Class : 9

Chapter : 1

PRODUCTION TECHNOLOGIES OF MAJOR RABI AND KHARIF CROPS

New Book Punjab Board

Multiple Choice Questions (MCQs)

1. What is the ideal temperature range for wheat growth?
a) 5°C–10°C
b) 10°C–25°C
c) 30°C–40°C
d) 40°C–50°C

2. Which crop is known as "white gold" in Pakistan?
a) Wheat
b) Rice
c) Cotton
d) Sugarcane

3. What is the best soil type for potato cultivation?
a) Sandy loam
b) Clay
c) Rocky soil
d) Saline soil

4. Which of the following is a Rabi crop?
a) Rice
b) Maize
c) Wheat
d) Cotton

5.What is the critical irrigation stage for sugarcane?

a) Germination

b) Tillering

c) Grand growth

d) All of the above

6.

Which fertilizer is essential for root development in crops?

a) Nitrogen

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b) Phosphorus

c) Potassium

d) Zinc

7.

Which crop is used for both food and brewing purposes?

a) Barley

b) Wheat

c) Rice

d) Maize

8.

What is the main pest of cotton?

a) Aphids

b) Bollworms

c) Termites

d) Armyworms

9.

Which crop is grown during the Kharif season?

a) Wheat

b) Barley

c) Rice

d) Mustard

10.

What is the ideal pH range for rice cultivation?

a) 4.0–5.0

b) 5.5–7.5

c) 8.09.0

d) 9.010.0

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➖□ Short Questions (Solved)

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1. What are Rabi crops? Give two examples.
Answer:
Rabi crops are sown in **winter (October–November)** and harvested in **spring (March–April)**. These crops require **cooler weather** and are grown after the monsoon season.
Examples:

- **Wheat**
- **Barley**

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2. Why is cotton called "white gold"?
Answer:
Cotton is known as "**white gold**" due to its **economic importance**. It is a **cash crop** and serves as the **foundation of Pakistan's textile industry**, which is the country's largest export sector. Cotton generates **employment**, **foreign exchange**, and supports **millions of livelihoods**.

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3. What is the importance of seed treatment in crop production?
Answer:
Seed treatment involves applying **fungicides, insecticides, or bio-products** to seeds before planting. Its benefits include:

- Protection from **soil-borne and seed-borne diseases**
- Better **germination and early growth**
- Improved **yield and crop health**
- Reduction in **initial pest attack**

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4. Name two diseases of wheat and their control measures.
Answer:
i. Rust (e.g., Leaf rust or Stem rust):

- **Control**: Use rust-resistant varieties; spray with fungicides.

ii. Smut (Loose smut or Covered smut):

- **Control**: Treat seeds with recommended fungicides before sowing.

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5. What is the role of phosphorus in plant growth?
Answer:
Phosphorus is essential for:

- **Root development**
- **Energy transfer** through ATP
- Early **flowering and seed formation**
- Improving **crop maturity** and strength

It helps plants grow deeper roots and boosts overall crop productivity.

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6. Why is irrigation critical during the flowering stage of sugarcane?
Answer:
During the **flowering stage**, sugarcane needs more water for:

- **Nutrient transportation**
- **Sugar accumulation in stalks**
- Preventing **wilting** and stress
- Enhancing **yield and quality**

Water shortage during this stage can **drastically reduce production**.

1. Explain the production technology of wheat, including land preparation, sowing, and fertilizer management.

Answer:

Wheat is the **major staple crop** in Pakistan. For a good harvest, proper production technology must be followed, including land preparation, sowing, and nutrient management.

🔹 *1. Land Preparation:*

- Begin after the harvest of the previous crop (usually rice or cotton).
- Plough the land 2–3 times to break clods.
- Use **rotavator or cultivator** to level the soil.
- Ensure **fine tilth** to allow better seed-soil contact.
- Apply **pre-sowing irrigation (rauni)** if soil is dry.

🔹 *2. Sowing:*

- **Optimum Time:**
  - In Punjab and Sindh: 1st to 30th November.
  - Delay reduces yield.
- **Seed Rate:**
  - 50 kg/acre for timely sowing.
  - 60–70 kg/acre for late sowing.
- **Sowing Method:**
  - Drill method (recommended) ensures proper spacing.
  - Broadcasting is less efficient and results in lower yield.
- **Seed Treatment:**
  - Treat seeds with fungicides (e.g., Vitavax, Topsin-M) to prevent smut and rust.

🔹 *3. Fertilizer Management:*

- **Basal Dose (at sowing):**
  - Apply **DAP or Urea + SSP** (Phosphorus and Nitrogen).
  - Common recommendation:
    - **Nitrogen (N):** 100–120 kg/ha
    - **Phosphorus (P):** 60–90 kg/ha
- **Top Dressing:**
  - Apply 2nd dose of nitrogen (urea) at **1st irrigation**.

