and relationships which are necessary for the smooth progress of a rapidly developing modern economy. There is bound to be a silent social revolution following in the wake of rapid modernization. Education should assist our youth to adapt to this change.

b) Economic Needs

Education in Kenya should produce citizens with the skills, knowledge, expertise and personal qualities that are required to support a growing economy. Kenya is building up a modern and independent economy which is in need of an adequate and relevant domestic workforce.

c) Technological and Industrial Needs

Education in Kenya should provide learners with the necessary skills and attitudes for industrial development. Kenya recognizes the rapid industrial and technological changes taking place, especially in the developed world. We can only be part of this development if our education system is deliberately focused on the knowledge, skills and attitudes that will prepare our young people for these changing global trends.

3. Promote individual development and self-fulfillment

Education should provide opportunities for the fullest development of individual talents and personality.

It should help children to develop their potential interests and abilities. A vital aspect of individual development is the building of character.

4. Promote sound moral and religious values.

Education should provide for the development of knowledge, skills and attitudes that will enhance the acquisition of sound moral values and help children to grow up into self-disciplined, self-reliant and integrated citizens.

5. Promote social equality and responsibility.

Education should promote social equality and foster a sense of social responsibility within an education system which provides equal educational opportunities for all. It should give all children varied and challenging opportunities for collective activities and corporate social service irrespective of gender, ability or geographical environment.

6. Promote respect for and development of Kenya's rich and varied cultures.

Education should instill in the youth of Kenya an understanding of past and present cultures and their valid place in contemporary society. Children should be able to blend the best of traditional values with the changing requirements that must follow rapid development in order to build a stable and modern society.

7. Promote international consciousness and foster positive attitudes towards other nations.

Kenya is part of the international community. It is part of the complicated and interdependent network of peoples and nations. Education should therefore lead the youth of the country to accept membership of this international community with all the obligations and responsibilities, rights and benefits that this membership entails.

8. Promote positive attitudes towards good health and environmental protection.

Education should inculcate in young people the value of good health in order for them to avoid indulging in activities that will lead to physical or mental ill health. It should foster positive attitudes towards environmental development and conservation. It should lead the youth of Kenya to appreciate the need for a healthy environment.

Extracted from the KICD Curriculum by Mwalimu Consultancy Ltd.

LEARNING OUTCOMES FOR JUNIOR SCHOOL

By end of Junior School, the learner should be able to:

- 1. Apply literacy, numeracy and logical thinking skills for appropriate self-expression.** Students should be able to read and write with confidence. This includes understanding different genres, composing coherent texts and interpreting information from various sources. Students should understand basic mathematical concepts like addition, subtraction, multiplication and division and be able to apply these in real-life scenarios. Encouraging problem-solving and critical thinking through puzzles, simple coding activities and science experiments.
- 2. Communicate effectively, verbally and non-verbally, in diverse contexts.** Participating in group discussions, presenting ideas clearly and listening actively. Using body language, facial expressions and gestures to enhance understanding and express emotions.
- 3. Demonstrate social skills, spiritual and moral values for peaceful co-existence.** Practicing teamwork, empathy and conflict resolution. Learning about honesty, respect, and responsibility through stories, role-playing and classroom discussions.
- 4. Explore, manipulate, manage and conserve the environment effectively for learning and sustainable development.** Engaging in hands-on activities like planting trees, recycling projects and nature walks. Understanding the importance of reducing waste and protecting natural resources through classroom projects and field trips. **Authored by Mwalimu 0746222000.**
- 5. Practice relevant hygiene, sanitation and nutrition skills to promote health.** Teaching proper handwashing techniques, personal cleanliness and the importance of dental care. Understanding waste disposal, keeping personal and communal spaces clean. Learning about balanced diets, recognizing healthy food choices and understanding the impact of nutrition on overall health.
- 6. Demonstrate ethical behaviour and exhibit good citizenship as a civic responsibility.** Discussing concepts of fairness, respect and integrity through stories and classroom activities. Participating in community service, understanding civic duties and respecting diverse perspectives.
- 7. Appreciate the country's rich and diverse cultural heritage for harmonious co-existence.** Learning about various cultural practices, traditions and celebrations through activities, guest speakers and cultural events. Encouraging respect for diversity and inclusion through collaborative projects and discussions. **Done Mwalimu Consultancy Limited.**
- 8. Manage pertinent and contemporary issues in society effectively.** Discussing current affairs, events and social issues in age-appropriate ways. Encouraging students to think critically about solutions and their roles in addressing societal challenges.
- 9. Apply digital literacy skills for communication and learning.** Using educational software, engaging with online resources responsibly and understanding the basics of internet safety. Leveraging digital tools to create presentations, research topics and collaborate with peers.

