



Supplementary Material 1

Signed consent by the Chairperson, PFAN, Ogun State Chapter to conduct the study among pig production farms in Ogun State.



FEDERAL UNIVERSITY OF AGRICULTURE, ABEOKUTA
COLLEGE OF VETERINARY MEDICINE
DEPARTMENT OF VETERINARY PUBLIC HEALTH AND REPRODUCTION June, 2019.
PRIVATE MAIL BAG 2240, ABEOKUTA, OGUN STATE, NIGERIA

The Chairperson,
Association of Pig Farmers,
Ogun State,
Nigeria.

Dear Sir/Ma,

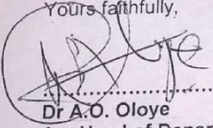
REQUEST FOR APPROVAL TO CONDUCT FINAL YEAR PROJECT (QUESTIONNAIRE ADMINISTRATION) AMONG PIG FARMERS IN OGUN STATE

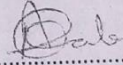
I hereby introduce to you Adeyemo Folasade, one of the final year students at the College of Veterinary Medicine. She wishes to request for your approval to administer questionnaire to Pig Farmers registered under your association. Adeyemo Folasade is undertaking a research project to provide information on the antimicrobial use in pig production in Ogun state, Nigeria (Ogun central, East, West).

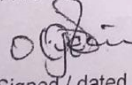
As you may be aware, the indiscriminate use of antimicrobials in food animals has been linked to the emergence of antimicrobial resistance in humans, which has become a global health concern. So, Folasade will be working in collaboration with her supervisor to evaluate the prevalence and farmers' levels of knowledge and practices of antibiotic use in the pig production system. We believe the information gathered in this study will serve as a baseline for the development of strategic guidelines on antimicrobial use and promotion of antimicrobial stewardship among pig farmers in Ogun State. By taking part in this survey, we will give feedback on the resulting outcome and you will have the chance to put forward your views on what practical steps can be taken to reduce indiscriminate use of antimicrobials and the consequent health hazards among consumers. We will ensure that any recommendations coming out of the project will be practicable and benefit the pig farmers.

To better conduct this study, a self-administered questionnaire will be given to the pig farmers. Participation in this study by farmers is voluntary and we would be grateful if the farmer would take a moment to complete the questionnaire. This should take no more than twenty minutes of their time. All information collected will be treated confidentially and used mainly for academic purposes.

If you find this request acceptable, please sign this letter indicating your approval.

Yours faithfully,

Dr. A. O. Oloye
Ag. Head of Department


Dr. (Mrs.) O. O. Adebowaie
Supervisor

I HEREBY APPROVE OF THE ABOVE REQUEST
 1/7/2019
Signed / dated

Supplementary material 2

Focus group: discussion guidelines/ template for Pig farmers in Ogun State

Title: Perceptions of Farmers Regarding Antimicrobial usage and other Challenges Confronting Pig Production in Ogun State, Nigeria.

Objectives:

1. Facilitator's welcome, a brief introduction about the focus of discussions
2. Provide farmers with the future benefits of the study
3. Perceptions of pig farmers regarding antimicrobial usage and drivers in the pig industry in Ogun state
4. Identify challenges confronting the pig industry in Ogun State?
5. Gather recommendations from pig farmers' perspectives?

Guiding questions:

1. Please, can you identify issues confronting a pig farmer in Ogun state
2. How easy is it to access a food animal veterinarian or services in your area?
3. How well do you have access to veterinary extension officers in your area?
4. Mention common diseases encountered in the pig industry?
5. How do you use antibiotics/AM?
6. What influences your decision to start or discontinue the use of antibiotics/AM?
7. Please share things that are important to you when deciding to use antibiotics/AM.
8. How would antibiotic/AM use affect your production practice?
9. What do you know about antibiotic resistance/AMR?
10. What can producers, veterinarians, and the government do in order to make antibiotic/AM use in pig better?
11. Please share other management practices or products besides antibiotics /AM that you use to prevent or treat disease.
12. In your opinion, what specific type of information would you as pig producers need and like to be receiving about antibiotic use?
13. What is the best format for information dissemination?

