Improving Water Productivity in Agricultural Systems
(With emphasis on irrigated production systems)
05 – 23 November 2017
ICARDA, Amman, Jordan

Cadroption Analysis and Impact Assessment of Water Saving-Irrigation Technologies
19 November 2017, Amman, Jordan
WHY WE NEED ADOPTION STUDIES?

Background

- Better understanding of farming systems and farming communities.
- Quantifying the number of technology users over time to assess impacts or determine extension requirements.
- Identifying Constraints (Technical, Socioeconomic, Environmental, Social, Cultural, Policy) and Working on Solutions.
- Improving technology adoption and diffusion.
- Providing information for policy reform.
- Providing a basis for measuring impact.
1. Technology should be developed and evaluated in areas of targeted groups.
2. Technology should not require high level of capital costs and imported inputs.
3. Production methods employed should be relatively simple.
4. Production should be mainly from local materials.
Determine the focus of the inquiry
Formulate research questions
Determine the unit of analysis
Deciding on a sampling strategy
Determine the types of data to be collected (interviews, diaries, field notes, photos, videos, etc.)
Plan data analysis process
### Issues considered in quantitative and qualitative studies

<table>
<thead>
<tr>
<th>Qualitative</th>
<th>Quantitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political and Institutional dynamic forces like,</td>
<td>Impacts on production, income, Employment, education, expenditures, health</td>
</tr>
<tr>
<td>interdepartmental cooperation, conflicts, and investment</td>
<td>and nutrition</td>
</tr>
<tr>
<td>Beliefs and attitudes, norms and values, social relationships</td>
<td>Targeting accuracy</td>
</tr>
<tr>
<td>Gender relations and status of women</td>
<td>Participation rates in training or services</td>
</tr>
<tr>
<td>Experiences with different institutions like, government agencies</td>
<td>Household socio-demographic profile</td>
</tr>
<tr>
<td>hospitals, and banks</td>
<td>Household’s decision making</td>
</tr>
<tr>
<td>Processes occurring in households, Organizations, and Communities</td>
<td>Quality of services like staff absence, waiting times, availability and</td>
</tr>
<tr>
<td>Service delivery like care practices and</td>
<td>accuracy of consignments</td>
</tr>
<tr>
<td>attitudes of service providers toward beneficiaries</td>
<td>Test scores</td>
</tr>
<tr>
<td>Local satisfaction with program design, targeting, and administration</td>
<td></td>
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</tbody>
</table>
HOW TO CONDUCT ADOPTION STUDIES?

Sequence of quantitative and qualitative methods

Fig. 1 Sequence of qualitative and quantitative methods used in the study
**HOW TO CONDUCT ADOPTION STUDIES?**

**Detailed view on the methods used for data collection**

<table>
<thead>
<tr>
<th>Data collected on</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers livelihoods</td>
<td>Questionnaire, Farmers interview, field walk</td>
</tr>
<tr>
<td>Problems faced by farmers</td>
<td>Literature review, Focus groups, problem ranking, PRA exercise</td>
</tr>
<tr>
<td>Documented sustainable agricultural practices and traditional farming practices</td>
<td>Interviews with Govt. agricultural offices, NGO’s staff,</td>
</tr>
<tr>
<td>Reasons of adoption and non-adoption of sustainable agricultural practices</td>
<td>Questionnaire, Farmers interviews, informal talking with farmers and key informants</td>
</tr>
<tr>
<td>Rainfall and temperature data Maps generated</td>
<td>Local Govt. meteorology department, GPS, GIS</td>
</tr>
</tbody>
</table>
HOW TO CONDUCT ADOPTION STUDIES?
Quantitative Research Methods

- These are several methods within this form of research of which are:
  1. Focus group discussions
  2. Key Informant Interviews
  3. Structured Interviews/Questionnaires
HOW TO CONDUCT ADOPTION STUDIES?

Focus Groups Discussions - FGD

- A group of 6-12 is assembled and engaged in an interaction to produce data and insights that would be less accessible without the interaction.
- The group put together should be fairly homogenous: Social status, experience/user status, sex, age etc
- It useful in identifying normative issues, terms, perceptions, attitudes, beliefs, interpretation, from a group of individuals
- Moderator is needed to guide and lead the discussion in a focused manner
HOW TO CONDUCT ADOPTION STUDIES?

Key Informant Interviews

• These are informal interviews directed to the knowledgeable people about the problem.

