



# DESIGN OF THE QUESTIONNAIRE

---

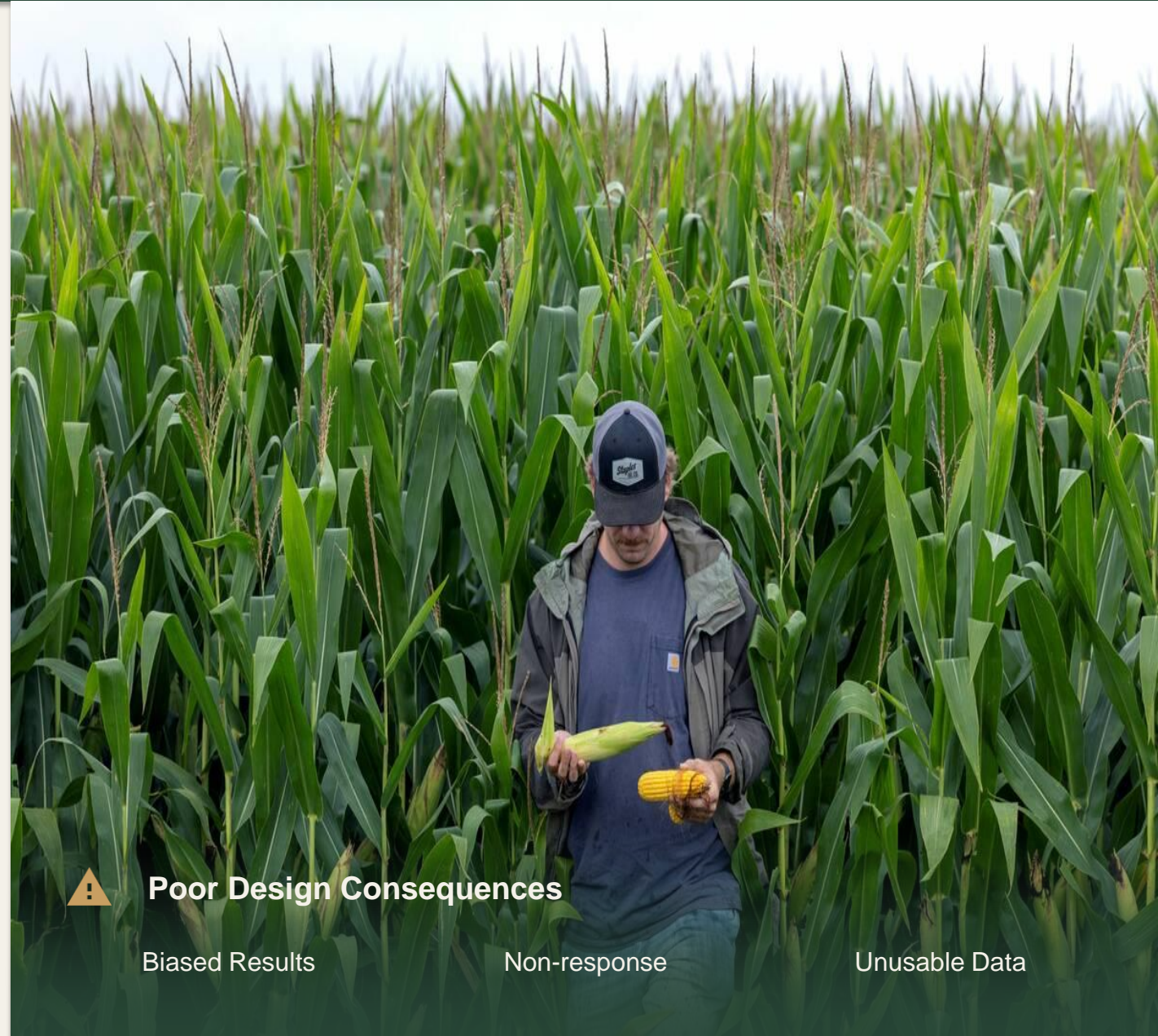
# Introduction

## What is a Questionnaire?

A central instrument in **survey-based research** that enables structured data collection from farmers, technicians, cooperatives, and other stakeholders regarding practices, constraints, perceptions, and innovations.

