



Small N exploratory
case study

RTB User Guide

User Guide to the Small N
Exploratory Case Study

Conny J. M. Almekinders, Jeffery W. Bentley

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www.rtb.cgiar.org

Contact:

RTB Program Management Unit
International Potato Center (CIP)
Apartado 1558, Lima 12, Peru
rtb@cgiar.org • www.rtb.cgiar.org

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This user guide is intended to disseminate research and practices about production and utilization of roots, tubers and bananas and to encourage debate and exchange of ideas. The views expressed in the papers are those of the author(s) and do not necessarily reflect the official position of RTB, CGIAR or the publishing institution.

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Acronyms

DM	Decentralized Multiplier
NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek (Netherlands Organization for Scientific Research)
RTB	CGIAR Research Program on Roots, Tubers and Bananas
Small N	Small number
WOTRO	Stichting voor Wetenschappelijk Onderzoek van de Tropen en Ontwikkelingslanden (Netherlands Foundation for the Advancement of Tropical Research)
WUR	Wageningen University & Research

Abstract

A qualitative study of a small number of farmers helps the research team to understand a seed system, such as local preferences for seed and varieties, and differences based on wealth, farm ecology or gender. The study should ask a few questions focused on important topics. Fifteen people per category is usually enough. Be aware of sampling bias. Review the literature and confer with colleagues before designing the interview questions. The results of the qualitative study will keep costs down by helping to design a second, quantitative study that asks the right questions of the right people.

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Author affiliations

Conny J. M. Almekinders Wageningen University and Research, Wageningen, The Netherlands

Jeffery W. Bentley Agro-Insight, Cochabamba, Bolivia

Small N exploratory case study

INTRODUCTION

In the toolbox for working with root, tuber and banana seed systems (Andrade-Piedra et al. 2020), small N mixed methods are exploratory studies of (a part of) the existing seed system of a particular crop. The studies shed light on the general practices for using varieties and seed. These include seed tracing studies (which are also a form of small N studies, see the separate user guide for more information), decentralized multiplier (DM) studies and surveys that aim to capture farmers' use of varieties, seeds, seed sources and associated practices.

SCOPE OF THE TOOL

The practices, preferences and needs of better-off and poor farmers often differ, so it is worthwhile to collect data on both types. Collecting data on male and female farmers helps to understand any differences between them. This results in socially differentiated data collection and presentation, which allows comparisons of the practices of different types of farmers.

The rationale behind a small N study is exploration, in search of tendencies and patterns, using quantitative and qualitative data. The quantitative data analysis is through descriptive statistics (especially averages, means, and standard deviations) and occasional statistical testing (for example a Chi-test, a non-parametric Kruskal Wallis test or using generalized linear models). Small N studies do not aim at statistically significant differences and correlations, but they do increase in power when comparative case study analysis is possible. The small N study as used here is based on a family of small N approaches that are usually applied in situations where only one or a few units are available and which generally focus on inferring causality.

ABOUT QUESTIONS AND SAMPLE SIZE

A questionnaire should be short enough that the interview does not become a dreaded and boring exercise for the interviewee. Thus, collect only relevant information! You may not need to know the exactly how many square meters the farmer has, but some indication of size is relevant, as is the approximate age of your interviewee. A cell phone number of the person interviewed is extremely handy for possible follow up. The date of birth of all household members is unlikely to be useful. Asking the interviewee for farm income of the household is a question that is unlikely to give you accurate information: if such information is relevant for the study, then carefully think through how it is important and how it can be asked. An interview should not last more than 1 to 1.5 hours. The quality of answers goes down when your interviewee gets tired, bored or wants to move on.

Typical information to collect includes the following:

- What varieties are farmers growing of the crop being studied?
- Practices of selecting and storing seed from their own harvest?
- How do seed practices differ for improved commercial varieties and local varieties?
- When farmers do not use their own on-farm saved seed, where do they obtain their seed?
- What are reasons for farmers not to use their own seed?
- When was the last time they started using a new variety, and how did they get the first planting material of that new variety?
- What are the main seed quality constraints, according to farmers?

Organize your questions by starting with less sensitive topics that build rapport, and end with the more personal ones near the end, after you have built some trust. For example, you can ask people what pests and

diseases they have near the start of the interview. Farmers like to talk about pest problems, and listening will generate a bit of rapport. Near the end of the interview you can ask “How much potato (or yam, or cassava or ...) seed do you plant? The question will make sense to farmers who, near the end of the interview, realize that you are interested in seed and that you know something about it. The answer will give you an idea of which farmers have more land.