Concluding question

14. What is interesting about this topic- AU/AMU?

Conclusion:

Thank the participants

Supplementary Material 3

Questionnaire for the cross-sectional survey- Phase Two of this study

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PROJECT TITLE: FARM OWNER/MANAGER QUESTIONNAIRE ON FARM OPERATIONS AND ANTIBIOTICS USAGE IN PIG PRODUCTION IN OGUN STATE, NIGERIA.

Farm ID:

Farm name:

Farm Address:

Farm managers name:

Date:

Dear Farmer,

I am a final year veterinary student from the Federal University of Agriculture, Abeokuta. I am carrying out a project on the use of antimicrobials among pig farmers.

WHAT IS THE PROJECT ABOUT?

To provide information on the pattern of antimicrobial use (AMU) in pig production in Ogun State, Nigeria with a view to giving insights into the implications of the current status.

Why are we carrying out the project?

As you may be aware, the indiscriminate use of antimicrobials in food animals has been linked to the emergence of antimicrobial resistance in humans, which has become a worldwide health concern due to the associated increased morbidity and mortality in humans

Benefits of the project to farmers?

This study would provide baseline data for efficient development of educational programs and guidelines on AMU among pig farmers, promote strategic planning or initiatives, and policy formulation or modification where appropriate.

What happens to my data?

All information gathered will be treated as highly confidential and will only be used for academic purposes. Please note, the questionnaire should take 15-20 minutes of your time, and is voluntary. Please ensure you tick all relevant boxes and answer the questions appropriately.

Thank You for your time.

SECTION A: FARMERS' SOCIODEMOGRAPHIC DATA

Farm Owner

1. Farm owner's age in years as at last birthday: _____
2. Sex (Please tick as appropriate): Male Female
3. Marital status (Please tick as appropriate):
 - a) Married
 - b) Single
 - c) Divorced
4. What is your highest formal educational level?
 - a) No formal education
 - b) Primary
 - c) Secondary
 - d) Tertiary

Farmers Occupational History

4. Is pig farming your main occupation? Yes No
5. If No, please specify primary occupation Yes No
6. If Yes, do you have a secondary occupation _____
7. How long have you been operating the farm? _____
8. How many hours per day do you work on the pig farm? 1-3hours 4-6 >6hours
9. Do you have farm attendants working on your farm? Yes No
10. If Yes, how many? (please specify number) _____

SECTION B: GENERAL FARM INFORMATION

11. Specify farm location (Long, Lat and Altitude) _____
(to be filled by visiting vet)
12. Farm size _____

Flock details

13. Is pig the animal mainly raised on the farm? Yes No
14. If Yes, please complete the table below for pigs raised on the farm

Species	Breeds	Source of purchase	Number of males	Number of females	Number/age of group of adults	Number/age of group of young	Purpose of keep
Pigs							

15. If No, do you operate mixed farming Yes No

16. Please complete the table below for the other types of animals present on the farm.

Species	Breeds	Source of Purchase	Number of males	Number of females	Number/age group of adults	Number/age group of young	Purpose of keeping
Cattle							
Sheep							
Goat							
Poultry							
Others							

SECTION C: MANAGEMENT AND BIOSECURITY

This section to be filled by farmers for pigs only

Management (please tick as appropriate)

17. What pig production system do you operate? Intensive semi-intensive
18. Type of housing Open Close
19. Number of enclosures _____
20. Are enclosures bird/other animal-proof? Yes No
21. Do you have separate enclosures for following?
- a) Farrowing Yes No
- b) Weaners Yes No
- c) Growers Yes No
- d) Sows Yes No
- e) Boars Yes No
22. Are animals in these enclosures permanently held? Yes No
23. Type of flooring Soil Concrete Grass Gravel

Others: _____

24. Type of feed used for the pigs: Industrial byproducts only Crop residues only
 Hotel and party left over Industrial by product and compounded feed