• These respondents may not necessarily be under the problem, but only with a sufficient knowledge.

• These informants should be selected carefully to reflect diverse views and concerns.

• An interview guide with issues to be covered is used and it is carried out in an informal atmosphere.
Three methods:

1. Face-to-face interviews
2. Self-administered questionnaires
3. Telephone interviews
### Structured Interviews: Face to face interviews

**Advantages:**

- Can be used with respondents who wouldn’t be able to provide information in another format – bedridden, illiterate, etc.
- Researcher can elicit more in-depth response or fill in information if participant doesn’t understand the question
- Different data collection techniques – open-ended questions, visual aids, etc.
- Certainty about who answered the questions

**Disadvantages:**

- Intrusive and reactive
- Cost time and money
- Difficult to locate respondents for callbacks

**How to Conduct Adoption Studies?**
Advantages:

• Post Office locates participants
• Everybody gets the same questions
• Researcher can ask more complex questions
• No response effect (less likely to try to impress interviewer)
• Can be computer-based

Disadvantages:

• No control over participant interpretation
• Low response rates
• Uncertainty about who actually filled out the questionnaire
• Useless with non-literate, illiterate populations or hard-to-reach populations
Advantages:

- Combo of face-to-face personal quality with impersonal self-administered questionnaires
- Inexpensive and convenient (maybe)
- Safe for interviewers

Disadvantages:

- Changing demographics – more cell phones?
  - May miss certain population segments
- Survey must be short or people will hang up
- “No Call Lists” presenting increasing challenge

HOW TO CONDUCT ADOPTION STUDIES?

Structured Interviews: Telephone interviews
• Surveys offer quantitative measurements based on a representative sample

• Focus groups offer content insight – the why of what people think
Impact Assessment of Agricultural Technologies
ADOPTION INDICATORS

- **Adoption Rate (AR)**: % of farmers who used the technology.

  The adoption rate of a new technology is subject to:
  - Its profitability,
  - The degree of risk and uncertainty,
  - Capital requirements,
  - Agricultural policies,
  - Socioeconomic characteristics of farmers.

- **Degree of Adoption (DA)**: Measured by the proportion of land under the new technology.

- **Intensity of Adoption (IA = AR*DA)**: Measured by multiplying adoption rate by degree of adoption.
## ADOPTION INDICATORS

### Case study

### Exercise

<table>
<thead>
<tr>
<th>Total number of olive trees farmers in region X</th>
<th>Number of olive trees farmers using supplemental irrigation technology</th>
<th>Total area planted with olive trees</th>
<th>Total area under supplemental irrigation technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>50</td>
<td>750 ha</td>
<td>500ha</td>
</tr>
</tbody>
</table>

Calculate the following:

<table>
<thead>
<tr>
<th>Adoption rate (%)</th>
<th>Degree of adoption (%)</th>
<th>Intensity of Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>??</td>
<td>??</td>
<td>??</td>
</tr>
</tbody>
</table>
## ADOPTION INDICATORS

### Case study

<table>
<thead>
<tr>
<th>Adoption rate (%)</th>
<th>Degree of adoption (%)</th>
<th>Intensity of Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25</td>
<td>0.66</td>
<td>0.16</td>
</tr>
</tbody>
</table>

- **Farmer’s viewpoint** The final success of a new agricultural technology depends on perception of farmers’ evaluation, acceptance, adoption, and sustained use.
CASE STUDY
Farmer’s perception to agricultural technologies characteristics: the MAKAT Approach

The Conservation agriculture in Morocco

• Farmer’s viewpoint
• The final success of a new agricultural technology depends on perception of farmers’ evaluation, acceptance, adoption, and sustained use.
ADOPT
Adoption and Diffusion Outcome Prediction Tool
**Methodological background**

- **How ADOPT works**
  - **Predict** the likely peak level of adoption of an innovation and the time taken to reach that peak.
  - **Encourage** users to consider the factors that affect adoption at the time that projects are designed.
  - **Engage** research, development and extension managers and practitioners by making adoptability knowledge and considerations more transparent and understandable.

**Data collection needed**

- Focus groups/country/region (farmers vs researchers vs extensionists)
- 22 questions with several options (agreed only on one option)

**Outputs**

- Time to peak adoption
- Peak adoption level
- Adoption determinants factors
- Sensitivity analysis
ADOPT SOFTWARE

Example in Practice

**ADOPT: Adoption and Diffusion Outcome Prediction Tool**

Source:
Thank You

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