SUBJECT GENERAL LEARNING OUTCOMES

By the end of Junior School, the learner should be able to:

- 1. Actively participate in agricultural and household activities for resource conservation.** Learners will understand the importance of conserving natural resources such as water, soil and energy. Through involvement in practical activities, they will learn how to reduce waste and ensure sustainable use of resources in daily life.
- 2. Utilize scarce resources through innovative practices to contribute to food and nutrition security.** Learners will explore creative ways to maximize the use of limited resources in food production such as through sustainable farming methods or the efficient use of kitchen ingredients. They will gain an understanding of how these practices contribute to food security and improve nutritional outcomes.
- 3. Engage in food production processes for self-sustainability, health and economic development.** Learners will be introduced to various methods of food production, such as gardening or small-scale farming to foster self-sufficiency. This outcome encourages a deep understanding of how these practices can support personal health and contribute to local economic growth.
- 4. Adopt personal and environmental hygiene practices for healthy living.** Students will learn about the importance of hygiene in preventing illness and maintaining overall well-being. They will be encouraged to practice good personal hygiene and promote environmentally responsible actions such as waste management and cleanliness.
- 5. Apply appropriate production techniques, innovative technologies and digital and media resources to enhance sustainable agricultural and household practices.** Learners will be exposed to modern farming techniques, digital tools, and media resources that can improve efficiency in both agricultural and household practices. They will explore how these innovations can help create sustainable systems that support long-term environmental and economic health.
- 6. Appreciate agricultural and household skills as valuable for hobbies, career development, further education and training.** Learners will recognize that skills in agriculture and household management are not only practical but can also open doors to careers and further educational opportunities. They will develop an appreciation for how these skills can provide personal fulfillment, professional growth, and contribute to community well-being.

1. CONSERVATION OF RESOURCES

1.1. CONSERVING ANIMAL FEED: HAY

- Conserving animal feed, especially hay, is important in farming to make sure animals have enough food all year round.
- Hay is a key food for many animals, during dry seasons when fresh grass isn't available.
- To keep hay good for feeding, it needs to be harvested, dried and stored correctly.
- Good hay conservation helps animals stay healthy, saves farmers money and reduces waste, making farming more efficient and environmentally friendly.
- **Forage** refers to any edible parts of plants that can be used as feed for grazing animals or harvested for later use.
- Livestock such as cows, goats, horses and camels need proper food for healthy growth and production.
- Grass and legumes are commonly grown as feed for animals.
- During the rainy season, livestock have enough food, but in the dry season, when drought causes shortages, excess feed must be preserved.
- Farmers often cut grasses and legumes from the fields, allow them to dry and then store them in bales for future use.

1.2. Reasons for conservation

- a) For better and full utilisation of available land. When forage is cut, further regrowth occurs especially during the rainy season.
- b) It ensures availability of livestock feed throughout the year even during dry seasons.
- c) Source of income. The conserved forage may be sold to generate income to the farmer.

1.3. Methods of conserving forage

- Forage can either be eaten by animals directly in the field (grazed) or harvested and saved for later use.
- When there is a lot of forage, farmers often preserve it to make sure animals have enough food during dry periods or times of drought.
- Examples of forage crops:
 - ❖ Grass
 - ❖ Legumes
 - ❖ Maize
 - ❖ Sorghum
 - ❖ Oats
 - ❖ Millet
 - ❖ Clover
 - ❖ Napier grass
 - ❖ Lucerne
 - ❖ Desmodium

- Some common methods to conserve forage include:
 - Baled hay
 - Standing forage or hay
 - Stacking straws and maize stovers

1.4. **Baled hay**

- Hay refers to forage crops which have been cut and dried to about 15-20% moisture content so that they can safely be stored without undergoing fermentation and becoming moldy.
- Hay can be made from pasture grass and legumes such as desmodium.