The number of persons to be interviewed is relatively small – as the title of this type of studies suggest. Typically, select 12-30 persons per category of farmer you are interested in. Thus, if exploring the differences between male and female farmers in two similar villages, 15 male and 15 female farmers may be enough. If the villages are different and you want to know about the differences (for example because one village is close to the road and has good access to seeds and inputs while the other is remote and inputs are hard to come by), it is more logical to aim for 15 male and 15 female farmers in each village.

More interviews yield more reliable information. This is important when there is considerable variation between farmers, for example in the number or type of varieties (improved or local) they grow, the practices to save, exchange or buy seeds, or how produce is marketed. You should define categories of farmers in such a way that when you analyze the data there is more variation between categories than within them. This is useful to see patterns and relations. Such relations may show, for example, that farmers with the smallest farms grow only local varieties. Or that women buy seeds less often than men do.

There is not really an optimal number of interviewees. Since this is an exploratory study, at some point adding more interviews provides few new insights and does not change your results any further. Do keep in mind how you will report your study. Some scientific journals accept descriptive statistics (averages, means), sometimes with the condition of adding standard deviations, while other journals reject quantitative data without statistical tests. As a rule of the thumb, 12 interviews per category of farmers is the minimum for statistical testing.

The sample of interviewees can be selected in many different ways. Local extensionists can often support this; they know how to find farmers and they can intermedate if permission from local authorities is needed. However, extensionists are more likely to take you to meet prosperous men living near the paved road, so be aware of possible biases and how to describe them for a scientific publication. Because it is an exploratory study, there is no need to arrive at a representative sample size. Random sampling of the interviewees can also be done in many different ways (often a list of all the farm households is used to select them, but you may for example also approach every fifth house along a predefined route). Any account of your study should describe how the random sampling was done.

PRACTICALITIES

Each crop, each situation requires crafting a tailor-made questionnaire. To start with, each crop has its own seed characteristics: sweet potato is propagated through vines, cassava through stems and banana is a perennial crop that is planted with suckers. In some environments, there is only one planting season, in others there are two. Sometimes there is a special interest in the use of improved varieties as compared to local ones, or the issue could be the use of certified seed, or of some other type of new seed. Thus, questions about the use of varieties and of planting material need to be adapted. The best preparation and information for developing a good survey is to look at earlier studies: what information did they collect and how? Colleagues who know the area and the situation can also help you to frame your research questions. A number of references can be found on the website of this tool.

Many agricultural scientists favor quantitative data over qualitative data. But collecting too much quantitative data is expensive, and if you collect it too soon you may miss some important topics. For example, if your project will promote a new, vitamin-rich crop variety, your qualitative survey could learn the local names for vitamin deficiency, folk explanations of its cause, and farmers’ opinions about its severity (e.g. “It’s terrible: all

our kids get that illness.”) After collecting qualitative information, you may be able to better focus quantitative questions in a follow up survey.

TIPS

When considering how to collect detailed information about seeds, varieties, yields, etc. from one year ago or earlier, bear in mind that for farmers (and for most other people) that is difficult to remember. It is best to collect information about only the last planting season (or the last two, if there are two growing seasons in a year).

Think through how you want to present your survey information: prepare the spreadsheet for data processing and tables with results derived from it in advance. Enter the data every evening, while it is still fresh in your mind.

Feel free to estimate wealth categories by direct observation. This is easier if you interview everyone at their home. Make a quick note of capital items at the farmstead (a car, tractor, motorcycle or team of oxen). Jot down a rough idea of house size and if it is made of local or store-bought materials.

Validate your survey instrument (the blank questionnaire) in the field, with people who are similar to those you are going to study. Adapt the wording of the questions so that they are easier for local people to understand. Delete questions that are too similar, the ones that elicit the same kinds of responses (as when respondents answer “As I already told you”) You will be surprised how many small points need adaptation!

CONCLUSION

A seed intervention often requires a quantitative study at the start of the project. For example, a baseline study provides numbers that will later help to show the impact of the project on people’s lives. However, start with a qualitative study of a few farmers in the seed system. This will help you to understand what needs to be counted, and how to ask the questions on a later survey.

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