



ASSESSMENT OF BEE DISEASES AND PESTS USING PARTICIPATORY EPIDEMIOLOGICAL TECHNIQUES



Norber MBAHIN, Ph.D
AU-IBAR

Nairobi, Kenya
31st March – 4th April 2014



Introduction





Introduction



- 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



Introduction





Introduction



- 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?



Assumptions



- ❑ PE recognizes that local bee keepers 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.



Assumptions



- ❑ 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.



Assumptions



- ❑ PE learns from local **knowledge**,
- ❖ Leading to disease control programmes:
- ✓ That are both acceptable to their stakeholders
- ✓ Effective.



PE Advantages

- ❑ 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,







PE Advantages



- ❑ 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.





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





PE Limitations



- ❑ 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.



PE Limitations



- ❑ 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.

Overview of PE Methods



- ❑ 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).

Overview of PE Methods



- ❑ 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.



Overview of PE Methods



- 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



Overview of PE Methods



- ❑ 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 mains diseases or pests affecting your bee colonies?



Overview of PE Methods



- ❑ 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



Overview of PE Methods



- ❑ 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





Overview of PE Methods

- ❑ 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





Data Validation & Analysis



- ❑ 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.

Data Validation & Samples Collect.





Promising application of PE



- ❑ 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
- ❑ the use of PE as a method of collecting expert opinion for use in infectious disease modelling.

Promising application of PE



- ❑ 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