

Class 9 - Skill Education

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Precision Farming

CBSE NOTES

Precision Farming - Practice 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. Define precision farming and explain its importance in agriculture. How does it contribute to sustainable farming practices?

Hint: Focus on the relationship between precision farming practices and sustainability.

2. Explain the role of technology in precision farming. Provide examples of tools or methods used.

Hint: Consider different technology aspects: monitoring, watering, and pest management.



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

3. Describe how to prepare a Lactic Acid Bacteria (LAB) culture as a biofertiliser. What are its benefits for plant growth?

Hint: Review the fermentation process outlined in the chapter for details on preparation.

4. What is a humidity chamber in precision farming, and how does it facilitate seedling growth?

Hint: Refer to the functions of a humidity chamber as mentioned in your textbook.



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

5. Compare traditional farming methods with precision farming methods regarding irrigation practices.

Hint: Think about the differences in water management strategies used in both methods.

6. How do agro-climatic conditions influence crop selection in precision farming?

Hint: Focus on the relationship between climate data and crop health.



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

7. Discuss the steps involved in creating a low-tunnel structure for precision farming. What advantages does it provide?

Hint: Consider the key steps listed in the construction process in your notes.

8. Explain the process of using soil analysis to determine the need for organic fertilizers in precision farming.

Hint: Review the soil testing sections in the chapter for steps and calculations.



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

9. What are the key benefits of using sensors in precision farming? Provide examples of their applications.

Hint: Think of different sensor types and their roles in farming efficiency.

10. Describe integrated pest management strategies used in precision farming. Why are they important for sustainable agriculture?

Hint: Consider the role of IPM in balancing pest control and environmental protection.



Check your answers with the solutions below.

1. Define precision farming and explain its importance in agriculture. How does it contribute to sustainable farming practices?

Solution: Precision farming is an agricultural management concept that utilizes technology to apply inputs more accurately and efficiently as per crop needs. This method significantly enhances productivity while minimizing resource waste. By focusing on giving plants the exact water, nutrients, and treatments needed at the right time, farmers can reduce environmental impact, conserve water, and decrease reliance on chemical fertilizers and pesticides. For example, using soil moisture sensors allows for targeted watering, reducing water wastage. This approach aligns with sustainable agriculture goals by ensuring long-term farming viability.

2. Explain the role of technology in precision farming. Provide examples of tools or methods used.

Solution: Technology plays a pivotal role in precision farming by enabling farmers to monitor and manage crop health, soil conditions, and pest management. Key technologies include GPS for field mapping, remote sensing for crop health monitoring, and soil moisture sensors for efficient irrigation management. For instance, a health map created with drone imagery can identify crop stress areas, guiding farmers on where to focus their resources. Additionally, automated drip irrigation systems deliver water directly to the roots, ensuring optimal use for plant growth.

3. Describe how to prepare a Lactic Acid Bacteria (LAB) culture as a biofertiliser. What are its benefits for plant growth?

Solution: To prepare a Lactic Acid Bacteria (LAB) culture, wash uncooked rice and collect the rinse water. Pour this into a clean jar and cover it with a muslin cloth for 3-5 days at room temperature. After fermentation, you'll notice a mat forming; pour out the cloudy liquid beneath, which is rich in LAB. Mix this liquid with milk for a few days to culture the bacteria. LAB improves soil fertility by enhancing nutrient absorption, suppressing pathogens, and improving soil health, leading to robust plant growth.



Check your answers with the solutions below.

4. What is a humidity chamber in precision farming, and how does it facilitate seedling growth?

Solution: A humidity chamber is a controlled environment structure that maintains high humidity and optimal temperatures for germinating seeds and growing young plants. It typically consists of transparent covering, allowing sunlight to reach the plants while trapping moisture. By creating a stable environment, humidity chambers accelerate seed germination and provide consistent moisture levels, essential for seedlings that haven't yet developed extensive root systems. This method ensures healthier plants that are vital for successful transplanting into the field.

5. Compare traditional farming methods with precision farming methods regarding irrigation practices.

Solution: Traditional farming often relies on flood irrigation, which inundates the entire field regardless of specific crop needs, leading to water wastage and inconsistent moisture levels. In contrast, precision farming employs micro-irrigation techniques, such as drip or sprinkler systems, directed by soil moisture sensors that provide water only where it's needed. This targeted approach significantly reduces water usage, minimizes soil erosion, and optimizes crop yield by maintaining an ideal moisture balance in the root zone.

6. How do agro-climatic conditions influence crop selection in precision farming?

Solution: Agro-climatic conditions, such as temperature, rainfall patterns, and humidity, significantly determine which crops can thrive in a specific location. In precision farming, data from local meteorological sources helps farmers choose crop varieties that are best suited for their environment, ensuring optimal growth conditions. For example, a region with heavy monsoon rains may favor crops with high resistance to excess moisture. Additionally, understanding local climatic trends aids in timing sowing and harvesting activities to avoid weather-related losses.



Check your answers with the solutions below.

7. Discuss the steps involved in creating a low-tunnel structure for precision farming. What advantages does it provide?

Solution: To create a low-tunnel structure, 1) build a frame using bamboo or metal rods, 2) cover it with transparent polyethylene sheeting to trap heat and moisture, 3) ensure openings for ventilation, and 4) add a base layer of sand and compost for added humidity. The advantages of low-tunnels include prolonged growing seasons by protecting plants from cold weather, reducing exposure to pests, and maintaining stable growth conditions. This structure enhances crop quality and yield, allowing for the cultivation of sensitive crops in adverse conditions.

8. Explain the process of using soil analysis to determine the need for organic fertilizers in precision farming.

Solution: Soil analysis involves collecting soil samples and conducting tests to assess nutrient levels, pH, and organic matter content. By determining the existing nutrient status, farmers can calculate the exact amount of organic fertilizers required to enhance soil health and meet the needs of the crops. For example, if a soil test reveals low organic carbon levels, adding compost helps achieve the desired nutrient balance, promoting healthier root growth and improved crop productivity. Accurate soil testing aligns with the principles of precision farming, avoiding over-fertilization.

9. What are the key benefits of using sensors in precision farming? Provide examples of their applications.

Solution: Sensors in precision farming offer numerous benefits, including real-time monitoring of soil moisture, temperature, and humidity levels, which help optimize crop management. For instance, soil moisture sensors tell farmers when to irrigate crops, conserving water while ensuring sufficient moisture for healthy growth. Climate sensors can predict weather changes, informing farmers about potential irrigation needs or pest threats. By integrating these sensors into farming practices, farmers can make data-driven decisions that enhance yield, reduce input costs, and promote sustainable practices.



Check your answers with the solutions below.

10. Describe integrated pest management strategies used in precision farming. Why are they important for sustainable agriculture?

Solution: Integrated pest management (IPM) strategies in precision farming include monitoring pest populations, using natural predators, and applying organic pesticides when necessary. This approach minimizes reliance on chemical pesticides, reducing environmental contamination and promoting biodiversity. For example, introducing beneficial insects can naturally suppress pest populations without chemical intervention. IPM is essential for sustainable agriculture as it balances effective pest control with environmental health, ensuring long-term viability of farming practices and protecting ecosystems.



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