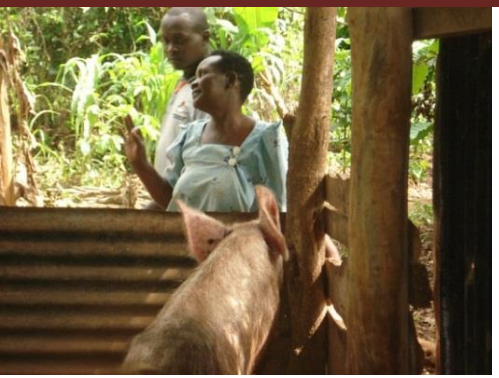
Erysipelothrix rhusiopathiae infection in pigs, pork and raw pork handlers in Kamuli district, Eastern Uganda

Angella Musewa, Kristina Roesel, Damalie Nakanjako, Delia Grace, Ronald Ssenyonga, Joan Nangendo, Ismael Kawooya, Joseph Erume



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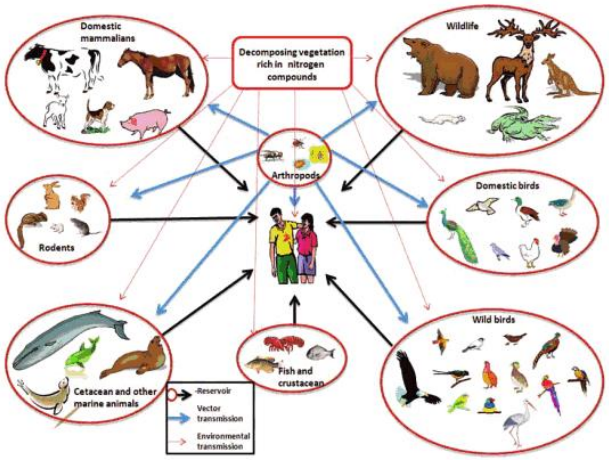
Introduction – *Erysipelothrix rhusiopathiae*

Ubiquituous gram+ bacterium



Adapted from Reboli and Farrar, 1989

In pigs: erysipelas, diamond skin disease

Source: McGavin DM, Zachary JF, 2007. Pathologic basis of veterinary disease, 4th ed.

In people: erysipeloid

Source: Quizlet.com

Why study *E. rhusiopathiae* in Uganda?

- No published research in Uganda
- CGIAR Research Program on Livestock & Fish
- Clinical signs of diamond skin disease in pigs reported by farmers in 3 subcounties in Kamuli district

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Participatory assessment of animal health and husbandry practices in smallholder pig production systems in three high poverty districts in Uganda

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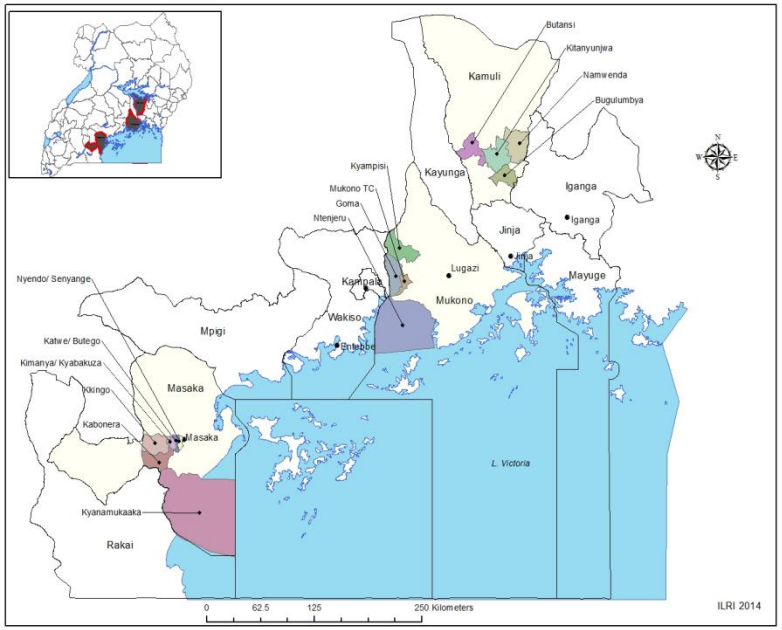


