“All the guns in the armoury”: An ethnographer implements a survey

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This methodology paper will trace the evolution of the author's doctoral research from classic single-sited ethnography to multi-sited ethnography and then again to mixed methods with the implementation of a survey. This research drew on systems of innovation theory which seeks to explain the multitude of factors that influence innovation and diffusion by exploring these factors in the UK's agricultural sector. These influences can include legislation, market factors, private sector strategy, farmer preference, consumer demand, campaigners, the agro-ecological environment and more.

Phase 1 of this research included ethnographic observation at agricultural events and informal conversations with scientists, agrochemical companies and agronomists. As a result of Phase 1, the author decided to focus on a recent change in pesticide legislation, 1107/2009 ‘Placing Plant Protection Products on the Market’, and its influence on innovation through its withdrawal of pesticides from the EU. This phase resulted in the preliminary conclusion that this change in legislation could create a vacuum into which alternative methods of pest and pathogen control might enter, either through the development of new products or through the diffusion of existing methods. To illustrate the influence of this legislation, Phase 1 also resulted in the decision to develop a crop-based case study on potatoes and the control of late blight (*phytophthora infestans*) because the legislation puts at risk mancozeb, a fungicide often used to control this pathogen.

Phase 2 involved the realisation that the object of enquiry was the systemic features of an innovation system, not a topic that lends itself to traditional ethnographic approaches. Instead of conducting immersive participant observation in a host organisation, this phase of research evolved into a multi-sited approach which followed the legislation through the system of innovation to explore the vacuum created by the potential withdrawal of mancozeb. This phase involved more participant observation at agricultural events, more informal conversations, document analysis as well as semi-structured interviews with actors that included scientists, regulators, growers, industry representatives, and agrochemical companies. As a result of this phase of research a new conclusion was reached, that alternative methods of controlling late blight would not enter the vacuum either because none were close enough to market or there were barriers to their adoption. Instead, it was concluded that potato growers would default to other chemical methods of control. Two themes emerged in this phase explaining why potato growers would or would not adopt new methods of growing. The first was the role of market mechanisms in locking growers in to their current methods of growing. The second was the role of the agro-ecological environment in that late blight itself can cause total crop failure if not managed.

Phase 3 explored this second conclusion in a move from purely qualitative research to mixed methods. As it is growers that will adopt a new product or method of production and due to the geographic dispersion of farming, a remote data collection method was proposed, a survey. The survey was designed to explore grower response to the legislation and ask potato growers
which methods of control they currently use to control late blight and how they might control it if macozeb were withdrawn. The results of the survey confirmed this second conclusion, that growers would not substantially change their growing practices and that they would continue to use chemical pesticides to control late blight. The reasons given in the survey's free-text boxes mirror the two themes that already emerged in the qualitative phase, that market mechanisms and agro-ecological reasons prevent potato growers from changing their growing practices.

If the answers received from the quantitative element of this research echo those of the qualitative phase, was it worth the time and effort implementing the survey? Firstly, there were other themes that emerged from the survey that did not feature strongly in the previous phase such as concern about controlling another pathogen, early blight (alternaria). Secondly, the survey increases the credibility of the research, although not because of a positivist distrust of qualitative methods. The second conclusion, that growers would not substantially change their growing practices, was developed through exposure to a variety of actors in the innovation system, the majority of which who were not growers. Many of them were actors that worked with growers but may have held assumptions about what growers will and will not do. Furthermore, through the survey's extensive use of free-text boxes we have it in the growers' own words why they can and cannot change their growing practices: “We need all the guns in the armoury.”

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