Baled hay making process

- This method involves cutting grass during its flowering stage. Cutting the grass at this time helps to preserve its nutritional value
- The hay-making process involves cutting, spreading cut forage for faster drying and putting it in rows (windrowing) for easier collection.
- The structures that can be used to make bales include:
 - ❖ Metallic or wooden box baler.
 - ❖ Wooden box.

Materials required to make baled hay

- ❖ Dried forage such as grass, maize stover or straw
- ❖ Gloves
- ❖ Gumboots
- ❖ Knife
- ❖ Metallic or wooden box baler/wooden box
- ❖ Panga/sickle
- ❖ Rake
- ❖ Sisal twine/strings

Procedure followed when making baled hay:

1. Wear gloves and gumboots to protect your hands and feet.
2. Cut fresh forage from the field using either a panga or a sickle.
3. Spread the cut forage to allow it to dry for 2 to 3 days using a rake.
4. You can also use already dried forage materials from the field, such as maize stover, straw or grass.
5. Put the dried forage materials into the box baler or wooden box (approximately 40 cm x 50 cm x 75 cm).
6. Place lengths of sisal twine in the box.
7. Compact the materials by pressing them down tightly or applying pressure from the top.
8. Tie the materials securely or bind the compressed hay using binding materials such as sisal twine or strings.
9. Remove the baled hay from the box.
10. Store the hay bales in a dry, shaded area for use during drought.

Advantages of making baled hay

- They are easy to transport.
- Bales offer easy and safe storage for a long time.
- It is easy to handle hay while it is in the form of bales.
- Bales require less space.
- Baled hay is less susceptible to contamination from dirt, pests, or water compared to loose hay.
- Baling can help preserve the nutritional value of forage for extended periods.
- Bales are easier to stack and organize, maximizing storage space.

Disadvantages of baled hay

- It is labor-intensive; a lot of work is required.
- There is a risk of spoilage if the hay is not properly dried before baling.
- Baled hay can be difficult to break open if it is tightly compressed.
- Improper storage conditions can lead to mold growth and reduced hay quality.
- The process may require a significant amount of time, especially if weather conditions delay drying.

1.5. Standing forage or hay

- Standing forage refers to grass and other plants that are left to grow and accumulate in the field. This forage can either be harvested later for feeding or grazed directly by livestock.
- It is essentially a form of forage preservation that ensures there is a reserve of feed available for livestock when fresh pasture is unavailable.
- Standing forage should be sufficient in quantity and quality to meet the nutritional needs of livestock throughout the dry season or other periods when fresh forage is not readily available.



- Proper management of standing forage can provide a reliable food source, reducing the need for additional feed inputs.
- To get the most from standing forage, farmers use methods like rotational grazing or strip grazing.
- These methods involve dividing the field into smaller sections and allowing animals to graze only part of the field at a time.
- This gives the other parts of the field time to grow back and stay healthy.
-

Advantages of standing forage

- Livestock can graze on it when needed.
- It can be harvested regardless of weather conditions.
- It requires little investment in labor or equipment.
- It helps improve soil health and supports wildlife.

Disadvantages of standing forage

- It requires large pieces of land.
- It can be damaged by extreme weather like floods or drought.
- Livestock can overgraze if not managed carefully.
- It can attract pests that damage the forage.

1.6. Stacking straws and maize stovers:

- Stacking hay refers to piling dried forage in a heap. Materials like maize stover or wheat straw are cut and piled on a raised surface.
 - The forage should be kept in a well-sheltered place to prevent rainwater and sunlight from damaging it.
 - Storing these materials properly is important to avoid waste and keep the quality high.
 - The stacks should be placed in a dry area to prevent mold or decay.
-
- It is also a good idea to leave some space between the stacks to allow air to circulate and help the materials dry properly.