### Why It Matters

- ✓ **Reliable & Valid** data collection
- ✓ **Efficient fieldwork** execution
- ✓ **Easy analysis** with digital tools



### Poor Design Consequences

Biased Results

Non-response

Unusable Data

# Role in the Investigation Process

The questionnaire is embedded in a broader investigation framework

1



Problem Definition

2



Objective Formulation

3



Hypothesis Development

4



Questionnaire Design

5



Data Collection

6



Data Analysis

7



Interpretation & Reporting



Key Alignment

Questionnaire design must be **strictly aligned** with study objectives

# Types of Questionnaires



## Structured

- **Fixed Questions**

Predetermined questions

- **Predefined Answers**

Fixed response options

- **Quantitative Analysis**

Statistical processing

**Common in:** Agricultural surveys  
(yield, input use)



## Semi-structured

- **Mixed Format**

Closed + Open-ended questions

- **Deeper Understanding**

Practices & perceptions

- **Balanced Approach**

Quantitative + Qualitative

★ **Most Appropriate for L3**

Plant production studies



## Unstructured

- **Open-ended**

Free-form responses

- **Flexible Design**

Adaptable structure

- **Qualitative Research**

In-depth exploration

**Used for:** Exploratory research

# Structured Questionnaire

## Definition

Questionnaire with **fixed questions** and **predefined response options** that respondents must choose from.

## Fixed Questions

Same questions for all respondents

## Predefined Answers

Set response categories

## Quantitative Analysis

Ideal for statistical analysis and numerical data processing

## Agricultural Survey Applications

- ▶ **Crop yield** measurements
- ▶ **Input use** tracking
- ▶ **Farm size** data collection
- ▶ **Production costs** analysis

Easy to Analyze



Consistent Data



# Semi-structured Questionnaire

## Definition

Combines **closed and open-ended questions** in a single questionnaire format

## Why Most Appropriate?

**L3 Plant Production Studies** require both quantitative data and qualitative insights

### Closed Questions

Predefined response options for statistical analysis

### Open-ended Questions

Free-form responses for detailed insights

## Key Advantages



Deeper Understanding



Practice Insights



Perception Analysis



Quantitative + Qualitative



Balanced Approach

# Unstructured Questionnaire

## Definition

Questionnaire with **open-ended, flexible** format allowing respondents to express themselves freely

## Open-ended

No predefined response options

## Flexible Format

Adaptable question flow

## Exploratory & Qualitative Research

Designed for in-depth investigation and understanding of complex phenomena

## When to Use

- ▶ **Initial investigations** of new topics
- ▶ **Understanding** new phenomena
- ▶ **Generating** hypotheses
- ▶ **Rich, detailed** responses

Deep Insights



Flexible Process



# 5 Steps in Designing a Questionnaire



01

## Define the Objectives

Align questions with study goals



02

## Identify Variables & Indicators

Translate objectives into measurable items



03

## Define the Target Population

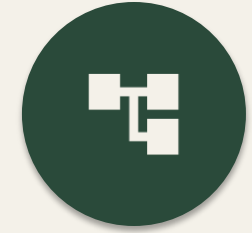
Determine survey respondents



04

## Choose Question Types

Select appropriate formats



05

## Ensure Logical Structure

Create coherent flow



Each step builds on the previous one, creating a systematic approach to questionnaire design

# Step 1: Define the Objectives

## Core Principle

Each question must **correspond to a specific objective**

## Why It Matters

Clear objectives prevent irrelevant questions and ensure focused data collection

## Practical Example



### Research Objective

Evaluate irrigation practices



### Corresponding Questions

- ✓ Irrigation frequency
- ✓ Method used (drip, sprinkler)
- ✓ Water source identification

