ASSESSMENT OF BEE DISEASES AND PESTS USING PARTICIPATORY EPIDEMIIOLOGICAL TECHNIQUES

Norber MBAHIN, Ph.D
AU-IBAR

Nairobi, Kenya
31st March – 4th April 2014
- Participatory Epidemiological (PE) used since 1980s
- PE or PA (Participatory Appraisal)
- PE is the application of participatory methods to epidemiological research and disease surveillance
- It is a proven technique which overcomes many of the limitations of conventional epidemiological methods
It has been used to solve a number of animal health surveillance and research problems.

Participatory disease surveillance has made an important contribution towards controlling both rare and common diseases.

Use PE to control bee diseases HOW?
PE recognizes that local beekeepers have very rich and detailed **knowledge** about:

- The bees or animals they keep
- The infectious and zoonotic diseases that can gravely affect their livelihoods
- Endanger human health.
Local bee keepers and livestock owners are often able to describe:

- Clinical presentations,
- Epidemiological patterns,
- Principal pathological lesions,
  using a vocabulary of specific disease terms in local languages that correspond to Western clinical case definitions.
PE learns from local knowledge,

Leading to disease control programmes:

✓ That are both acceptable to their stakeholders

✓ Effective.
The PE approach was developed:

- To overcome the constraints in applying conventional epidemiology and formal research in developing countries.

Conventional epidemiology can be:

- Expensive and logistically complex,
Producing large quantities of information from formal surveys that are often biased:

- Spatially,
- Behaviorally
- Logistically.

Further, as researchers generally do not understand the local context,

- Quantitative information is often misinterpreted.
PE Advantages
Veterinary field epidemiologists realised that:

- There was tremendous potential to develop participatory approaches
- To epidemiology as surveillance,
- Outbreak investigation,
- Research tools,
- In a variety of rural and urban settings.
Advantage of PE

- As the data is gathered, the study team can review the information available and refine the study hypotheses.
- They have the opportunity to include new questions or data collection exercises as a result of information discovered during the PE process.
- The participants can add, subtract or clarify information of the best-bet scenario.
The way qualitative data is assessed and validated is fundamentally different from quantitative data.

In the quantitative world, statistics are used to calculate the probability that randomised information and associations are valid.

Validation in the qualitative approach is based on weighing of evidence from diverse sources.
This may include information derived from quantitative or laboratory-based testing.

But PE can make use of broader forms of experiential knowledge:

- Information such as oral testimony
- Observations from samples of non-random key informants.
Participatory approaches are based on open communication and transfer of knowledge.

The methods include:

- Semi-structured interviewing
- Focus-group discussions
- Ranking and scoring disease observations
- A variety of visualisation (mapping) and diagramming techniques (seasonal calendars).
In PE, as in PRA, all information should be validated by cross-checking, using multiple techniques and informants:

- Process called ‘triangulation’.

In PE, a basic assumption is that investigators cannot fully anticipate the priorities and problems of the communities they study.

This assumption helps to avoid many biases associated with conventional epidemiology approaches.
Sampling methodologies used in PE:
- The selection of key informants
- Identification of sampling sites
- Random sampling is sometimes employed when to make quantitative estimates.
- Key informants are individuals or groups who are likely to have well-developed knowledge
- Bee keepers and organisations & Veterinary officers for bee Health
The core method in the toolkit for PE is the semi-structured interview. The interviewer introduces a topic using an open-ended question. An example of an open ended question would be: What are the main diseases or pests affecting your bee colonies?
This allows the respondents to provide direction to the interview and describe problems in their own terms.

Once the participants have noted and described problems, the team can then ask probing questions to fill in any gaps and to check for internal consistency.
A number of ranking and scoring techniques exist:

- Simple ranking
- Pair-wise ranking
- Piling techniques.

In this technique, the participants are given a number of counters (30 stones, beans or maize).

The community may have identified five main diseases or pests.

Respondents could then be asked to divide the pile into five smaller piles, to represent the relative impact of each disease or pest.
Piling techniques
Proportional piling techniques can be adapted to study issues such as:

- Disease impact on honey yield and quality
- Disease prevalence and incidence
- Mortality rates
- Clinical presentation
- Epidemiological risk factors
- The efficacy of disease interventions
Once a body of information is obtained from a series of interviews and data collection exercises,

The information can be assessed through the process of triangulation.

The term triangulation simply means comparing information obtained from multiple informants and multiple methods to look for patterns.
Several appropriate techniques of sample collection such as dried blood on filter paper have been developed for both serological and genetic analysis.

Efforts are now underway to combine PE approaches with more conventional forms of analytical epidemiology.

Studies have been completed to validate existing veterinary knowledge as a form of epidemiologic data.

The results of this work suggest that combinations of both participatory and analytic techniques yield an extremely powerful approach to the study of epidemiology.
Thank You

AU-IBAR: Providing leadership in the development of animal resources for Africa