- Proper storage is important because poorly stored forage can lose its nutritional value and may even become harmful to animals.

Advantages of haystacks

- Easy to assemble
- Suitable for areas without equipment for making baled hay
- Cost-effective, as fewer tools and machinery are required
- Protects the forage from direct sunlight, which can preserve its nutrients
- Can be built using locally available materials
- Allows for airflow around the stored hay, which reduces the risk of mold or rot

Disadvantages of haystacks

- Require large spaces
- Susceptible to damage from pest such as rodents or insects
- Hay may settle or collapse over time, leading to waste
- May be more difficult to access and remove hay compared to bales
- Hay is more exposed to wind, which can cause it to degrade if not properly secured
- Not as efficient for long-term storage as baled hay as it can be harder to transport or handle

1.7. Factors to consider when choosing a method of conserving forage

- 1. Type of forage:** Baled hay is suitable for grasses and legumes, while standing forage works best for grazable crops and stacking straws and maize stovers is ideal for crop residues like maize stalks and wheat straw.
- 2. Climate and weather conditions:** Baled hay requires dry, sunny weather for proper drying, while standing forage thrives in consistent rainfall areas, and stacking straws and maize stovers can withstand various weather conditions as long as proper storage is ensured.
- 3. Storage space and infrastructure:** Baled hay needs significant storage space to protect from moisture, standing forage requires minimal storage, and stacking straws and maize stovers only needs a dry, sheltered area for stacking.
- 4. Labor and time requirements:** Baled hay is labor-intensive, requiring cutting, drying and baling, while standing forage has minimal labor needs once managed, and stacking straws and maize stovers involves less labor but may need additional feed supplementation.
- 5. Nutrient retention and quality:** Baled hay retains most nutrients if dried properly, standing forage maintains nutritional value if grazed correctly, and stacking straws and maize stovers has lower nutritional value, typically used for roughage.
- 6. Cost of production:** Baled hay is expensive due to the need for specialized equipment and storage, standing forage is cost-effective if pasture infrastructure is in place, and stacking straws and maize stovers is inexpensive, relying on crop residue.
- 7. Flexibility and accessibility:** Baled hay offers flexibility for long-term feed storage, standing forage depends on weather and grazing control, and stacking straws and maize stovers is less flexible but provides roughage when other options are limited.

1.8. Reasons why conserving forage is important

1. Conserving forage ensures a steady supply of nutritious feed for livestock during dry seasons when fresh pasture is unavailable.
2. It reduces the need for expensive supplemental feeds by utilizing stored forage, hence lowering the overall feeding costs.
3. Proper forage conservation promotes soil health, reduces erosion and supports biodiversity on farms.
4. Conserving forage allows farmers to manage feed availability in the face of unpredictable weather patterns like droughts.
5. Consistent access to conserved forage boosts livestock growth, reproduction and overall farm productivity.
6. By ensuring a reliable feed source, forage conservation helps stabilize revenue and reduce financial risks.
7. Forage conservation practices support the long-term sustainability of farming operations by preserving natural resources.

1.9. CONSERVING LEFTOVER FOOD

- Leftover food refers to food that remains uneaten after a meal or meal preparation. It is food that has been cooked but not consumed and is stored for later use.
- Leftovers can come from various types of meals such as home-cooked dishes, takeout or food prepared in large quantities.
- Common examples of leftover food include:
 - ❖ Extra portions of cooked meat, vegetables or pasta
 - ❖ Unfinished servings of soups, stews or salads
 - ❖ Bread, rice or grains not fully consumed
 - ❖ Leftover pizza or sandwiches
 - ❖ Fruit or dessert that wasn't eaten
- Leftovers can be repurposed into new dishes or enjoyed as-is, making them a convenient and economical option.
- Conserving leftover food allows individuals to enhance their creativity by trying different dishes using what is already available. Serving leftover food in a new form also prevents monotony.
- Leftover food, if poorly stored, can become contaminated with bacteria, which may cause food poisoning for anyone who consumes it.