# Step 2: Identify Variables and Indicators









## Translation Process

Convert **objectives** into **measurable variables** and indicators



## Key Insight

Clear indicators enable accurate data collection and meaningful analysis

Objective	Variable	Indicator
 <b>Study crop productivity</b>	 Yield	 kg/ha
 <b>Analyze pest management</b>	 Treatment type	 Chemical / Biological



**Clear Target**



**Measurable Data**



**Consistent Collection**

# Step 3: Define the Target Population

## Who Will You Survey?

Identify and categorize your respondents



### Farmers

Smallholders

Large-scale



### Agricultural Technicians

Extension agents, field officers



### Input Suppliers

Seed, fertilizer, equipment dealers



## This Determines:



### Language Level

Technical vs. simple terminology



### Terminology

Industry-specific vocabulary



### Questionnaire Length

Time availability and attention span

Tailor your questionnaire to match your audience's characteristics

# Step 4: Choose Question Types



## Closed Questions

Type A

Select from predefined options

- Fixed response choices
- Easy to analyze
- Quantitative data

Fast response time



## Open-ended Questions

Type B

Answer freely

- Free-form responses
- Rich qualitative data
- Detailed insights

In-depth understanding



## Mixed Questions

Type C

Combination of both

- Balanced approach
- Quantitative + Qualitative
- Comprehensive data

Best of both worlds

# Closed Questions

## Definition

Respondent selects from predefined options



### Dichotomous

Two options: Yes / No

Do you use certified seeds?

Yes

No



### Multiple Choice

Several predefined options to choose from



### Scaled (Likert Scale)

Rating scale for measuring attitudes or perceptions

How often do you purchase the following groceries?

	Never	Less than once a month	1-3 times a month	1-2 times a week	Daily or almost daily
Fresh fruit and vegetables	0	0	0	0	0
Meat, fish and poultry	0	0	0	0	0
Dairy and eggs	0	0	0	0	0
Bread and baked goods	0	0	0	0	0
Store cupboard and pantry items	0	0	0	0	0
Breakfast cereals and grains	0	0	0	0	0
Frozen foods	0	0	0	0	0
Snacks and confectionery	0	0	0	0	0
Drinks (non-alcoholic)	0	0	0	0	0
Tea, coffee and hot drinks	0	0	0	0	0

# Open-ended and Mixed Questions

## Open-ended Questions

Respondent answers freely

### Example:

"What are the main constraints affecting your production?"

### When to Use

- ▶ Exploring new topics
- ▶ Gathering detailed insights
- ▶ Understanding perceptions