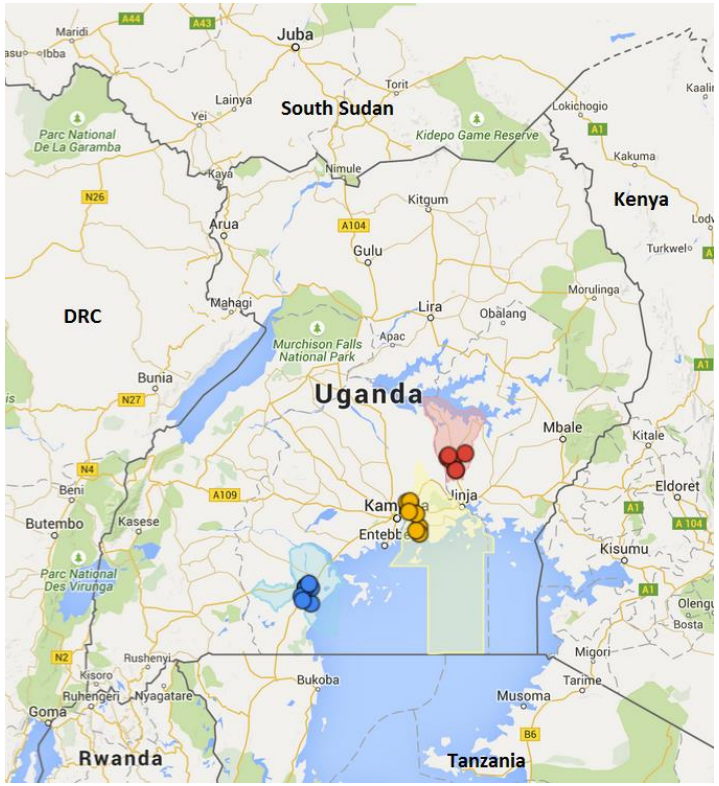
Objectives

- To determine the prevalence of ER infection in pigs, pork and raw pork handlers in Kamuli district.
- To establish risk factors associated with infection in raw pork handlers.

Methods

1. Serology

- Part of a multi-pathogen assessment including 4 subcounties in Kamuli district
  (Dione et al., 2014 and Erume et al., 2016)
- 426 pig sera
- IgG (CIVtest Suis SE/MR; Laboratorios Hipra, Spain)



22 villages sampled in 3 districts of Uganda: Kamuli (6, red); Masaka (9, blue), Mukono (7, yellow) © google maps/ Kristina Roesel/ILRI

Methods

2. microbiology

- 100 x 250g fresh pork samples from 67 butcheries

- 302 whole blood samples from raw pork handlers:
  - ER selective media
  - Confirmatory tests: catalase, aesculin, gelatine

3. Risk factors

- Semi-structured questionnaire, 6 focus group discussions, 3 key informant interviews

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Results – prevalence

Subcounty	Pig serology	Pork culture	Abattoir workers	Butchers	Cooks**
Kitayunwa*	27/38 (71.1%)	5/14 (35.7%)	8/20 (40.0%)	3/19 (15.8%)	0/60 (0.0%)
Bugulumbya*	81/118 (68.6%)	11/24 (45.8%)	2/4 (50.0%)	1/6 (16.7%)	1/39 (2.6%)
Namwendwa*	49/79 (62.8%)	23/55 (41.8%)	4/14 (28.6%)	5/34 (14.7%)	6/106 (5.7%)
Butansi	128/192 (66.7%)	6/7 (85.7%)	-	-	-
Total	**285/426 (66.9%)**	**45/100 (45.0%)**	**14/38 (36.8%)**	**9/59 (15.3%)**	**7/205 (3.4%)**