1.10. Importance of conserving/reasons for reusing leftover food

1. **It does not require special skills** – Since leftover food is already available, preparing it is easier than making a new dish.
2. **It helps keep the environment healthy** – Reusing leftovers benefits the environment as less food is wasted, which is good for sustainability.
3. **To ensure food security** – Using leftovers ensures that food is available for everyone because nothing is wasted. This helps ensure everyone has enough to eat.
4. **To reduce food wastage** – Instead of throwing away leftover food, it can be transformed into new dishes.
5. **To save on labor** – There is no need for the initial food preparations; the leftovers can be used to prepare a new dish.
6. **To save resources and money** – Reusing leftovers enables the saving of both food and the ingredients required to make a new meal. This helps to save money as no additional food needs to be bought.
7. **To save time** – Reheated dishes save time in the kitchen, as the cooked leftovers do not require the initial cooking process. This saves time.

1.11. Preparing leftover githeri (maize and beans) by reheating

Requirements:

- ❖ Apron
- ❖ Chopping board
- ❖ Closed shoes
- ❖ Headgear
- ❖ Kitchen gloves
- ❖ Kitchen knife
- ❖ Saucepan
- ❖ Source of heat
- ❖ Water
- ❖ Wooden spoon



Ingredients:

- ❖ 1 cup leftover maize and beans (githeri)
- ❖ 1 medium-sized onion
- ❖ 1 tablespoon cooking oil
- ❖ 1 cup cubed carrots
- ❖ 1 bunch of spinach
- ❖ Salt to taste

Procedure:

1. Cut or shred the spinach appropriately.
2. Chop the onion.
3. Add the carrots to the pan and stir-fry until they are browned (for a few minutes).
4. Add the rest of the vegetables (onion and spinach) and stir-fry for a few more minutes. Note: Overcooking vegetables destroys vitamins.
5. Add a little salt to taste.
6. Add the leftover githeri and a little water.
7. Simmer until the liquid evaporates.

Note: Observe safety precautions when working to avoid injuries such as burns, scalds and falls caused by water spills on the floor.

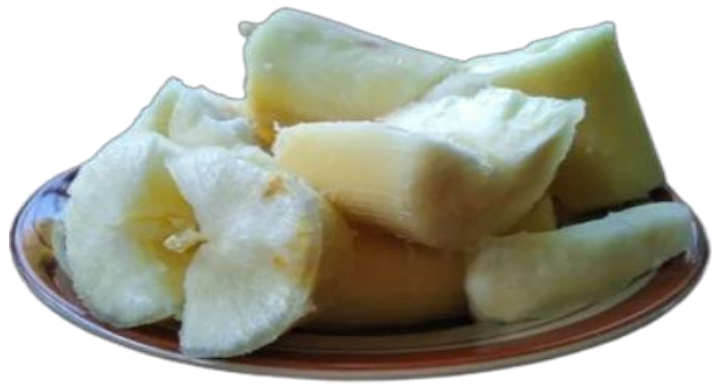
1.12. Reheating leftover cassava

Ingredients:

- ❖ Pieces of leftover cassava
- ❖ Enough cooking oil
- ❖ Salt (optional)

Procedure:

1. Cut the cassava into small pieces.
2. Heat the cooking oil in a frying pan.
3. Lower the pieces of cassava into the hot oil. Keep turning until they turn golden brown.
4. Serve hot or cold as a snack.



1.13. Preparing meatballs using leftover meat

Requirements:

- ❖ A frying pan
- ❖ A mixing bowl
- ❖ A saucepan
- ❖ A kitchen knife
- ❖ A plate
- ❖ A spoon



Ingredients:

- ❖ 4 slices of bread
- ❖ 2 eggs
- ❖ Leftover meat
- ❖ A bunch of coriander leaves (dhania)
- ❖ Salt to taste
- ❖ Enough cooking oil
- ❖ 1 medium red onion

Procedure:

1. Mince the meat or cut it into tiny pieces.
2. Dry the slices of bread in a hot saucepan to prepare breadcrumbs.
3. Crush the dry slices into breadcrumbs.
4. Break the eggs into a bowl and beat them lightly.
5. Chop the onion into small pieces, fry them and set them aside.
6. Chop the coriander leaves into small pieces.
7. Mix the onion, coriander leaves, breadcrumbs and egg mixture into the leftover minced meat.
8. Mix well using your hands.
9. Scoop with your hands and mold the mixture into small balls. Set them aside until all the mixture is made into balls.
10. Heat oil in a pan and gently lower the meatballs into the pan. Avoid overcrowding the meatballs in the pan for easier turning.
11. Turn the meatballs regularly until both sides are well browned.
12. Remove the meatballs and serve hot.

1.14. Making pumpkin soup using leftover boiled pumpkins**Ingredients:**

- ❖ 2 pieces of boiled pumpkin
- ❖ 1 onion
- ❖ 1 tablespoon cooking oil
- ❖ 1 flat teaspoon salt
- ❖ Spices of your choice
- ❖ 250 ml water
- ❖ 1 medium tomato



Procedure:

1. Slice the onion and cut the tomato into small pieces.
2. Fry the onion until slightly brown.
3. Add the tomato, salt and spices and stir well. Steam for a few minutes.
4. Cut the boiled pumpkin into small pieces and add it to the mixture. Stir until well blended.
5. Add the water and bring to a boil.
6. Put the mixture into a blender and blend until smooth. (If a blender is not available, make a puree by passing the mixture through a sieve.)
7. Serve while hot.

1.15. Guidelines to follow when handling and preparing leftover foods

- Observe high standards of hygiene when handling food.
- Fried foods require constant attention. Always lower food into a frying pan gently to avoid getting burns from the hot oil.
- Preparation of meat for reheating involves removal of excess fat, bones and gristle.
- Leftover rice should be loosened with a fork if it is stuck together, to allow heat to penetrate easily.
- If the food is frozen, it must be defrosted before reheating. Do not refreeze it after defrosting.
- Some foods can be coated using eggs and breadcrumbs.
- Protective clothing should be worn during food preparation.
- Leftover foods should be garnished before serving to make them more interesting.
- Adding new ingredients when using leftover foods helps to:
 - a) Vary the texture of food.
 - b) Improve the appearance of leftover food.
 - c) Improve the nutritional value.
- Where there is no refrigerator, keep leftover food well covered in a place that does not encourage the growth of bacteria. Use it within ten hours.
- Reheat leftover foods only once.
- Large pieces of leftover food should be sliced into smaller pieces for proper reheating.

1.16. INTEGRATED FARMING

- Integrated farming is a farming system that combines different types of farming activities such as growing crops, raising animals, fishing, and sometimes planting trees, to make the farm more productive and sustainable.
- The goal is to use the resources on the farm efficiently, reduce waste and make the farm more profitable and environmentally friendly.

1.17. **Components of integrated farming systems**

a) **Crop production**

- Growing different crops, such as cereals (e.g. rice, wheat, maize), pulses, vegetables, fruits and oilseeds.
- Crop rotation: Changing the types of crops grown on the same land over time to maintain soil health.
- Intercropping: Growing two or more crops together on the same land to increase productivity and reduce pest problems.



b) **Livestock production**

- Raising animals such as cattle, goats, sheep, pigs, poultry or rabbits for meat, milk, eggs, wool and other products.
- Manure production: Livestock provide manure, which can be used as organic fertilizer for crops.



c) Poultry rearing

- This involves rearing of poultry such as chicken, ducks and pigeons.
- It provides manure for crops hence reducing the reliance on fertilizers.
- Provides food through eggs and meat for humans



d) Aquaculture

- Fish farming in ponds, tanks, or cages, raising fish such as tilapia, catfish or shrimp.
- Fish waste can be used to fertilize crops, and water from fish ponds can be used for irrigation.



e) **Agroforestry**

- Integrating trees with crops or livestock on the same land. Trees may provide timber, fruit, nuts, firewood or other products, while also offering shade, wind protection and improving soil fertility.
- Silvopasture: Combining tree planting with grazing land for livestock.