## Mixed Questions

Combination of both types

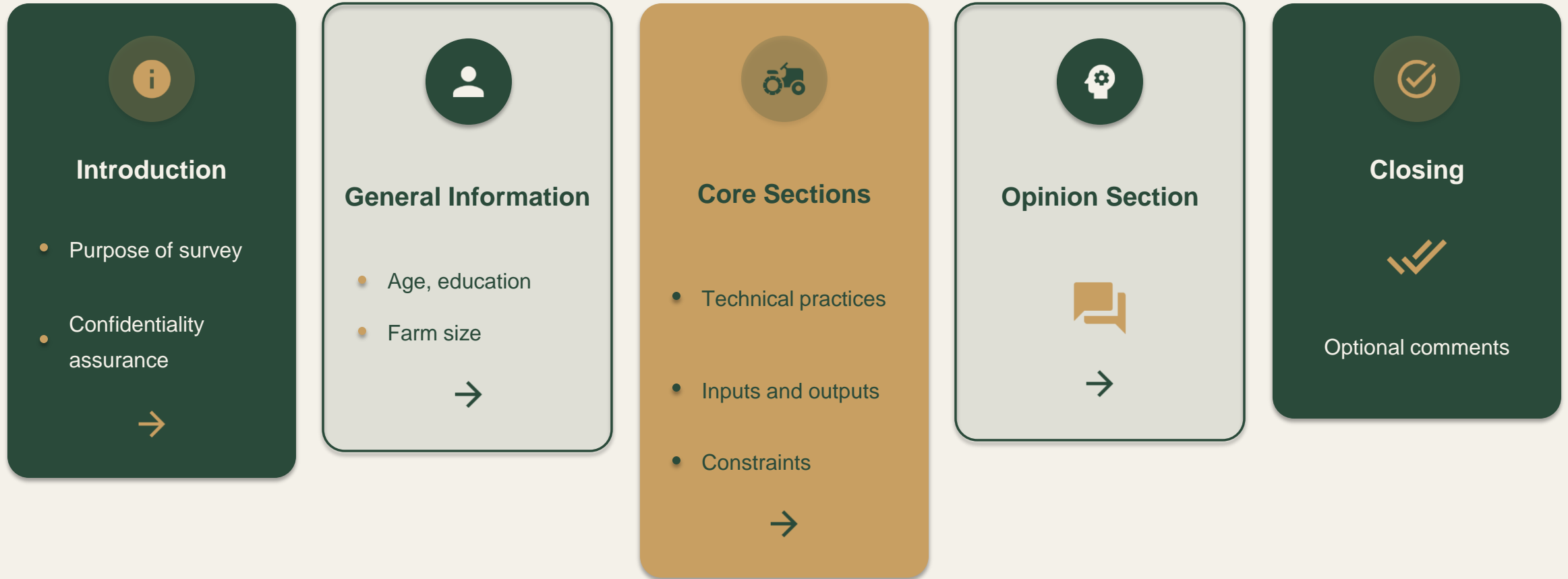
### Characteristics

- ✓ Closed + Open-ended format
- ✓ Quantitative + Qualitative data
- ✓ Comprehensive understanding

### Best For

- ▶ L3 plant production studies
- ▶ Complex research topics
- ▶ Multi-dimensional analysis

# Step 5: Ensure Logical Structure



**Key Principle:** A good questionnaire follows a logical flow from general to specific

# Principles of Good Question Design

## 1. Clarity

Avoid ambiguous terms, use simple language

✗ "Do you regularly irrigate?"

✓ "How many times per week do you irrigate?"

## 2. Relevance

Each question must serve the study objective

## 3. Neutrality

Avoid influencing responses

✗ "Do you agree organic farming is better?"

✓ "What is your opinion on organic farming?"

## 4. Simplicity

- ✓ One idea per question
- ✓ Avoid jargon
- ✓ Clear wording

## 5. Avoid Bias

- ▶ Leading questions
- ▶ Social desirability bias
- ▶ Recall bias

## Key Takeaways

- 1 Test questions before deployment
- 2 Pilot with target population
- 3 Refine based on feedback
- 4 Ensure cultural sensitivity
- 5 Maintain consistent tone

**Remember:** Good questions = Good data

# Question Scaling Techniques



## Likert Scale

Measures attitudes or perceptions

### Example:

"Soil fertility is a major constraint"

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

5-point scale most common



## Frequency Scale

Measures frequency of occurrence

### Response Options:

Never

Rarely

Sometimes

Often

Always

Use for behavioral patterns



## Ranking Questions

Prioritize items or constraints

### Example Format:

"Rank the following constraints from 1 (most important) to 5 (least important):"

- 1 Water scarcity
- 2 Pest damage
- 3 High input costs
- 4 Labor shortage
- 5 Market access