* Subcounties where farmers reported clinical signs of ER in pigs
** 147 female, 58 male

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Results – risk factors

11 variables in bivariate analysis, included to multivariate analysis if $p<0.20$

associated with ER infection

- Work in abattoir (OR=26.13, $p<0.001$)
- Work at butchery (OR=8.37, $p<0.01$)
- Alcohol consumption (OR=4.01, $p<0.05$)

Discussion & conclusion

- First report of ER in Uganda
- High level of occurence, especially among abattoir workers
- Findings consistent with previous research
- Low level of awareness that the disease exists

- More research needed on sources of infection

- Prevention in pigs: vaccination
- Prevention in humans: protective gear
- Treatment possible
- Cost versus benefits?

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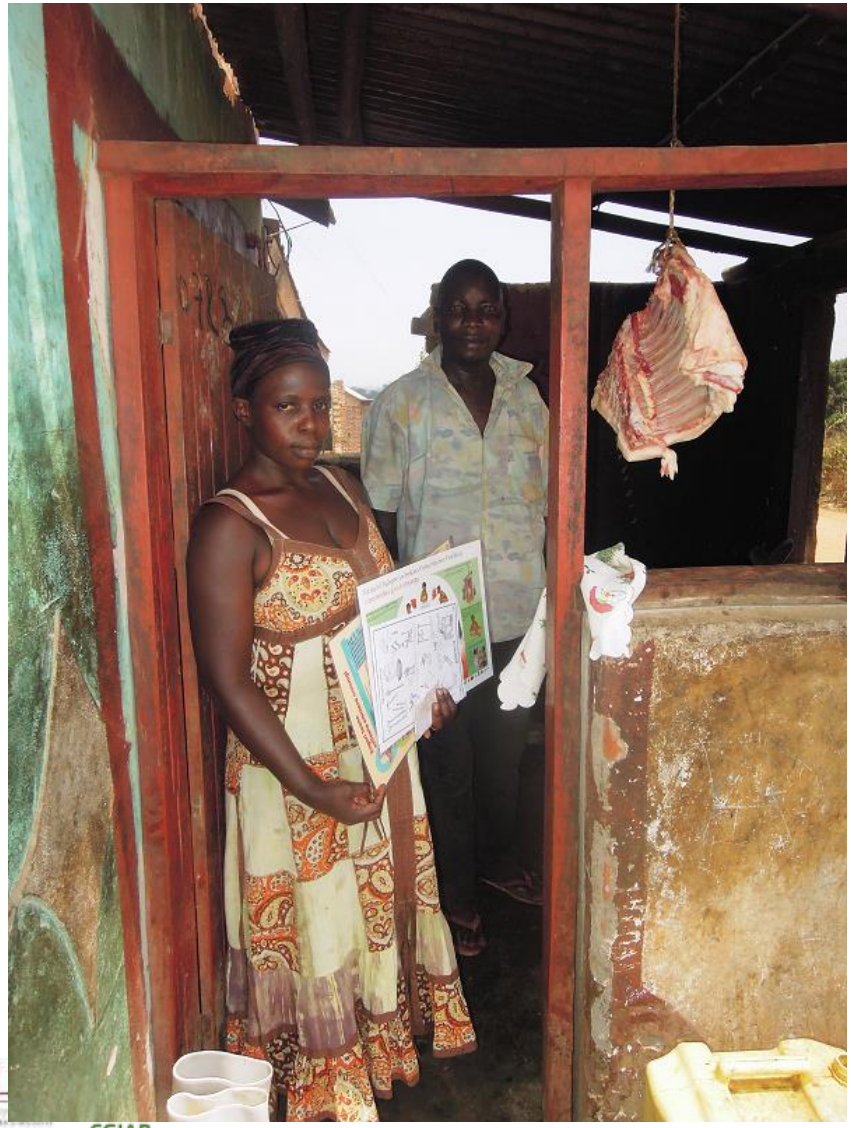
Participatory research & feedback to communities



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- Research participants in the study
- Supervisors and lecturers

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