f) **Horticulture**

- Growing fruits, vegetables or flowers. This can be combined with crops or livestock to diversify farm products.
- Greenhouses or polyhouses: Growing high-value vegetables or fruits in controlled environments.



g) **Beekeeping (Apiculture)**

- Raising bees for honey, beeswax and pollination of crops.
- Beekeeping is often integrated with crop farming as bees help pollinate flowers, improving crop yields.



h) Vermiculture (Worm farming)

- Raising earthworms to produce vermicompost, a natural fertilizer that improves soil health and fertility.



i) Animal-fish integration

- Combining livestock and fish farming in one system, where animal waste can be used to fertilize fish ponds and fish water can be used to irrigate crops.



1.18. Ways in which integrated farming helps to conserve resources

1. Crop residues and animal manure can be used to enrich the soil, reducing the need for chemical fertilizers and improving natural soil fertility.
2. Crop rotation and agroforestry improve soil structure, prevent land degradation and optimize land use.
3. Growing a variety of crops alongside livestock helps maintain biodiversity, improving ecosystem stability and resilience.
4. Integrated farming involves water management practices such as agroforestry or fish rearing, maximizing the use of water. Water from fish ponds can irrigate livestock and crops and conservation measures like drip irrigation reduce water wastage.
5. Integrated farming practices increase resilience to climate change by reducing vulnerability to extreme weather events like droughts or floods, ensuring more stable yields.

6. Integrated farming practices such as agroforestry and cover cropping help to prevent soil erosion, protecting soil and reducing nutrient loss through runoff.
7. Planting various crops in the field reduces pests, which minimizes reliance on chemical pesticides.
8. Practices like using animals for plowing reduce reliance on fossil fuels for machinery, conserving energy and reducing carbon emissions.
9. Waste products from livestock can be used to make organic manure for growing crops, reducing the need for chemical fertilizers.
10. Agricultural and food processing by-products can be repurposed for animal feed or composting, reducing waste and optimizing resource use.

1.19. Integrated farming model



1.20. Importance of integrated farming

1. By combining different components such as crops, livestock and aquaculture on the same plot, integrated farming allows for the production of a wide variety of food, offering a balanced and diverse source of nutrition for households.
2. By diversifying farming activities, integrated farming systems help reduce the risk of crop failure due to extreme weather conditions, increasing resilience to climate change.
3. Integrated farming promotes efficient water use by combining crop production with fish farming. Water from fish ponds can be recycled for irrigation, reducing water wastage and improving overall water conservation.

4. Integrated farming reduces environmental pollution by minimizing the use and reliance on chemical fertilizers, promoting a healthier ecosystem.
5. Integrated farming supports long-term food production by reducing the need for chemicals, fostering healthy, sustainable farming practices that protect soil, water and air quality.
6. Integrated farming systems reduce waste by repurposing by-products from one farming activity to benefit others, such as using manure as fertilizer or crop residues for animal feed.
7. The integrated farming system provides farmers with a steady flow of income throughout the year. It leads to greater financial stability by diversifying sources of income and lowering costs on animal feed, fertilizers and other farm inputs.
8. The integration of crop rotation, agroforestry and animal farming helps maintain soil fertility and structure, reducing erosion and enhancing nutrient cycling.

2. FOOD PRODUCTION PROCESSES

- Food production in agriculture means growing crops and raising animals to provide food for people.
- It includes planting and harvesting plants like vegetables, grains and fruits, as well as taking care of animals such as cows, chickens, and pigs to produce meat, milk and eggs.
- This process helps create the food we eat every day.
- It also focuses on making sure there is enough healthy food for everyone.

2.1. ORGANIC GARDENING

- Organic gardening involves using natural substances such as organic manure, pesticides and weed control methods, derived from plants and animal waste, to grow crops.
- It focuses on cultivating crops like vegetables, legumes and herbs without relying on synthetic agricultural chemicals.

POLITE NOTE!

Take note that this is a Sample of the Well Organized Detailed Simplified Notes.

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