# Questionnaire Length, Format & Pre-testing



## Length

Keep it concise



**15-30** minutes max

- ✗ Avoid respondent fatigue
- ✓ Maintain attention
- ✓ Efficient completion



## Format

Clear and organized



### Numbered Questions

Sequential numbering



### Sections with Titles

Clear section headings



### Consistent Layout

Uniform design throughout



## Pre-testing

Pilot survey



- Identify unclear questions
- Estimate duration
- Detect missing variables



- Reword ambiguous questions
- Remove unnecessary items
- Add missing options

# Digital Tools & Ethical Considerations



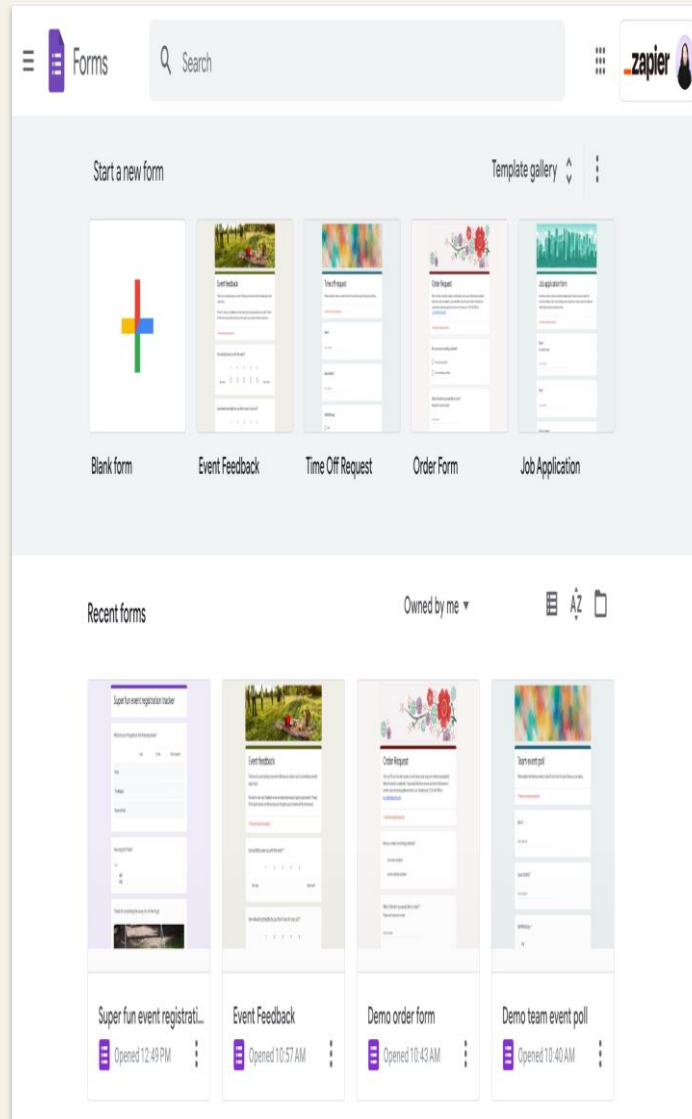
## Digital Tools

- ✓ Google Forms
- ✓ Microsoft Forms
- ✓ KoboToolbox
- ✓ SurveyMonkey



## Ethical Considerations

- ▶ Informed consent
- ▶ Confidentiality of responses
- ▶ Respect for respondents
- ▶ Data for research purposes only



## Advantages



### Automated Collection

Real-time data gathering



### Reduced Errors

Minimized manual mistakes



### Easy Export


Export to Excel/SPSS


# Application in Plant Production


## Case Study


### Constraints in Cereal Production


## Questionnaire Sections


 Farmer profile

 Farm characteristics

 Crop management

 Input use

 Pest management

 Constraints



## Common Mistakes

- × Too many questions
- × Irrelevant questions
- × Complex wording
- × Lack of logical flow
- × No pilot testing



## Key Takeaways

- ✓ Clear objectives alignment
- ✓ Systematic design process
- ✓ Pre-testing essential
- ✓ Ethical considerations



## Summary

- 1 Define clear objectives
- 2 Select appropriate question types
- 3 Ensure logical structure
- 4 Test and refine thoroughly

Mastering questionnaire design enables scientific research and informed decision-making