Biosecurity

25. Does farm owner know about biosecurity? Yes No
26. Do you use foot dip disinfectant at entrances to farm? Yes No
27. If Yes, mention disinfectants used: _____
28. Do you visit other farms within or outside the settlement? Yes No
29. Do your workers visit within or outside settlement? Yes No
30. Are pig marketers given access into the farm/pig enclosures? Yes No
31. Does the feed transport vehicle visit the farm? Yes No
32. Does the transport vehicle supply feed to other farms? Yes No

33. Do you have farm own equipment? Yes No
34. If No, do you get farm equipment from other farms? Yes No
35. Do you clean and disinfect enclosures? Yes No
36. Tick waste disposal methods practised on the farm:

Burn/bury	Sell as fertilizer	Dump in refuse site	Others (state)
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SECTION D: FARM HEALTH QUESTIONNAIRE

37. Does the farm have isolation facilities for sick animals? Yes No
38. Are animals that are brought in quarantined before being introduced to the rest of the stock? Yes No
39. Do you have a routine written health plan? Yes No
40. Please complete the table below concerning the routine preventive medications used on the unit.

Vaccination	Dewormer	Probiotics	Others(specify)

41. Can you tick below diseases encountered on the farm:

Diseases	Tick
1. African Swine Fever	
2. Salmonellosis	
3. Foot and Mouth diseases	
4. Brucellosis	
5. Coccidiosis	
6. Mycoplasmosis	
7. Helminthiasis	
8. Mastitis	
9. Erysipelas	
10.	

42. Do you keep health records? Yes No
43. Do you have a farm veterinarian? Yes No

SECTION E: FARMER'S USE AND PRACTICES OF ANTIBIOTICS USE

44. Have you heard about antibiotics? Yes No
45. Have you used antibiotics before on your farm Yes No
46. How often do you use them?
- a. Once in a while
 - b. Often
 - c. Always
 - d. Never

47. Please specify the common antibiotics you use?

Antibiotics	TICK
Tetracycline	
Penicillin	
Amoxicillin	
Streptomycin	
Gentamycin	
Chloramphenicol	
Ciprofloxacin	
Ceftrazone	
Tylosin	
Macrolides	
Polymyxins	
Clarithromycin	
Levofloxacin	
Doxycycline	
Tobramycin	

48. Do you get them off the counter? Yes No
49. Does a veterinarian prescribe them for use? Yes No
50. How do you use them?

Prophylactic use	Therapeutic use	Growth promoters	Others (specify)

51. What informs the start of antibiotics?
- a. As soon as you see signs of unwellness
 - b. Routine
 - c. When the pig is critically sick
 - d. Veterinarian prescription

52. What informs the stoppage of antibiotic?
- a. As soon as the animal is showing signs of wellness
 - b. Manufacturer's instructions
 - c. Veterinarian's advice or prescription

53. What common route of administration do you use?

- a. Orally
- b. Injectable
- c. Suspension
- d. Topically

54. Is the use of antimicrobial influenced by company brand?

55. Do you observe the withdrawal period? Yes No

SECTION F. FARMERS KNOWLEDGE OF THE USE OF ANTIBIOTICS

56. Do you know antibiotics have different classes? Yes No

57. Do you know antibiotics have side effects? Yes No

58. Are you aware that overuse of antibiotics could increase resistance in food-producing animals? Yes No

59. Are you aware that antibiotic residues from food-producing animals can be passed down to humans through consumption? Yes No

60. Do you know antimicrobial residues in food animals pose danger to human health? Yes No

61. Do you know antimicrobial misuse in animals can be linked to resistance in humans? Yes No

62. Does antimicrobial resistance occur when bacteria develop the ability to defeat the drugs designed to kill them? Yes No

63. Does resistance increase morbidity and mortality in animals? Yes No

64. Does resistance increase morbidity and mortality in humans? Yes No

65. Does antimicrobial resistance increase cost of production? Yes No

66. Is it safe not to complete the dose of antibiotics? Yes No

67. Is antimicrobial sensitivity test necessary before use? Yes No

68. Are you aware of antimicrobial stewardship? Yes No

69. What do you understand by the words antimicrobial stewardship.....