The People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
University Center of Mila
Faculty of Natural and Life Sciences
Department of Biological and Agronomic Sciences
DW 01 – Methods And Practices Of Investigation

Exercise 1: Multiple Choice Questions

1. Which of the following best describes the primary aim of **Quantitative Survey Methods**?
    a. To explore meanings, perceptions, and motivations.
    b. To collect numerical data that can be statistically analyzed.
    c. To conduct in-depth interviews with a small group of people.
    d. To understand the cultural context behind crop selection.
2. In the context of plant production, when would a researcher primarily use **Qualitative Survey Methods**?
    a. When they need to calculate the average fertilizer input per hectare across a region.
    b. When they need to determine the percentage of farmers adopting a new pest management strategy.
    c. When they want to understand the reasons behind farmers' resistance to adopting a new technology.
    d. When they need to measure the prevalence of a specific crop disease using a large sample.
3. Which of the following tools is best suited for data collection in a **Quantitative Survey**?
    a. NVivo
    b. Atlas.ti
    c. Audio recording software for transcription
    d. KoboToolbox
4. What type of research logic is associated with **Qualitative Surveys**?
    a. Deductive
    b. Inductive
    c. Reductive
    d. Statistical
5. Which characteristic is **NOT** typical of Quantitative Surveys?
    a. Closed-ended questions
    b. Large sample sizes
    c. Thematic analysis
    d. Standardized instruments

Exercise 2: Scenario Analysis

Read the following research scenarios. Based on the text, identify whether the researcher should use a Quantitative or Qualitative survey method. Justify your answer in one sentence.

1. **Scenario A:** A student wants to conduct a market study to estimate the consumption frequency of organic tomatoes among households in a specific city.
    - **Method: _____**
    - **Justification: _____**
2. **Scenario B:** An extension agent wants to explore the traditional knowledge and local practices that farmers use to select seeds for the next planting season.
    - **Method: _____**
    - **Justification: _____**
3. **Scenario C:** A researcher aims to measure the yield variability observed in fields before and after the adoption of a new cultivar.

- **Method:** _____
- **Justification:** _____

4. **Scenario D:** A study aims to identify the barriers and perceived risks that prevent farmers from switching to organic farming practices.
   - **Method:** _____
   - **Justification:** _____

Exercise 3: Questionnaire Design

1) You are studying **fertilizer management in vegetable crops**.

a) Propose **4 closed-ended questions** suitable for a quantitative survey.

b) Propose **2 open-ended questions** suitable for a qualitative survey.

2) **Part A:** For the research objective "To assess farmers' perceptions of climate change," formulate **one** appropriate survey question.

- Should this be an **open-ended** or **closed-ended** question? Why?
- Write the example question:

Part B: A student is planning a socio-professional project to launch a new bio-fertilizer. They need to survey 500 farmers to quantify the potential demand.

- Which specific **computer-based tool** mentioned in the text would be best for collecting this data in the field (mobile) or online?
- Name the tool: _____

Exercise 4:

Read the following research situation: *"A plant production research team is studying the low adoption rate of a new high-yielding wheat variety."*

Explain how you would combine Quantitative and Qualitative methods in a **Mixed-Methods Approach** to fully understand this problem.

1. What specific question would the **Quantitative** part answer? (What/How much)
2. What specific question would the **Qualitative** part answer? (Why/How)
3. Briefly describe a method for each part.

Exercise 5: Mini Case Study (Analysis & Method Choice)

Situation:

An agricultural extension service wants to evaluate the introduction of a **new drought-tolerant tomato variety** in a semi-arid region.

Questions:

1. Which quantitative indicators could be measured using a survey? (at least 3)
2. Which qualitative aspects should be explored through interviews? (at least 3)
3. Explain why a **mixed-methods approach** would be useful in this case.