

Class 9 - Skill Education

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Precision Farming

CBSE NOTES

Precision Farming - Mastery Worksheet

Strengthen your foundation with key concepts and basic applications.



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Solve the following questions. Write your answers in the space provided.

1. Discuss the significance of precision farming in enhancing agricultural productivity and sustainability. Provide examples of different techniques used.

Hint: Think about how technology maximizes efficiency while minimizing environmental impact.



Solve the following questions. Write your answers in the space provided.

2. Compare traditional farming methods with precision farming methods in terms of resource management and yield outcomes. Use data from your observations.

Hint: Create a table comparing specific practices and outcomes.

3. Explain the process and importance of preparing Lactic Acid Bacteria (LAB) culture as a biofertilizer. Include steps and expected benefits.

Hint: Outline the fermentation stages and relate them to plant growth improvements.



Solve the following questions. Write your answers in the space provided.

4. How does the use of a humidity chamber differ from a low-tunnel in terms of plant growth conditions? Discuss their respective advantages.

Hint: Create a Venn diagram to visualize similarities and differences.

5. Assess how integrated pest management strategies in precision farming can lead to sustainable agricultural practices. Provide real-world applications.

Hint: Consider examples from case studies where pests are managed sustainably.



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Solve the following questions. Write your answers in the space provided.

6. Develop a Bill of Materials (BOM) for setting up a precision farming unit in your school. Justify your choices based on functionality and safety.

Hint: Organize items into categories like tools, materials, and safety gear.



Solve the following questions. Write your answers in the space provided.

7. Evaluate the impact of using sensors and data collection in precision farming. How have these technologies transformed traditional practices?

Hint: Reflect on specific technologies and their quantitative impacts on farming.

8. Illustrate the process of setting up a drip irrigation system and how it contributes to water conservation in precision farming.

Hint: Include a flowchart to outline the key installation steps.



Solve the following questions. Write your answers in the space provided.

9. Discuss the role of agro-climatic data in decision-making for crop protection methods in precision farming. Explain with examples.

Hint: Consider case studies where specific data directly influenced farming decisions.



Check your answers with the solutions below.

1. Discuss the significance of precision farming in enhancing agricultural productivity and sustainability. Provide examples of different techniques used.

Solution: Precision farming involves utilizing technology such as sensors, GPS, and data analysis to optimize farming practices. Techniques like micro-irrigation, soil-moisture sensors, targeted fertilization through drones, and controlled climate environments like greenhouses are examples. They reduce resource waste, improve yields, and create sustainable farming systems by providing plants exactly what they require.

2. Compare traditional farming methods with precision farming methods in terms of resource management and yield outcomes. Use data from your observations.

Solution: Traditional farming often results in inefficient resource use, such as over-watering and excessive pesticide use. In contrast, precision farming utilizes soil moisture sensors and climate data to precisely manage these inputs, leading to higher yields and reduced crop losses, as shown in examples where yield improvements range from 10% to 30%.

3. Explain the process and importance of preparing Lactic Acid Bacteria (LAB) culture as a biofertilizer. Include steps and expected benefits.

Solution: LAB culture involves rinsing rice, fermenting it, and mixing it with milk over specific timeframes. This process produces beneficial bacteria that aid nutrient absorption for plants. Utilizing LAB can enhance soil fertility and plant health, resulting in improved crop quality. The benefits include increased microbial activity in the soil, promoting nutrient availability.



Check your answers with the solutions below.

4. How does the use of a humidity chamber differ from a low-tunnel in terms of plant growth conditions? Discuss their respective advantages.

Solution: A humidity chamber is a controlled environment primarily for seedling growth, maintaining high humidity and warmth, which fosters rapid germination. In contrast, a low-tunnel extends the growing season by trapping heat and protecting plants from harsh climates. While humidity chambers are crucial for seedlings, low-tunnels enable year-round production of vegetables.

5. Assess how integrated pest management strategies in precision farming can lead to sustainable agricultural practices. Provide real-world applications.

Solution: Integrated pest management combines biological, cultural, and chemical practices to manage pest populations while minimizing environmental impact. Techniques include the use of beneficial insects, light traps, and targeted organic pesticides. This approach allows for balancing pest control and ecosystem health, seen in practices such as orchard management using natural predators.

6. Develop a Bill of Materials (BOM) for setting up a precision farming unit in your school. Justify your choices based on functionality and safety.

Solution: A BOM might include trays, soil, seeds, irrigation tools, and a humidity chamber setup. Each item should be justified for its role in cultivation, such as trays for planting, specific soil mixes for nutrient retention, and irrigation tools for efficient water delivery. Safety notes emphasize the need for proper handling of tools and materials to prevent injuries.



Check your answers with the solutions below.

7. Evaluate the impact of using sensors and data collection in precision farming. How have these technologies transformed traditional practices?

Solution: Sensors enable real-time monitoring of environmental factors like soil moisture and temperature, leading to data-driven decisions. This technology transforms traditional farming by shifting from reactive practices to proactive management, improving efficiency and yield while reducing input costs and environmental damage.

8. Illustrate the process of setting up a drip irrigation system and how it contributes to water conservation in precision farming.

Solution: Setting up a drip irrigation system involves laying main and lateral pipes, attaching drippers near plant roots, and connecting to a water source. This method conserves water by delivering it directly to roots, unlike traditional flood irrigation, reducing evaporation and runoff.

9. Discuss the role of agro-climatic data in decision-making for crop protection methods in precision farming. Explain with examples.

Solution: Agro-climatic data informs farmers about temperature ranges, rainfall patterns, and humidity levels, aiding in selecting appropriate crop protection methods like low-tunnels for frost protection or shade-netting for heat resistance. For example, data predicting high rainfall may prompt the use of raised beds.



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