- Use **zinc** in zinc-deficient soils.

Conclusion:
Following these recommended practices improves **plant growth, tillering, grain filling**, and ensures **higher wheat yield and quality**.

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2. Discuss the importance of Kharif crops in Pakistan's economy and their role in food security.

Answer:

Kharif crops are **sown in summer** (June–July) and **harvested in autumn** (October–November). They play a vital role in **Pakistan's agriculture, food system, and economy**.

Major Kharif Crops:

- **Rice**
- **Cotton**
- **Maize**
- **Sugarcane**
- **Millets**

Economic Importance:

1. **Rice and Cotton** are key export crops:
   - Rice (especially Basmati) earns foreign exchange.
   - Cotton supports Pakistan's textile industry.
2. Sugarcane supports **sugar mills and related industries**.
3. These crops provide **employment** to millions of farmers.

Role in Food Security:

- Rice and maize are **important cereal crops** ensuring calorie intake.
- Maize and millet are used in **livestock feed**, supporting the dairy sector.
- Kharif crops ensure **diversity in food production**, reducing dependence on imports.

Conclusion:
Kharif crops are essential for **economic growth, exports, employment, and national food stability**.

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3. Describe the steps involved in the production of rice, from land preparation to post-harvest management.

Answer:

Rice is a major **Kharif crop and staple food** in Pakistan. The production process involves multiple steps to ensure healthy growth and maximum yield.

1. Land Preparation:

- Plough the field 2–3 times to soften the soil.
- Level the field for uniform water distribution.
- Apply water to create **puddled conditions**.
- Add organic manure before sowing.

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🔹 *2. Nursery Raising (if transplanted method):*

- Sow seeds in seedbeds 25–30 days before transplanting.
- Treat seeds with fungicides to prevent diseases.

🔹 *3. Transplanting or Direct Sowing:*

- Transplant 2–3 seedlings per hill in rows after 25–30 days.
- Spacing: 20x20 cm or 22.5x22.5 cm.
- In **direct seeding**, use seed drill or broadcasting.

🔹 *4. Fertilizer Management:*

- Apply 100–120 kg N, 60–80 kg P, and 40–50 kg K per hectare.
- Use split application of nitrogen (basal + top dressing).

🔹 *5. Water Management:*

- Keep the field flooded (5–10 cm) during most of the growing season.
- Drain water before harvest to allow ripening.

🔹 *6. Weed and Pest Control:*

- Use **herbicides** or manual weeding.
- Spray **insecticides** for pests like rice stem borer and leaf folder.

🔹 *7. Harvesting and Post-Harvest:*

- Harvest when grains are mature (golden-yellow).
- Dry the grains to 12–14% moisture to prevent fungus.
- Store in **dry, pest-proof storage facilities**.

Conclusion:
Following proper production steps ensures **high rice yield, grain quality**, and better income for farmers.

🔍 Inquisitive Questions (Solved in Detail)

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1. How can modern technology, like drones and sensors, improve crop yields in Pakistan?

Answer:

Modern technologies like **drones, sensors, and AI** can revolutionize Pakistani farming by improving efficiency, yield, and sustainability.

🔹 *Benefits of Drones:*

- Monitor crop health and detect diseases early.
- Spray pesticides and fertilizers evenly and quickly.
- Create aerial maps for **precision agriculture**.

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Benefits of Soil and Climate Sensors:

- Measure **soil moisture, pH, temperature** in real-time.
- Help schedule irrigation and fertilizer application.
- Prevent overwatering and nutrient waste.

Outcome:

- Saves resources (water, chemicals).
- Reduces manual labor.
- Increases **crop yield and profitability**.

Conclusion:
Modern technology makes agriculture **smart, efficient, and productive**, helping Pakistani farmers meet food demand with limited resources.

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2. What are the environmental impacts of excessive fertilizer use in agriculture, and how can they be minimized?

Answer:

Overuse of fertilizers harms the **environment and human health**.

Negative Impacts:

- **Water Pollution:** Nitrates from fertilizers contaminate groundwater.
- **Soil Degradation:** Reduces microbial activity and soil fertility over time.
- **Air Pollution:** Nitrous oxide is released, contributing to greenhouse gases.
- **Eutrophication:** Excess nutrients cause algae bloom in rivers and lakes.

How to Minimize:

- Use **balanced and recommended doses** (based on soil tests).
- Adopt **integrated nutrient management (INM)** using organic + chemical fertilizers.
- Apply **fertilizers at the right time and place** (e.g., split application).
- Promote **bio-fertilizers** and compost.

Conclusion:
Using fertilizers wisely helps **protect the environment** and ensures long-term **soil and crop sustainability**.